ADAPTATION FUND

REGIONAL PROJECT/PROGRAMME PROPOSAL

PART I: PROJECT/PROGRAMME INFORMATION

Title of Project/Programme:	Increasing the resilience of both displaced persons and host communities to climate change-related water challenges in Jordan and Lebanon
Countries:	Jordan, Lebanon
Thematic Focal Area:	Transboundary water management and food security
Type of Implementing Entity:	Multilateral
Implementing Entity:	United Nations Human Settlements Programme
Executing Entities:	**Lebanon**: Ministry of Environment; Ministry of Energy and Water; Line departments in municipalities; UNICEF and NGO partners **Jordan**: Ministry of Environment, Ministry of Water and Irrigation;; Line departments in municipalities; UNICEF and NGO partners
Amount of Financing Requested:	USD 14 million

Project Background and Context

Introduction to the problems and needs

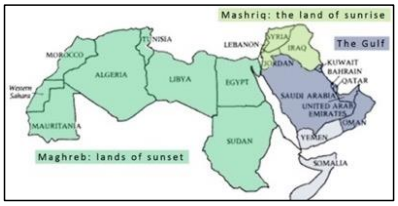
There is little exploration of how urban systems respond to the impacts of climate change combined with a rapid influx of new and often long-term residents. Considering the scale and nature of impacts of climate change and the Syrian crisis in the Mashreq region, a comprehensive and regional response framework is needed, including the identification of effective approaches and best practices.[1]

The Mashreq region is part of the most water scarce regions in the world and both urban and rural areas face water challenges. However, some urban areas, especially in Lebanon and Jordan, experience extreme pressure on water availability, both in quantity and quality, exacerbated by both climate change and the unprecedented influx of Displaced Persons (DPs), especially from Syria.[2]

The aim of this project is to support the development of a comprehensive regional response framework, especially in an urban context. This is done by identifying effective approaches and best practices to build urban resilience, focused on actions that address water challenges that benefit both DPs and host communities, and especially women and youth.

Arab region context

The Arab region is full of potential. Over the past decades, the region has seen significant economic and social progress. However, climate risks threaten to derail these development gains. This could disrupt efforts to build peace, cause a spike in 'eco-migrants,' and undermine efforts to end hunger, poverty and inequality by 2030.[3]



[1] World Bank et all (2017, policy note September 14): Refugees in the middle east. Bringing an urban lens to the forced displacement challenge.
[2] Ibid
[3] UNDP / GEF (2018) Climate Change Adaptation in the Arab States Best practices and lessons learned. Online: https://reliefweb.int/report/world/climate-change-adaptation-arab-states-best-practices-and-lessons-learned

The Arab region is home to rising levels of conflict and the world's largest population of refugees and displaced people. Simultaneously, it is now the planet's most water-scarce and food-import-dependent region, and the only region where malnutrition rates have been rising. The Arab region contains 14 of the world's 20 most water-stressed countries. In fact, the region's annual internal water resources amount only 6 percent of its average annual precipitation, against a world average of 38 percent. Overexploitation of natural resources in the region has led to severe ecosystem degradation. Poor land and water management are reducing the potential provision of already limited natural resource services.[4]

Urbanization and population growth are putting severe strains on dwindling natural resources. The population of the Arab countries, estimated at approximately 407 million (2016), with 100 million considered to be in poverty, is expected to reach approximately 635 million by 2050. Middle East North Africa (MENA) is the only region in the world where poverty increased between 2011 and 2016; and poverty is projected to increase further by 2030. With low human development index (HDI) rankings for many Arab countries and rampant poverty, the region is also facing internal conflicts over scarce natural resources such as conflicts between rain-fed farmers and pastoralists.[5]

The impacts of climate change are exacerbating the existing challenges of sustainably managing limited natural resources. Current climate change projections show that by the year 2025, the water supply in the Arab region will be 15 percent of the levels in 1960. By 2030 the predominant effects of climate change will include a decrease in precipitation, a drastic rise in average temperatures and an increase in seawater intrusion into coastal aquifers as sea levels rise and groundwater overexploitation continues. Climate change will also have disproportionate consequences for women, poor and marginalized communities who are especially at risk due to their dependence on natural resources.[6]

Lebanon and Jordan socio-demographic, economic and environmental context

The Syrian crisis

Now in its eight year, the Syrian crisis has had a profound humanitarian, socio-economic, and political impact on the population in both Syria and its neighbouring countries. In recent years, millions of people have been displaced and migrated from Syria.[7] Lebanon and Jordan are among the top DPs host countries: Lebanon is the third largest hosting country in the world (and first if compared to the size of its national population) and Jordan the seventh.[8] This has placed unprecedented strain on the country's economy, infrastructure, and public services.[9] Although some moved to camps, most (85 percent in Lebanon[10] and 83.3 percent[11] Jordan) settle in cities, often in informal communities. This movement is impossible to stop as people search for security, livelihood opportunities and a decent life. Unfortunately, due to lack of planning and resources to respond to this large influx, many find themselves in communities that lack basic infrastructure and services, of which water challenges are seen as a major problem,[12] often leading to health and livelihood issues (as most DPs work in agriculture and this sector is heavily dependent on water availability) and social unrest.[13] Moreover, the majority of DPs from Syria live under the poverty line[14] and lack legal residency making it difficult for them to secure income.

At the programmatic level, the Regional, Refugee and Resilience Plan (3RP) responds to the Syrian crisis and is conceptualized of two inter-connected components. The refugee component addresses

[4] UNDP / GEF (2018) Climate Change Adaptation in the Arab States Best practices and lessons learned
[5] Ibid
[6] Ibid
[7] The Syrian Arab Republic is the biggest sending country of refugees registered by UNHCR in the world (5.5 million out of a total of 18.5 million - UN-Habitat 2018. Migration and inclusive cities: A guide for Arab city leaders
[8] UN-Habitat 2018. Migration and inclusive cities: A guide for Arab city leaders
[9] Lebanon crisis response plan 2017-2020 (2018 update)
[10] Ibid
[11] UNHCR fact sheet, August 2018.
[12] See Jordan and Lebanon INDCs and Lebanon crisis response plan 2017-2020
[13] https://video.ecc-platform.org/videos/links-between-migration-and-climate-change
[14] UN 3RP: Regional Refugee & Resilience Plan 2018-2019.

the protection and humanitarian assistance needs of refugees living in camps, in settlements and in local communities in all sectors, as well as the most vulnerable members of impacted communities. The 3RP resilience component addresses the resilience, stabilization and development needs of impacted and vulnerable communities in all sectors, strengthens the capacities of national and sub-national service delivery systems, strengthens the ability of governments to lead the crisis response, and provides the strategic, technical and policy support to advance national responses.

Despite support from the National governments, civil society and the international community, the needs of affected communities are outpacing the resources and capacities of partners, and coping mechanisms of the most vulnerable are being severely tested. As there are limited numbers of Syrian DPs returning, there are worrying signs of heightened tensions and host-community fatigue. In this context, it is essential for the international community to maintain its solidarity and support,[15] especially since there is a decline in funding for support (the resilience component of the 3RP was only 53 percent funded in 2017 and 29 percent funded until Sep 2018) (to countries like Jordan and Lebanon that face DPs crisis.[16] The regional approach of the project aligns with the 3RP 2018 and 2019 sector objectives. The WASH sector of the 3RP will continue supporting service providers at the host community level to adapt to the increased service demand through several means including capacity strengthening and service delivery (upgrading and expanding service coverage and improving service efficiencies).

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Lebanon context

Lebanon is located on the eastern basin of the Mediterranean Sea, with a surface area of 10,452 km2, a coastline extending on 225 km and a landscape characterized by mostly mountainous areas.

Economic trends in Lebanon remain sluggish, with all segments of the economy struggling and competitiveness being undermined by the loss of major trading routes and regional markets. Against this background, in 2017, Lebanon began developing its vision for stability and sustainable long-term growth and job creation, which is accompanied by important sectoral and structural reforms as well as a major infrastructure programme, the Capital Investment Plan (CIP).

The CIP calls for over $20 billion in funding for 250 projects scheduled over the next decade, until 2030, focusing on investments in priority sectors, such as water, energy, transportation, and solid waste, among others.[17] However, Lebanon faces important challenges, especially related to water resource management and the Syrian crisis.

Environmental and water challenges: Water resources in Lebanon are under stress. Available water, including from rivers and springs, storage dams and groundwater, exceed projected water demand.[18] In 2010, total water supply reached 1,377 (MCM)/year originating from surface water (46 percent), groundwater (51 percent), and used storage (3 percent). Groundwater is over-extracted (0.7 BCM against total recharge of 0.5 BCM). In 2012, Lebanon was already using two thirds of its available water resources. This rate of water withdrawal is very high compared to global standards (averaging 10-30 percent for other regions), and includes a substantial component of resource mining, depleting Lebanon's water capital[19]. In

Untreated wastewater discharge

[15] UN 3RP: Regional Refugee & Resilience Plan 2018-2019.
[16] Ibid.
[17] UN for Lebanon annual report 2017
[18] UNICEF Evaluation of the Water, Sanitation and Hygiene (WASH) Programme within the UNICEF Country Programme in Lebanon (2013-2016)
[19] Ministry of Environment, EU and UNDP: Lebanon Environmental Assessment of the Syrian Conflict & Priority Interventions 2014

addition, widespread pollution and substandard water infrastructure are restricting the ability of the government to meet water demands in the future.[20]

Lebanon is also generating ever increasing quantities of domestic and industrial wastewater, all of which requires treatment. The country has invested heavily in wastewater facilities over the last two decades. As a result of this investment, about two-thirds of the population is connected to sewer networks but only 8 percent of wastewater reaches the operational wastewater treatment plants and is treated. A considerable amount of the installed treatment capacity is not being exploited.

The environmental costs of this situation are severe. Most wastewater collected is discharged raw, without treatment, into watercourses and the sea. Where there is no network, cesspits are used with considerable seepage into groundwater. Few industries pre-treat their effluent, so harmful waste is discharged into the sewer system or the environment. While all the water resources are being impacted by bacteriological contamination, in agricultural areas, the runoff and infiltration of fertilizer and pesticide residues is exposing these water resources to further environmental degradation. Furthermore, runoff from urban areas may contain heavy metals and hydrocarbons, which could impact the quality of receiving waters.

The negative environmental impacts of poor wastewater collection and treatment have the knock-on effects of increasing health costs, polluting water resources and soils, and reducing income from amenities and tourism. This situation is the result of years of political instability, poor planning and scattered responsibilities within the sector.

Demographic challenge: With a total population of 6 million in 2017,[21] Lebanon's population has almost doubled since 2000. The largest increase took place during the last decade, especially because of the large influx of DPs since the Syrian Crisis started in 2011. This relatively high population growth rate puts pressure on government spending to deliver basic public services, and to stimulate economic development.

Economic and fiscal challenges: Economic growth for 2019 is expected to be 2 percent. This has been mainly driven by the services and tourism sectors. Public finances remain structurally weak and are expected to worsen, and are in urgent need of reforms. Public debt continued to rise (153 percent of GDP at end-2017), due to low growth and a relatively high cost of debt financing.[22]

Refugee crisis: one of the key issues facing Lebanon is the economic and social impact of the Syrian crisis.[23] According to government and independent sources, up to 1.5 million Syrians, about a quarter of the Lebanese population, have taken refuge in Lebanon since the conflict erupted in March 2011. This has strained Lebanon's public finances, service delivery, and the environment. 76 percent of the Syrian DP households subsisted below the poverty line and more than 50 percent of Syrian households live in extreme poverty.[24] The crisis also worsened poverty incidence among Lebanese citizens as well as widen income inequality. In particular, it is estimated that as a result of the Syrian crisis, some 200,000 additional Lebanese have been pushed into poverty, adding to the erstwhile 1 million poor. An additional 250,000 to 300,000 Lebanese citizens are estimated to have become unemployed, most of them unskilled youth.

The Syrian conflict and the influx of refugees to Lebanon coincided with a period of severe water shortage, further stressing the scarce water resources and the under-developed water and wastewater infrastructure in the country. By the end of 2014, the incremental increase in domestic water demand for refugees was expected to reach 43 to 70 MCM, corresponding to an increase in water demand of

[20] UNICEF Evaluation of the Water, Sanitation and Hygiene (WASH) Programme within the UNICEF Country Programme in Lebanon (2013-2016)
[21] World Bank. Online: https://data.worldbank.org/country/lebanon
[22] Ibid
[23] https://www.worldbank.org/en/country/lebanon/overview
[24] VASYR 2017: Vulnerability Assessment of Syrian Refugees in Lebanon

8 to 12 percent at the national level, with the Bekaa having the highest share. As for the wastewater generation rates, refugees were expected to contribute to an increase of 34 to 56 MCM by the end of the year 2014, resulting in an increase of 8 to 14 percent in wastewater generation at the national level with the Bekaa having the highest share.[25]

Host community fatigue became more and more pronounced, and tensions between and within communities have been on the rise. Perceived competition for lower-skilled jobs was identified as a key driver for these tensions. Between 2014 and 2017, the percentage of Lebanese who did not report any inter-community tensions dropped from 40 to 2 per cent.[26] Most DPs (around 85 percent) settle in urban areas. The Bekaa valley, which is relatively close to Syria and used to be well connected with Damascus, hosts most of the Syrian DPs.[27]

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Jordan context

Jordan is located about 80 km to the East of the Mediterranean Sea. Located at the heart of the Middle East, Jordan is a middle income county shaped by its Geography, history, Geopolitics and scarcity in natural resources.[28]

Over the past ten years, Jordan has had success pursuing structural reforms in education, health and privatization and liberalization. The Government of Jordan has introduced social protection systems and reformed subsidies, creating the conditions for public-private partnerships in infrastructure and making tax reforms.[29] However, the country faces important challenges. Macroeconomic vulnerabilities persist mainly due to its energy import dependency. Regional tensions and their recent extension to Iraq and Syria are weighing down on the Jordanian economy through a widening trade deficit and weaker investor confidence. High unemployment (18 percent average, 27 percent female and 40 percent youth in 2018[30]) and dependency on remittances from Gulf economies are additional threats to economic stability.[31]

Environmental and water challenge: Issues in Jordan are to some extent similar to those in Lebanon. However, Jordan is even a more water scarce country. In fact, it is the second most water scarce country in the world. Water demand distinctly exceeds supply as the annual water availability per capita has declined significantly, from 3,600 m³ per capita in 1946 to only 145 m³ in 2008.[32] Jordan requires about 1,400 MCM annually (2014) but has, on average, only 848 MCM of freshwater supply available for various uses. The increased demand for water has caused over abstraction of water resources to reach 160 percent in 2014[33]. In 2017, 50.3 percent of the Jordanian population had 24 h/week of piped water supply or less and 49.7 percent of Jordanians were listed with higher than 24 hsupply/week[34]. This trend will make some areas unliveable, reduce agriculture lands and put more pressure on already scarce water resources, potentially increasing displacement, the continuous risk of social unrest and conflicts and migration to host settlements already struggling to provide basic services.

Demographic challenge: With a total population of 9,7 million in 2017,[35] Jordan's population has grown very rapidly, doubling more than ten times in 55 years. The largest increase took place during the last decade, especially because of the large influx of DPs since the Syrian Crisis started in 2011. This

[25] Ministry of Environment, EU and UNDP: Lebanon Environmental Assessment of the Syrian Conflict & Priority Interventions 2014
[26] Regular Perception Surveys on Social Tensions throughout Lebanon (ARK, 2017), and Defining Community Vulnerability in Lebanon, REACH (2014).
[27] https://data2.unhcr.org/en/situations/syria/location/71#_ga=2.248854471.1978193527.1540994637-1966626473.1540994637
[28] Jordan TNC (2014)
[29] Hashemite Kingdom of Jordan, UNICEF and UNDP (2015) Socio-economic inequality in Jordan
[30] World Bank. Online: https://www.worldbank.org/en/country/jordan/overview
[31] Hashemite Kingdom of Jordan, UNICEF and UNDP (2015) Socio-economic inequality in Jordan
[32] MWI (Ministry of Water and Irrigation, Jordan) (2009): Water for Life. Jordan's Water Strategy.
[33] Jordan National Water Strategy 2016-2025
[34] Ministry of Water and Irrigation: Water Facts and Figures 2017
[35] World Bank. Online: https://data.worldbank.org/country/jordan

relatively high population growth rate puts pressure on government spending to deliver basic public services, and to stimulate economic development.

Economic and fiscal challenges: The elevated level of debt of 95 percent of adjusted GDP (2017) is of concern. As for the water sector, increased financing needs of the Water Authority of Jordan (WAJ), which is government owned, continues to pressure this debt situation as operation and maintenance cost recovery is not expected until 2021. Economic growth for 2019 is expected to be 2.4 percent.[36]

Refugee crisis: Jordan has a long history of accommodating refugees. The sheer scale of the current refugee crisis compounds the existing socio-economic and environmental pressures in Jordan. There has been an increased competition for access to public utilities (water and electricity), education, health services, infrastructure, and employment, as well as pressure on natural resources, and the already limited carrying capacity of Jordan's natural environment. Similar to Lebanon, most DPs (around 83.3 percent) settle in urban areas. The Northern governorates of Irbid, Mafraq and Zarqa saw the largest influx of refugees relative to the total population,[37] leading to increased demand for public services.[38] Each Syrian refugee costs the water sector around 620 US$/year[39].

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Climate change

Lebanon

As mentioned in Lebanon's Intended Nationally Determined Contributions (INDC): 'adaptation is a priority for Lebanon. Being a developing country with scarce water resources and high population density in the coastal areas, Lebanon is already facing and will continue to face, significant challenges as a result of climate change. The government of Lebanon recognizes that the more sustainable its development path is, the easier it will be to build resilience to climate change impacts.' Priority sectors are water, forestry & agriculture and biodiversity.

Climate: Lebanon has a Mediterranean-type climate characterized by hot and dry summers and wet and cool winters, with an average annual temperature of 15 ℃. Lebanon has an arid / semi-arid climate, which makes it poor in water resources availability.[40]

Climate change projections: According to climate models[41], temperatures are expected to increase with 1.7°C by mid-century and up to 3.2°C by 2100 and a decrease in precipitation of 4 to 11 percent with drier conditions by the end of the century (up to 5.8 mm decrease in average monthly precipitation). Projections also show increasing trends of warming, reaching up to 43 additional days with maximum daily temperature higher than 35°C and an increase in number of consecutive dry days when precipitation is less than 1.0 mm by the end of the century, causing the seasonal prolongation and geographical expansion of drought periods. This combination of significantly less wet and substantially warmer conditions will result in hotter and drier climate.

Climate change impacts (on vulnerable sectors and areas), including the water sector: The projected changes in rainfall will put tremendous pressure on national water security and produce knock-on effects in sectors such as agriculture, where around 70 percent of the available water is being used for irrigation. The decline in precipitation will also negatively affect the recharge of rivers and groundwater. Snow will melt earlier in spring, affecting spring recharging and decreasing water availability for irrigation in summer. Annual drought periods are expected to start 15 days to 1 month earlier and will be 9 days longer by 2040 and 18 days longer by 2090. The already dry regions, such as the Bekaa, Hermel, and the South, will experience the sharpest effects. In Zahle, projections show a 6-15 percent decrease in the annual total rainfall (mm)/number of days by 2098 under the SRES

[36] World Bank. Online: https://data.worldbank.org/country/jordan
[37] https://data2.unhcr.org/en/situations/syria/location/36#_ga=2.22371195.1978193527.1540994637-1966626473.1540994637
[38] Hashemite Kingdom of Jordan, UNICEF and UNDP (2015) Socio-economic inequality in Jordan
[39] Ministry of Water and Irrigation: Water Facts and Figures 2017
[40] Lebanon TNC (2016)
[41] Ibid

A1B scenario.[42] Anticipated changes in climate would reduce the nation's exploitable supplies of water by about 1 percent in 2020, 8 percent in 2040, and 29 percent in 2080[43]. (This is even aggravated by the fact that water demand in Lebanon increased 28 percent between 2011 and 2017, which is directly linked to the Syrian crisis.[44]

Jordan

As mentioned in Jordan's National Climate Change Policy: 'Jordan faces potential serious impacts on its natural ecosystems, on its river basins and watersheds, on biodiversity—then cascading to impacts on food productivity, water resources, human health, public infrastructure, and human settlements. Climate change will have serious implications on the country's efforts to eradicate poverty and realize sustainable development for current and future generations— ultimately making climate change an issue of intergenerational equity. Climate change scenarios indicate that Jordan and the Middle East could suffer from reduced agricultural productivity and water availability among other negative impacts.'

Climate: Jordan is located about 80 km to the East of the Mediterranean Sea with a predominantly Mediterranean climate; hot and dry summers and wet and cool winters. Jordan is divided into three main climatic regions: the Ghor region (lowlands), Highlands, badia and Desert region.[45]

Climate change projections: Climate models[46] show a consistent trend towards a drier climate and annual precipitation tends to decrease significantly with time. The mean and maximum temperatures over the full country of Jordan will be 2-4 degrees higher, precipitation will be 15-20 percent lower and potential evapotranspiration about 150 mm higher by the end of the century. In 2070-2100 the cumulated precipitation could decrease by 15 percent. The decrease would be more marked in the western part of the country. Simultaneously, the mean, maximum and minimum air temperature tends to increase significantly by 0.02, 0.01, and 0.03 °C/year, respectively. On the other hand, the relative humidity tends to increase significantly by an average of 0.08 percent/year. In addition, projection show that heat waves and drought events, dry days will be more frequent.

Climate change impacts (on vulnerable sectors and areas), including the water sector: Previous studies and strategic documents (i.e. Jordan's SNC (2009) and National Climate Change Policy (2013)) have identified scarcity of water resources as one of the major barrier facing sustainable development in Jordan; a situation that will be magnified by climate change,[47] leading to more water stress. Due to climate change-induced drought, the average agricultural production declined by 25–50 percent in 1999–2000 and agricultural production entirely failed in many areas of land. Furthermore, wheat production declined by 12–20 percent of the total average, and the productivity of rangelands declined by 50 percent. In that season, agricultural production losses as a result of drought were estimated at around US$57 million. More recently, the latest figures show that rainfall in September 2014 was less than half the average expected[48]. Water-related impacts also include reduced total water availability, less reliable seasonal patterns, increasing intensity of droughts during which reservoirs are not refilled, and reduced groundwater recharge. Flood events will also be more likely. High rainfall events also increase erosion which causes losses of soil water storage and siltation of reservoirs. Higher temperatures cause higher evaporative demand and hence higher irrigation water demand. Higher temperatures also affect the efficiency of wastewater treatment plants.[49] Jordan has been subjected to additional water stress due to the influx of displaced peoples, especially from Syria.

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[42] Ministry of Environment and UNDP (2011) Lebanon Second National Communication on Climate Change – Public Health
[43] Lebanon Third National Communication on Climate Change
[44] Lebanon crisis response plan 2017-2020
[45] Jordan TNC (2014)
[46] Jordan's Third National Communication Report to UNFCCC (2014)
[47] Jordan Third National Communication on Climate Change
[48] UNEP 2015: Climate Change in the Arab Region (Regional Coordination Mechanism Report)
[49] Jordan Ministry of Water and Irrigation: Climate Change Policy for a Resilient Water Sector, 2016, page 3

There are indications of pollution of the main aquifer lying beneath the Zaatari camp due to wastewater leakages. Besides that, groundwater, including the Amman-Zarqa aquifer,[50] is being overpumped.

Climate change vulnerabilities assessment and hot-spot mapping approach

Global-, MENA and National climate change models and data have been used to understand climate change trends and projections in Jordan and Lebanon and to justify this project, focused on addressing water-related challenges in the target areas in both countries.

Target areas / municipalities have been selected by identifying which areas experience most pressure on water-related services, exacerbated by climate change impacts and the influx of DPs. Irbid and Mafraq in Jordan are the municipalities that host most DPs after Amman. In Lebanon, the Bekaa area, in which Zahle and the three surrounding target municipalities are located, hosts most DPs.

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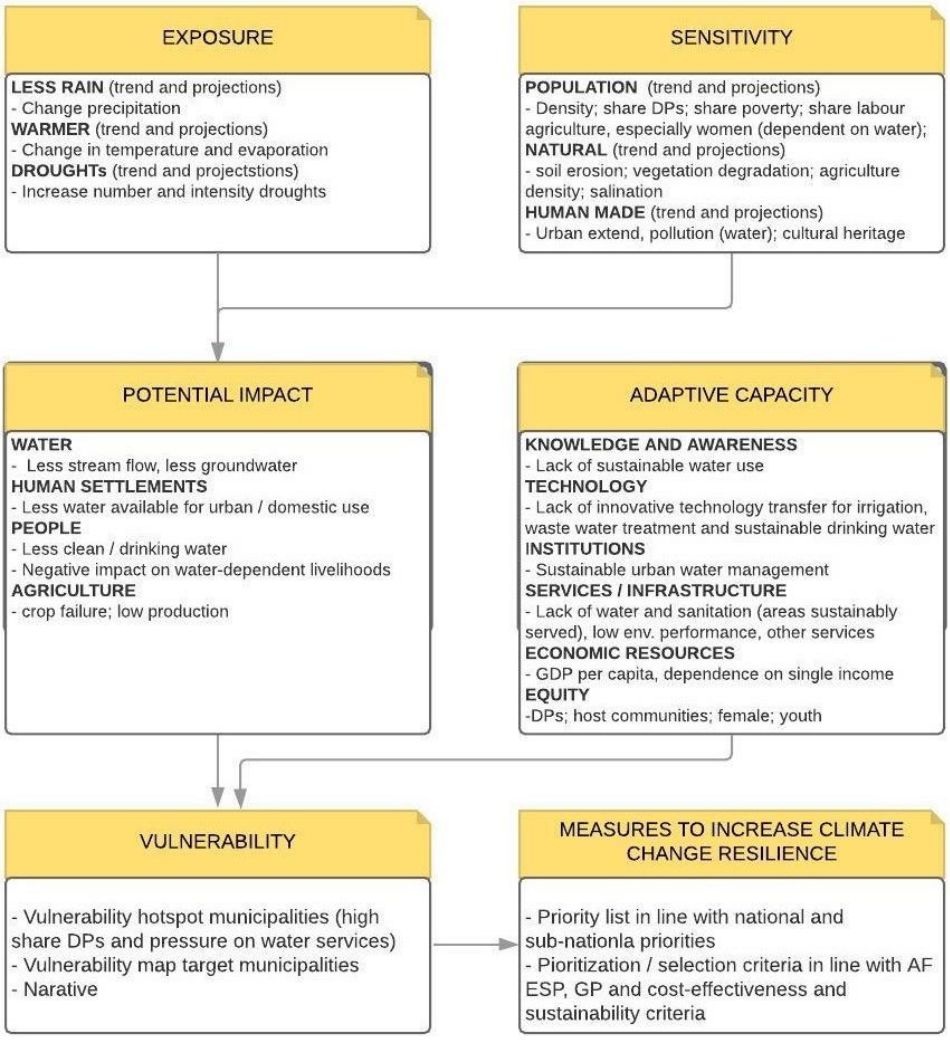
As labelled by the WB,[51] cities under widespread stress from displaced persons – which significantly impacted the overall absorption capacity, including urban systems and services such as water supply (exacerbated by climate change), sanitation, education, and health services, are called 'type 2' cities.

Figure 1: Typology of settlements[52]

The project concept phase has been used to collect data required to map climate change vulnerable hotspots (see approach in figure 1 below) and develop response plans (i.e. identify appropriate measures) to address specific vulnerabilities in these hotspot areas. This has been done through a combination of research and a comprehensive consultation process (see section II.I), including with vulnerable groups. During the full proposal phase, all proposed activities will be detailed.

[50] UN-ESCWA et al. (2017) Arab Climate Change Assessment Report (RICCAR initiative)
[51] World Bank et all (2017, policy note September 14): Refugees in the middle east. Bringing an urban lens to the forced displacement challenge
[52] Ibid

Figure 2: Climate change vulnerability assessment and hotspot mapping approach (ESCWA approach)



Project target areas

There is enough evidence[53] that water challenges will likely grow for Irbid, Mafraq and Zahle in the future due to climate change impacts. There is also a clear link between the influx of Syrian DPs and increasing pressure on water resources in these areas. Both challenges are coupled with adaptation challenges in both countries. Common adaptation challenges for the two countries are financial constraints to implement climate action. For example, the financial deficit in the municipality budget for Greater Mafraq has reached 107 percent due to the impact of the influx of Syrian DPs[54]. Also, there is a lack of awareness at the community level, weak coordination between relevant authorities and a need to spend more on research and capacity building to apply low-cost innovative solutions.[55]

Many of the DPs have now been in the host country for four or more years. As most DPs live in cities, solutions focused on their needs and negative climate change impacts must target host cities and towns.[56] The shift from a focus on camps to cities and towns means changing the paradigm for how humanitarian and development agencies work with DPs. Instead of providing stand-alone solutions to DPs in camps or rural areas, the challenge is to establish urban – rural linkages and support host communities to adapt / scale up existing services, shelter and jobs to meet the needs of both the original residents and DPs,[57] considering the impacts of climate change, especially increasing water challenges, on these services. For an overview of urban resilience building needs World Bank.[58]

Deleted: For an overview of urban resilience building needs, see annex 2.

The Jordan Refugee Response Plan identifies the Northern region as highly vulnerable (including Irbid) while the East (Mafraq) is the second highest region in the percentage of DPs rated highly vulnerable or above.[59] Syrian DPs in Jordan and Lebanon are specifically vulnerable to climate-induced water challenges. The Jordan Refugee Response Plan survey shows that 32 percent of Syrian DPs are identified as severely vulnerable due to spending over 25 percent of their expenditure on WASH items[60]. 34 percent of households rely on bottled water.[61] In Zahle, more than 50 percent of male refugees don't work while most Syrian refugee women (93 percent) don't work. Zahle had the highest share among Lebanese cities (42 percent) of households relying on cash from humanitarian organizations as a source of income and 80 percent of households depended on informal loans as a source of income[62]. This leaves most of the DPs susceptible to impacts of climate change and with weak adaptive capacity. There is also a cultural barrier with Syrian populations used to higher water availability and so higher consumption and so are struggling to cope with much less amounts of water.

In addition, there is a number of specific challenges across the region, including limited job access and livelihoods opportunities, exhaustion of savings, and the adoption of negative coping mechanisms, which further exacerbate the residual protection risks they face. Broader political and social pressures can also affect stability between displaced populations and host communities in both countries. There are over 10,000 Syrian displaced children recorded in the Arab region as either separated, unaccompanied or in institutional care.[63] The loss of social networks further decreases the adaptive capacities and make DPs more vulnerable to climate change.

The population of Irbid is estimated at 950,000 and the population of Mafraq is estimated at 206,920 in 2017[64]. Number of Syrian DPs in Iribd is 135,132 and in Mafraq is 157,446.[65] The disaggregated data and the overview of climate change concerns for each target area are shown in tables 1 and 2.

[53] See sections above
[54] ILO (2016) Local Economic Development Strategy For Mafraq Governorate (2016-2018)
[55] Jordan Third National Communication on Climate Change and Lebanon Third National Communication on Climate Change
[56] Idem page 21
[57] Idem
[58] World Bank et all (2017, p21, policy note September 14): Refugees in the middle east. Bringing an urban lens to the forced displacement challenge.
[59] UNHCR (2015) Jordan Refugee Response Plan
[60] Idem
[61] UNHCR, UNICEF and WFP (2017): Vulnerability Assessment of Syrian Refugees in Lebanon
[62] Ibid
[63] UN 3RP: Regional Refugee & Resilience Plan 2018-2019
[64] Department of Statistics (DoS) - Jordan
[65] UNHCR

Lebanon

Zahle and surrounding area lies in central Bekaa valley and has an annual rainfall of between 200-600 mm[66]. Figure 3 shows the administrative boundaries of Zahle and the surrounding municipalities. The target areas in Zahle have been identified based on high share of vulnerable communities. The total populations and disaggregated data and an overview of climate change issues and adaptation needs for each municipality are shown in table 1.

Figure 3: Target municipalities in Lebanon

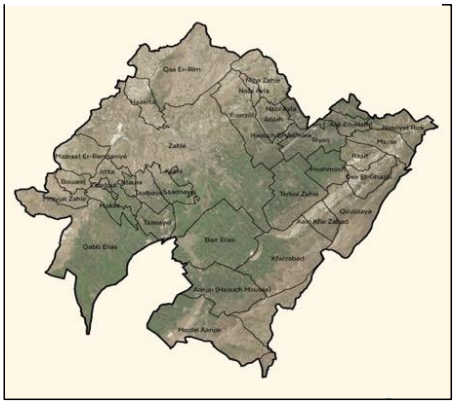


Figure 4 shows communities in most need of water resources, which have been combined with figure 5, which shows poverty distribution in Zahle area among vulnerable Lebanese communities (living under 4US$ per day, as per the World Bank data, 2011) and location of vulnerable Syrian displaced population living in Informal Tented Settlements (ITSs). The maps also show the land cover with agricultural and built areas, which has been used to identify vulnerable farmers and vulnerable urban populations.

Figure 4: target areas in need of water

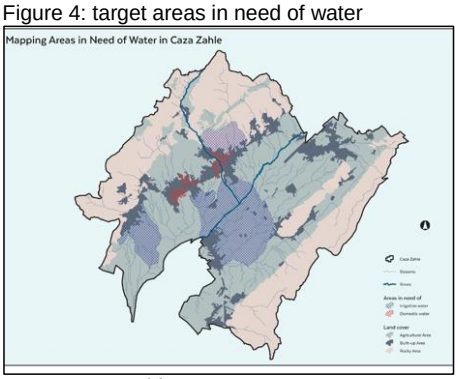
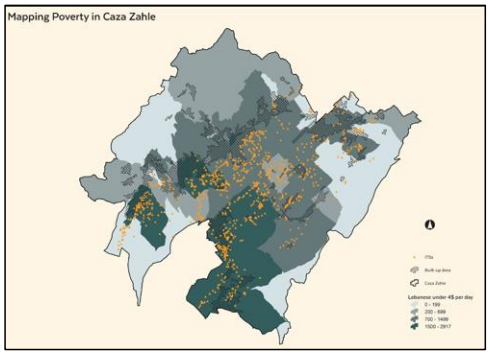


Figure 5: target area poverty / ITSs



Source: UN-Habitat

Focus group consultation and key informant interviews have been held in the target municipalities (see section II.I.) with the purpose to identify specific issues and needs regarding climate change-related water issues and possible concern regarding proposed adaptation actions (see outcomes in table 1). Drought has been identified as the most problematic hazard in the city of Zahle and its surrounding municipalities during the past 10 years. In general, the surrounding municipalities suffer from extreme heat that has been increasing, especially in the years between 2016 and 2018. In 2017 and 2018, flooding has also been a major concern for the target areas. This trend coincides with the predictions of Lebanon's Third National Communication to the UNFCCC for generally prolonged drought periods all over the country, increase in average temperature and increase in winter flooding by up to 30 percent.

Deleted: For an overview, see .

[66] Farajalla et al. (2014): Climate Change in Lebanon: High-order Regional Impacts from Agriculture http://website.aub.edu.lb/ifi/publications/Documents/working_papers/20140722_Higher_order_CC.pdf

Zahle: During the past 8 years, the amount of rainfall and upstream melting snow serving the area has noticeably decreased, causing boreholes to dry out in the summer in addition to becoming increasingly contaminated. The ITS community in Zahle agrees that drought is the main climate change hazard in the area especially during the past 3 years. The quantity of drinking water distributed by Solidarite (35 L/capita/day in summer and 15 L/capita/day in winter) is not sufficient for the entire ITS communities. This has caused the community living in ITS to pay additional monetary cost for buying water (According to VASYR 2017, 20 percent of total Syrian DPs expenditure is on water). While in other cases, women and children, who are responsible for most of the domestic work, travel outside the ITS- mainly on foot- to collect water. This puts them under safety risks and the proposed rainwater harvesting inside ITS will helo address this issue.

Haouch El Oumara: The targeted community of host Lebanese population has identified drought and extreme heat as the main climate change hazards in their area, especially in the years 2017 and 2018. The rainfall season shifted to the end of winter- beginning of spring, with heavy downpours. As a result, water infiltration into the underground water table has reduced and so has lowered the water table. Twenty years ago, the water table was 80 m underground in Zahle and nowadays one has to dig to 150 m to reach the water table. Existing boreholes are drying out in summer and supplying less water in winter. Farmers started digging deeper boreholes to reach the water table. This water scarcity has increased the cost of crop production due to the need to pump water from deeper boreholes. As a result, some farmers have lost their livelihoods as they are failing to compete with cheaper imported products. This has also caused farmers to use the polluted water of Litani River, which in turn increased diseases in the surrounding area. According to the community, Lebanon is the third in the world in the rate of cancer, with the central Bekaa area (around Litani River) having the greatest share of cancer patients (800 cases in Barelias alone). These water scarcity issues have been also exacerbated by the increased temperature that increased the water need for plants as well as caused crop damages and spread of new types of insects. Consequently, farmers are using pesticides more often.

Qabelias and Saadnayel: The whole targeted communities are living in ITSs and have no piped water supply. The drinking water being distributed (e.g. by World Vision in Qabelias is not enough for all the ITSs and at the same time boreholes are drying out in summer due to the increasing drought incidents. Due to the fact that 68 percent of the targeted communities in both municipalities are unemployed, most of the community cannot afford to buy drinking water and so collect water from untested water sources. Since women and children are responsible for domestic work and water supply, they are facing safety issues while walking away from ITS to collect water. Another safety concern- especially for children, elderly and disabled people- is the damages caused by the increased flooding causing loss of shelter. This is in addition to the fires in ITS due to increased heat that melts electrical wires. Skin diseases have also spread among the community due to decline in hygiene caused by water scarcity. While other diseases such as respiratory diseases and fever have increased mainly among children due to increased temperature which also caused an increase in the numbers of insects and rodents. The river stream dries in summer and so is filled with wastewater which has also caused spread in insects and rodents carrying diseases.

Informal Tented Settlement

For an overview of the main climate change issues and needs in target areas in Lebanon see table 1.

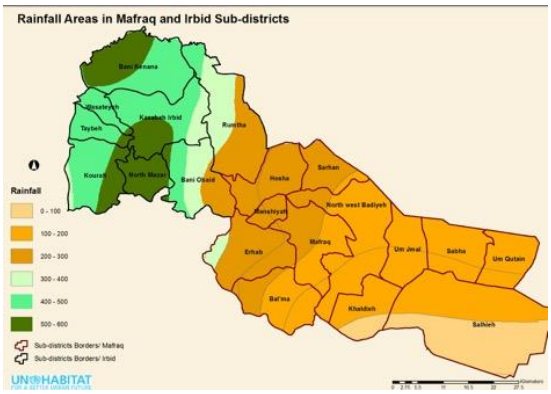
Table 1: overview of main climate change issues and needs in target areas in Lebanon

Municipality	Population / beneficiaries	Main climate change impacts / Hazards (exposure)	Effects on communities and vulnerable groups (sensitivity)	Barriers to adapt (adaptive capacity)	Priority resilience building interventions	Issues and concerns (identified through consultations) and response needs
Haouch El Oumara	**Total Number: 30,000** Female: 14,700 <14: 7,500 15-24: 5,100 25-60: 12,000 >60:5,400 Disabled: N/A Syrian /DPs: 5,000	- Drought - Extreme heat	- Drought o Lower water table o Higher cost for producing crops o Loss of livelihoods for farmers - Extreme heat o Increase of water demand by plants o Increase of pests that damage crops	- Lack of funding - Weakness of law enforcement regarding misuse of pesticides	- Clean water for agriculture, e.g. through water harvesting or reuse	- Lack of participation in planning of project/ interventions (need to involve)
Qabelias	**Total Number: 50,000** Female: 23,800 <14: 25,800 15-24: 9,000 25-60: 14,000 >60:1,100 Disabled: N/A Syrian DPs: 55,000 *Syrians are sometimes not counted under the total numbers of inhabitants	- Drought - Flooding - Extreme heat	- Drought o Not enough drinking water for ITS o Financial burden for ITS to buy water o Skin diseases - Flooding o Loss of shelter and safety risks for Syrian women and children - Extreme heat o Spread of insects and diseases	- Lack of funding - Lack of knowledge and awareness - Legal restrictions on supplying piped water to ITS	- Clean water, e.g. through water harvesting or reuse	- Treated wastewater will only benefit farmers - Harvested water can be polluted (need quality control and awareness) - Maintenance of rainwater harvesting system (need maintenance plans)
Saadnayel	**Total Number: 24,374** Female: 7,935 <14: 7,725 15-24: 2,715 25-60: 4,245 >60:330 Disabled:180 Syrian DPs: 17,266	- Drought - Flooding - Extreme heat	- Drought o Not enough drinking water for ITS o Financial burden for ITS to buy water o Skin diseases for children - Flooding o Loss of shelter - Extreme heat o Spread of insects and diseases	- Lack of funding - Lack of knowledge and awareness - Legal restrictions on supplying piped water to ITS	- Clean water for agriculture, e.g. through water harvesting or reuse	- Harvested water can be polluted (need quality control and awareness) - Maintenance of rainwater harvesting system (need maintenance plans)
Zahle	**Total Number**: **80,282** Female: 10,580 <14: 10,300 15-24: 3,620 25-60: 5,660 >60:440 Disabled: N/A Syrian DPs: 25,409	- Drought	- Drought o Not enough drinking water for ITS o Financial burden for ITS to buy water o Safety risk for Syrian women and children who walk to collect water	- Lack of money to buy drinking water	- Clean water for agriculture, e.g. through water harvesting or reuse	- Harvested water can be polluted (need quality control and awareness) - Maintenance of rainwater harvesting system (need maintenance plans)

Jordan

Irbid lies in Jordan's wet region with a total annual rainfall in this region varies between 400 and 600 mm while Mafraq lies in the dry region in the east with an average rainfall between 100 and 300 mm (see figure 6). The total populations and disaggregated data and an overview of climate change issues and adaptation needs for each municipality are shown in table 2.

Figure 6: annual average rainfall in target areas



According to focus group consultation and key informant interviews carried in target areas in Jordan (see section II.I), the increase in temperature and the decline in rainfall leading to drought are two of the most hazardous climate change impacts in both Mafraq and Irbid. This confirms the outcomes of Jordan's Third National Communication to the UNFCCC that predicted a serious decline in precipitation trends and a significant increase in the mean temperature. While in some target areas, flooding has also been pointed out as a major hazard. This is also in line with the predictions of a higher intensity of flooding in Jordan due to climate change[67].

Figure 7: existing situation / infrastructure and severe water vulnerability in red in Irbid and Mafraq

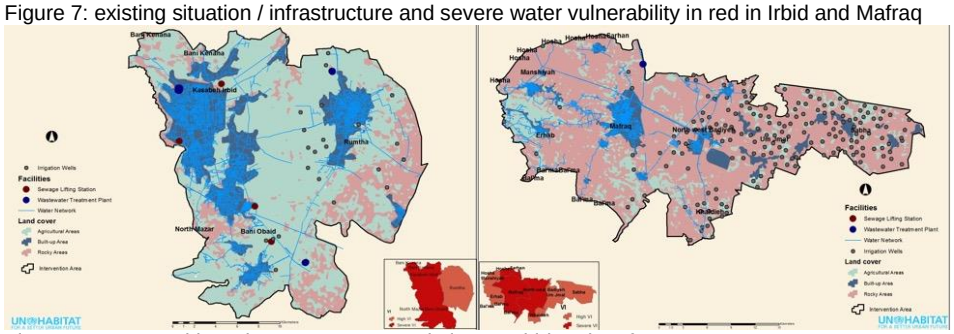
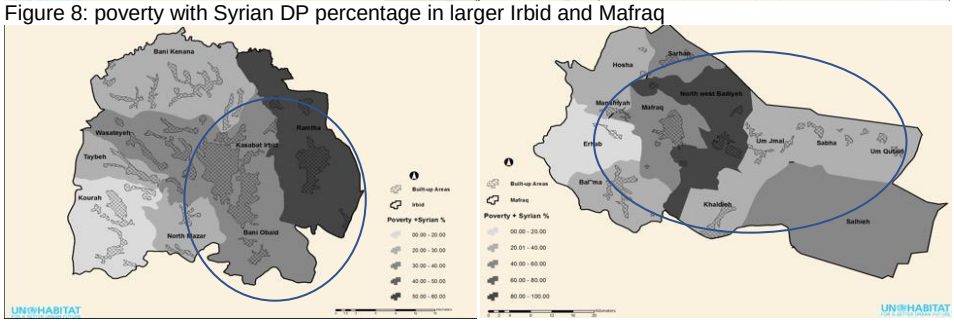


Figure 8: poverty with Syrian DP percentage in larger Irbid and Mafraq



[67] Jordan Ministry of Water and Irrigation: Climate Change Policy for a Resilient Water Sector, 2016, page 3

All the target areas suffer from increased water demand mainly due to the influx of Syrian DPs besides population growth. Syrian DPs live in the same urban areas as Jordanians and so are subject to the same impacts. However, Syrian DPs have higher vulnerability due to the fact that they rent shelter and so have less income. In agricultural areas, livelihoods of Syrian DPs mainly depend on working for Jordanians in the farms and so are affected by any decline or change in agricultural activities.

Figure 7 shows the build-up area in larger Ibid and Mafraq with existing water infrastructure. In red, the area with severe water vulnerability (according to UNICEF) is shown. Figure 8 shows the share of poverty with Syrian DP percentage in larger Irbid and Mafraq. The cities fall in the category 30-40 percent poverty / DPs.

Mafraq city

Kasabet Al Mafraq (Al Mafraq Main Municipality Area, 2 Focus Groups): Flooding and drought have been identified as the two most problematic climate change hazards. Flooding of the main Wadi which passes through the city of Mafraq affects safety of people, mainly women and children as well as damages to houses and infrastructure. The frequency of floods occurrence forced many households to displace, particularly those who are living close to the Wadi, forced children and parents' absence from schools and work, increased number of insects and rodents and so increased diseases accordingly. Decline in the precipitation level led to decline in water table and groundwater level which resulted in water scarcity. Water is being pumped to households once a week and houses with small tanks do not store enough water. Women suffer from physical and psychological stress as they sometimes need to stay up late at night to make use of the water supplied once a week in laundry, cleaning and other house work purposes. Also, women are obliged to stay at home with their children during flooding which affects their income. This also adds a financial burden to families to buy drinking water especially Syrian DPs families who usually have less net income than Jordanian families. In addition, this drought has caused a decline in agricultural land and livestock production in the surrounding areas. This affects also livelihoods of Syrian DPs working in farms in addition to women who rely on the production of olive oil to generate income.

Bwaidat Al-Elaimat – Erhab: Drought and extreme heat have been identified as the main climate change impacts in this target area according to the targeted community. Generally, there has been a decrease in precipitation during winter with severe drought in summer. Since water is only delivered to households once a week, houses have to store water for the rest of the week. In case stored water is not adequate, households need to buy water from the market. Men are particularly responsible for securing adequate water supply to the house. However, women and children also suffer from physical and psychological stress as they sometimes need to stay up late at night to make use of the water supplied once a week in laundry, cleaning and other house work purposes. Water scarcity has also led to less agricultural activity as well as a decline in livestock production. Farmers who depended on rainfall for cultivating wheat and barley cannot cope with water scarcity and at the same time cannot afford to switch to irrigated agriculture. In the past, farmers have been cultivating crops twice a year, now they only cultivate crops once a year due to the decline in water availability. Water scarcity has also been exacerbated by increased temperatures in summer which also led to the increase in insects and skin diseases among children. Women also identified flooding as a significant climate change impact that poses a safety risk and affects their ability to work as they are forced to stay at home with their children.

Al Ghadeer Al Abiad and Eastern Mafraq: Farmers in both target areas have identified drought and extreme weather (heat and cold) as the two most significant climate change hazards in the past 10 years. Farmers used to rely on rain fed for agriculture. However, due to water scarcity, they are becoming more dependent on reclaimed water which is- according to them- becoming more expensive. They are also sometimes forced to receive reclaimed water in times that they do not need for irrigation (e.g. during rainy season) and they cannot store it in storage tanks for more than few days because its quality will be extremely deteriorated resulting in serious health risks. The change in the patterns of rainfall seasons resulted in deteriorating cultivated crops such as wheat and barley and

forced farmers to shift from rain fed to irrigated agriculture. Livelihoods of Syrian DPs who work in the farm for Jordanians are also negatively affected with these impacts. Less farm workers are needed and for less number of days. Drought has also caused a decline in livestock production. In addition, extreme weather in summer and winter has damaged crops and caused economic losses to farmers.

Irbid city

Kasabet Irbid (Greater Irbid Municipality): Flooding and drought are the two most hazardous climate change impacts affecting the area. The increased frequency of flooding- which occurs mainly in winter- over the past few years imposes safety risks especially to children, disabled and elderly. It sometimes causes displacement among people living in wadi (valley) areas in addition to damage to houses and infrastructure. According to the community, flooding increases the number of insects and rodents which increased diseases among children. Women and children mainly remain at home during flooding. On the other hand, drought caused by decline in rainfall has severely affected households. Exacerbated by Syrian DPs influx, water scarcity caused a shortage in supplied drinking water adding a financial burden on men- who are responsible for ensuring adequate water supply- to buy drinking water from the private market. Women and children also suffer from physical and psychological stress as they sometimes need to stay up late at night to make use of the water supplied once a week in laundry, cleaning and other house work purposes. Drought also caused a shrinkage in the agricultural area and changes in the vegetation cover. For example, the supply of olive oil has dramatically decrease and with much higher prices.

Edon Neigbourhood, Liwa: Bani Obead: Drought, extreme heat and flooding have been identified as the most hazardous climate change impacts in the target area. Exacerbated by Syrian DPs influx, water scarcity caused a shortage in supplied drinking water adding a financial burden on men- who are responsible for ensuring adequate water supply- to buy drinking water from the private market. It has also affected personal hygiene especially among children. Drought also caused a shrinkage in the agricultural area. The agricultural pattern has also changed due to increased temperature with a decline in wheat and clover. Temperature which used to reach 35°C can now reach up to 45°C in summer according to the community members causing spread of mosquitos and emergence of diseases that are new to the area. The increased frequency of flooding over the past few years imposes safety risks especially to children, disabled and elderly. It also causes damages to houses and infrastructure and make women and children less mobile.

Ramtha: Farmers in the target area have identified drought and extreme weather (heat and cold) as the two most significant climate change hazards in the past 10 years. Due to water scarcity, farmers are becoming more dependent on reclaimed water which is- according to them- becoming more expensive. They are also sometimes forced to receive reclaimed water in times that they do not need for irrigation (e.g. during rainy season) and they cannot store it in storage tanks for more than few days because its quality will be extremely deteriorated resulting in serious health risks. There is also water shortage at household level. Women pointed out that lack of knowledge of permaculture techniques and greywater use in addition to lack of funding to install rainwater harvesting systems are missed opportunities to adapt with water scarcity. Less farm workers are needed and for less number of days. Drought has also caused a decline in food and water available for livestock production. In addition, extreme weather in summer and winter has damaged crops and caused economic losses to farmers. Livelihoods of Syrian DPs who work in the farm for Jordanians are also negatively affected with these impacts.

For an overview of the main climate change issues and needs in target areas in Jordan see table 2.

Table 2: overview of main climate change issues and needs in target areas in Jordan

Community	Population / beneficiaries	Main climate change impacts / Hazards (exposure)	Effects on communities and vulnerable groups (sensitivity)	Barriers to adapt (adaptive capacity)	Priority resilience building interventions	Issues and concerns (identified through consultations) and response needs
MUNICIPALITY						
Kasabet Al Mafraq (Greater Mafraq Municipality, 2 focus groups)	**Total Number: 106800** Female: 50534 <14: 33011 15-24: 20749 25-60: 40149 >60: 4593 Disabled: NA Syrian DPs: 36916	- Flooding - Drought	- Flooding o Safety risk due to flooding especially for women and children o Damage to infrastructure and houses o Spread of diseases among children and youth - Drought o Water Scarcity in urban areas o Agriculture/ crop failure with significant impact on Syrian DPs	- Lack of funding - Lack of capacity - Lack of awareness - Absence of legislations to cope with climate change - Lack of space in the Wadi area (valley) to provide buffer zone to cope with flooding	- Water harvesting from the upstream of the Wadi to reduce flooding - Greywater reuse - Rooftop rainwater harvesting	- Resettlement during construction and after it as many houses are located within the buffer zone of the Wadi (project will ensure no resettlement will take place / resettlement is not needed as intervention is upstream) - How to use apartment blocks for water harvesting (to be identified during full proposal) - Some cultural and religious resistance to greywater reuse (awareness through religious leaders)
Bwaidat Al-Elaimat – Erhab (Mafraq)	**Total Number: 1173** Female: 568 <14: 443 15-24: 224 25-60: 452 >60: 53 Disabled: NA Syrian DPs: 64	- Drought - Extreme heat	- Drought o Less agriculture practices with significant impact on Syrian DPs - Extreme heat o Increased diseases o Decline in livestock production	- Lack of funding - Lack of awareness of water scarcity in Jordan especially among Syrian DPs who used to consume much larger amounts of water in Syria.	- Rainfall water harvesting - Permaculture practices at household level - Greywater reuse in public buildings.	- The average annual precipitation is relatively low (but high enough) - Some cultural and religious resistance to greywater reuse (awareness through religious leaders)
Irbid (Greater Irbid Municipality and nearby municipalities)	**Total Number: 306102** Female: 148711 <14: 107455 15-24: 68033 25-60: 97980 >60: 16572 Disabled: NA Syrian DPs: 73341	- Flooding - Drought	- Flooding o Safety risks especially for women and children o Displacement o Increased diseases - Drought o Urban water scarcity o Agricultural decline with significant impact on Syrian DPs	- Lack of funding - Lack of awareness - Lack of space in wadis to provide buffer zone in flooding - Absence of legislations to cope with climate change	- Rehabilitation of 3 existing ponds to harvest flood water - Rooftop rainwater harvesting - Water saving devices	- Resettlement during construction and after it as many houses are located within the buffer zone of the Wadi (project will ensure no resettlement will take place / resettlement is not needed as intervention is upstream) - How to use apartment blocks for water harvesting (to be identified during full proposal)

Neighbourhood: Edon, Liwa: Bani Obead (Irbid)	**Total Number: 61768**
	Female: 30255
	<14: 21122
	15-24: 13539
	25-60: 23896
	>60: 3211
	Disabled: NA
	Syrian DPs: 14,636
		- Drought
		- Extreme heat
		- Flooding
			- Drought
			  o Urban water scarcity
			  o Decline in agricultural area
			- Extreme heat
			  o Increased diseases
			- Flooding
			  o Safety risks among women and children
			  o Damage to houses and infrastructure
				- Lack of funding
				- Lack of awareness
				- Absence of legislations to cope with climate change
					- Rooftop rainwater harvesting
					- Greywater reuse in public buildings
					- Storm water harvesting
					- Water saving devices
						- Lack of participation in planning of project/ interventions.
						- Safety during construction.

AL Ghadeer AL Abiad (Mafraq)	**Total Number: 1752**
	Female: 858
	<14: 680
	15-24: 338
	25-60: 658
	>60: 76
	Disabled: NA
	Syrian DPs: 271
		- Drought
		- Extreme heat and cold
			- Drought
			  o Less water available for agriculture
			  o Changing crop patterns
			  o Decline in livestock production
			- Extreme heat and cold
			  o Crop failure
				- Lack of funding and high prices of reclaimed water
				- Lack of capacity to use new agricultural techniques
				- Absence of legislations to cope with climate change
					- Enhance the quality of treated wastewater from Al Mafraq WWTP
					- Shared water ponds between farmers to store and mix water of different qualities
						- Land availability as farmers prefer to use the whole land for cultivation.
						- Non-equal access to provided service. Water shares are not evenly distributed among farmers (inclusive planning)

Eastern Mafraq	**Total Number: 9338**
	Female: 4323
	<14: 3586
	15-24: 2056
	25-60: 3811
	>60: 396
	Disabled: NA
	Syrian DPs: 2144
		- Drought
		- Extreme heat and cold
			- Drought
			  o Less water available for agriculture with significant impact on Syrian DPs
			  o Changing crop patterns
			  o Decline in livestock production
			- Extreme heat and cold
			  o Crop failure
				- Lack of funding and high prices of reclaimed water
				- Lack of capacity to use new agricultural techniques
				- Absence of legislations to cope with climate change
					- Introduce hydroponic agriculture
					- Construct ponds to properly store rainfall water and use it when it is needed
						- Land availability as farmers prefer to use the whole land for cultivation.

Ramtha (Irbid)	**Total Number: 5439**
	Female: 2655
	<14: 2258
	15-24: 1085
	25-60: 1878
	>60: 218
	Disabled: NA
	Syrian DPs: NA
		- Drought
		- Extreme heat and cold
			- Drought
			  o Less water available for agriculture with significant impact on Syrian DPs
			  o Urban water scarcity
			- Extreme heat and cold
			  o Crop failure
				- Lack of funding for farmers to adapt
				- Lack of financial capacity to invest in permaculture
				- Lack of capacity to use new agricultural techniques
					- Enhance the quality of treated wastewater from Ramtha WWTP
					- Permaculture
						- Non-equal access to provided service. Water shares are not evenly distributed among farmers (inclusive planning)

Project Objectives

The overall aim of this project is to support the development of a comprehensive response framework to climate change, combined with the Syrian crisis, especially in an urban context. This is done by identifying effective approaches and best practices to build urban resilience, focused on actions that address water challenges that benefit both DPs and host communities, and especially women and youth. The framework is not only developed for the project target areas, but also for areas with similar contexts.

The project will focus on supporting a sustainable water management approach, by reducing water use of unsustainable sources (by reducing water losses and increasing water use efficiency) and by increasing water supply of sustainable sources (by supporting water harvesting and promoting the use of non-conventional sustainable water resources). The approach also includes promoting innovative, low cost and sustainable techniques (more information on these techniques is available on request and will be included in the full proposal) and to establish urban-rural linkages (as water challenges also impact agriculture and livelihood security). The project identifies DPs as the most vulnerable group due to socio-economic challenges that could affect affordability to access water in the target areas. However, the project also recognizes increased tension between DPs and host communities and the need of poor Lebanese.

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Table 3: project objectives and sub-objectives

Challenges / objectives	Development approach applicable to DPs crisis and climate change context
Overall objective: Increasing the resilience of both displaced persons and host communities to climate change-related water challenges in Jordan and Lebanon.	
Sub-objectives: 1. Increase resilience of municipal governments in a regional context: Managing urban risks and vulnerabilities in context of climate change and high influx of DPs (in line with AF outcome 1 and 2)	**Support address regional migration / DPs crisis and climate change challenges at the municipal level:** through developing a comprehensive and integrated development approach and capture best practices
	Forward-looking / pro-active urban land use planning and sustainable water management: planning for future influx of people and climate change impacts in an integrated manner
2. Improve citizen (DPs and host communities) engagement and livelihood security support: Bridging the divide city and securing livelihoods (in line with AF outcome 3)	**Citizen engagement:** minimizing risks to social tensions through citizen engagement and enhancing opportunities for social exchange between host-city inhabitants and DPs (especially women and youth)
	Skill building support: providing support such as skill building and training to build people's self-reliance, especially regarding water (targeting especially women and youth).
3. Increase community-level resilience to water challenges: expanding the coverage of resilient water supply systems, using innovative, low-cost and replicable techniques that are suitable for high DPs presence context (in line with AF outcome 4)	**Settlement upgrading**: Area-based (i.e. urban – rural linkages) approach for increasing the resilience of basic services that also provides opportunity for target populations living in the area for complementary social, economic and environmental benefits
	Infrastructure and services projects: Expanding and strengthening water infrastructure and services which are climate change resilient and sustainable (and capture best practices)
4. Improve policies and plans to increase urban resilience in the region: development of regional urban risks and vulnerabilities management model (in line woth AF outcome 7)	**Improvement of policies and plans in the region:** by developing a 'regional' approach / model for managing urban risks (considering DPs and climate change impacts), especially for type 2 cities, including gender considerations

Project Components and Financing:

Table 4: project components and financing

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Project Components	Expected Outcomes	Expected Outputs	Countries	Amount (US$)

1. Managing urban risks and vulnerabilities in context of climate change and high influx of DPs	1.1.1. Strengthened municipal institutional capacity to manage urban risks, impacts and vulnerabilities related to both climate change and the movement of DPs, also considering urban – rural linkages (in line with AF outcome 1 and 2)	1.1. Land use strategies and plans as a tool to assess and comprehensively / efficiently respond to water needs and availability water (taking into consideration both climate change (including floods and increasing temperatures) and movement of DPs (which require studies and assessments) - Trainings on above (targeting municipal officers)	In target municipalities in Jordan and Lebanon	1 million
2. Bridging the divide city and securing livelihoods	2.1.1. Strengthened DPs and host communities local-level awareness and ownership of adaptation actions and processes + capacities strengthened to operate and sustain proposed adaptation actions, including skills building (in line with AF outcome 3)	2.1 Community level skill building and trainings conducted (targeting women and youth), and operation and maintenance plans developed, including participatory community-level planning processes to promote social exchange focused on implementing and replicating adaptation options to climate change	In target municipalities and communities in Jordan and Lebanon	1,427.420 million
3. Expanding the coverage of resilient water supply systems, using innovative, low-cost and replicable techniques that are suitable for high DPs influx context	3.1.1. Increased adaptive capacity within the water sector through resilient and sustainable water supply, using innovative, cost-effective, climate change resilient water supply techniques, which are suitable for high DPs influx context and replicable and benefit vulnerable groups (in line with AF outcome 4)	3.1 Small-scale upstream river / flood water harvesting systems - Rooftop rainwater harvesting systems and storage options - Decentralised waste water treatment and reuse facilities to irrigate agriculture land and efficient water use options and permaculture (all suitable for flexible use in DPs context). For more details see section II.A	In target municipalities and communities in Jordan and Lebanon	8,25 million
4. Development of regional urban risks and vulnerabilities management model	4.1.1. Strengthened National and international institutional capacity to manage urban risks, impacts and vulnerabilities related to climate change and DPs movements, including lessons learned collected and options to replicate approaches and techniques shared regionally	4.1 'Regional' urban risks and vulnerabilities assessment, planning and management approach model for type 2 cities developed, taking into account climate change and urban development trends, including DPs movements. The model can be replicated in similar context and feed into 3RP programming	Lebanon, Jordan (and other countries in the region that are part of ESCWA and especially 3RP programming)	1 million
5. Total components				11,677.420
6. Project/Programme Execution cost				1,225.806
7. Total Project/Programme Cost				12,903,226
8. Project/Programme Cycle Management Fee charged by the Implementing Entity				1,096,774
Amount of Financing Requested				**14,000,000**

Projected Calendar:

Table 5: Project calander

Milestones	Expected Dates
Start of Project/Programme Implementation	January 2020
Mid-term Review (if planned)	March 2022
Project/Programme Closing	June 2024
Terminal Evaluation	March 2024

PART II: PROJECT / PROGRAMME JUSTIFICATION

A. Project components

To achieve the overall project objective 'Increasing the resilience of both displaced persons and host communities to climate change-related water challenges in Jordan and Lebanon' the projects' 'core' entails a set of concrete adaptation actions, using innovative, low-cost and replicable techniques (more information on these techniques is available on request and will be included in the full proposal), to support efficient and climate change resilient waster use (by reducing water use of unsustainable sources (by reducing water losses and increasing water use efficiency) and by increasing water supply of sustainable sources (by supporting water harvesting and promoting the use of non-conventional sustainable water resources) at municipal and community level (component 3). To ensure local ownership and sustainability of these concrete adaptation actions, and to avoid social tension of proposed project benefits, measures to inclusively plan, operate and sustain the actions at the community level are proposed (component 2). To better manage urban risks and vulnerabilities, especially related to the water sector, capacities will be strenghthened at the municipal level (component 1). Based on above, a model to better manage urban risks and vulnerabilities suitable for a high DPs influx context (in type 2 cities) will be developed, taking into account the impacts of climate change, especially on water resources. This model is relevant for the Mafraq region as well as areas with a similar context.

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The objectives of the proposal are in line with national priorities (see section II.D) and Adaptation Fund outcome areas, which resulted in the following components:

Component 1: Increase resilience of municipal governments in a regional context: Managing urban risks and vulnerabilities in context of climate change and high influx of DPs (in line with AF outcome 1 and 2).

This component will focus on strengthening municipal institutional capacity to manage urban risks, impacts and vulnerabilities related to both climate change and the movement of DPs, also considering urban – rural linkages. This will be done by developing land use strategies and plans as a tool to assess and comprehensively / efficiently respond to water needs and availability water (i.e. multisectoral and urban - rural linkages assessment and planning), taking into consideration both climate change and movement of DPs (which require studies and assessments) and by training municipal officers on developing these plans and managing related urban risks and vulnerabilities.

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As water is managed at the governorate level, capacities to assess and plan for water at the municipal level are lacking, especially taking into consideration climate change impacts and urban growth trends, including DPs movements. Therefore, municipalities need tools to better plan water together with governorates, including using water harvesting and reuse technical options.

The water and wastewater masterplans of the Bekaa Water Establishment are operational/sectoral plans that indicate the main supply and distribution of water and wastewater facilities. The current plans lack any synergies with intersectoral issues that climate change has impact on. Our proposed land use strategies and plans intervention aims to fill these gaps by integrating the needs of various sectors including social, economic, and environmental.

The current municipal plans for Mafraq and Irbid cities are outdated and were developed many years before the Syrian refugee crisis. They lack a long-term spatial vision for the future and they do not address adequately climate change related-water challenges, nor those related to floods and increasing temperatutes. The vulnerability assessment which was recently done for both Governates showed that Mafraq and Irbid municipalities are severely vulnerable to water supply. There is a need to integrate climate change and water scarcity issues in the spatial plans to enable both municipalities to reduce vulnerabilities of people and improve adaptabilities to climate change. The process of

formulating spatial strategies and plans will help both municipalities to identify medium and long-term adaptation needs and to develop, scale up and implement strategies and programmes to address them.

Being cross sectorial in their nature, the plans can support proactive cross-cutting urban adaptation and promote synergies between different sectors and stakeholders. Giving the lack of coordination between municipalities and utility providers at local level, it is envisaged that the plans will play an important role in strengthening synergies and partnerships between sectors and actors. In line with water strategies in both countries, the plans will also include clear responsibilities for the municipalities in managing urban water risks in addition to other climate risks such as increased temperature and flooding at the local level.

In Zahle in Lebanon, a strategic municipal plan is forthcoming and UN-Habitat is already in touch with the team developing it to mainstream climate change considerations in it. Recommendations for this plan will be made to also manage urban risks and vulnerabilities related to climate change and trends in DPs movements. As for target municipalities surrounding Zahle, 'complete' spatial strategies and plans will be developed. In Irbid in Jordan, a spatial plan is also forthcoming. Here, also recommendations will be made to better manage urban risks and vulnerabilities related to climate change and trends in DPs movements. As for Mafraq, 'complete' spatial strategies and plans will be developed. In light of the new decentralization law in Jordan, there is a need to focus on local plans and strengthen the capacity of local authorities. However, local plans stem from national priorities and respond to them, which will also be the case in Jordan, especially linking with water strategies

Component 2: Improve citizen (DPs and host communities) engagement and livelihood security support: Bridging the divide city and securing livelihoods (in line with AF outcome 3).

This component will focus on strengthening DPs and host communities local-level awareness and ownership of adaptation actions and processes + strengthening capacities to operate, sustain and replicate proposed adaptation actions. This will be done by developing operation and maintenance plans for proposed adaptation actions (and techniques). As tensions between DPs and host communities, especially around scare resources and jobs, are increasing, inclusive community-level planning processes are needed to support social exchange and to ensure equall benefits to interventions. Women and youth organization will be strengthened and trained to lead water harvesting interventions at home / in the settlement and to use and replicate techniques. Youth specifically will be involved in a way that targets peacebuilding since tension between host and DP communities is most likely to occur among youth.

Component 3: Increase community-level resilience to water challenges: expanding the coverage of resilient water supply systems, using innovative, low-cost and replicable techniques that are suitable for high DPs presence context (in line with AF outcome 4).

This component will focus on Increased adaptive capacity within the water sector through resilient and sustainable water supply, using innovative, cost-effective, climate change resilient water supply techniques, which are suitable for high DPs influx context and replicable and mostly benefit vulnerable groups. The purpose is to reduce water use, especially of unsustainable sources, by reducing water losses, increasing water use efficiency and promoting the use of non-conventional sustainable water resources. This will be done by 1) developing small-scale upstream river / flood water harvesting systems, 2) establish rooftop rainwater harvesting systems and water storage options and 3) decentralised waste water treatment and reuse facilities to irrigate agriculture land and efficient water use options and permaculture.

Small-scale upstream river / flood water harvesting systems will be established in Zahle and Mafraq. In Zahle, Lebanon, the upstream system will serve relatively higher elevated agriculture areas. In December 2018, the National court demanded companies upstream of Zahle to close in order to improve water quality in the local seasonal stream. In Lebanon, small-scale 'urban' upstream water

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harvesting options don't exist and the ministry of environment requested UN-Habitat (see section II.I) to show such interventions can be feasible and replicable options besides large-scale reservoirs. In Mafraq, the upstream water harvesting system will serve agriculture areas but als reduce flood risks of the seasonal stream.

Informal Tented Settlement

Rooftop rainwater harvesting systems will be established in Informal Tented Settlements (ITS) in Lebanon and in private houses in Jordan. Besides that, grey water reuse systems will be established in public buildings in Jordan (targeting especially religious leaders and children for awareness raising purposes. Moreover, existing ponds / reservoirs will be rehabilitated and permaculture and hydroponic promoted in Jordan to reduce water use / increase water use efficiency for gardens and agriculture. In Lebanon, syrian DPs pay a relatively large share of their income to trucked water. The project intends to develop a business model for rainwater harvesting systems in ITSs in Lebanon. In Jordan, various ministries requested UN-Habitat (see section II.I) to set-up a national programme for rainwater harvesting. This will be piloted in Irbid and Mafraq. Details of the business models will be shared in the full proposal (after further studies and assessments).

Decentralised waste water treatment and reuse facilities to irrigate agriculture land will be established in Lebanon. In the target areas, release of untreated waste water and non-efficient use of treated waste water has been identified as a major problem and priority (see section II.I). Flexible use of these facilities is required to respond to changing migration and climate change trends. Therefore, decentralised and easy and fast to establish and dismantle facilities are required. In Jordan, treated waste water will be used to irrigate argriculture land.

Component 4: Improve policies and plans to increase urban resilience in the region: development of regional urban risks and vulnerabilities management model (in line woth AF outcome 7).

This component will focus on strengthening National and international institutional capacity to manage urban risks, impacts and vulnerabilities related to climate change and DPs movements, including lessons learned collected and options to replicate approaches and techniques shared regionally.

As mentioned above, there is a need for more effective, inclusive and sustainable regional, national and local programming focused on addressing water challenges, especially in 'host' (type 2) cities, exacerbated by both the influx of DPs and climate change impacts. There is an opportunity and need to do this in Lebanon and Jordan, but also in the region (i.e. Turkey, Iraq and Egypt) through an existing single planning and resource management framework called 3RP (i.e. Regional, Refugee and Resilience Plan 2018-2019). The 3RP which is co-led by a humanitarian and development partner, has created spaces for synergies among partners to build on their comparative advantages to ensure that response is more coherent, the outcomes more collective, and to fill knowledge and policy gaps in protracted crisis response. This project will work with ministries in Lebanon and Jordan responsible for 3RP coordination, other 3RP partners and ministries responsible climate change, spatial strategies and water resources to develop an integrated approach focused on addressing water challenges in these cities, exacerbated by both the influx of DPs and climate change impacts.

Proposed concrete adaptation actions in Lebanon

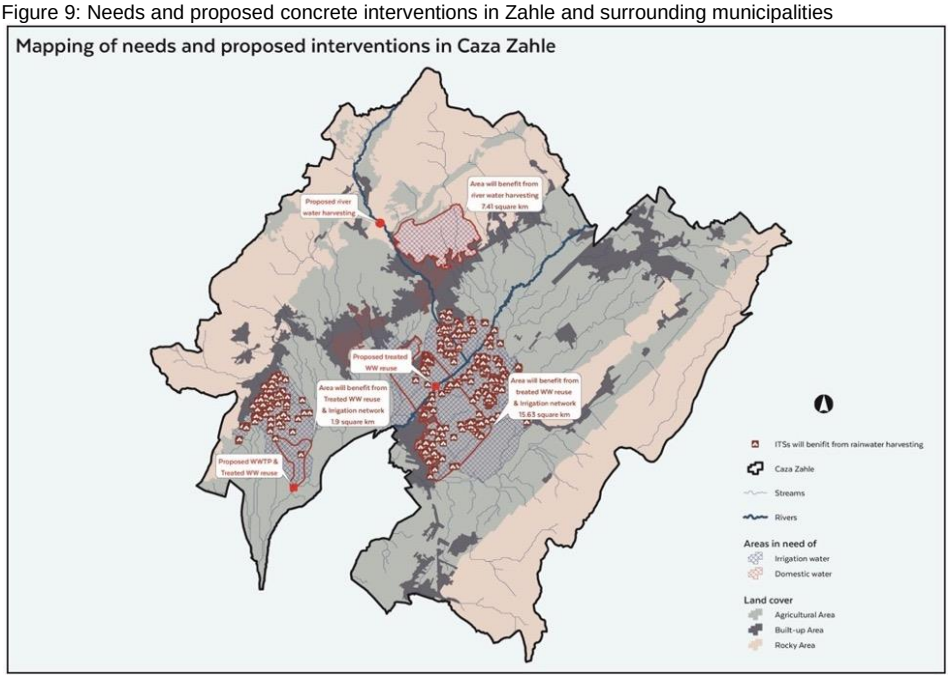
The proposed concrete interventions in **Zahle and surrounding municipalities** include:

- ☐ Waste Water Treatment system(s) and Treated Wastewater reuse for Qabb Elias;
- ☐ Proposed treated Wastewater reuse from Zahle Wastewater treatment plant;

- ☐ Small-scale River Water Harvesting, for the Berdawni River;
- ☐ ITSs tents rainwater harvesting.

The small-scale river Water Harvesting will include retention walls formed from steel mesh filled with gravel (similar to the picture), to serve as dam wall to retain water. The retained water is to be canalized to the agricultural lands specified in the proposed interventions map. The gravel will filter impurities from flowing water and the full wall will serve also as a crossing bridge from bank to another. This system will be done at three stages.

Figure 9: Needs and proposed concrete interventions in Zahle and surrounding municipalities



The proposed WWTP(s) in Qabb Elias, is suggested by the community and the Municipality. The municipality has already purchased the land for its construction. Previously and due to water shortages, the Municipality adopted a plan of watering half of the agricultural fields each year. The other year, farmers had to rely on well digging or informal water sources. Reusing the treated waste water will allow all farmers in Qabb Elias to benefit from it.

The proposed reuse of treated wastewater of the Zahle WWTP will cover a large area of agricultural lands as it treats 18,000 Cubic Meters of sewage daily, and this amount is subject to increase as Taalabaya and Saadnayel system are going to be connected. The current practise, is to flush treated water to the Litany river located on the downstream of the plant. And as the WWTP is located in a merely flat land, gravity system will apply, and this will limit extra operation costs in the future.

The last proposed action, is to collect rain water from Syrian refugees' tents. And knowing that working INGOs in the area have decreased supplied water from 35 l/c/day to less than 15 l/c/day. This has led refugees to resort to illegal water sources. Collecting rain water and using traditional chlorine filtration will complement INGOs efforts and supply water for displaced Syrians for domestic use.

Proposed concrete adaptation actions in Jordan

The proposed concrete interventions in **Irbid municipality** include:

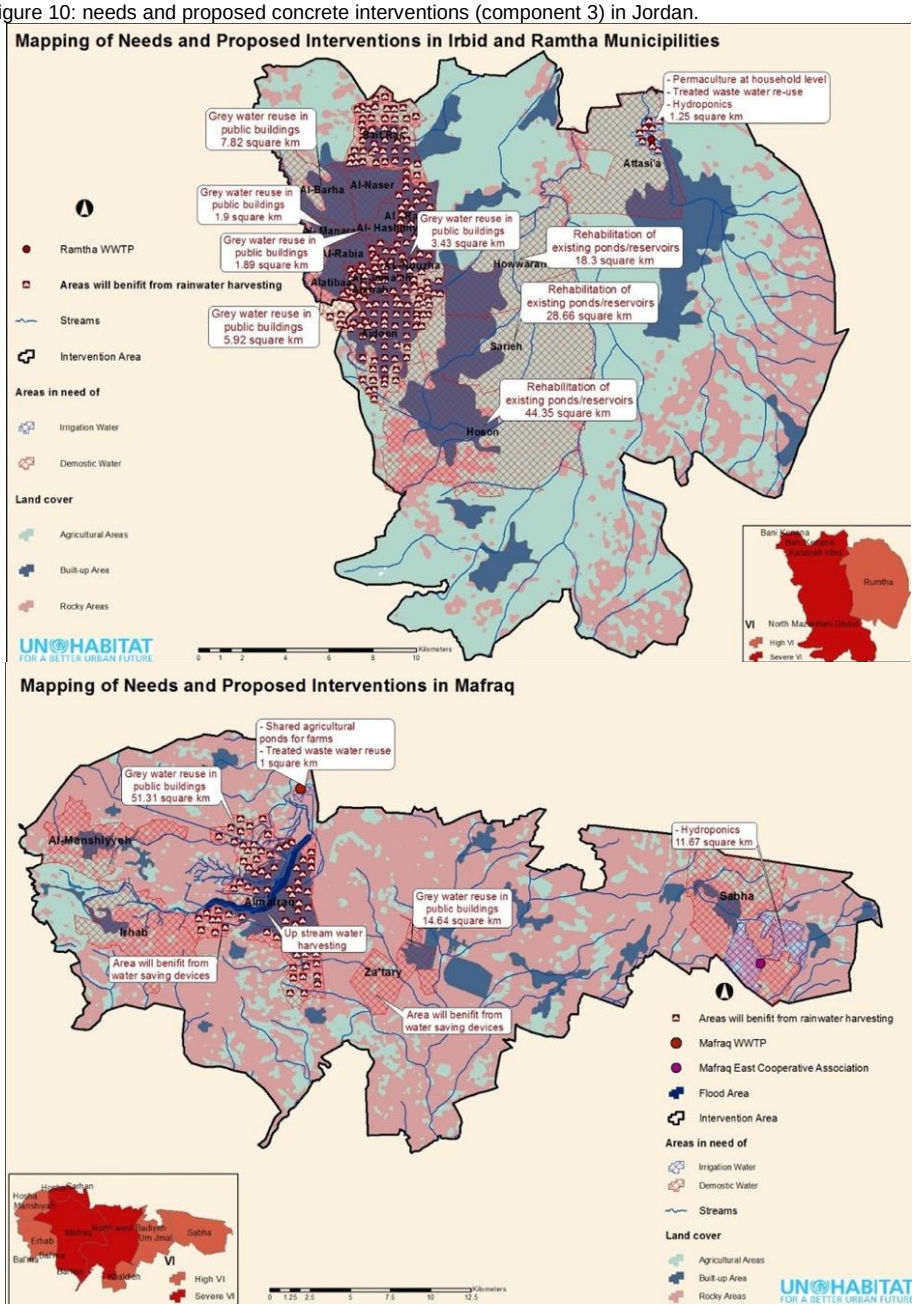
- ☐ Rehabilitation of 3 existing ponds to capture water in Hoson, sareeh and Howara.
- ☐ Grey water reuse in public buildings[68] such as schools and Mosques in the following areas: Hashimya, Nuzha, Barha, Rabia, and Al Amanarha.
    a. Mosques: collect water from ablutions of worshippers in Mosques, pump it to a storage tank and filter it and then reuse for irrigation purposes.
    b. Schools: capture the drainage water from drinking water faucets and use it to irrigate ornamental shrubs and trees. Since the water will be of high quality, and should contain little solid matter or organics, only a simple screen filter will be used and water to protect the pipe system. The reuse of graywater in such a simple, low cost way, will be used as awareness tool for students
- ☐ Rainwater harvesting from rooftops in Edeon, Al Afrah, Al Atiba, Al Jamiah and Beit Ras. Rain water harvesting from rooftops can be mandatory through Jordanian building bylaws.[69] However, financial burden needs to be reduced through government support through funds like solar heaters where 50 percent of the cost was covered by JREEEF[70]
  Farms around Ramtha WWTP
- ☐ Hydroponics and permaculture at household level
- ☐ Rainwater harvesting from rooftops at farm level

The proposed concrete interventions in **Mafraq Municipality** include:

- ☐ Small-scale upstream water harvesting for the main wadi. The upstream of the wadi is at Al Mnashia and Rehab in the west and the downstream is in the north of the Municipality at Al Ghadeer Al Abyad.
- ☐ Install water saving devices at household level and in public buildings (Mosques and Schools) to reduce water consumption in Mafraq and Zaatari neighbourhood: These include Shower heads, faucet fixtures, toilet flushing practices to reduce amount of flush water.
- ☐ Grey water reuse in public buildings in Mafraq and Zaatari
  Farms around Mafraq WWTP
- ☐ Shared agricultural ponds for farms to collect and store water
  Farms in East Mafraq
- ☐ Hydroponics: Introducing hydroponic systems to farmers to use significantly less water in agriculture than traditional farming practices and thus improving water efficiency.

[68] http://www.csbe.org/greywater-reuse-in-jordan/#girls
[69] http://jordantimes.com/news/local/public-urged-harvest-rainwater
[70] http://www.jordantimes.com/news/local/energy-fund-assistance-cover-30-50-cost-renewable-energy-systems-households%E2%80%99

Figure 10: needs and proposed concrete interventions (component 3) in Jordan.



B. Promotion of innovative solutions

Under component 1, the proposed land use strategies and plans for target cities would be innovative decision-making tools for municipal governments (but also national government) in Jordan and Lebanon to plan cities for future climate change impacts, especially water, and the influx of people in an integrated manner (that allows for coordinated and forward-looking investment in infrastructure and services). The land use strategies and plans will aim to address the current gaps in the planning process at the city level through integrating climate change risks and DPs crisis aspects in water management strategies. The plans shall include addressing the most significant climate change impacts for the target areas- not only water related impacts- including increased temperature (e.g. in relation to crop failure) and urban floods.

Under component 2, community-level adaptation related planning and decision-making as a tool to enhance social cohesion (i.e. avoid tension over scarce resources) is unique and very relevant and timely in the case of Lebanon and Jordan, where increased tension between DPs and host communities has been reported. Especially women and youth groups will be encouraged to participate in this exchange and planning process.

Under component 3, the project will use internationally proven technologies (more information on these techniques is available on request and will be included in the full proposal), that are innovative yet cost-efficient for water harvesting, waste water reuse and water efficient use at community / household level. The puspose is the showcase techniques that are suitable for urban areas, considering urban-rural linkages and flexibility in response needs, including e.g. wastewater treatment systems that need little time to assemble and could be removed easily and assembled again. Rainwater harvesting from tents is also an innovative technique and would require some more studies to fill the exact numbers for a business case (to be completed during the full proposal phase). Small-scale upstream river / flood water harvesting is also a new approach in both countries and collecting information on this best practice is needed and requested by ministries. The innovative permaculture concept can also be applied to an urban / garden context (see section II.I). This concept has shown to be promising in Jordan through the national AF project.

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Under component 4, the integration between the climate change sensitive management approach for type 2 host cities and 3RP programming is innovative and provides synergy between climate and DPs action relevant for the region.

C. Economic, social and environmental benefits

The proposed project aims to maximize benefits to the most vulnerable groups, including DPs, poor Lebanese and Jordanians, women and youth, and to avoid any negative environmental and social impacts.

Table 6: 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. A large share of DPs, poor Lebanese and women are depedent on the agriculture	☐ The governments, at different levels, but especially at the municipal level, will be able to better assess, plan and manage scarce water resources, which are also of economic importance ❑ The agriculture sector in target areas will be more climate change / drought resilient, leading to improved livelihood security, benefitting especially DPs, poor Lebanese and Jordanians, women and youth, with more secure / higher income. ❑ Flood mitigation interventions will help avoid economic losses due to damages to infrastructure and houses. ❑ Sustainable solutions implemented will avoid future costs related to drought / less rain impacts.

	sector for their income	
Social	Climate change is already leading to negative social impacts, especially caused by less rain, droughts and water evaporation, leading to rural – urban migration, and social tension and incoherent development.	❑ The governments, at different levels, but especially at the municipal level 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. ❑ Inclusive assessment, planning and decision-making processes over scare water resources, also involving DPs, poor Lebanese and Jordanians, women and youth, will enhance social cohesion (i.e. avoid / reduce tension) over scare water resources. ❑ Climate change resilient techniques skills building activities, including to operate, sustain and replicate these (especially targeting women and youth) + resilient water supply systems, will benefit the most vulnerable, including DPs, poor Lebanese and Jordanians, women and youth. These groups will also be involved in construction activities where possible. ❑ Improved or new climate resilient and sustainable water systems will contribute to social well-being and avoid any tension between Syrian DPs and host communities that may arise due to competition over water resources. ❑ Improved awareness of involved communites will increase adapative capacities. ❑ Peacebuilding through involving youth and thus reducing possible tension between host and DP communities that is most likely to occur among youth.
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	❑ The government, at different levels, will be able to better assess, plan and manage scarce water resources ❑ Water resources such as wells, and water dependent livelihoods (i.e. agriculture) will be protected from pollution through above and waste water treatment. This will mostly benefit the most vulnerable / poor groups dependent on these resources, including DPs, poor Lebanese and Jordanians, women and youth. ❑ Introduction of unconventional water sources will help decrease pressure on the already depleting groundwater resources in some areas.

The development of upstream river / flood water harvesting systems will reduce flood impacts, especially in areas with a high share of poor people and Syrian DPs, while enhancing water availability in the dry season for agriculture purposes (in which most Syrian DPs and poor Lebanese and Jordanians, especially women, work). The systems will be small-scale and on public land. As the streams are seasonal, possible negative impacts on biodiversity are limited.

Rooftop rainwater harvesting increases water availability at household level, reduce urban flash flooding probabilities, also in ITSs, and reduces illegal connection to wastewater network thus reducing manhole flooding in the streets in winter season. It will also reduce costs for water purchase, especially in ITSs. Besides that, harvesting systems and grey water reuse in public buildings, especially schools, will raise awareness for sustainable water use and climate change for students and through religious leaders.

Decentralised waste water treatment and reuse facilities to irrigate agriculture land and efficient water use options and permaculture will reduce groundwater and agriculture pollution while enhancing sustainable access to water, thus also securing agriculture livelihoods. The permaculture approach will reduce land / soil degradation.

The number of direct beneficiaries under component 3 (i.e. concrete adaptation actions) is around 381,000, of which around 190,000 women and aound 74,000 youth and around 151,000 Syrians. For an overview of beneficiaries per sub-project, see tables 8 and 9 below.

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D. Cost-effectiveness

Table 7: Proposed adaptation actions' cost-effectiveness rationale

Proposed adaptation actions / outputs	Alternative actions and rationale why priority actions have been selected from a cost-effectiveness perspective
1.1. Land use strategies and plans as a tool to assess and comprehensively / efficiently respond to water needs and availability (taking into consideration both climate change and movement of DPs (which require studies and assessments) - Trainings on above (targetting municipal officers)	A total of around 670.000 inhabitants will benefit from municipal level spatial strategies, which will mean the plans will cost around USD 1,5 per person. Therefore, municipal level land use strategies and plans are a cost-effective way to plan and manage water resources efficiently and comprehensively by looking at the whole system and future trends and projections (including for implementation of concrete adaptation actions such as below). These strategies will reduce water use costs because of more efficient use within the system and avoid costs associated with future climate change related water scarcity issues. However, these strategies should be seen as a package to better plan for concrete adaptation actions in the future, and thus also sustain these. Alternatively, Integrated Water Resource Management is an approach to comprehensively plan and manage water within a system, but this is not a ministry priority. Currently, water is managed at higher levels (Bekaa) by the ministry. The ministry basically looks at current demand and supply.
2.1 Community level skill building and trainings conducted, and operation and maintenance plans developed, including participatory community-level planning processes to promote social exchange focused on implementing and replicating adaptation options to climate change	Participatory planning processes are required to avoid social tension over scarce resources and benefits of proposed intervention while ensuring ownership. Skill building of beneficiaries and community leaders to operate, maintain and replicate interventions is required to sustain them. Alternatively, interventions are planned and executed top-down, but this may lead to sustainability and tension issues with the chance of lost investment
3.2 Small-scale upstream river / flood water harvesting systems - Rooftop rainwater harvesting systems and storage options - Decentralized waste water treatment and reuse facilities to irrigate agriculture land and efficient water use options and permaculture (see details of cost-effectiveness per concrete action in tables below)	Proposed concrete adaptation actions are cost-effective solutions in a water-scare context. Upstream river / flood water harvesting systems are regarded as being cost-effective when cost associated with floods are reduced and when alternative water supply options are limited (such as in higher elevation agriculture areas where groundwater is polluted or limited). Rainwater harvesting options are regarded as being cost-effective when the investment is returned within an accepted number of years or when it supports awareness raising purposed. Wastewater treatment systems are regarded as being cost-effective when availability of grundwater is limited when the action can stop pollution of water (used for agriculture) Alternatively, conventional water supply methods are used, such as continued pumping of groundwater, but this is not sustainable / climate change resilient in areas that already suffer from water scarcety For an overview of the cost-effectiveness per concrete intervention, see table 5 and 6 below
4.1. 'Regional' urban risks and vulnerabilities assessment, planning and management approach model for type 2 cities developed, taking into account climate change and urban development trends, including DPs movements. The model can be replicated in similar context and feed into 3RP programming	Type 2 cities contexts require specific planning approaches and water supply techniques. Alternatively, best practices and approaches are not shared regionally, which may lead to loss of investments is countries and urban areas, which need to deal with similar situations.

Altogether, the project will be cost-effective by:

- ❑ Avoiding future costs associated with damage and loss due to climate change impacts (especially less rain and 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) and specialist agency (UNICEF);
- ❑ Community involvement with development / construction of concrete interventions and because of community capacity building especially for youth who would ensure the sustainability of the project.
- ❑ Selected technical options based on cost-, feasibility and resilience/sustainability criteria (to be done during full proposal development phase).

Table 8: overview concrete interventions, beneficiaries and cost-effectiveness in Lebanon

Priority Concrete Interventions	Details	Target areas and target communities	National/ local priority	Estimated number of Beneficiaries	Studies and assessments needed (during full proposal)	Challenges	Cost and cost effectiveness	Effectiveness in terms of water saving/collection	Maintenance arrangements
Treated Wastewater re-use	Treated Wastewater re-use from Zahle Wastewater plant in irrigation	Farmers in Zahle and the surrounding municipalities + people working in agriculture	National Water Sector Strategy, National Physical Masterplan, INDC, LCRP, Third National Communication	30,000 Leban (14,700 women 6,000 youth) 5,000 Syrian (2,550 women 1,000 youth)	efficiency of Irrigation systems in the area; EIA during full proposal	Pumping feasibility, awareness on using treated wastewater for agriculture, no upstream beneficiaries	$1,500,000 Cost Effectiveness 43$ per person	5,950 m3/day 2,171,750m3/year (average water consumption per capita per day is 200 litres, MoEW 2012)	According to Law 220/2001, MoEW and the water establishment (WE) are responsible for all water/wasterwater facilities including networks. A yearly fee is collected by WE from all subscribers to ensure O&M.
Wastewater treatment and re-use	Building a new wastewater treatment system in Qabb Elias	Farmers and residents in Qabb Elias residents + people working in agriculture	National Water Sector Strategy, National Physical Masterplan, INDC, LCRP, Third National Communication	50,000 Leban (24,500 women 10,000 youth) 55,000 Syrian (28,050 women 11,000 youth)	The studies have been already done by the Qabb Elias Municipality; EIA during full proposal	Awareness on using treated wastewater for agriculture, not a lot of beneficiaries, business case (revenue to operate and maintain)	$1,200,000 Cost Effectiveness: 12$ per person	17,850 m3/day 6,515,250 m3/year	According to Law 220/2001, MoEW and the water establishment (WE) are responsible for all water/wasterwater facilities including networks. A yearly fee is collected by WE from all subscribers to ensure O&M.
Riverwater harvesting	Small-scale upstream riverwater harvesting in Berdawni	Upstream farmers whose wastewater is connected to downstream wastewater plants	Ministry of environment request	20,000 Leban (9,800 women 4,000 youth) 1,000 Syrians (510 women 200 youth)	Hydrological studies, EIA during full proposal	Ensure water is clean enough (national court order closure of companies upstream in December 2018)	$500,000 Cost Effectiveness: 24$ per person	15,000m3/year (based on 3 storage ponds for 200m3 each)	According to Law 220/2001, MoEW is responsible for all riverbeds. And according to law 118/1977, municipalities are responsible for the protection of the river from all pollutants.
Rainwater harvesting	Rainwater harvesting in ITSs, Greenhouse roofs, public buildings	Syrian DPs in ITSs in the 5 targeted municipalities	Third National Communication, LCRP	20,957 Syrians (10,690 women 4,191 youth)	Simplest and most cost-efficient rainwater harvesting technique	Community led technology, government approval, sustainability	250$ per tent Total of $850,000 Cost Effectiveness: 41$ per person	35,770m3/year (central bekaa average rainfall 690mm/year, Meteorological data of Lebanon 2016)	Land owners to facilitate administrative works with municipality. Communities in ITS will be given awareness sessions to maintain and preserve the installed systems.
Total				>100,000 Leban >81,957 Syrians >90,800 women >36,391 youth			USD 4.05 million	8,737,770m3/year	

Table 9: overview concrete interventions, beneficiaries and cost-effectiveness in Jordan

Priority Concrete Interventions	Details	Target areas and target communities	National/ local priority	Estimated number of Beneficiaries	Studies and assessments needed (during full proposal)	Challenges	Cost and cost effectiveness	Effectiveness in terms of water saving/collection	Maintenance arrangements
Treated waste-water re-use	Enhancing treated Wastewater from Mafraq and Ramtha WWTPs for irrigation purposes + introducing modern irrigation technologies	Farmers around in Ramtha and Mafraq WWTPs Jordanian and Syrian refugees	Jordan's TNC; INDC; NAP; National Water Strategy; Climate Change Policy for a Resilient Water Sector; Water Demand Management Policy	8000 Jordanians (3840 women; 1620 youth) 4000 Syrians (2140 women; 760 youth)	Irrigation study, Capacity and quality of effluent from WWTPs; Check if EIA may be required	Awareness on using treated wastewater for agriculture	650,000 Cost effectiveness $50	4300 m3/day for Ramtha WWTP and 2600 m3/day for Mafraq WWTP.	According to law, enhancing the quality of WW is the responsibility of the Ministry of Water and Irrigation (MWI) through Yarmouk Water Company (100%) owned by MWI while irrigation system will be through farmers in cooperation with local CBOs.
Flood Water harvesting	Small-scale upstream flood water harvesting from the Main Wadi in Al Mafraq	Municipality of Greater Mafraq Jordanians and Syrian refugees	National Water Strategy 2016-2025, Climate Change Policy for a Resilient Water Sector, Water Demand Management Policy; Building Resilience to Combat the Impact of Climate Change on the Water Sector Policy and Surface Water Exploitation Policy; Decentralized Wastewater Management Policy;	23,000 Jordanians (14,400 women; 6,300 youth) 27,000 Syrians (9,600 women; 2016 youth)	Hydrological study. Check if EIA may be required	Feasibility and connections	$850,000 Cost effectiveness $17	This will be calculated after conducting topographical and hydrological study for the catchment areas.	Ministry of Water and Irrigation (MoWI), Jordan Valley Authority (JVA), and local CBOs in coordination with Greater Mafraq Municipality.
	Rehabilitation of 3 existing ponds.	Irbid Municipality Howara, Sareeh and Hoson communities		84,700 Jordanians (43,350 women; 16,940 youth) 26,000 Syrians (13,520 women; 4940 youth)	Hydrological studies.	Feasibility and connections	$1,250,000 Cost effectiveness $11 per person	This will be calculated after and hydrological study for the three catchment areas stormwater runoff.	Rellevant municipalities.
Grey water reuse	Greywater reuse in public buildings in Mafraq and Irbid Municipalities	Identify sources and flood areas Jordanian and Syrian refugees		200 buildings Whole community using mosques and schools			400,000 Cost effectiveness $2000 per building	The expected amount of water saving In Mosques depends on number of prayers with an annual average between 200- 300m^3. (1m^3/person/year) The expected amount of annual water saving In Schools with an average size of 300-400 students and teachers is 52m^3	For mosques, Ministry of Awqaf and Islamic Affairs, specifically Imamas and /or paryer callers at Mosques, in schools the Ministry of Education through school administration unit.
Rainwater harvesting	Rooftops rainwater harvesting at	Irbid, Ramtha municipalities	National Strategy for Agricultural Development	5000 Jordanians	Best practices mapped - simplest and most cost-	Setting the right condition for a	$500,000	Annual rainwater captured per plot 120 m^3, 14.4 m^3/person	Plot owners/ Household residents. Communities in target communities

	household level	Jordanian and Syrian refugees	2016- 2025, TNA; National Water Strategy 2016-2025, Climate Change Policy for a Resilient Water Sector, Water Demand Management Policy;	(2400 women; 1000 youth) 5000 Syrians (2400 women; 1000 youth)	efficient rainwater harvesting technique	national programme	Cost effectiveness $50 per person Assumption: 2 households per plot. The system includes constructing water collection tanks and pumping system.	**Assumptions:** Rooftop area: 300m^2, average annual rainfall: 500mm. **Equation:** Annual rainwater captured (m^3)= rooftop area (m^2) x annual rainfall (mm)x 0.80/1000 (efficiency rate)	will be given awareness sessions to maintain and preserve the installed systems.
Water saving devices (WSDs)	Installing water saving fixtures	Mafraq and Irbid municipalities Jordanian and Syrian refugees		2000 Jordanians (1,100 women; 500 youth) 5000 Syrians (2,650 women; 1,000 youth)	Survey of most effective water saving devices in Jordan market	Lack of awareness on water conservation especially among Syrian refugees	100,000 Cost effectiveness $15 per person	Average annual water savings (m^3) Toilets: 32.2, Lavatory Faucets: 17.7, Kitchen Faucets 16.0, Showerheads 13.5, 79.4m^3/ household, 18.9m^3/p.	Households. Awareness sessions on efficiency of WSDs will be provided to beneficiaries.
Permaculture	Include rooftop rainwater harvesting, greywater reuse and relevant to agricultural practices	Permaculture at household level in Ramtha. Jordanian and Syrian refugees	National Strategy for Agricultural Development 2016- 2025, National Water Strategy 2016-2025, Climate Change Policy for a Resilient Water Sector, Water Demand Management Policy.	1200 Jordanians (580 women; 200 youth); 1800 Syrians (860 women; 320 youth)	Develop permaculture criteria	Lack of awareness and capacity on using and practicing permaculture activities	150,000 Cost effectiveness $50 per person Assumption: 4 households per plot and community permaculture gardens.	105m^3 per household Total of 73,500m3/year.	Households. Targeted households (mainly women) will be provided with awareness and training sessions to operate and maintain the permaculture practices.
Hydroponic		Farmers in East Mafraq. Jordanian and Syrian refugees		6250 Jordanians (1,875 women; 1,250 youth) 2150 Syrians (645 women; 420 youth)	Studying suitable cropping patterns, feasibility study	Lack of awareness and capacity on using hydroponic	$300,000 Cost effectiveness $5000 per greenhouse $40 per person	30%-80% depending on cropping pattern. For lettuce, the amount of saved water is 32 l/plant/year representing 80% water saving per year.	Farmers through CBOs. targeted farmers will be given awareness sessions to operate maintain the hydroponic systems.
Total				>130,150 Jord >69,150 Syrians >99,360 women >38,266 youth			USD million 4.2		

E. Consistency with national or sub-national strategies

Both Jordan and Lebann have advanced climate action agendas, since both countries ratified the UNFCCC in 1994. Both countries submitted the Third National Communications (TNC) and an INDC to the UNFCCC while also having done Climate change Technical Needs Assessments TNA). Jordan also has a national climate change policy (also for water). However, the institutional and individual capacities, especially at sub-national levels, for effective climate programming (e.g. through spatial strategies and planning) is still weak. A detailed overview of project consistency with all relevant national and sub-national priorities has been developed in a table, which is available on request and will be included in the full proposal. For consistency of sub-projects with national strategies, see also tables 8 and 9 above.

The project concept note proposal especially aligns with the INDC, TNC and TNA and National Water (Sector) Strategies in both countries. In Jordan, the project concept note proposal also aligns with the National climate change policy (for water). Relevant ministries have been consulted to fully align with their most recent priorities (see section II.I)

F. Compliance with relevant national technical standards

The project will fully align with national technical standards, including standards for environmental and social impacts, land use planning, water supply / harvesting / reuse, etc. If environmental and social impacts are required for proposed interventions, this will be done during the full project development phase.

Lebanon

The institutional framework for the water sector in Lebanon is managed by a number of ministries, water establishments, public agencies, municipalities, etc., as per below.

Table 10: Key players and responsibilities in the water and wastewater sectors

Function	MOEW	RWEs	LRA	CDR	MOE	MOPH	Other
Planning	×	×		×			
Licensing and permitting (inc. EIAs)	×				×		×
Capital Investment	×	×		×			×
Infrastructure construction	×	×		×			×
Operation & maintenance	×	×					
Financing (national)	×	×		×			
Financing (external funding)	×			×			
Regulations and guidelines	×				×	×	
Water quality / quantity monitoring	×		×		×		
Hydro-power plants	×		×				

Source: State and Trends of the Lebanese Environment, 2010

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Deleted: <#>Table 9: Project alignment with National and sub-national priorities¶
<#>**Policy / Document** ...

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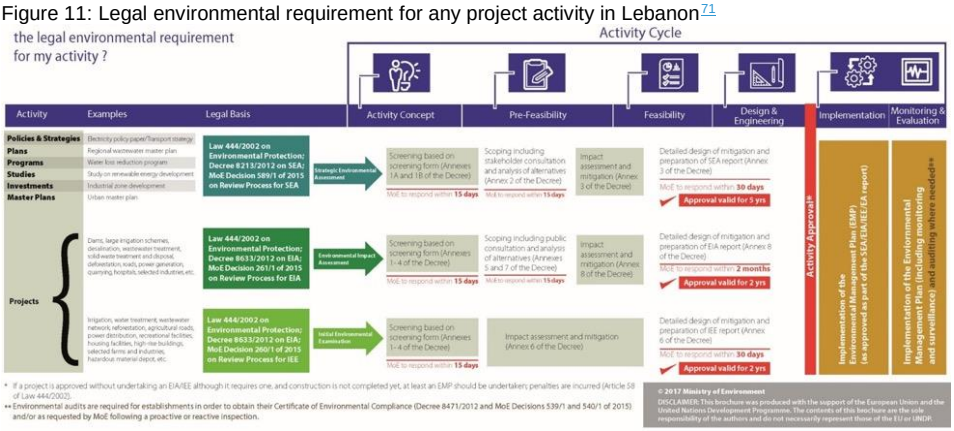
Figure 11: Legal environmental requirement for any project activity in Lebanon[71]



For more information about which sub-projects may required an EIA, see table 8

Table 11: Compliance with relevant notional technical standards

Expected concrete output/intervention	Relevant rules, regulations and standards (to comply to AF principle 1)	Compliance procedure and authorizing offices
Output 1.1. Land use strategies and plans as a tool to assess and plan water availability and needs (taking into consideration both climate change and movement of DPs (which require studies and assessments) - Trainings on above (targeting municipal officers)	- The Urban Planning decree-law of 1983: ▪ Article 4 to 17: plans, regulations and relevant planning conditions and possibilities. ▪ Article 18 to 24: operational arrangements that governments can use when undertaking a development project. ▪ Article 25 to 44: building permits and land subdivision. - Municipal Law decree 118/77: ▪ Article 11: masterplans and regulations should be submitted to the relevant municipalities. ▪ Article 49: an urban plan should be approved jointly by the Directorate General of Urbanism (DGU) and the concerned municipality. - Environment Code, Law 444/2002. - Strategic Environmental Assessment (SEA) decree 8213/2012	- Ministry of Interior and Municipalities - Ministry of Environment - Directorate General of Urbanism (DGU) - Municipalities of Zahle, Qabb Elias, Barr Elias, Taalbaya and Saadnayel.
Output 2.1. Community level skill building, trainings and operation and maintenance plans developed, including participatory community-	- The Urban Planning decree-law of 1983: ▪ Article 4 to 17: plans, regulations and relevant planning conditions and possibilities. ▪ Article 18 to 24: operational arrangements that	- Ministry of Interior and Municipalities - Ministry of Environment - Directorate General of Urbanism (DGU)

[71] http://www.lb.undp.org/content/dam/lebanon/docs/Energy%20and%20Environment/Publications/20171218%20Environmental%20safeguards%20EN.pdf

level planning processes to promote social exchange focused on planning urban adaptation options to climate change	governments can use when undertaking a development project. ▪ Article 25 to 44: building permits and land subdivision. - Municipal Law decree 118/77: ▪ Article 11: masterplans and regulations should be submitted to the relevant municipalities. ▪ Article 49: an urban plan should be approved jointly by the Directorate General of Urbanism (DGU) and the concerned municipality. - Environment Code, Law 444/2002. - Strategic Environmental Assessment (SEA) decree 8213/2012	- Municipalities of Zahle, Qabb Elias, Barr Elias, Taalbaya and Saadnayel.
Output 3.1. Upstream river / flood water harvesting systems - Rooftop rainwater harvesting systems and storage options - Decentralised waste water treatment and reuse facilities to irrigate agriculture land and efficient water use options and permaculture	- Law 444/2002: Environmental protection - Law 251/2014: Appointing prosecutors and investigative judges for environmental a-airs - Initial Environmental examination (IEE) decree 8633/2012 - Decree 8213/2012: SEA of policy, plan and program proposals in the public sector - Decree 8471/2012: Environmental compliance of establishments - Decree 8633/2012: Fundamentals of EIA - Law 221/2000 (amendment 241/2000) and law 77/2018: Water Code - Water and Wastewater masterplan for the Bekaa Governorate 2015 - The National Guideline for Rainwater Harvesting Systems in Lebanon - Water Code–Law 77	- Ministry of Interior and Municipalities - Ministry of Environment - Ministry of Energy and Water - Ministry of Agriculture - Bekaa Regional Water Establishment - Lithani River Authority - Municipalities of Zahle, Qabb Elias, Barr Elias, Taalbaya and Saadnayel. For which sub-projects may require an EIA, see table 8
Output 4.1. Regional' urban risks and vulnerabilities assessment, planning and management approach model for type 2 cities developed, taking into account climate change and urban development trends, including DPs movements. The model can be replicated in similar context and feed into 3RP programming	- Not relevant	Not relevant

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Jordan

Process to comply to national technical standards: compliance will be attained by:

1. Abiding with provisions of the governing Jordanian legal document (laws, by-laws, standards, etc.) through conforming to the relevant rule(s);
2. In cases a permit is required from the authorizing entity to fulfil certain regulatory requirements, in which obtaining the permit entails following no standardized procedure, the Executing Entity will prepare an official letter addressed to the authorizing Ministry to obtain the approval. This is usually requested at preliminary phases of the projects. During the full proposal development phase, sub-projects proposals will be shared with the ministries to check if permits are needed.
3. If the permit is only issued based on a standardized procedure and a risk management tool is needed, the specific procedure will be followed based on the governing Jordanian Environmental Protection Law No. (1) of 2003 and Environment Impact Assessment Regulations of 2005, by-law or Instructions (i.e. ESIA permit based on Ministry of Environment-administrated ESIA Bylaw no. 37 of the Year 2005 will be obtained including developing an ESMP for activities that are required to develop an EIA, etc.). In all cases sub-project proposals need to be submitted to the ministry of environment to decide on the type of EIA required based on the EIA compliance process shown in the figure. This will be done during the full proposal development phase. A first screening shows that no EIA may be required as there is no mentioning of EIA requirements for water-project, except 'deep drilling. For agriculture project, EIA are only required for cattle breeding farms.

Figure 12: EIA compliance process

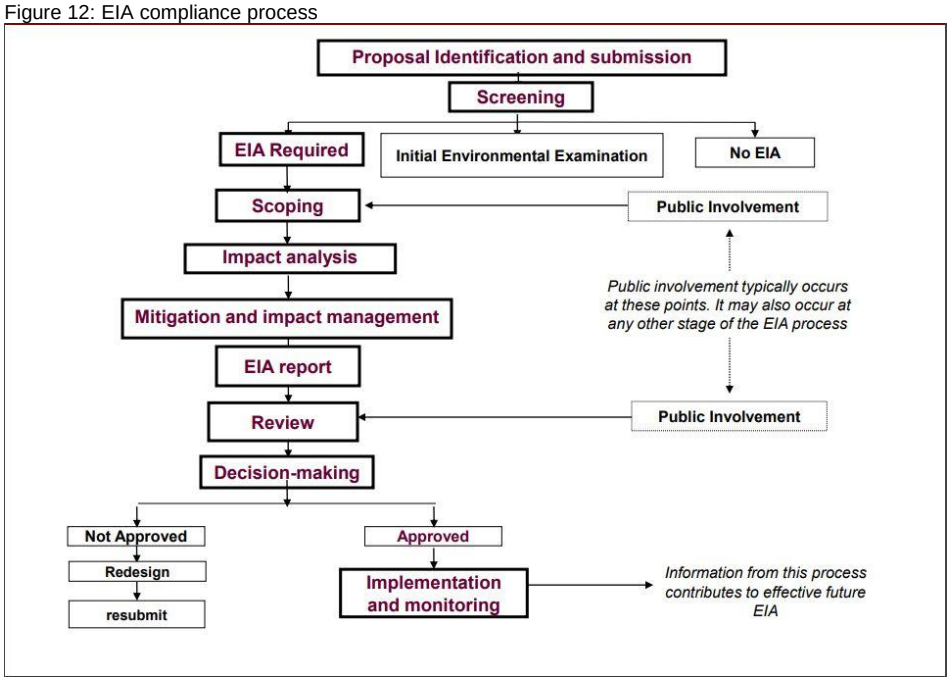

Table 12: Compliance with relevant national technical standards

Expected concrete output/intervention	Relevant rules, regulations and standards (to comply to AF principle 1)	Compliance procedure and authorizing offices
Output 1.2. Land use strategies and plans as a tool to assess and plan water availability and needs (taking into consideration both climate change and movement of DPs (which require studies and assessments) - Trainings on above (targeting municipal officers)	- Cities, Villages and Buildings Planning Law and Amendments thereof No (79) for the year 1966 - Building, villages and cities regulating by-law and amendments thereof for the year 2016 - Land Use Planning By-Law No. 6 of 2007 - Environmental Protection Law No. (1) of 2003	- See compliance procedure above. - Authorizing offices: Municipalities of Irbid and Mafraq and Ministry of Municipal Affairs-MoMA for Land use-related affairs and strategies
Output 2.2. Community level skill building, trainings and operation and maintenance plans developed, including participatory community-level planning processes to promote social exchange focused on planning urban adaptation options to climate change	- Cities, Villages and Buildings Planning Law and Amendments thereof No (79) for the year 1966 - Building, villages and cities regulating by-law and amendments thereof for the year 2016 - Land Use Planning By-Law No. 6 of 2007 - Environmental Protection Law No. (1) of 2003	- See compliance procedure above. - Authorizing offices: Municipalities of Irbid and Mafraq and Ministry of Municipal Affairs-MoMA for Land use-related affairs and strategies
Output 3.2. Upstream river / flood water harvesting systems - Rooftop rainwater harvesting systems and storage options - Decentralised waste water treatment and reuse facilities to irrigate agriculture land and efficient water use options and permaculture	- Environmental Protection Law No. (1) of 2003 - EIA Rules, regulations, standards (see above) - The Jordanian Standard for Reclaimed Domestic Water - No. 893/2006 - JS:286/2015: Water – Drinking Water, mandatory regulations - Design Guidelines for Water Harvesting in Jordan, National Agricultural Research Center (NARC). - Water and sanitary wastewater building code, Jordan National Building Council - Jordanian National Building Law No. 7 of 1993 and recent Amendment Law No. 24 of 2018 - Law on Municipalities No. 41 of 2015 - The By-Law of Buildings and Organization of Cities and Villages and its Amendments No. 2 0f 2018 - Jordan Green building Guide - Instructions No. G/7 for the Year 2016: Instructions and Conditions to Use Treated Waste Water, Salty Water, and Brackish Water for Agricultural Use - Permaculture Manual – CARE International (guidelines)	- The program will abide with the strict regulatory measures enforced in Jordan to manage the use of reclaimed water for agriculture or other purposes. - EIA Studies EIA procedure: Submit a request to the MoE to obtain environmental approval for the project. Then the project is classified according to its impact into three categories (first, second and third. The first category requires full EIA, the second require preliminary EIA, while the third does not require EIA. The process is explained in the attached flow chart.
Output 4.2. Regional' urban risks and vulnerabilities assessment, planning and management approach model for type	- Not relevant	Not relevant

2 cities developed, taking into account climate change and urban development trends, including DPs movements. The model can be replicated in similar context and feed into 3RP programming		

G. Duplication with other funding sources

The project will avoid overlap with other projects and use lessons learned where possible. During the concept note development phase, all projects and their lessons learned, complimentary potential and non-duplication have been mapped. An overview of all these projects, has been included in a table that is available on request and will be included in the full proposal.

How the project will integrate relevant lessons learned and/or seek synergies with relevant on-going projects: the regional UN-Habitat office (ROAS) will coordinate with UN-Habitat country offices regarding different UN-Habitat project approach and lessons learned. As for lessons learned from- and coordination with other projects (regarding approaches, technologies, etc., especially from these projects will be contacted during the full proposal and implementation phase for more information, e.g. concerning permaculture use in Jordan, women involvement in Jemen, water harvesting technology, etc. UN-Habitat will held regular meetings with ministries and target municipalities for project coordination purposed. With UNICEF as executing partner, a wealth of knowledge and experience is available regarding WASH in the region. UN-habitat will also work with universities to further develop business cases for water harvesting options during the full proposal phase. As for geographic overlap, this has been avoided through confirmation by government, UN agencies, NGOs, etc. through research and consultations. UN-habitat will continue to coordinate with these stakeholders during the full proposal development phase and implementation of the project, also through an advisory board (which will be explained in part III in the full proposal).

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H. Learning and knowledge management

The project will capture and disseminate lessons related to increasing 'urban resilience' to respond to a rapid influx of new and often long-term residents by conflict and climate change. The project will also capture and disseminate lessons related to use and implementation of innovative, low-cost water supply techniques and management of type 2 cities. Where possible, lessons will be integrated in 3RP programme plans, UN-ESCWA's SDGs platform, RICCAR, ACWUA, Arab Centre on Climate Change Studies, the State of the Environment Reports in Lebanon and Jordan in addition to reporting to UNFCCC (National Communications, NDCs, etc.). Lessons would also be very relevant to include in regional assessments (e.g. UN Environment's Global Environment Outlook). Moreover, project outcomes can be showcased by Jordan and Lebanon governments at major climate change events (such as the COP and Cities and Climate Change conferences).

A dedicated Component (4) is included to replicating the approach for managing type 2 cities, including techniques. Whilst this 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). Capacities of government officials will be strengthened to replicate these approaches and techniques. Capacities of communities and vulnerable groups will be strengthened to operate and maintain techniques. Knowledge sharing tools used will include social media streams (twitter, Facebook, etc.) plans and guidelines. Also, videos will be produced.

Table 13: Learning and knowledge management

Expected Concrete Outputs	Learning objectives (lo) & indicators (i)	Knowledge products
Output 1.1. Land use strategies and plans as a tool to assess and comprehensively / efficiently respond to water needs and availability water (taking into consideration both climate change and movement of DPs (which require studies and assessments) - Trainings on above (targetting municipal officers)	(lo): To use land use strategies and plans to better plan water (taking into consideration both climate change and movement of DPs (i): Number of plans; number of trainings	- Local spatial plans - Model / Guidelines, also shared internationally - Training toolkit on mainstreaming climate change and DPs considerations in land use planning to address water issues in type 2 cities - Training reports
Output 2.1 Community level skill building and trainings conducted, and operation and maintenance plans developed, including participatory community-level planning processes to promote social exchange focused on implementing and replicating adaptation options to climate change	(lo): Build community and vulnerable groups skills to operate and maintain resilient water systems; identify best way to reduce (potential) tension between groups (i): Number of plans; number of trainings	- Maintennace plans - Model / Guidelines, also shared internationally - Training toolkit for building capacities at the community level in type 2 cities - Training reports - Video
Output 1.1. Small-scale upstream river / flood water harvesting systems - Rooftop rainwater harvesting systems and storage options - Decentralized waste water treatment and reuse facilities to irrigate agriculture land and efficient water use options and permaculture	(lo): showcase best practice information on low-cost and replicable innovative techniques in context of high influx of DPs and climate change impacts (i): Number of techniques showcased	- Model / Guidelines, also shared internationally - List of recommended innovative and cost-efficient solutions to adapt to climate-induced water scarcity - Video
Output 1.1. 'Regional' urban risks and vulnerabilities assessment, planning and management approach model for type 2 cities developed, taking into account climate change and urban development trends, including DPs movements. The model can be replicated in similar context and feed into 3RP programming	(lo): understand how to address climate change impacts in type 2 cities context (i): Number of guidelines, recommendation papers	- Guidelines, also shared internationally - Recommendation papers for regional programming

I. Consultative process

For this concept stage, consultations have been conducted with key stakeholders, including representatives from the government, UN agencies, NGO's and vulnerable groups. Four type of consultations shaped this proposal. Consultations to:

- ☐ *Align with National priorities*: throughout the concept phase, UN-Habitat worked with the AF focal points and ministries which are mandated to work on water, agriculture and spatial planning. The target areas have been selected together and duplication with government projects avoided.
- ☐ *To avoid duplication with other projects* (government, UN agencies, NGOs, etc.) and use lessons learned
- ☐ *Identify specific needs and possible concerns of vulnerable groups*, in line with AF ESP and GP policies (see project compliance to AF ESP and GP in annex 1 + draft gender baseline and approach in annex 2. During the full proposal phase, annex 1 and 2 will be updated to provide complete information on risk screening and impact assessment of all 15 AF safeguard areas per project activity.

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- ☐ *Identify potential environmental and social risks and impacts*, in line with AF ESP and GP policies (see consultation plan in annex 1 + draft gender baseline and approach in annex 2). During the full proposal phase, annex 1 and 2 will be included to provide complete information on risk screening and impact assessment of all 15 AF safeguard areas per project activity.

During the pre-concept note stage, which was developed in close coordination with AF focal points and relevant ministries, national plans and strategies have been consulted to ensure addressing national priorities in both countries. Regional frameworks, mainly 3RP, have been reviewed in order to ensure robust regional approach. During the development of this concept note, consultation workshops have been conducted in each country, involving target municipality mayors, representatives of local authorities, as well as other international stakeholders and academia, to identify the main climate change issues, especially related to water and local needs and geographic coverage of other projects (see figures 13 and 14).

Also, "one to one" meetings targeting relevant government institutions, UN agencies, other international organisations and NGOs have been consulted. An overview of all consultations conducted, including objective, outcomes, how inputs have been incorporated in the proposal and prove of consultations is available on request and will be included in the full proposal. Moreover, A total of 12 focus group discussions with vulnerable beneficiary groups have been organised across target areas identified as most vulnerable (full reports and attendance sheets can be shared on request). Some of the community consultations were organised in collaboration with municipalities of Mafraq, Irbid and Zahle and others were organised with the help of NGOs and CBOs (i.e. World Vision, Norwegian Refugee Counsil) working in the target areas. The consultations aimed to identify the most hazardous climate change impacts on target communities and groups, their barriers to adapt to such impacts, their specific needs and their potential concerns regarding proposed interventions. Vulnerable groups consulted include: Syrian DPs, women, youth, children and disabled people by ensuring their representation in most of the discussions. Whenever possible and acceptable, focus goups for women only followed the main focus group to try and understand underlying vulnerabilities of women and children. In Lebanon, 4 key informant interviews were also held with organisations working in the target area to understand their perspective of the issue and their current contribution to address it.

The outcomes of consultations have shaped the selection of proposed interventions at this stage. Some of the proposed interventions were execluded due to cost ineffecienct (in low density areas), non-feasibility due to e.g environmental risks (e.g groundwater use) and non-preference of beneficiary groups. In some discussions, new interventions were suggested by the communities (e.g. hydroponic agrirculture), which will be further assessed during the full proposal development phase. Also, measures will be taken to respond to some concerns raised, especially those of Syrian DPs and women (e.g. in ITSs in Lebanon).

Figure 13: Lebanon workshop to identify main climate change issues, needs and other projects in target municipalities. Attendance sheets can be shared on request.

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Figure 14: Jordan workshop to identify main climate change issues, needs and other projects in target municipalities. Attendance sheets can be shared on request.


Figure 15: Example pictures of community consultations and women focus groups and representatives in Lebanon


Figure 16: Example pictures of community consultations and women focus groups and representatives in Jordan


J. Justification of funding request

Urban resilience provides a comprehensive response framework. Although there is little exploration of how urban systems respond to a rapid influx of new and often long-term residents by conflict and climate change, it is manifest and critical to build resilient communities and institutions that are equipped to respond to shocks and stresses arising from displacement. This project explores and collects evidence of approaches and best practice technqiues that effectively respond to urban areas that face a combination of high DP influx (i.e. type 2 cities) challenges and climate change impacts.

The project will support implementation of national priorities as well as responding to local needs, especially of the most vulnerable, and will provide added value to national plans and approaches through implementation of innovative and low-cost technical interventions. The proposed project components also fully align with AF outcome areas. This alignment has resulted in the design of a comprehensive approach to address climate change related water challenges in a type 2 host cities context.

There is a need for concrete adaptation actions in the water sector in the targeted cities in Jordan and Lebanon focusing on the most vulnerable groups. Since most Syrians in Lebanon and Jordan work in the water-dependent agriculture sector and have limited access to water, increasing water scarcity, acerbated by climate change, is a big challenge. The actions are crucial for the cities to cope with current and future climate change impacts exacerbated by influx of Syrian DPs. The Third National Communications to the UNFCCC of Jordan and Lebanon stated clearly that financial constraints are among the barriers to adaptation and that there is a clear need for funding and capcity building to support national and municipal climate action. As mentioned earlier, the target cities were selected because of a combination of existing and projected climate change-related water challenges, high pressure on water resources due to high influx of DPs and lacking resources and capacities to address these climate change-related water issues and specific needs of DPs, which includes access to affordbale water.

From a regional perspective, the programme will support the 3RP regional and national programming, for which budget gaps exist for the development of an integrated regional approach focused on addressing especially WASH and social cohesion and livelihoods issues,[73] in 'host' cities exacerbated by both the influx of DPs and climate change impacts.

The project aims to maximizing the funding amount for the concrete adaptation component (component 3; USD 8,25 million); funding allocation to the other components is required to better manage water and strengthen related capacities, including for operating, maintaining and replicating concrete adaptation measures proposed under component 3.

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

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Project outcomes	Baseline (without AF)	Additional (with AF)	Comment and alternative adaptation scenario's

[73] 3RP Regional Quarterly Dashboards March 2018. Online: https://data2.unhcr.org/fr/documents/download/63820

1.1.1. Strengthened municipal institutional capacity to manage urban risks, impacts and vulnerabilities related to both climate change and the movement of DPs, also considering urban – rural linkages (in line with AF outcome 1 and 2)	In Jordan and lebanon, water is managed at the district scale, by looking at current demand and supply needs, with limited consideration of climate change and population trends. Most of the response in target areas is still humanitarian; therefore, a sustainable approach is lacking;	The activities related to this outcome will allow municipal governments to assess, plan and manage climate change and DPs influx related risks and vulnerabilities, especially related to water, in a participatory, integrated, sustainable and climate change resilient way; Displacement and climate change are increasingly important factor driving urban growth trends. Taking into account the scale, scope and impacts of displacement and climate change in the existing urban planning and policies will help local governments respond to the challenge effectively	Municipal governments lack the capacity and financial resources to execute activities related to this outcome without support Without sustainable and climate change resilient approaches, target areas will become more water scarce, resulting in negative effects for poverty reduction targets and livelihood security and possible tension over scare resources. Alternatively, water is managed through IWRM approaches, but this is not in line with national priorities / practices
2.1.1. Strengthened DPs and host communities local-level awareness and ownership of adaptation actions and processes + capacities strengthened to operate and sustain proposed adaptation actions, including skills building (in line with AF outcome 3)	Target communities have very limited options (capacity – skills and technically - and financial resources) to protect their people and assets against climate change impacts, especially lack of water. Rising social tensions between host communities and DPs, pose risks and threats to development gains	The activities related to this outcome will enable communities and vulnerable groups to operate and sustain systems and to assess, plan and manage these together. It will also increase livelihood / income security; Inclusive approaches that promote social cohesion need to be an integral part of displacement responses, especially around scare resources	Communities and vulnerable groups lack the capacities to operate and sustain systems and to assess, plan and manage these together. 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 livelihood security and possible tension over scare resources. Altrenatively, livelihoods could be diversified more, but as water is an urgent issue, this has been prioritized.
3.1.1. Increased adaptive capacity within the water sector through resilient and sustainable water supply, using innovative, cost-effective, climate change resilient water supply techniques, which are suitable for high DPs influx context and replicable and mostly benefit vulnerable groups (in line with AF outcome 4)	Municipal governments invest very little in sustainable and climate change resilient urban water services, considering most cities in Jordan and Lebanon are already suffering from inadequate service provision. Displacement and climate change exacerbate the situation by adding extra pressure on services, often becoming a source of tension with discontent and competition around services.	The activities related to this outcome will increase the sustainability and climate change resilience of water-related services and livelihoods dependent on water. Taking into consideration the DP and climate change context, techniques selected can be implemented rapidly and will be flexible in use.	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. Alternative adaptation scenarios are ad hoc humanitarian responses, which would respond to urgent needs, but not in a sustainable and climate change resilient way.

4.1.1. Strengthened National and international institutional capacity to manage urban risks, impacts and vulnerabilities related to climate change and DPs movements, including lessons learned collected and options to replicate approaches and techniques shared regionally	National governments in the Mashriq region have limited capacity (available models, tools, techniques and financial resources) to develop and replicate a model that effectively respond to urban challenges of combined high DP influx (i.e. type 2 cities) and climate change.	The activities related to this outcome will allow the government to replicate the approach / model of responding to a combination of high DP influx (i.e. type 2 cities) and climate change challenges internationally	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 and international support and engagement for the proposed approach is not mobilized.

K. Sustainabilty

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, but especially at the urban level, and its further replication – see components 1, 2 and 3.

The project will be sustained by the strong linkage to national priorities (i.e. national buy-in), by mainstreaming outcomes into (inter)national and city-level strategies and their monitoring framework and through the engagement of local affected communities in planning, maintenance and training activities. Alignment with regional plans and strategies, such as the 3RP and the Arab Strategy for Water Security, continued cooperation on the issues addressed through this project after it comes to an end, is guaranteed. It is also sustained through the involvement and capacity building of national and municipal governments, local communities and vulnerable groups (e.g. skills development and maintenance plans) and other stakeholders during the processes and through development of knowledge products and sharing of lessons.

By fully 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 – see component 2. Specific emphasis is given to community capacity strengthening to operate, maintain and replicate the systems (including the development of maintenance plans). Also, through the participatory approach, the project activities aim to contribute to avoid potential future tension over scare resources.

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 secure livelihood options, improve the health and security of the community – see component 3. With all four components, the project aims to support sustainable development in target areas in Jordan and Lebanon and the wider region, compared to a currently humanitarian / emergency driven approach.

During the full proposal development phase, all details for sustainability / maintenance arrangements for all proposed activities will be identified / established. However, at this stage, information on maintenance arrangements per concrete adaptation interventions are provided in tables 8 and 9.

Scaling up climate change adaptation interventions

The project recognizes the need to rapidly scale up effective climate change adaptation interventions, through favorable policy frameworks and concrete actions. The components of the project will generate knowledge about concrete experiences with local level adaptation. The lessons learned from actions will be leveraged to promote replication of successful community practices and will be integrated into policies that promote increased community adaptive capacity. On the other hand, the project includes awareness raising components that help communities better understand and prepare for climate change. It also

includes capacity building components at both the local and national levels. Thus, the project will serve as example for further adaptation planning by local and government institutions and is expected to lead to the development of national initiatives that support and trigger the scale up of the suggested climate change adaptation interventions at large.

L. Environmental and social impacts and risks

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.F above on compliance with national technical 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 project actions, and based on that, of the entire project. With this information, the entire project has been categorized. As shown in section II.I and annex 1, consultations have been conducted to identify potential environmental and social risks and impacts and to identify specific groups needs and possible concerns. A draft gender baseline, containing disaggregated data and approach, containing specific approaches for women and youth, has been inserted as annex 2. Details will be completed and more consultations required to do this conducted during the full proposal development phase. Annex 1, which shows how the proposal complies to AF ESP) will be updated during the full proposal development phase to show all potential risks per proposed intervention with impacts quantified and if needed, appropriate mitigation measures proposed.

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Normative, planning and capacity development activities (i.e. non-concrete interventions) under components 1, 2 and 4 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 negative environmental or social impacts can occur.

Activities under components 3 are 'concrete' adaptation actions. Because of the scope of the proposed actions, which are numerous, small scale and very localized, and proposed and managed by municipalities and communities where possible, who have a stake in avoiding environmental and social risks and impacts, potential direct impacts are limited, and indirect impacts and transboundary impacts are highly unlikely. Given this, cumulative impacts are also unlikely. Because of this, the entire project is regarded as a medium risk (Category B) project. During the full proposal development phase, all proposed activities will be detailed so that all potential risks can be identified and impacts quantified, and if a risks exist, measures proposed to mitigate these. A PFG has been submitted to AF to conduct feasibility studies and impact assessments and to conduct consultations to support the process. This will be done with experts from Arcadis.

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The project is designed to generate positive economic, social and environmental impacts, using inputs from especially women and youth and DPs and host communities 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 actions proposed have been selected together with mayors, communitie and vulnerable group representatives, making sure they are culturally appropriate and local.

Table 15: Overview of the environmental and social impacts and risks. For more details see section II.I and annex 1 and 2.

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Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment required for compliance
Compliance with the Law	x	

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

During the concept note phase, consultations with all relevant stakeholders took place to identify potential environmental and social risks and impacts (to comply to the AF ESP) and to identify specific needs and possible concerns of women and to establish a disaggregated data baseline (to comply to the AF GP). However, because the proposed adaptation activities at the concept note phase have not been detailed to the point that all potential risks can be fully identified and / or excluded (or appropriately be mitigated) and impacts quantified, all sub-projects will be identified during the full proposal development phase to a detail that all risks can be fully identified and impacts quantified. This will be done with support of experts of Arcadis and through consultations with all vulnerable groups identified, including women and youth. This is especially relevant for principles 2 (access and equity), 3 (marginzalized and vulnerable groups, 5 (gender), 11 (climate change) and 12 (pollution). For this more details are required to provide complete risks screening and impacts assessment details.

As for principle 1, relevant laws and standards and how subprojects comply have been identified (see section II.F). As for principle 4 and, the human rights and core labour rights not ratified have been identified and relevant agencies consulted to identify potential risks and mitigation measures (see section II.I). As for principle 7, no indigenous groups were identified in the target areas. As for principle 8, all involuntary resettlement will be avoided and all interventions will be on public land. As for principle 9 and 10, no protected natural habitat would be harmed, as confirmed by IUCN (see section II.I). As for principle 14, no heritage sites were identified in the target areas (as per UNESCO website). As for principle 15, lands and soils will not be affected negatively as all proposed interventions have a sustainable land use planning approach and won't touch vulnerable soils. For more details see annex 1.

PART III: IMPLEMENTATION ARRANGEMENTS

UN Habitat will be the implementing entity for the project providing specific technical support in urban development and resilience related areas. With support from the Regional Office for Arab States (ROAS), UN-Habitat country offices in Jordan and Lebanon will facilitate the coordination between the government entities. In Jordan and Lebanon, national executing entities will be the ministries responsible for climate change, which will coordinate with the ministries responsible for water resources, spatial planning and DPs.

Lebanon: Ministry of Environment; Ministry of Energy and Water; Line departments in municipalities; UNICEF and NGO partners
Jordan: Ministry of Environment, Ministry of Water and Irrigation;; Line departments in municipalities; UNICEF and NGO partners

At the city level, partners will be municipal line departments in target cities. For the execution of community-level concrete adaptation actions and community involvement, local partners will be confirmed during the full proposal phase, but as UNICEF is the lead agency on water in both countries, UNICEF is tentatively proposed as executing entity for concrete interventions. There will be coordination between municipal authorities in both countries on technical issues (e.g. spatial planning) and communication of lessons learned during implementation.

The two countries are already under a number of common frameworks by the League of Arab States such as the Arab Strategy for Water Security and the Arab Strategy for Housing and Sustainable Urban Development 2030. On DPs specifically, Jordan and Lebanon are already cooperating under the 3RP framework. This ensures that the coordination of the project will be continuous, efficient and sustainable.

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

A. Record of endorsement on behalf of the government[1]

Nayef Hmeidi Al-Fayez, Minister, Ministry of Environment, Jordan	Date*: August 5, 2018*
Tarek El Khatib, *Minister, Ministry of Environment, Lebanon*	Date*: August 6, 2018*

Ministry of Environment

Ref.No 7.2.7793
Date 5-8-2018

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

Subject: Endorsement for "*Increasing the resilience of displaced persons (DPs) to climate change-related water challenges in urban host settlements*"

In my capacity as designated authority for the Adaptation Fund in Jordan, I confirm that the above regional project proposal is in accordance with the government's National Adaptation Plan including the priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in the country. It is also well aligned with Jordan's Climate Change Policy and Intended Nationally Determined Contribution (INDC). The regional approach shall also enhance management of water challenges and pressure on resources regionally and foster our cooperation with Lebanon under the Regional Refugee and Resilience Plan 2018-2019.

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 the relevant local executing entities.

Sincerely,

Minister of Environment

Nayef Hmeidi Al-Fayez

Eng. Ahmad Al-Qatarneh
Secretary General

The Hashemite Kingdom Of Jordan
Tel : +962 6 5560113 Fax : +962 6 5516377 P.O.Box : 1408 Amman 11941 Jordan www.moenv.gov.jo

[1] 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.

REPUBLIC OF LEBANON
MINISTRY OF ENVIRONMENT

Beirut, 06/03/2018
Our Ref: 4206/B

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

Subject: Endorsement for project: Increasing the resilience of displaced persons to climate change related water challenges in urban host settlements

In my capacity as designated authority for the Adaptation Fund in Lebanon, I confirm that the above national project/programme proposal is in accordance with the government's national and regional priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in Lebanon.

Accordingly, I am pleased to endorse the above project/programme proposal with support from the Adaptation Fund. If approved, the project/programme proposal will be implemented by the UN Habitat and executed by the Ministry of Environment.

Sincerely yours,

Republic of Lebanon
Ministry of Environment

Tarek El Khatib
Minister of Environment

AA-F-16-V 1- 1/1

Cc:
- *Mrs. Nancy Khoury, Acting Head, Department of Public Relations & External Affairs, MoE*
- *Mrs. Samar Malek, UNFCCC Focal Point , Service of Environmental Technology*

Ministry of Environment, Lazarieh Center, 7th Floor, Block A-4 Old
P.O.Box: 11/2727; Beirut-Lebanon. Tel: +(961)-1-976555 or 4-Digit Number: 1789; Fax: +(961)-1-97653
Home Page: www.moe.gov.lb

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 including INDCs, NAP, TNCs and the regional 3RP, 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.
For O.I.C. *Raf Tuts,* *Director Programme Division, UN-Habitat*
Date: *January 3rd, 2019* | raf.tuts@un.org
Project Contact Person: Tarek Abdel Monem
Tel. And Email:+20237618812 tarek.abdel-monem@un.org

Annex 1: Proposal compliance to AF Environmental and Social Policy and Gender Policy

Table 16: consultation plan to comply to AF Environmental and Social Policy and Gender Policy

Eenvironmental and social principles	To do / consultation required to comply to AF ESP and GP	Consulted (see section II.I for outcomes)	Risk screening and impact assessment process
Compliance with the Law	- Identify relevant rules, regulations and standards, including procedures to comply to these for proposed interventions - Identify national legal framework and guidelines for conducting EIAs for relevant projects – see format in ToR (done during CN)	Environmental directorate MoLAE	Relevant laws and how to comply have been identified (see section II.F)
Access and Equity	- Identify needs and potential issues related to proposed project actions	Vulnerable groups	Detailed stakeholder mapping has been conducted and consultations with identified vulnerable groups conducted.
Marginalized and Vulnerable Groups	- Include specific questions in vulnerable groups survey (done during CN and will be completed during full proposal)	UNHCR; Vulnerable groups	Detailed stakeholder mapping has been conducted and consultations with identified vulnerable groups conducted; UNCHR has been consulted to understand specific needs and possible concerns of DPs (see section II.I)
Human Rights		OHCHR; Vulnerable groups	Detailed stakeholder mapping has been conducted and consultations with identified vulnerable groups conducted; UN-Habitat checked what core human rights have been ratified; OHCHR has been consulted to identify possible project human rights risks (see section II.I)
Gender Equity and Women's Empowerment		UNICEF; UN Women; Vulnerable groups	Detailed stakeholder mapping has been conducted and consultations with identified vulnerable groups conducted; UN Women and UNICEF have been consulted to understand specific needs and possible concerns of DPs (see section II.I). A gender baseline and approach has been included.
Core Labour Rights		ILO; Vulnerable groups	Detailed stakeholder mapping has been conducted and consultations with identified vulnerable groups conducted; UN-Habitat checked what core Labour rights have been ratified; ILO has been consulted to identify possible project human rights risks (see section II.I)
Indigenous Peoples		Vulnerable groups	Some Bedouins are now official Lebanese and Jordanians so not regarded as indigenous anymore
Involuntary Resettlement		Municipalities; Vulnerable groups	Resettlement will be avoided in all cases. All proposed activities are on public land or at household level where the household would agree with the intervention
Protection of Natural Habitats	- Identify any protected areas in target area (done during CN)	IUCN	UN-Habitat checked the IUCN Red list and consulted IUCN regional office (see section II.I)
Conservation of Biological Diversity	- Identify potential endangered species in target area (done during CN)	IUCN	
Climate Change	- Identify potential emissions from proposed interventions (partly done during CN)	Studies during full proposal	All proposed interventions are small-scale; Energy use (for e.g. waste water systems) will be produced through PV
Pollution Prevention and	- Identify if considered interventions will use large quantity of energy		

Resource Efficiency			
Public Health	- Include specific questions in vulnerable groups survey (done during CN)	Vulnerable groups	All interventions will support clean water supply in accordance with international standards
Physical and Cultural Heritage	- Identify heritage sites (done during CN) - Include specific questions in vulnerable groups survey	UNESCO website	No heritage sites have been identified in target areas
Lands and Soil Conservation	- Map any fragile and valuable lands in target area (done during CN)	IUCN; studies	Proposed interventions will support sustainable land/ soil use and avoid degradation

Table 17: Overview of project activities' initial screening results against the 15 AF risk areas / principles, related potential impacts and measures to avoid or reduce potential risks.

Project outputs	Specific activities	(Design) details			Risk screening result (potential risks)	Impact assessment (quantified) (to be identified during full proposal stage)	Mitigation measure (At full proposal stage)
		Location (exact location to be identified during full proposal)	Number of beneficiaries	Dimensions (to be identified at full proposal stage)			
1.2. Land use strategies and plans + trainings		Target municipalities	All in target municipalities (670.000)		- Potential risks of unequal benefits of proposed interventions (principles 2, 3 and 5)		- Quotas and specific gender approach
2.1 Community level skill building and trainings		Beneficiary areas in target areas municipalities	Representatives of target beneficiaries		- Potential risks of unequal benefits of proposed interventions (principles 2, 3 and 5)		- Quotas and specific gender approach
3.1. Concrete adaptation actions Lebanon	Treated Wastewater re-use	Farmers in Zahle and the surrounding municipalities + people working in agriculture	30,000 Leban (14,700 women; 6,000 youth); 5,000 Syrian (2,550 women 1,000 youth)		- Potential risks of unequal benefits of proposed interventions (principles 2, 3 and 5) - Potential risk of increased energy use / greenhouse gases (principle 11) - Potential risk non-efficient use of resources (principle 12)		- Quotas and specific gender approach - Use renewable energy source - Conduct hydrology and irrigation studies For all works, standard clauses will be included in all contracts for contractors / employers and employees to comply to Human Rights, ILO / safety standards. Moreover, awareness raising regarding above will be conducted and safety signs and equipment provided.
	Wastewater treatment and re-use		50,000 Leban (24,500 women; 10,000 youth); 55,000 Syrian (28,050 women 11,000 youth)				
	Riverwater harvesting	Upstream farmers whose wastewater is connected to downstream wastewater plants	20,000 Leban (9,800 women 4,000 youth); 1,000 Syrians (510 women 200 youth)				
	Rainwater harvesting	Syrian DPs in ITSs in the 5 targeted municipalities	20,957 Syrians (10,690 women 4,191 youth)				
3.2. Concrete adaptation actions Jordan	Treated waste-water re-use	Farmers around in Ramtha and Mafraq WWTPs Jordanian and Syrian refugees	8000 Jordanians (3840 women; 1620 youth); 4000 Syrians (2140 women; 760 youth)				
	Flood Water harvesting: Small-scale upstream flood water harvesting from the Main Wadi in Al Mafraq	Municipality of Greater Mafraq Jordanians and Syrian refugees;	23,000 Jordanians (14,400 women; 6,300 youth) 27,000 Syrians (9,600 women; 2016 youth)				
	Flood Water harvesting: Rehabilitation of 3 existing ponds.	Irbid Municipality Howara, Sareeh and Hoson communities	84,700 Jordanians (43,350 women; 16,940 youth) 26,000 Syrians (13,520 women; 4940 youth)				
	Grey water reuse	Identify sources and flood areas Jordanian and Syrian refugees	200 buildings Whole community using mosques and schools				

	Rainwater harvesting	Irbid, Ramtha municipalities, Jordanian and Syrian refugees	5000 Jordanians (2400 women; 1000 youth); 5000 Syrians (2400 women; 1000 youth)				
	Water saving devices (WSDs)	Mafraq and Irbid municipalities Jordanian and Syrian refugees	2000 Jordanians (1,100 women; 500 youth); 5000 Syrians (2,650 women; 1,000 youth)				
	Permaculture	Permaculture at household level in Ramtha. Jordanian and Syrian refugees	1200 Jordanians (580 women; 200 youth); 1800 Syrians (860 women; 320 youth)				
	Hydroponic	Farmers in East Mafraq. Jordanian and Syrian refugees	6250 Jordanians (1,875 women; 1,250 youth); 2150 Syrians (645 women; 420 youth)				
1.1. 'Regional' urban risks and vulnerabilities management approach model for type 2 cities developed		National	National		Unequal representation / inputs during process (principles 2, 3 and 5)		Quotas and specific gender approach

Details of the screening results

Details of project activities' screening results against the 15 AF risk areas / principles, related potential impacts and measures to avoid or reduce potential risks.

AF principle 1: Compliance with the law
For all proposed activities, relevant rules, regulations and standards and procedures have been identified including procedures to comply to these (see section II.E).

In line with national standards / requirements (see section II.E), an EIA may be required for below proposed sub-projects. These EIAs will be conducted during the full proposal development phase.

Output / activity	National EIA requirements	Outcome
Lebanon		
Treated Wastewater re-use from Zahle Wastewater plant in irrigation	yes	To be conducted during full proposal phase including feasibility and irrigation study
Building a new wastewater treatment system in Qabb Elias	yes	To be conducted during full proposal phase including feasibility and irrigation study
Small-scale upstream riverwater harvesting in Berdawni	yes	To be conducted during full proposal phase including feasibility and hydrological studies
Jordan		
Enhancing treated Wastewater from Mafraq and Ramtha WWTPs for irrigation purposes + introducing modern irrigation technologies	yes	To be conducted during full proposal phase including feasibility and irrigation study
Small-scale upstream flood water harvesting from the Main Wadi in Al Mafraq	yes	To be conducted during full proposal phase including feasibility and hydrological studies

The EIA will follow government and sectoral guidelines and following steps / processes. It will also assess all potential risks and impacts in line with the AF ESP and GP considering the 15 AF principles and potential earthquake and land slide risks.

AF principle 2: Access and equity
The project ensures that project benefits are allocated equally and that discrimination nor favouritism in accessing project benefits can take place. This has been done through detailed stakeholder mapping, including identification of specific concerns and needs of beneficiaries and specific groups (see section II.I). During the full proposal, this part and the 'gender' approach and baseline will be completed.

AF principle 3: Marginalized and vulnerable groups
The project ensures that possible adverse impacts of all project activities on marginalized and vulnerable groups are avoided / mitigated. This is done through detailed stakeholder mapping, including identification of specific concerns and needs of beneficiaries and specific groups (also considering limitations, constraints and requirements of each group) (see section II.I). During the full proposal, this part and the 'gender' approach and baseline will be completed.

AF principle 4: Human rights
The project ensures that potential human rights issues that may arise due to execution of proposed project activities are avoided / mitigated. This has been done through an identification and analysis of relevant status of human rights ratifications in the special procedures and by making human rights a subject during consultations (see outcomes consultations in part II.I). UN-Habitat consulted OHCHR, which mentioned that both Jordan and Lebanon have both not ratified core Human right CMW - International Convention on the Protection of the Rights of All Migrant Workers and Members of Their Families. Therefore, the project needs to ensure DPs and Lebanese and all other groups have equal access to work options and are equally treated / rewarded. This will be done through participatory planning process and by included standard clauses in all contract with partners ensuring all beneficiary groups will have equal access and opportunities.

AF principle 5: Gender

The project will ensure that gender equality and women's and youth empowerment is ensured for all project activities. This has been done through detailed stakeholder mapping, including identification of specific concerns, needs and benefits of women and youth (see section II.I). During the full proposal, this part and the 'gender' approach and baseline will be completed. UN Women and UNICEF have been consulted to specifically identify potential risks and needs of women. The project will ensure women will have equal opportunities and access to project benefits (through quotas) and involve women and promote them as leaders where possible while ensuring their safety through safety measures.

AF principle 6: Core Labour rights

The project ensures that possible core labour rights issues relevant to all proposed project activities are avoided / mitigated. This has been done through an identification and analysis of relevant international and national core labour rights and by making core labour rights a subject during consultations (see outcomes consultations in part II.I. ILO identified the following:

Agriculture: Lebanon and Jordan have both not ratified C129 - Labour Inspection (Agriculture) Convention, 1969 (No. 129)
Construction: Lebanon and Jordan have both not ratified C167 - Safety and Health in Construction Convention, 1988 (No. 167)
Migrant workers: Lebanon and Jordan have both not ratified C143 - Migrant Workers (Supplementary Provisions) Convention, 1975 (No. 143)
Women: Lebanon and Jordan have both not ratified: P089 - Protocol of 1990 to the Night Work (Women) Convention (Revised), 1948

Main potential issue / risk in Jordan:
- Convention 81 – labour inspection convention. Although ratified there is limited inspection capacity
- Increase in child labour (because refugees often work with whole family)
- Safety / harassment issues for women

Figures:
- Not many women in construction, but many in agriculture

Improvements and projects:
- Collective Bargaining Agreement (CBA) by 2019
- Shawish (mediator) protect wage of Syrian refugees

Flexible work permit for Syrian refugees (not dependent on one employer)

Therefore, UN-Habitat need to ensure all contracts include standard clauses to avoid any risks regarding above and that safety measures are taken and inspections conducted. UN-Habitat may work with ILO to do this during project execution.

AF principle 7: Indigenous people:

The project ensures that possible adverse impacts of all project activities on indigenous are avoided / mitigated. This has been done through detailed stakeholder mapping, including identification of specific concerns and needs of indigenous groups through consultations. Although Some Bedouins are now official Lebanese and Jordanians, no indigenous groups have been identified in target areas. I

AF principle 8: Involuntary resettlement

The project ensures physical or economic displacement is avoided for each project activity. Reference to and agreement to comply with human right related to avoiding involuntary resettlement will be made in all contract and MoUs and AoCs. No interventions will take place without the consent of inhabitants in the targeted area. All proposed interventions are planned on public land (in streams, irrigation channels or land allocated by the municipalities.

AF principle 9: Protection of natural habitats

The project ensures no negative impacts on natural habitats will result from project activities. UN-Habitat checked the IUCN Red list and consulted IUCN regional office (see section II.I). No protected natural habitats are in the target areas. This will be again be confirmed with IUCN and the ministry of environment and target municipalities during the full proposal

AF principle 10: Conservation of biological diversity
The project ensures no negative impacts on biological diversity will result from project activities. According to the IUCN red list and UNESCO Man and the Biosphere Programme reserve, no sensitive biospheres are located in the target areas. This will be again be confirmed with IUCN and the ministry of environment and target municipalities during the full proposal

AF principle 11: Climate change
The project ensures no negative climate change impacts will result from project activities, such as increases in the emissions of greenhouse gasses or in other drivers of climate change. In line with internationally recognized standards, large interventions in the following sector require a greenhouse gas emissions calculation: energy, transport, heavy industry, building materials, large-scale agriculture, large-scale forest products, and waste management. In line with national standards, environmental and social impact assessments will be conducted for a few proposed sub-projects during the full proposal development phase (see principle 1). These studies will include an assessment of energy use for proposed interventions. In any case, renewable energy sources will be used.

AF principle 12: Pollution Prevention and Resource Efficiency
The project C will be prevented and resources will be used efficiently for all project activities. In line with national standards, environmental and social impact assessments will be conducted for a few proposed sub-projects during the full proposal development phase (see principle 1). These studies will include an assessment of potential pollution resource use efficiency.

AF principle 13: Public health
The project ensures no negative public health impacts will result from project activities. To avoid potential negative health impacts for this activity and other activities safety signs and equipment will be provided in line with core labour rights (155 and 187)

AF principle 14: Physical and Cultural Heritage
The project ensures no negative impacts on heritage sites will result from project activities. Under the UNESCO listed Heritage sites in target area:[75] Anjar has been identified as a heritage site in Lebanon (in the district of Zahle). However, this is not in the target areas.

AF principle 15: Lands and Soil Conservation.
The project ensures no negative impacts lands and soil conservation will result from project activities. All proposed project activities aim to enhance sustainable land and soil use, especially for agriculture use. No major excavations will take place. Anyways, In line with national standards, environmental and social impact assessments will be conducted for a few proposed sub-projects during the full proposal development phase (see principle 1). These studies will include an assessment potential impacts on vulnerable lands and soils.

Governance & Management of environmental, social, gender and youth related risks and opportunities.

- ☐ Risks management arrangements
- ☐ Risks monitoring and evaluation arrangements (incl. overview table)
- ☐ Disclosure and grievance mechanism

To be completed during full proposal development phase

[75] https://whc.unesco.org/en/list/&order=country#alphaG

Annex 2: 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

An UN-Habitat headquarter 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 done through desk research, surveys, focus group discussions and community decision-making processes.

Specific steps and considerations

1. Determinants for gender-responsive stakeholder consultation

Focus group discussions with women and youth have been conducted during the concept note development phase, especially to identify specific needs and possible concerns regarding proposed interventions. Besides that, UN agnecies have been consulted. Relevant government institutions will be consulted during the full proposal to discuss execution modalities.

Table 18: Stakeholders consulted for gender approach

Type of stakeholder	Specific stakeholder
National government (to be consulted during full proposal)	- Jordanian National Commission for women - Lebanon Office of the Minister of State for Women Affairs (OMSWA)
UN agencies	- UN Women - UNICEF
Community level	- Community consultations and focus groups with women and youth

See part II.I

2. Initial Gender Assessment

The following has been identified / determined:

- ☐ Data baseline – overview of disaggregated data (beneficiaries) in target areas. Per activities see tables 8 and 9.

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Table 19: Data baseline – overview of disaggregated data (beneficiaries) in target areas

Population / direct beneficiaries (Disaggregated)	
Lebanon	Jordan
>90,800 women >36,391 youth To be defined for trainings / skill building	>99,360 women >38,266 youth To be defined for trainings / skill build

- ☐ 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.

Table 20: Differentiated climate change impacts on men and women

	Labour sector	CC impact	Vulnerability	Capacity to adapt
Lebanon	Agriculture	Drought / less work	High dependency on agriculture sector for income; cultural and tranditional barriers to negotiate salary and work conditions	Women organization
	Water (domestic)	Drought / less work	Time consuming and involves safety risk (including harassment) to collect water and high financial burden to get water	Collect water in ITS
Jordan	Agriculture	Drought / less work	High dependency on agriculture sector for income; cultural and tranditional barriers to negotiate salary and work conditions	Women organization
	Water (domestic)	Drought / less work	Time consuming to collect water and high financial burden to get water. Physical and pyshcological stress to do house work (cleaning, laundary, etc.) once a week and mostly at night.	Collect water at home
	Employment	Flooding	Higher safety risk for women. Women have to stay at home with children and so it affects their income.	Flood water harvesting

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

Lebanon
Article 8 of the Lebanese Constitution asserts the equality of rights and duties of all citizens, regardless of gender.[1] Lebanon ratified the Convention on the Elimination of All forms of Discrimination against Women (CEDAW) in 1997 with reservations to Article 9(2), regarding nationality; several subparagraphs of Article 16(1), related to personal status laws; and Article 29(1), on the settlement of disputes.[2] Lebanon has published CEDAW in the official Gazette, giving it primacy over national laws, one of the few Arab countries to do so. The country has not yet ratified the Optional Protocol.[76]

Jordan
Jordan has seen important changes with regards to gender equality over the last decades. Work on women's rights reached new levels following the ratification of the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) in 1992 and the establishment of the Jordanian National Commission for women (JNCW) in the same year. The indicators for women's education and health show notable improvements. However, women's participation in the formal labour market is low. Moreover, women are still not equal to men before the law. There have been several reforms of the Personal Status Law (the latest reform took place in 2010). Violence against women is not sufficiently addressed. The gender gap in politics persists despite introduced quotas for women.[77]

☐ Analysis of cultural/religious status of women in the country/region

Lebanon
Country falls into group 5 countries: has low equality in HDI achievements between women and men: absolute deviation from gender parity greater than 10 percent (HDI 80 out of 189)[78] and scores 'high' on level of discrimination of women on the OECD gender index (with especially access to resources being an issue).[79]

[76] https://www.genderindex.org/country/lebanon/
[77] https://www.genderindex.org/country/jordan/
[78] http://hdr.undp.org/en/composite/GDI
[79] https://www.genderindex.org/country/lebanon/

Jordan
Country falls into group 5 countries: has low equality in HDI achievements between women and men: absolute deviation from gender parity greater than 10 percent (HDI 95 out of 189) and scores 'high' on level of discrimination of women on the OECD gender index (with access to resources, civil liberties, and son bias).[80]

☐ Opportunities for promoting a 'women' and 'youth' as agents of change

It was found through the community consultations that local women in Jordan and Lebanon (from both host communities and DPs) have significant knowledge regarding the re-use of grey water and urban farming. The project will ensure utilizing women's traditional knowledge by targeting women in community level skill building and trainings. Enhancing women and youth's capacities for efficient water harvesting and grey water re-use will help address their vulnerabilities to water scarcity. In Jordan, permaculture training would secure a source of livelihoods for women. Here are the opportunities:

- Strenghten women organization
- Women to lead water harvesting and efficient use at home / in settlement and develop business cases
- Youth to work with women to lead water harvesting at home / in settlement and develop business cases (women and youth to be trained to do enable them).
- Women to lead permaculture activities as consultations have shown that they see it as a source of income and can develop business cases.
- Youth to lead greywater reuse in public buildings (e.g. mosques and schools) and women to lead greywater reuse at household level.
- Youth to lead awareness raising campaigns on adaptation to water scarcity.

3. Project planning and design **(to be completed during full proposal phase)**

Deleted: The following has been identified / determined:¶
¶
Program goals/objectives and target groups¶
Key gender goals (to improve gender equality)¶
Entry points to integrate gender considerations (how to empower women and youth)¶
Suitable interventions to meet specific needs and built on women skills and knowledge ¶
¶
Design of intervention activities:¶
Promoting an enabling environment for gender equality ¶
Specific roles and needs women (and men) and youth¶
Involvement women (and men) and youth in activities¶
Additional activities needed to ensure gender perspective, incl. risk mitigation measures¶
¶
Table 1: gender baseline, goals and roles¶
Scale ...

[80] https://www.genderindex.org/country/jordan/