

## 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

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: UNICEF; BWE; LARI; RTO; UN-ESCWA

Jordan: UNICEF; JOHUD, HFDJB; MoWI/YWC; PRI; Irbid &

Mafraq municipal governments

Amount of Financing Requested: USD 13,973,509

# **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, an adequate response approach is needed, including concrete adaptation response measures and planning approaches that work in such context.<sup>1</sup>

The Mashreq region is part of the most water scarce region 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 climate change, the unprecedented influx of Displaced Persons (DPs), especially from Syria<sup>2</sup> and groundwater over extraction and pollution challenges.

The overall aim of this project is to better respond to climate change impacts and vulnerabilities in the context of the Syrian crisis in Jordan and Lebanon. This is done by demonstrating what concrete adaptation measures (see comp 3) respond to the needs of both DPs and host communities, and especially women and youth, while avoiding any tension over resources and employment opportunities.

The project will focus on responding to climate change-related water challenges by taking a sustainable water management approach. This means it aims to reduce the demand of unsustainable water sources such as over-extracted (and often polluted) groundwater, while increasing water supply options from non-conventional and more sustainable sources, incl. rainwater harvesting and the reuse of treated waste water (see comp 3).

The project will promote the replication and upscaling of the demonstrated techniques and approaches, also beyond Jordan and Lebanon (see comp 4), and to demonstrate how water resources can be assessed, planned and managed more efficiently at the municipal level (i.e. establish urban-rural linkages) and sustainably (by mainstreaming climate change and gender in municipal master plans) (see comp 1).

During project preparation, DPs in the target areas have been identified as the most vulnerable group due to their socio-economic situation and their dependence on often water-vulnerable sectors, especially the agriculture sector. However, to avoid supporting possible increased tension between DPs and host communities, the project also targets host community members. Assessment and planning processes under component 1 and capacity building activities under component 2 will target both DP and host community groups to avoid and even reduce any tension over scare resources and job opportunities.

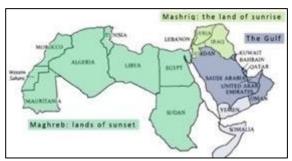
<sup>&</sup>lt;sup>1</sup> World Bank et all (2017, policy note September 14): Refugees in the middle east. Bringing an urban lens to the forced displacement challenge.

<sup>&</sup>lt;sup>2</sup> Ibid

### **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.<sup>3</sup>

The Arab region is home to high 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.<sup>4</sup>

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. The 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.<sup>5</sup>

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.<sup>6</sup>

#### Lebanon and Jordan socio-demographic, economic and environmental context

#### The Syrian crisis

Now in its ninth 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. Lebanon and Jordan are among the top DPs host countries: According to a study by UNHCR, Lebanon and Jordan are ranked the largest and second largest refugee-hosting countries in the world compared to the size of their national population, with 173 and 89 refugees per 1,000 inhabitants, respectively. This has placed unprecedented strain on the country's economy, infrastructure, and public services. Although some moved to camps, most (82 percent in Lebanon and 83.5 percent in Jordan settle in cities, often in informal communities. 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, often leading to health and livelihood issues (as most DPs work in agriculture and this sector is heavily

<sup>&</sup>lt;sup>3</sup> 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

<sup>&</sup>lt;sup>4</sup> UNDP / GEF (2018) Climate Change Adaptation in the Arab States Best practices and lessons learned

<sup>&</sup>lt;sup>5</sup> Ibid

<sup>6</sup> Ibic

<sup>&</sup>lt;sup>7</sup> 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

<sup>8</sup> http://reporting.unhcr.org/node/2520

<sup>&</sup>lt;sup>9</sup> The Government of Lebanon and the United Nations. (2019) *Lebanon crisis response plan 2017-2020 (2019 update*). 2019 Edition. Lebanon: The Government of Lebanon and the United Nations.

<sup>&</sup>lt;sup>11</sup> UNHCR fact sheet, October 2019.

 $<sup>^{\</sup>rm 12}$  See Jordan and Lebanon INDCs and Lebanon crisis response plan 2017-2020

dependent on water availability) and social unrest. <sup>13</sup> Moreover, the majority of DPs from Syria live under the poverty line <sup>14</sup> 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 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, especially since there is a lack and decline in funding for support to countries like Jordan and Lebanon that face DPs crisis. The regional approach of this project aligns with the 3RP sector objectives, especially for the WASH sector (see annex 1 for more info).

#### 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, especially against the most recent political turmoil and demonstrations. 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. <sup>16</sup> 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. 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), and includes a substantial component of resource mining, depleting Lebanon's water capital. In addition, widespread pollution and substandard water infrastructure are restricting the ability of the government to meet water demands in the future.

Lebanon is also generating ever increasing quantities of domestic and industrial wastewater, all of which requires treatment. The country has invested 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.

<sup>&</sup>lt;sup>13</sup> https://video.ecc-platform.org/videos/links-between-migration-and-climate-change

<sup>&</sup>lt;sup>14</sup> UN 3RP: Regional Refugee & Resilience Plan 2018-2019.

<sup>&</sup>lt;sup>15</sup> Ibid.

<sup>&</sup>lt;sup>16</sup> UN for Lebanon annual report 2017

<sup>&</sup>lt;sup>17</sup> UNICEF Evaluation of the Water, Sanitation and Hygiene (WASH) Programme within the UNICEF Country Programme in Lebanon (2013, 2016)

<sup>(2013-2016)

18</sup> Ministry of Environment, EU and UNDP: Lebanon Environmental Assessment of the Syrian Conflict & Priority Interventions 2014

19 UNICEF Evaluation of the Water, Sanitation and Hygiene (WASH) Programme within the UNICEF Country Programme in Lebanon (2013-2016)

The environmental costs of this situation are severe. Most wastewater collected is discharged 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 6,848,925 million in 2018,<sup>20</sup> 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. According to the latest WB Lebanon Economic Monitor report,<sup>21</sup> 27 percent of the Lebanese population are poor and around 8 percent live in severe poverty conditions with less than 75 US dollars per month. The poverty rates in all Lebanon increased by 61 percent between 2011 to 2016. While the national unemployment rates passed the 30 percent, out of which 36 percent of youth groups from both genders. In the Bekaa governorate, the poverty rate is highest with 38 percent.

Economic and fiscal challenges: Economic growth (at constant factor process) for 2020 is expected to be -0.1 percent and 0.3 at constant market prices. This will be mainly driven by the agriculture and industry sectors. Public finances remain structurally weak and are expected to worsen and are in urgent need of reforms. Public debt continued to rise (155.6 percent of GDP expected in 2020), due to low growth and a relatively high cost of debt financing.<sup>22</sup> However, these estimates remain uncertain due to the mass protests that swept across Lebanon shortly after the government announced new tax measures on 17 October and which are still ongoing.<sup>23</sup>

*DPs crisis*: one of the key issues facing Lebanon is the **economic and social impact** of the Syrian crisis.<sup>24</sup> 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.<sup>25</sup> 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. According to the Lebanon Crisis Response Plan, <sup>26</sup> many of the most vulnerable communities in Lebanon are concentrated in specific pockets of the country: the majority of deprived Lebanese (67 percent) and persons displaced from Syria (87 percent) live in the country's most vulnerable cadastres, incl. in the Bekaa area (see also annex 1).

The Syrian conflict and the influx of DPs 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 8 to 12 percent at the national level, with the Bekaa having the highest share. As for the wastewater generation rates. DPs

<sup>&</sup>lt;sup>20</sup> World Bank (2019) *Population, total.* [Online] Available from: <a href="https://data.worldbank.org/country/lebanon">https://data.worldbank.org/country/lebanon</a> [Accessed 10 January, 2020]

<sup>&</sup>lt;sup>21</sup> World Bank (2017). Lebanon Économic Monitor. (Online) Available from:

http://documents.worldbank.org/curated/en/568551493132224115/pdf/114552-v1-WP-PUBLIC-4-26-7AM-47p-LEM-Spring-2017.pdf

<sup>22</sup> World Bank (2019) *Macro Poverty Outlook: Country-by-country Analysis and Projections for the Developing World*. October 2019 Edition.

World Bank

<sup>&</sup>lt;sup>23</sup> Amnesty International (2020) Lebanon Protests Explained: Mass demonstrations. Available from:

https://www.amnesty.org/en/latest/news/2019/11/lebanon-protests-explained/ [Accessed 15 January, 2020]

<sup>&</sup>lt;sup>24</sup> https://www.worldbank.org/en/country/lebanon/overview

<sup>&</sup>lt;sup>25</sup> VASYR 2017: Vulnerability Assessment of Syrian Refugees in Lebanon

<sup>&</sup>lt;sup>26</sup> https://www.unhcr.org/lb/wp-content/uploads/sites/16/2019/04/LCRP-EN-2019.pdf

contribution was 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.<sup>27</sup>

Host community fatigue is becoming 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.<sup>28</sup> Most DPs (around 85 percent) settle in urban areas. The Bekaa valley, which is relatively close to Syria, hosts most of the Syrian DPs.<sup>29</sup>

According to a recent labour survey dated the 16 of January 2020, and due to the ongoing economic crisis in the country and the large protests that raged in all Lebanese territories, the estimated number of people who lost their jobs as per December 2019 was 160,000 and the number is subject to increase. Imports of basic commodities have decreased from 500,000 tons in July 2019 to less than 250,000 tons in November 2019. The survival expenditure basket prices (especially food items) increased to merely 25% from October to December 2019.

According to CAS-ILO Household survey 2019, Lebanon labour force is segregated to 76% in services, 4% in Agriculture, 20% in industry. And seen the current situation, the threat to access local food products increased and the demand for basic food items between host Lebanese communities and refugees' communities also increased, this has also increased poverty rates according to sources. Versus, all these challenges, serious measures by the international community were established to enhance local agribusinesses. The latter remains also a challenge seen the urgent environmental challenges stated above especially those related to water depletion and pollution.

#### 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. 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. 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. According to the Department of Statistics unemployment rates reached 19.2 percent in the second quarter of 2019, male unemployment is at 17.1 while female unemployment is at 27.2 percent, youth unemployment (ages15-24) according to ILOSTAT database was estimated at 36.7 percent in 2019. Dependency on remittances from Gulf economies are additional threats to economic stability.

Environmental and water challenge: Issues in Jordan are to some extent similar to those in Lebanon. However, Jordan is an even 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 2008.³5 If supply remains constant, per capita domestic consumption is projected to fall to 90m³ per person per year by 2025, putting Jordan in the category of having an absolute water shortage that could constrain economic growth and potentially endanger public health.³6 Jordan requires about 1,400 MCM annually (2014) but has, on average, only 848 MCM of freshwater supply available for various uses. Non-revenue water accounts for approximately 50% of total water consumption. In 2014, 229.3 Million Cubic Meters (MCM) were lost, out of the 428.1 MCM delivered for municipal needs, the MoWI strategy includes the reduction of non-revenue water from

<sup>&</sup>lt;sup>27</sup> Ministry of Environment, EU and UNDP: Lebanon Environmental Assessment of the Syrian Conflict & Priority Interventions 2014

<sup>&</sup>lt;sup>28</sup> Regular Perception Surveys on Social Tensions throughout Lebanon (ARK, 2017), and Defining Community Vulnerability in Lebanon, REACH (2014).

<sup>&</sup>lt;sup>29</sup> https://data2.unhcr.org/en/situations/syria/location/71#\_ga=2.248854471.1978193527.1540994637-1966626473.1540994637

<sup>&</sup>lt;sup>30</sup> Jordan TNC (2014)

<sup>31</sup> Hashemite Kingdom of Jordan, UNICEF and UNDP (2015) Socio-economic inequality in Jordan

<sup>32</sup> http://dosweb.dos.gov.jo/19-2-unemployment-rate-during-the-second-quarter-of-2019-2/

https://data.worldbank.org/indicator/SL.UEM.1524.ZS?locations=JO

<sup>34</sup> Hashemite Kingdom of Jordan, UNICEF and UNDP (2015) Socio-economic inequality in Jordan

<sup>&</sup>lt;sup>35</sup> MoWI (Ministry of Water and Irrigation, Jordan) (2009): Water for Life. Jordan's Water Strategy.

<sup>&</sup>lt;sup>36</sup> National Climate Change Strategy of Jordan, 2013

52% to 25% by 2025.<sup>37</sup> The increased demand for water has caused over abstraction of water resources to reach 160 percent in 2014.<sup>38</sup> According to the Ministry of Water, of Jordan's 12 groundwater basins, 10 are being pumped at a deficit. Overall, groundwater is being extracted at twice the rate that it is replenished. 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<sup>39</sup>. 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 10,558,717 in 2020,<sup>40</sup> 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 relatively high population growth rate puts pressure on government spending to deliver basic public services, and to stimulate economic development. Jordan registered an absolute poverty rate of 15.7 per cent for Jordanians only in 2018 while 78 per cent of the Syrian population is highly vulnerable, living below the Jordanian poverty rate<sup>41</sup>

*Economic and fiscal challenges*: The elevated level of debt equivalent to 94.23 percent of Jordan's GDP in 2018 is of concern.<sup>42</sup> 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.<sup>43</sup>

*DPs crisis*: Jordan has a long history of accommodating DPs. However, the scale of the current DPs 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 the already limited carrying capacity of Jordan's natural resources. Similar to Lebanon, most DPs (around 83.5 percent) settle in urban areas. The Northern governorates of Irbid, Mafraq and Zarqa saw the largest influx of refugees relative to the total population, leading to increased demand for public services. Each Syrian refugee costs the water sector around 620 US\$/year<sup>46</sup>.

### Climate change

#### Lebanon

As mentioned in Lebanon's Nationally Determined Contributions (NDC): 'adaptation is a priority for Lebanon. Being a developing country with scarce water resources and high population density, 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 °C. Lebanon has an arid / semi-arid climate, which makes it poor in water resources availability.<sup>47</sup>

Climate change projections: According to climate models<sup>48</sup>, 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

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<sup>&</sup>lt;sup>37</sup> Ministry of Water and Irrigation: Water Facts and Figures 2017

<sup>&</sup>lt;sup>38</sup> Jordan National Water Strategy 2016-2025

<sup>&</sup>lt;sup>39</sup> Ministry of Water and Irrigation: Water Facts and Figures 2017

<sup>&</sup>lt;sup>40</sup> Department of Statistics. Online. <a href="http://dosweb.dos.gov.jo/">http://dosweb.dos.gov.jo/</a>

<sup>&</sup>lt;sup>41</sup> UNICEF. (2018). Geographic Multidimensional Vulnerability Analysis. Online: <a href="https://reliefweb.int/sites/reliefweb.int/files/resources/">https://reliefweb.int/sites/reliefweb.int/files/resources/</a>Sum mary%20English.pdf

<sup>42</sup> https://tradingeconomics.com/jordan/government-debt-to-gdp

<sup>&</sup>lt;sup>43</sup> World Bank. Online: <a href="https://data.worldbank.org/country/jordan">https://data.worldbank.org/country/jordan</a>

<sup>44</sup>https://data2.unhcr.org/en/situations/syria/location/36# ga=2.22371195.1978193527.1540994637-1966626473.1540994637

<sup>&</sup>lt;sup>45</sup> Hashemite Kingdom of Jordan, UNICEF and UNDP (2015) Socio-economic inequality in Jordan

<sup>&</sup>lt;sup>46</sup> Ministry of Water and Irrigation: Water Facts and Figures 2017

<sup>&</sup>lt;sup>47</sup> Lebanon TNC (2016)

<sup>48</sup> Ibid

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 the 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 A1B scenario.<sup>49</sup> Anticipated changes in climate would reduce the nation's exploitable supplies of water by about 8 percent in 2040, and 29 percent in 2080<sup>50</sup>. (This is even aggravated by the fact that water demand in Lebanon increased 28 percent between 2011 - 2017, which is directly linked to the Syrian crisis.<sup>51</sup> For more info about climate change scenarios and vulnerabilities in the project target areas see annex 1. An Inter-Agency vulnerability mapping based on several criteria<sup>52</sup>, showed that central Bekaa cadastres are classified as most vulnerable due to the Syrian crisis with high pressure on resources. A similar exercise at district level was conducted jointly by UN-Habitat and UNICEF in 2018, where a workshop was held with stakeholders<sup>53</sup> selected for their districtwide knowledge. The outcome was a ranking of disadvantaged areas.<sup>54</sup> Subsequently, the score was coupled with the respective Multi-section Vulnerability Index (MsVI)55 score of an area's cadastre. The study showed that the Bekaa area and its population is vulnerable to climate change, especially water and related agriculture production and dependence on this sector for income, especially for Syrians.

#### 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.<sup>56</sup>

Climate change projections: Climate models<sup>57</sup> 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. The decrease in precipitation would be more prevailent 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

<sup>&</sup>lt;sup>49</sup> Ministry of Environment and UNDP (2011) Lebanon Second National Communication on Climate Change – Public Health

<sup>&</sup>lt;sup>50</sup> Lebanon Third National Communication on Climate Change

<sup>&</sup>lt;sup>51</sup> Lebanon crisis response plan 2017-2020

<sup>&</sup>lt;sup>52</sup> Using Multi Deprivation Index (MDI) at household level.

<sup>&</sup>lt;sup>53</sup> Stakeholders involved governmental representatives, including the qaem maqam (head of a district), head(s) of union(s) of municipalities of a district, and representative(s) of Social Development Centre(s) (SDC[s]); local stakeholders (civil society organizations and local non-governmental organizations);

representatives of UNICEF zonal offices; and UN-Habitat area coordinators.

<sup>&</sup>lt;sup>54</sup> Criteria were: (1) extreme poverty, (2) presence of refugee population, (3) existence of slums/substandard housing, (4) out-of-school/working children, (5) frequency of incidence of violence in the community, (6) overburdened public services, and (7) deficiencies in basic urban services.

<sup>&</sup>lt;sup>55</sup> Developed by UNICEF Lebanon (in 2017) as a child-focus vulnerability index.

<sup>&</sup>lt;sup>56</sup> Jordan TNC (2014)

<sup>&</sup>lt;sup>57</sup> Jordan's Third National Communication Report to UNFCCC (2014)

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: Jordan's Third National Communication (TNC) Report to UNFCCC58 has developed a socioeconomic analysis to determine expected vulnerabilities and impacts of climate change on local communities and their adaptive capacities by employing socioeconomic and adaptation analysis tools on the pilot area composed of four villages in the Amman- Zarga Basin, near Irbid and Jerash, two main territories of the three regions of this proposal. The study used the income (and climate sensitive employment assessment) as a main critical indicator to the sensitivity of local community to the climate change. The importance of these indicators is linked to the impacts of climate change on the yield agricultural productivity at the study site especially that 54.47 percent of the community income based on agriculture which was considered the most sensitive sector to climate change. Previous studies and strategic documents (i.e. Jordan's SNC (2009) and National Climate Change Policy (2013), Jordan's TNC (2014) have identified scarcity of water resources as one of the major barriers facing sustainable development in Jordan; a situation that will be magnified by climate change, <sup>59</sup> 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<sup>60</sup>. Water-related impacts also include reduced total water availability, less reliable seasonal patterns, increasing intensity of droughts during which reservoirs are not refilled, and groundwater does not recharge. Flood events will also be more likely, in 2018 flash floods claimed 35 lives and affected 150,000 people. 61 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. 62 Jordan has been subjected to additional water stress due to the influx of displaced peoples, especially from Syria. 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,63 is being overpumped. For more info about climate change scenarios and vulnerabilities in the project target areas see annex 1.

#### 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. See Annex 1 for more info. As labelled by the WB,<sup>64</sup> 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.

During project preparation, data has been collected required to map climate change vulnerable hotspots (see approach in figure 2 below) and develop response plans (i.e. identify appropriate adaptation measures) to address specific vulnerabilities in these hotspot areas. This has been done through a combination of research and a comprehensive planning and consultation process (see section II.I), including with vulnerable groups.

<sup>58</sup> Government of the Hashemite Kingdom of Jordan & UNDP (2014). Jordan's Third National Communication on Climate Change

<sup>59</sup> Ibio

<sup>&</sup>lt;sup>60</sup> UNEP 2015: Climate Change in the Arab Region (Regional Coordination Mechanism Report)

<sup>&</sup>lt;sup>61</sup> UNDP/ National Centre for Security and Crises Management (NCSCM): Jordan National Disaster Risk Reduction (DRR) Strategy 2019-2022

<sup>62</sup> Jordan Ministry of Water and Irrigation: Climate Change Policy for a Resilient Water Sector, 2016, page 3

<sup>&</sup>lt;sup>63</sup> UN-ESCWA et al. (2017) Arab Climate Change Assessment Report (RICCAR initiative)

<sup>&</sup>lt;sup>64</sup> World Bank et all (2017, policy note September 14): Refugees in the middle east. Bringing an urban lens to the forced displacement challenge

Figure 1: Typology of settlements<sup>65</sup>

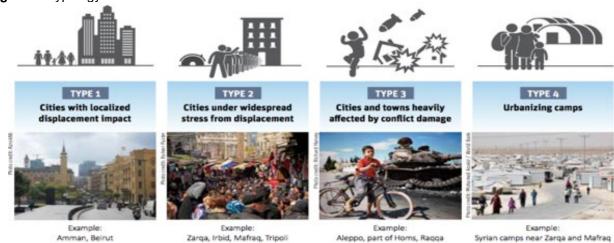
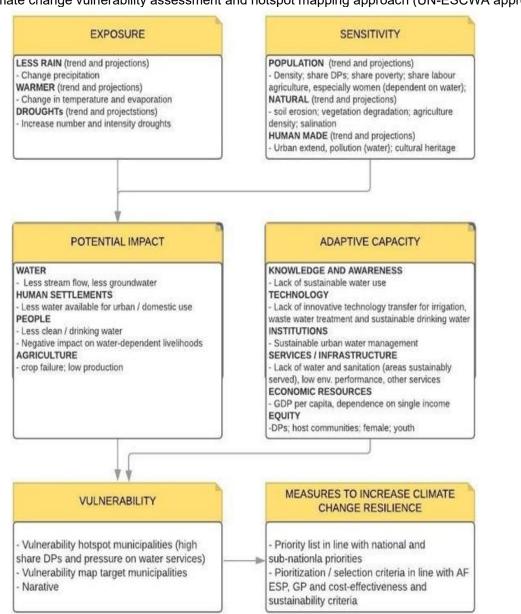


Figure 2: Climate change vulnerability assessment and hotspot mapping approach (UN-ESCWA approach)



<sup>&</sup>lt;sup>65</sup>World Bank et all (2017, policy note September 14): Refugees in the middle east. Bringing an urban lens to the forced displacement challenge

### **Project target areas**

There is evidence<sup>66</sup> that water challenges will likely grow for Irbid, Mafraq and Zahle and surrounding municipalities 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<sup>67</sup>. 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.<sup>68</sup>

Many of the DPs have now been in the host country for five 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. <sup>69</sup> 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, <sup>70</sup> considering the impacts of climate change, especially increasing water challenges, on these services.

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. Syrian DPs in Jordan and Lebanon are specifically vulnerable to climate-induced water challenges. The Vulnerability Assessment Framework 2019 shows 11 percent of the Syrian DP population as having high or severe VAF WASH indicator vulnerability, while this indicator might appear very low, sub-indicators reveal much higher levels of vulnerability, namely expenditure on WASH items, 58 percent reported spending more than five per cent of expenditures on water. In Lebanon, 42 percent of households rely on bottled water. In Bekaa, Lebanon—where Zahle is located—the unemployment rate (unemployed over labour force), 61.9 percent, is the highest amongst all Lebanese Governorates and almost double the total unemployment rate nationally (31.3 percent). Moreover, the Bekaa Governorate is the second lowest when measuring the percentage of "households with members working in the past 7 days" with an average of 36.4 percent compared to the lowest 30.1 percent in Baalbek El-Hermel Governorate and as compared to 59.4 percent nationally.

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. The loss of social networks further decreases the adaptive capacities and make DPs more vulnerable to climate change. The 2015 population census estimates the population of Irbid governorate at 1,770,158 (Syrian DPs 134,649)<sup>77</sup>, Qasabit Irbid, Bani Obeid and Ramtha target area populations are estimated at 739,212 (Syrian DPs 165,843), 204,313 (Syrian DPs 48,574) and 238,502 (Syrian DPs 68,306) respectively. The population of Mafraq governorate was estimated at 549,948 (Syrian DPs 161,977<sup>78</sup>), Qasabit Mafraq, Al-Ghadeer Al-Abyad and Akaider targeted area populations are estimated at 124,479 (Syrian DPs 39,359), 1,661 (Syrian DPs 166) and 1,649 (Syrian DPs 165) respectively. Disaggregated data and the overview of climate change concerns for each target area shown in Tables 1 and 2.

<sup>&</sup>lt;sup>66</sup> See sections above

<sup>&</sup>lt;sup>67</sup> ILO (2016) Local Economic Development Strategy For Mafraq Governorate (2016-2018)

<sup>68</sup> Jordan Third National Communication on Climate Change and Lebanon Third National Communication on Climate Change

<sup>69</sup> Idem page 21

<sup>&</sup>lt;sup>70</sup> Idem

<sup>&</sup>lt;sup>71</sup> UNHCR (2015) Jordan Refugee Response Plan

<sup>&</sup>lt;sup>72</sup> UNHCR (2019) Vulnerability Assessment Framework <a href="https://data2.unhcr.org/en/documents/download/68856">https://data2.unhcr.org/en/documents/download/68856</a>

<sup>&</sup>lt;sup>73</sup> UNHCR, UNICEF and WFP. (2019) VASyR 2019: Vulnerability Assessment of Syrian Refugees in Lebanon.

<sup>&</sup>lt;sup>74</sup> Ibid

<sup>&</sup>lt;sup>75</sup> UN 3RP: Regional Refugee & Resilience Plan 2018-2019

<sup>&</sup>lt;sup>76</sup> Jordan in Figures 2017 - Page 7 http://dosweb.dos.gov.jo/DataBank/JordanInFigures/JORINFIGDetails2017.pdf

<sup>77</sup> UNHCR - https://data2.unhcr.org/en/situations/syria/location/36

<sup>&</sup>lt;sup>78</sup> Ibid

#### Lebanon

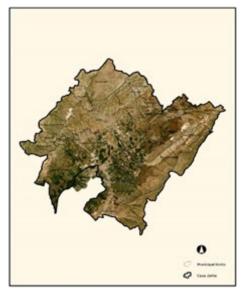


Figure 3: Target municipalities in Lebanon

Zahle and surrounding area lies in central Bekaa valley and has an annual rainfall of between 200-600 mm<sup>79</sup>. Figure 3 shows the administrative boundaries of Zahle and the surrounding municipalities. The target areas in Zahle have been identified based on a 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 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

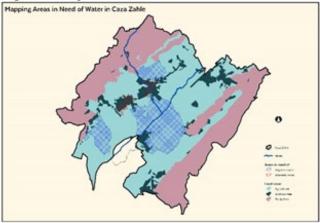
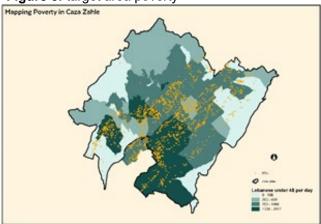


Figure 5: target area poverty



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.

Moreover, according to climate predictions from the PRECIS model, by 2040 temperatures will increase from around 1°C on the coast to 2°C in the mainland, and by 2090 they will be 3.5°C to 5°C higher. Rainfall is also projected to decrease by 10-20% by 2040 and by 25-45% by the year 2090, compared to the present. This combination of significantly less wet and substantially warmer conditions will result in an extended hot and dry climate. Temperature and precipitation extremes will also intensify. The drought periods, over the whole country, will become 9 days longer by 2040 and 18 days longer by 2090 (MoE, 2011).

<sup>&</sup>lt;sup>79</sup> 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 agriculture sector is especially vulnerable, not only to climate change-related increased water scarcity, but also groundwater pollution. As most of the Syrian DPs work in this sector, their jobs are dependent on the resilience of the sector and the use of non-conventional clean water resources. For instance, Haouch El Oumara's targeted community of host Lebanese population in Zahle 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 in summer 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 Bar Elias 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.

Bar Elias, Ablah, Hazerta, El-Marj, Ferzol, Qaa El-Rim, Taanayel, Taalabaya and Terbol: Similar to Zahle, all areas in the Bekaa region have witnessed various water-related problems. It is said that factories, mainly located in Zahle, and sewage lines in the area have been dumping their waste in the Litani River without prior treatment. This has heightened reported health problems, and which include the spread of diseases and elevated cancer rates in the Bekaa. Also, the residents have addressed concerns related to the presence of bad odours in and around the area. Drought and flood incidents have led to crop damage, surface water pollution and decreased water quality and groundwater depletion.

Qab Elias and Saadnayel: The drinking water being distributed (e.g. by World Vision in Qab Elias 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 damage 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. However, government priorities don't focus on the ITSs.

The agriculture sector in Zahle district is mainly fed by conventional water systems, such as water channels, open water sources and other badly operated drip irrigation systems. The main two rivers are the Berdawni river (a seasonal river) and the Litani river. Based on several reports, the Litany is highly subjected to pollution mainly due to municipal wastewater and industrial waste. This pollution has also affected the agri-businesses in the region, yet affecting livelihoods of several farmers in the area.

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 / vulnerabilities and needs in target areas in Lebanon

1 able 1: 0	<b>ble 1</b> : overview of main climate change issues / vulnerabilities and needs in target areas in Lebanon							
Municipal ity	Population	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		
Bar Elias	Total population count: 69,124 Women: 35,514 Youth: 3,802 Syrians: 39,124	- Drought - Flooding - Extreme heat	Drought: - Water Scarcity in urban areas - Add financial burden to families due to lack of adequate drinking water - Agriculture/ crop failure with significant impact on Syrian DPs  Extreme heat: - Increase in agricultural water demand - Increase of pests and other insects which damage crops and bring about diseases - Change in agricultural patterns and evident decline in livestock production - Low air quality resulting in heightened level of pollutants  Flooding: - Loss of shelter and safety risks for vulnerable groups (mainly displaced persons, women, elderly and children) - Limited mobility - Spread of diseases - Leachate seepage	Lack of adequate water supply Lack of funding Lack of capacity Lack of awareness about water scarcity and water conservation strategies. Absence of legislations to cope with climate change Legal restrictions on supplying piped water to ITS Poverty of 26 percent	Clean water, e.g. through rooftop rainwater harvesting and reuse and permaculture     Awareness on water scarcity and water conservation strategies     Guidelines including Climate Change Adaptation measures, land use and water scarcity issues	- Harvested water can be polluted (need quality control and awareness) - Harvested and treated stormwater can only be used for domestic reuse and irrigation purposes - Maintenance of rainwater harvesting system (need maintenance plans) Service provision disparities - Service provision disparities - Resistance on the use of harvested/treated water due to lack of awareness - Operation and maintenance (first year guidelines followed thereafter by continued routine guidelines)		
Hazerta, El Marj, Saadnaye I,Taanaye I, Taalabay a, Terbol, Ferzol	Total population count: 98,507 Women: 49,301 Youth: 5,454 Syrians: 55,827	- Drought - Flooding - Extreme heat	Drought:  - Water Scarcity in urban areas  - Add financial burden to families due to lack of adequate drinking water  - Agriculture/ crop failure with significant impact on Syrian DPs  Extreme heat:  - Increase in agricultural water demand  - Increase of pests and other insects which damage crops and bring about diseases  - Change in agricultural patterns and evident decline in livestock production  - Low air quality resulting in heightened level of pollutants  Flooding:  - Loss of shelter and safety risks for vulnerable groups (mainly displaced persons, women, elderly and children)  - Limited mobility  - Spread of diseases  - Leachate seepage	Lack of adequate water supply Lack of funding Lack of capacity Lack of awareness about water scarcity and water conservation strategies. Absence of legislations to cope with climate change Legal restrictions on supplying piped water to ITS	Clean water, e.g. through rooftop rainwater harvesting and reuse     Awareness on water scarcity and water conservation strategies     Guidelines including Climate Change Adaptation measures, land use and water scarcity issues	- Harvested water can be polluted (need quality control and awareness) - Harvested and treated stormwater can only be used for domestic reuse and irrigation purposes - Maintenance of rainwater harvesting system (need maintenance plans) - Service provision disparities - Resistance on the use of harvested/treated water due to lack of awareness - Lack of commitment and financing to apply adaptive measures to Climate Change		

Zahle	Total population	-	Drought	Drought:	- Lack of money to buy	- Clean water for	- Treated wastewater will only
	count: 184,332	-	Flooding	- Water Scarcity in urban areas	drinking water	agriculture, e.g. through rooftop	benefit farmers
	Women:94,705	-	Extreme heat	<ul> <li>Add financial burden to families due to lack</li> </ul>	<ul> <li>Lack of adequate water</li> </ul>	rainwater harvesting and reuse	<ul> <li>Harvested water can be</li> </ul>
	Youth: 10,140			of adequate drinking water	supply	and through treated water from	polluted (need quality control and
	Syrians: 104,332			Agriculture/ crop failure with significant	<ul> <li>Lack of funding</li> </ul>	upgraded WWTP (partial	awareness)
				impact on Syrian DPs	<ul> <li>Lack of capacity</li> </ul>	diversion of the treated	<ul> <li>Harvested and treated</li> </ul>
					<ul> <li>Lack of awareness</li> </ul>	discharge into an open canal)	stormwater can only be used for
				Extreme heat:	about water scarcity and	<ul> <li>Reduced agricultural</li> </ul>	domestic reuse and irrigation
				<ul> <li>Increase in agricultural water demand</li> </ul>	water conservation strategies.	water losses through water	purposes
				<ul> <li>Increase of pests and other insects which</li> </ul>	<ul> <li>Absence of legislations</li> </ul>	efficient drip irrigation	<ul> <li>Maintenance of rainwater</li> </ul>
				damage crops and bring about diseases	to cope with climate change	<ul> <li>Awareness on water</li> </ul>	harvesting system (need
				Change in agricultural patterns and evident	<ul> <li>Legal restrictions on</li> </ul>	scarcity and water conservation	maintenance plans)
				decline in livestock production	supplying piped water to ITS	strategies	<ul> <li>Service provision disparities</li> </ul>
				<ul> <li>Low air quality resulting in heightened level</li> </ul>	<ul> <li>Poverty of 38 percent</li> </ul>	<ul> <li>Guidelines including</li> </ul>	<ul> <li>Resistance on the use of</li> </ul>
				of pollutants	<ul> <li>45% of Lebanese</li> </ul>	Climate Change Adaptation	harvested/treated water due to lack
					households have	measures, land use and water	of awareness
				Flooding:	insecure food	scarcity issues	<ul> <li>Unwillingness to pay tariffs for</li> </ul>
				<ul> <li>Loss of shelter and safety risks for vulnerable</li> </ul>	consumption where the		wastewater collection and treatment,
				groups (mainly displaced persons, women, elderly	majority of the		and for sludge treatment and reuse
				and children)	population live from		
				- Limited mobility	agriculture (LCRP 2019)		
				- Spread of diseases			
				o Leachate seepage			

Based on UN-Habitat vulnerability assessment conducted in target area (through consultations). Details of surveys and consultation outcomes can be shared on request

#### Jordan

Irbid is located in Jordan's wet region the total annual rainfall in this region varies between 400 and 600 mm while Mafraq on the other hand is located within the dry region in the east, where average rainfall annually varies 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.

According to focus group consultation and key informant interviews conducted within the target areas in Jordan (see section II.I), the increase in temperature and the decline in rainfall which leads to drought are two of the most hazardous climate change impacts in both Mafrag and Irbid. This confirms the

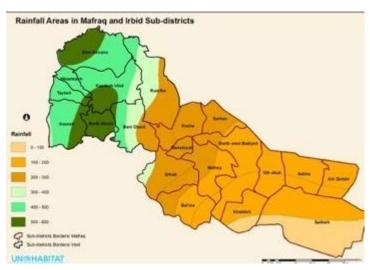


Figure 6: annual average rainfall in target areas

outcomes of Jordan's Third National Communication80 to the UNFCCC based on long historical data obtained from Jordan Metrology Department (JMD) that predicted a serious decline in precipitation trends, both the Mann-Kendall rank trend test and linear regression trends indicate that the annual precipitation tends to decrease significantly with time at a rate of 1.2 mm per year, and according to the results of the Second National Communitation<sup>81</sup> (SNC) by 2070-2100, the cumulated precipitation could likely decrease by 15%. TNC findings also show significant increase in the temperature, the mean, maximum and minimum air temperature tends to increase significantly by 0.02, 0.01, and 0.03 °C/year, respectively. For the Water Sector in particular, results revealed that based on the climate trends analysis using CORDEX and RCP 4.5 and 8.5 the main climate hazards that the water sector faces in Jordan are temperature increases, increased incidents of drought, increased evaporation, and precipitation decreases. The TRAIN model suggests up to a 50 per cent decrease in water availability in northwest Jordan (HadCM3, A1B scenario, 2021-2050 compared with 1961-1990 control period). An overall increase in local and regional irrigation demand has serious implications for Jordan since further stress will be put on the groundwater resource. While on the other hand, 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<sup>82</sup>.

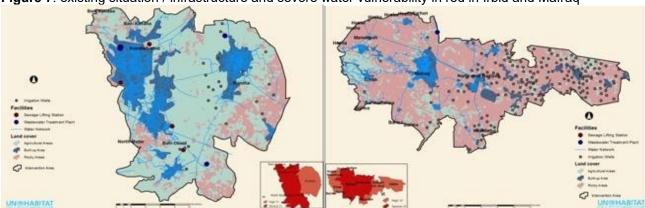


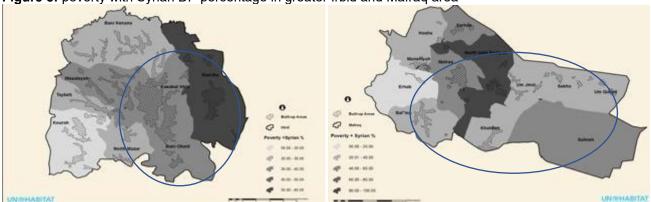
Figure 7: existing situation / infrastructure and severe water vulnerability in red in Irbid and Mafrag

<sup>&</sup>lt;sup>80</sup> Third National Communication Report of Jordan to UNFCCC (2014), UNDP and Jordan Ministry of Environment.

 $<sup>^{81}</sup>$  Second National Communication (SNC) to UNFCCC (2009). UNDP and Jordan Ministry of Environment.

<sup>&</sup>lt;sup>82</sup> Jordan Ministry of Water and Irrigation: Climate Change Policy for a Resilient Water Sector, 2016, page 3

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



Besides natural population growth, the target areas selected suffer from increased water demand mainly due to the influx of Syrian DPs, impacts of climate change are projected to raise water deficits in Jordan particularly in the northern part where the influx of refugee has worsen the situation. 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 are likely to have a lower net income than the average Jordanian family. In agricultural areas, the livelihood of Syrian DPs heavily depends on job opportunities at Jordanian farms and so are affected by any decline or change in agricultural activities.

Figure 7 shows the build-up area in greater Irbid 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 greater Irbid and Mafraq. The cities fall in the category 30-40 percent poverty / DPs.

#### **Mafraq Governorate:**

Qasabit Al Mafraq: The two most problematic climate change hazards identified throughout the focus group discussions were; flooding and drought. The area has been experiencing an increase in the frequency of flood occurrence and decline in precipitation levels. Which have led to a decline in water table and groundwater level, resulting in water scarcity. Water is being pumped to households once a week and houses with small tanks do not store enough water. Flooding and water scarcity have an adverse effect on residents of the area, floods damage many households causing displacement, forcing absence from workplaces and schools which affects families income. An increase in the number of insects and rodents is prevalent. Water scarcity adds a financial burden to families that resort to purchasing water, especially Syrian families who usually have less net income than Jordanian families. It also causes psychological and physical stress to stay-at-home moms who stay up late at night to make use of the water supplied once a week in laundry, cleaning and other household purposes. Drought has caused a decline in agricultural and livestock production in the surrounding areas, affecting the livelihoods of Jordanian farmers and Syrian DPs working on farms.

Al Ghadeer Al Abiad: Farmers identified drought and extreme weather (heat and cold) as the two most significant climate change hazards in the past 10 years. The change in the patterns of rainfall results in deteriorating cultivated crops such as wheat and barley and forcing farmers to shift from rain fed to irrigated agriculture. According to farmers, reclaimed water is becoming more expensive. Extreme weather in summer and winter has damaged crops and caused economic losses to farmers. Farmers can no longer rely on rain fed agriculture to make a living. Due to water scarcity, farmers are becoming more dependent on reclaimed water. Farmers are forced to receive reclaimed water even at times when irrigation isn't that high (e.g. during rainy season) reclaimed water cannot be stored for more than a few days as its quality will extremely deteriorate resulting in serious health risks. Livelihoods of Syrian DPs who work on Jordanian farms are also negatively affected by these impacts. Less farmers are required due to the decline in livestock and agricultural production caused by drought.

#### Irbid Governorate:

**Qasabit Irbid:** Flooding and drought are the two most hazardous climate change impacts affecting the area. Increased frequency of flooding- which occurs mainly in winter- over the past few years. drought caused by decline in rainfall and water scarcity caused a shortage in supplied drinking water. Floods

impose safety risks and limits the mobility of residents, specifically; children, disabled and elderly. It may result in displacement among the population living in wadi (valley) areas in addition to damage to houses and infrastructure. Flooding increases the number of insects and rodents which increased diseases among children. Women and children mainly remain at home during flooding. Drought has severely affected households, exacerbated by Syrian DPs influx, water scarcity caused a shortage in supplied drinking water adding a financial burden to families as they need to purchase drinking water from the private market, which is not subsidised. It also causes psychological and physical stress to stay-at-home moms who stay up late at night to make use of the water supplied once a week in laundry, cleaning and other household 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.

**Bani Obead:** Drought, extreme heat and flooding have been identified as the most hazardous climate change impacts in the target area.

Water scarcity caused a shortage in supplied drinking water, drought causes shrinkage in agricultural area and flooding causes safety hazards. Exacerbated by influx of Syrian DPs, water scarcity caused a shortage in supplied drinking water adding a financial burden on families that resort to purchasing drinking water from the private market which is not subsidised. 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. Floods damage houses and infrastructure hindering mobility.

**Ramtha:**Drought and extreme weather (heat and cold) were identified as the two most significant climate change hazards in the past 10 years by local farmers. The preliminary predictions of the CROPWAT model suggest that, at Ramtha in northwest Jordan, the irrigation demand will increase from 62 to 132mm of water when growing vegetables under the A2 scenario for 2071–2100 using HadRM3 and an assumed irrigation efficiency of 70 per cent<sup>83</sup>.

Water shortage at household level, farmers are more dependent on reclaimed water due to water scarcity, however reclaimed water is becoming more expensive. Drought has also caused a decline in food and water available for livestock production. Financial burden on farmers, as reclaimed water is increasing in price. Farmers are forced to receive reclaimed water in times that they do not need for irrigation (e.g. during rainy season) and they cannot store it for long as its quality will deteriorate, resulting in serious health risks. Women pointed out that lack of knowledge around permaculture techniques and greywater use in addition to lack of funding to install rainwater harvesting systems. Less farm workers are needed and for less number of days. In addition, extreme weather in summer and winter has damaged crops and caused economic losses to farmers. Livelihoods of Syrian farmers are also negatively affected by these impacts.

**Jerash:** Flooding and drought are the two most significant climate change hazards in Jerash. Poor water purification system, results in farmers receiving poor quality water. Reclaimed water that does not meet minimum health and safety standards pollutes the soil and groundwater. Drought and the decrease in precipitation as a result of climate change has an adverse effect on Jerash that depend highly on agricultural and livestock production. Farms are in critical conditions, livestock, olive and olive oil production have decreased, causing loss of jobs, this results in financial burdens to farmers. The quality of reclaimed water is deteriorating and becoming more expensive, as a result farmers in Jerash suffer from poor water quality and quantity causing a decrease human and land productivity. Moreover, water ponds result in potent smells that may cause disease. Syrian DPs that work on farms are also negatively affected by these impacts.

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

<sup>83</sup> https://royalsocietypublishing.org/doi/pdf/10.1098/rsta.2010.0207

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

Community	Population	Main climate change impacts / Hazards (exposure)	Effects on communities and vulnerable groups (sensitivity)	Barriers to adapt (adaptive capacity)	Priority resilience building interventions	Main issues and concerns (identified through consultations) and response needs (to be aligned with work Amal)
MUNICIPALIT Qasabit Mafraq (Mafraq)	Total Number: 124,479 Syrian DPs: 39,359 Female: 59,542 Disabled: NA	Flooding Drought	Flooding Safety risk due to flooding especially for women and children Damage to infrastructure and houses Households Displacement Spread of diseases among children and youth Limit children and parents mobility  Drought Water Scarcity in urban areas Add financial burden to families due to lack of adequate drinking water Agriculture/ crop failure with significant impact on Syrian DPs	Lack of funding Lack of capacity Lack of awareness about water scarcity and water conservation strategies. Absence of legislations to cope with climate change Lack of adequate water supply for household purposes Socio-Economic Data: Poverty: 11.7% Poverty [+Syrian % of total]: 43.3% Water network coverage (# of subscribers/HHs): 67.4% % of HH not connected to the network: 32.6% Needed Water [M3]: 5,910 VI attributed to Jordanian: 68% VI attributed to Syrian refugees: 32% Water Vulnerability: Severe Vulnerability Number of Agricultural Holdings: 3,618 Area of Agricultural Holdings (Donum): 68,544	Greywater reuse system in schools and mosques Rooftop rainwater harvesting system at municipal building, schools and mosques Urban master plan at with CC and gender mainstreamed	Some cultural and religious resistance to greywater reuse (awareness through religious leaders) Service provision disparities Potential conflicts over the provided services due to land ownerships Wastewater polluting the soil. Having microorganisms in the treated water
Al-Ghadeer Al-Abiad (Mafraq)	Total Number: 1,661 Female: 814 Disabled: NA Syrian DPs: 271 <14: 680 15-24: 338 25-60: 658 >60: 76	Drought Extreme Weather (heat and cold)	Drought Less water available for agriculture Changing crop patterns Decline in livestock production  Extreme heat and cold 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 Reduced agricultural water losses through water efficient drip irrigation	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)

Qasabit Irbid (Irbid)	Total Number: 739,212 Jordan Population: 573,369 Syrian DPs: 165,843 Female: 355,898 Disabled: NA	Flooding Drought	Flooding Safety risks especially for displaced, elderly women and children Displacement Damage to infrastructure and houses Increased diseases Drought Urban water scarcity Add a financial burden on families due to lack of adequate drinking water 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 Socio-Economic Data: Poverty: 9.9% Poverty [+Syrian % of total]: 32.3% Water network coverage (# of subscribers/HHs): 75.1% % of HH not connected to the network: 24.9% Needed Water [M3]: 38,688 VI attributed to Jordanian: 78% VI attributed to Syrian refugees: 22% Water Vulnerability: Severe Vulnerability Number of Agricultural Holdings: 7,879	Rooftop rainwater harvesting in municipal building, residential building, schools and mosques Greywater treatment and reuse in schools and mosques Urban master plan with CC and gender mainstreamed	How to use apartment blocks for water harvesting
Bani Obead (Irbid)	Total Number: 204,313 Jordan Population: 155,739 Syrian DPs: 48,574 Female: 100,351 Disabled: NA	Drought Extreme heat Flooding	Drought Urban water scarcity Add a financial burden on families due to lack of adequate drinking water Personal Hygiene among children Decline in agricultural area Extreme heat Increased diseases Change of agricultural patterns Flooding Safety risks among displaced, elderly, women and children Damage to houses and infrastructure Affect mobility of women and children	Area of Agricultural Holdings (Donum): 55,433  Lack of funding Lack of awareness about water scarcity and water conservation strategies. Outdated water supply networks causing inadequate water supply for household purposes Absence of legislations to cope with climate chang Socio-Economic Data: Poverty: 9.9% Poverty [+Syrian % of total]: 32.3%  Water network coverage (# of subscribers/HHs): 75.1% % of HH not connected to the network: 24.9% Needed Water [M3]: 38,688 VI attributed to Jordanian: 78% VI attributed to Syrian refugees: 22% Water Vulnerability: Severe Vulnerability Number of Agricultural Holdings: 7,879 Area of Agricultural Holdings (Donum): 55,433	Rooftop rainwater harvesting Greywater treatment and reuse in schools and mosques	Lack of participation in planning of project/ interventions. Safety during construction. Service provision disparities Potential conflicts over the provided services due to land ownerships. Untreated groundwater leakage and water salinity.

Ramtha (Irbid)	Total Number: 238,502 Jordan Population: 170,196 Syrian DPs: 68,306 Female: 114,571 Disabled: NA	Drought Extreme Weather (heat and cold)	Drought Less water available for agriculture with significant impact on Syrian DPs Urban water scarcity Decline livestock production Irrigation demand will increase from 62 to 132mm of water when growing vegetables under the A2 scenario for 2071–21 Extreme heat and cold Crop failure	Lack of funding for farmers to adapt Lack of awareness of and financial capacity to invest in permaculture Lack of capacity to use new agricultural techniques Socio-Economic Data: Poverty: 25.1% Poverty [+Syrian % of total]: 53.7% Water network coverage (# of subscribers/HHs): 35.8% % of HH not connected to the network: 64.2% Needed Water [M3]: 16,439 VI attributed to Jordanian: 71% VI attributed to Syrian refugees: 29% Water Vulnerability: High Vulnerability Number of Agricultural Holdings: 6,515 Area of Agricultural Holdings (Donum): 91,320	Permaculture at JUST Rainwater harvesting at schools Greywater treatment and reuse at schools	Increased water expenses Untreated groundwater leakage and water salinity
Jerash	Total Number: 207,97 Jordan Population: 197,704 Syrian DPs: 10,293 Female: 99,879 Disabled: NA	Drought Flooding	Drought Less water available for agriculture Decline in livestock production	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 Socio-Economic Data: Poverty: 20.3% Poverty [+Syrian % of total]: 25.2%  Water network coverage (# of subscribers/HHs): 63.0% % of HH not connected to the network: 37.0% Needed Water [M3]: 7,809 VI attributed to Jordanian: 95% VI attributed to Syrian refugees: 5% Water Vulnerability: High Vulnerability Number of Agricultural Holdings: 8,398 Area of Agricultural Holdings (Donum): 98,099	Enhance the quality of treated wastewater from Al Maerad WWTP Reduced agricultural water losses through water efficient drip irrigation	Non-equal access to provided service. Water shares are not evenly distributed among farmers The lack of distribution of water pipes to farmers Wastewater polluting the soil. Not cleaning the canals between the station and the flood stream.

Based on UN-Habitat vulnerability assessment conducted in target area (through consultations). Details of surveys and consultation outcomes can be shared on request

Assessment of sensitivity showed that the average sensitivity level is 3.71. Adaptation strategies and measures suggested for the water sector in the TNC are: Rainwater harvesting, Wastewater treatment, Desalination, Increasing Efficiency of irrigation technologies, Grey water Reuse, Public awarenes5 out of the 7 adaptation measures advanced to water sector in Jordan are covered in this proposal.

# **Project Objectives**

The overall aim of this project is to better respond to climate change impacts and vulnerabilities in the context of the Syrian crisis in Jordan and Lebanon. This is done by demonstrating what concrete adaptation measures (see comp 3) respond to the needs of both DPs and host communities, and especially women and youth, while avoiding any tension over resources and employment opportunities.

The project will focus on responding to climate change-related water challenges by taking a sustainable water management approach. This means it aims to reduce the demand of unsustainable water sources such as over-extracted (and often polluted) groundwater, while increasing water supply options from non-conventional and more sustainable sources, incl. rainwater harvesting and the reuse of treated waste water (see comp 3).

The project will promote the replication and upscaling of the demonstrated techniques and approaches, also beyond Jordan and Lebanon (see comp 4), and to demonstrate how water resources can be assessed, planned and managed more efficiently at the municipal level (i.e. establish urban-rural linkages) and sustainably (by mainstreaming climate change and gender in municipal master plans) (see comp 1).

During project preparation, DPs in the target areas have been identified as the most vulnerable group due to their socio-economic situation and their dependence on often water-vulnerable sectors, especially the agriculture sector. However, to avoid supporting increased tension between DPs and host communities, the project also targets host community members. Assessment and planning processes under component 1 and capacity building activities under component 2 will target both DP and host community groups to avoid and even reduce any tension.

Table 3: project objectives and sub-objectives

Table 3: project objectives and sub-objectives	ectives
Objectives	Development approach applicable to climate change and DPs crisis context
Overall objective: Increasing the resilience	of both displaced persons and host communities to climate change-related
water challenges in Jordan and Lebanon.	or both displaced persons and host commanded to climate change related
Sub-objectives:	
Increasing the resilience of municipal governments: Manage urban risks and vulnerabilities in the context of climate change, esp. water scarcity challenges, and urban (population) growth, incl. from DPs migration	Support addressing regional DPs crisis and climate change challenges at the municipal level: through developing a comprehensive and integrated development response approach (see comp 4)  Forward-looking / pro-active urban spatial planning and sustainable water management: planning for future urban (population) growth and climate change impacts in an integrated manner (see comp 1)
Increasing the resilience of citizens (DPs and host communities): Improve awareness, ownership and capacities to respond to climate change, incl. to operate, maintain and replicate resilient water	Citizen engagement: minimizing risks of social tensions through citizen engagement and enhancing opportunities for social exchange between host-city inhabitants and DPs (especially women and youth) (see comp 1 and 2)  Awareness, capacity / skill building support: providing support such
harvesting, supply and irrigation systems	as skill building and training to build people's self-reliance, especially regarding water (targeting especially women and youth) (see comp 2)
Increasing the adaptive capacity of the water sector: Expand unconventional water harvesting, supply and irrigation	Settlement upgrading: Area-based (i.e. urban – rural linkages) approach for increasing the resilience of water supply services (see comp 1)
options, using innovative and replicable techniques suitable for the context	Assets, services and livelihood security projects: Expanding and strengthening water infrastructure and services which are climate change resilient and sustainable (and capture best practices) (see comp 3)
Improving knowledge and policies and regulations to increase urban resilience in the region: Project KM and replication, incl. development of regional urban risks and vulnerabilities management model in the context of climate change and urban (population) growth (incl. from DPs migration)	Improvement of knowledge, policies regulations in the region: by developing a 'regional' approach model for managing urban risks and vulnerabilities in the context of climate change and urban (population) growth (also because of high influx of DPs), especially for type 2 cities, including gender considerations + sharing lessons

<sup>\*</sup>In line with World Bank et all (2017, policy note September 14): Refugees in the middle east. Bringing an urban lens to the forced displacement challenge.

# **Project Components and Financing**

Table 4: project of	Table 4: project components and financing							
Project Components	Expected Outcomes	Expected Outputs	Countrie s	Amount (US\$)				
1. Manage urban risks and	1.1.1. Strengthened municipal institutional	1.1. Territorial planning and development strategy / guidelines with CC and gender	Lebanon	249,000				
vulnerabilities in the context of climate change,	capacity to manage climate change and DP crisis related	mainstreamed in Lebanon 1.2. Urban master plans at municipal level with CC and gender mainstreamed in	Lebanon	530,000				
esp. water scarcity challenges, and urban	urban water scarcity challenges by mainstreaming these aspects into spatial	Lebanon 1.3. Urban master plans at municipal level with CC and gender mainstreamed in Jordan	Jordan	562,000				
(population) growth, incl. from DPs migration	strategies + developing action / investment plans and guidelines (with identified solutions) to use water most efficiently within	Above strategies and plans including mapped current and future water demand needs and supply options considering esp. climate change, urban growth and agriculture evolution + action / investment plans (incl. identified solutions) to use water most efficiently within municipal boundaries						
	municipal boundaries (in line with AF outcome 2)	Above also includes workshops / trainings targeting esp. women and youth (both host communities and DPs) to develop the plans		T: 1,341,000				
2.Improve awareness, ownership and capacities to	2.1.1.Strengthened DPs and host community awareness and	2.1. Community organisation, awareness and capacity building + operation, maintenance and replication/ upscaling plans for concrete adaptation output 3.1	Lebanon & Jordan	195,400				
respond to climate change, incl, to operate,	ownership of CC adaptation measures + capacities	<ul><li>2.2. See above for output 3.2.</li><li>2.3. See above for output 3.3.</li><li>2.4. See above for output 3.4.</li></ul>		139,200 234,000 163,200				
maintain and replicate	strengthened to operate, maintain	<ul><li>2.5. See above for output 3.5.</li><li>2.6. See above for output 3.6.</li></ul>		16,000 142,100				
resilient water harvesting, supply and irrigation	and replicate proposed adaptation measures (in line with AF outcome 3	2.7. See above for output 3.7. 2.8. See above for output 3.8 2.9. See above for output 3.9		259,000 314,600 418,171				
systems	and 8)	For more details see section II.A		T: 1,8 81,671				
3.Expand unconventional water harvesting	3.1.1. Increased adaptive capacity within the water	3.1. Rooftop rainwater harvesting in Lebanon 3.2. Rooftop rainwater harvesting in Jordan 3.3. Greywater treatment and reuse in	Lebanon Jordan Jordan	867,262 836,820 843,112				
and supply options, using	sector through resilient and	Jordan 3.4. Efficient treatment and reuse of	Lebanon	846,120				
innovative and replicable techniques	sustainable water harvesting, supply and irrigation options,	wastewater in Lebanon 3.5. Efficient treatment and reuse of wastewater in Jordan	Jordan	1,053,332				
	using innovative and replicable techniques suitable for the	3.6. Water-use-efficient irrigation of treated wastewater in Lebanon	Lebanon	988,950				
	context and benefitting vulnerable	3.7. Water-use Efficient irrigation of treated wastewater in Jordan	Jordan	804,400				
	groups (in line with AF outcome 4, 6 and	3.8. Permaculture demonstration – closed loop water system in Jordan	Jordan	384,046				
	8	3.9 Permaculture demonstration – closed loop water system in Lebanon	Lebanon	885,725				
		For more details see section II.A		T: 7,509,767				
4. Project KM and replication,	4.1.1. Strengthened (inter)National	4.1. Regional / international KM with focus on sharing project lessons and replication	Lebanon & Jordan	280,000				
incl. dev. of regional urban risks and	institutional capacity to manage climate change and DP crisis	4.2. Jordan and Lebanon KM with focus on project progress, best practices and lessons learned	(and other countries in the	437,800				
vulnerabilities management model in the	related urban water scarcity challenges, including lessons	4.3. Sub-national KM and Regional' urban risks and vulnerabilities assessment,	region that are part of ESCWA	165,000				

context of climate change and urban (population) growth (incl. from DPs	learned collected and shared regionally (in line with AF outcome 3 and 8)	planning and management approach model for type 2 cities 4.4. Incentive mechanism (financial) and regulatory framework to replicate and upscale rainwater harvesting activities		40,362		
migration)				T: 923,162		
5. Total componer	5. Total components					
6. Project/Progran	6. Project/Programme Execution cost					
7. Total Project/Programme Cost						
8. Project/Programme Cycle Management Fee charged by the Implementing Entity						
Amount of Financing Requested						

# **Projected Calendar**

Table 5: Project calendar

Milestones	Expected Dates
Start of Project/Programme Implementation	October 2020
Project/Programme Closing	April 2025
Terminal Evaluation	January 2025

### 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 and replicable techniques that aim to reduce the demand of unsustainable water sources such as (polluted) groundwater, while increasing water supply options from non-conventional and more sustainable sources, such as rainwater harvesting and the reuse of treated waste water at municipal and community level (component 3). To ensure local ownership and capacity to 'manage' these 'concrete' adaptation actions and to avoid social tension of proposed project benefits, measures to inclusively plan, operate, maintain and replicate the actions are proposed at the community level (component 2). To better manage urban risks and vulnerabilities, especially related to the water sector, assessment and planning capacities will be strengthened 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 area (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 Mafrag region as well as areas with a similar context and will therefore be shared in the region (component 4). For detailed maps of target areas and conceptual drawings of concrete interventions, see annex 2. For details of all activities, see budget notes in annex 6.

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**: Increasing the resilience of municipal governments: Manage urban risks and vulnerabilities in the context of climate change, esp. water scarcity challenges, and urban (population) growth, incl. from DPs migration (in line with AF outcome 1 and 2).

This component will focus on strengthening municipal institutional capacity to manage climate change and DP crisis, especially related to urban water challenges (i.e. water scarcity / droughts and floods) by mainstreaming these aspects into spatial strategies / urban master plans + developing action / investment plans and guidelines (with identified solutions) to use water resources most efficiently within municipal boundaries. Thus, through this project, the municipal plans will be used as tools to identify and manage climate change risks / vulnerabilities and identify additional adaptation options. Municipal officers will be

trained to collect needed data and conduct climate change vulnerability assessments as integral part of developing these strategies / plans; thus, to manage related urban risks and vulnerabilities.

Why is this needed: 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 equal benefits to interventions. However, in both Jordan and Lebanon, there is limited capacity at the municipal/ community level to respond to climate change and to manage water in an efficient, comprehensive and forward-looking way. One of the reasons is the lack of coordination between different authorities (i.e. municipalities, water establishments, ministry of agriculture) and disciplines (i.e urban planners, water engineers and agriculture engineers), which all produce their separate plans, making planning often not inclusive and efficient. Besides that, in both Jordan and Lebanon, most of the water management is the responsibility of national and governorate-level authorities. At this level, the focus is still very much on extracting water from conventional sources, especially groundwater, which is overexploited and increasingly polluted and current demand and supply focused, with limited consideration of climate change impacts and population growth and migration trends. However, municipalities are responsible for (i.e. mandated to) managing non-conventional water sources within their boundaries, including storm/rain-water, which sometimes result in floods, which opens up opportunities to plan and implement climate change adaptation options, such as rainwater harvesting and flood reduction interventions, in an inclusive way. By understanding the available water resources, especially nonconventional storm/rain sources, now and in the future, municipal planners can manage water more efficiently for urban and rural use and to reduce flood risks. This can be planned through the development of municipal plans that consider climate change with a focus on water challenges. These plans will complement regional (district) and national water master plans by reducing pressure on conventional water resources (groundwater). As both countries are currently developing national urban policies with the aim of empowering cities and expanding their mandates (besides laws described below), component 1 is forward-looking with the purpose of building the capacities of the cities and informing their water-climate related decision-making, through the urban observatories. Once drafted, urban policies are officially adopted, expanding the responsibilities of the municipalities.

In Jordan, according to the draft Local administration law, municipalities are fully responsible for managing storm/rainwater and floods within their boundaries, and for coordinating with the concerned authorities in managing the distribution of water among the population, organizing its distribution, participating in identifying water network and working to prevent pollution of springs, wadis and wells. Municipalities are also responsible for coordinating with concerned authorities on establishing wastewater networks.

In Lebanon, according to the Municipal Law 118, municipalities are also responsible for managing storm/rainwater and floods within their boundaries. At the level of permits, Municipalities have a major and decisive role in approving or rejecting any permit that does not abide by the set municipal zoning conditions<sup>84</sup>. This law allows, through the existing municipal authority, applying adequate climate planning. In the project target area, the Bekaa region, a high coordination mechanism is being established between the Bekaa Water Establishment (responsible for water-related utilities and resources at the district level and the municipalities that fall under the district's limits.

In Jordan, the current municipal master plan for Irbid was developed before the Syrian crisis and is outdated. In Mafraq, no master plan exists. In Lebanon, the same is the case for the municipalities surrounding Zahleh. The process of formulating strategies / plans will help the target municipalities to identify medium and long-term adaptation needs and to develop strategies to get these funded.

This is very timely as this project will build on initiatives that are giving municipalities the mandate and technical units to assess and manage climate change data and integrate this in municipal plans: the development of National Urban Policies in both Jordan and Lebanon (as mentioned above, see also section F), in which municipalities are urged to develop their local level plans and mainstream climate change in their planning processes, as well as the set-up of Urban Observatories (supported by CVBD (see section F), which is a mechanism to manage urban data and inform decision-making at the national level, including for climate change data with a National Observatory.

Structure and functioning of the urban observatories

<sup>&</sup>lt;sup>84</sup> The Municipal zoning conditions are approved by the Directorate General of Urbanism – DGU (functions under the Ministry of Public Works - MoPW) and the Ministry of Interior and Municipalities (MoIM).

As per UN-Habitat Lebanon's previous "Setting Up Local Urban Observatories in Lebanon" partnership agreement for a local Urban Observatory (LUO) could be defined as: "a local network of stakeholders responsible for producing, analysing and disseminating data on a meaningful set of indicators that reflects collectively prioritized issues. Data and information resources produced by the local network are used to support decision making and the formulation of better-informed policies. A Local Urban Observatory is therefore a focal point for territorial monitoring at the local or national scale." Local urban observatories are typically housed in an existing city or town department (Union of the Municipalities). They serve to produce manage and analyse data on the performance of a group of municipalities on key urban indicators and other thematic issues relevant to both local decision-making and global monitoring. This data analyses can be used to develop climate change vulnerability / hazards (droughts; water scarcity; floods) hotspot / risks maps (current and projected) and to prioritise adaptation measures (based on impacts / feasibility analysis). Local urban observatories share common aims:

- To create sustainable urban monitoring systems in support of local planning and management processes, linking data to policy
- To strengthen local capacity for the development and use of urban indicators that facilitate the collection of disaggregated data at city and sub-city levels;
- And to promote local ownership of urban indicator systems and cultures of monitoring and assessment in the urban sector

Climate change data available: In both Jordan and Lebanon, climate change data is collected and managed through national observatories. Sources of data are a combination international, national and local sources, including ESCWA / RICCAR. Besides that, climate change data and vulnerability assessment data, also at the local scale has been provided through multiple plans, incl. e.g. TNCs.

Climate change data missing: recurrent collection and management of climate change data in target municipalities, esp. Mafraq and municipalities surrounding Zahle.

What data will be collected, processed and analysed and by whom: available data for target municipalities and new climate scenario and vulnerability assessments. The data will be analysed by the to-be-strengthened/built by this project Urban Observatory Division in the target Municipalities as part of their business as usual roles (day-to-day work). Staff of such to-be-strengthened/built by this project Urban Observatory Division will have their capacities strengthened/built by this project to be in charge of coordination mechanism between municipal level and national government level on data and planning. In Jordan, two urban observatories will be established and in Lebanon one, covering Zahle and surrounding municipalities.

The project execution partner UNESCWA in cooperation with the Regional Initiative for the Assessment of Climate Change Impacts on Water Resources and Socio-Economic Vulnerability in the Arab Region (RICCAR) is currently generating six dynamically downscaled regional climate projections for the 'Mashreq domain' at the scale of 10 km2 through the end of the century for RCP 8.5), including for the project target areas. The projections will also be bias-corrected for use in water-related assessment (e.g., those related to water availability, runoff, groundwater recharge, agricultural productivity, etc.). This information can be used to assess water availability, incl. groundwater recharge in the Bekaa or northern Jordan, its implications for vulnerability and how to respond to this in the target areas at district / municipal level.

The municipal-level climate change vulnerability analysis will focus on identifying the risks and vulnerabilities related to water challenges (i.e. water scarcity / droughts and floods risks) and the implications for this on water availability and access, the built environment, people and water dependent livelihoods (especially agriculture) at the municipal level. This will include collecting some municipal level data (see data gaps table below) for which a budget is allocated (assessment and analysis under outpust 1.2. and 1.3. – see budget notes). The urban observatories' staff will be trained to collect this data and conduct the vulnerability analyses and developed risk / vulnerability hotspot maps.

Below an overview of what data is going to inform the municipal plans and in what format

Climate analyses	Scale, resolution and parameters	Format of analysis	
Regional climate	- Scale 10 km <sup>2</sup> through the end of the century for RCP 8.5.	<ul> <li>Climate change risk</li> </ul>	
change scenario	Specific areas, time period and time series (daily, monthly,	and vulnerability maps	
	yearly, 20-year increments)	and data set (NetCDF,	

	modelling for target areas	<ul> <li>Main parameters: climate, hydrology, vulnerability (with sub-indicators)</li> <li>Climate change hazards: focus on water challenges (droughts / water scarcity and flood risks)</li> <li>Bias-corrected for use in water-related assessment (wa availability, runoff, groundwater recharge, agricultural productivity, etc.).</li> </ul>	- ter	user friendly GIS, SPSS; Excel) Available from ESCWA without cost
2.	Climate change vulnerability assessment in target areas	<ul> <li>Scale: Territorial (district/watershed-level), municipal, community-level data 1/2500 district level and 1/1000 municipal level</li> <li>Climate change hazards: water challenges (droughts ar floods) and the implications for this on water availability and access, the built environment, people and water dependent livelihoods (especially agriculture).</li> <li>Main climate change related parameters: exposure, sensitivity, impacts, adaptative capacities</li> </ul>		Climate change risk and vulnerability maps and data set / profile (user-friendly GIS, SPSS, excel) Feasibility analysis prioritised identified adaptation measures

Above will feed into spatial /urban master plans + developing action / investment plans (based on feasibility assessments) and guidelines (with identified solutions).

Data / info to be assembled / collected through the urban observatories and current gaps analysis

Data / info	Indicator	Sub-indicator	Available at target municipal level			
			Jordan	Lebanon		
Regional climat	te modelling projections					
Climate	Change temperature	Annual; scale 10 km2	Yes (ESCWA / RICCAR)			
Hydrology	Change precipitation; change evapotranspiration	Annual; scale 10 km2	Yes ( <u>ESCW</u>	VA / RICCAR)		
Vulnerability	Exposure hazards	Droughts / water scarcity. Bias- corrected for use in water- related assessment (water availability, runoff, groundwater recharge, agricultural productivity, etc.).	Yes (ESCWA / RICCAR)			
Climate change	vulnerability target munic	cipalities by urban observatories:				
Exposure	Change temperature	Annual	Yes (MoEnv; JMD)	Yes (MoE; MoA; LARI)		
	Change precipitation	Annual	Yes (MoEnv; JMD)	Yes (MoE; MoA; LARI)		
	Droughts / water scarcity	Annual	Yes, (MoEnv; MoWI)	Yes (MoEW; WE		
Sensitivity	Demography /	Poverty (% + location)	Yes (DoS)	Yes (UoM)		
	population trends	Labour type / sector (% + location)	Yes (DoS)	Yes (LARI)		
		Unemployment (%)	Yes (DoS)	Yes (OCHA; WB; MoSA)		
		Displaced persons (% + location)	Yes (UNHCR)	Yes (UNHCR)		
	Natural / environmental	Water resources / availability (volume source, stream flow / runoff; groundwater recharge)	Partly (MoWI)	Partly (MoEW; WE		
		Soil erosion (% + location)	No	Partly (CNRS)		
		Vegetation degradation (% + location)	Partly (MoA)	Yes (LARI; MoA)		
		Salination (% + location)	No	Partly (MoEW; WE)		
	Human made	Water network (location)	Yes (MoWI; YWC)	Yes (WE)		
		Sewerage network (location)	Yes (MoWI; YWC)	Yes (WE)		
		Agriculture (% + location)	Yes (MoA)	Yes (LARI; MoA)		
		Solid waste (disposal kg +	Yes	Yes (MoE;		
		location)	(Municipalities)	Municipalities		
		Urban extend (coverage)	Yes (Municipalities remote sensing	Yes (Municipalities remote sensing		

		Cultural heritage (locations)	Yes (MoTA)	Yes (MoC; Municipalities)	
Potential	Water resources /	Sources	Yes (MoWI)	Partly (MoEW-	
impacts	availability	Stream flow / runoff	No	NWS)	
•	-	Groundwater recharge	No	<b>1</b>	
	Human settlements	Water access % and locations) % of housing units older than 30 years/total housing units	Partly (MoWI)	Partly (municipalities)	
	People	Urban Partly (municipali		Partly (municipalities)	
		Rural / farmers	Partly (municipalities)	Partly (municipalities)	
		Women	Partly (municipalities)	Partly (municipalities)	
		Youth	Partly (municipalities)	Partly (municipalities)	
		Displaced persons	Yes (UNHCR)	Yes (UNHCR)	
	Agriculture	Crop failure (%)	No	Yes (LARI; MoA)	
		Production change (%)			
Adaptive capacity	Knowledge and awareness	Population (%) trained to respond to cc hazard risks	No	No	
. ,	Technology	Water saving / efficient use / irrigation technology	No	Yes (UNDP; MoE; MoEW)	
		Building codes applied	Yes, (Municipalities, MoLA)	No	
Institutions		Nr of human resources assigned to work on climate change Nr of development and risk reduction plans for area	No	No	
	Services and infrastructure	Water access / current and projected (%) Nr of water companies rationing water during droughts	Partly (MoWl and YWC)	Partly (MoEW NWS)	
		Assets / buildings protected from hazards (or reduced loss) (%)	No	No	
Eq	Economic resources	Allocated budget (total + %) climate change / risks reduction	No	No	
	Equity (equal distribution / access)	Urban population	Partly (DoS; municipalities)	Partly (municipalities)	
		Rural population / farmers	Partly (DoS; municipalities)	Partly (municipalities)	
		Women	Partly (DoS; municipalities)	Partly (municipalities)	
		Youth	Partly (DoS; municipalities)	Partly (municipalities)	
		Displaced persons	Yes (UNHCR)	Yes (UNHCR)	

With regard to the current status of such Urban Observatories, the project will resume previous efforts engaged in assessing the existing situation of the relevant organizational units at the three municipalities in terms of level of development and potential upgrading of what resembles the function of urban observatories<sup>85</sup>. A number of organizational units at the targeted municipalities partially, but at different development levels, practice what fully developed observatories do globally, where they also collect data other than climate data. The aim is for the data to be used by planning authorities, infrastructure operators, emergency services and community groups to help them make better informed decisions about how conditions in the city could affect them. This will also inform planned concrete adaptation interventions in this project, especially related to specific vulnerabilities and detailed response designs. For an overview of possible concrete measures that could be taken as a result of municipal planning and an indication of the contribution to adaptation see Part II.D.

<sup>&</sup>lt;sup>85</sup> According to the definition provided by UN Habitat II, an urban observatory is a local network, which brings together different partners in charge of collecting, processing and disseminating data on different municipalities. It consists of a certain number of indicators on issues of sustainable development. It uses information gathered by local actors in order to help deciding upon and constructing sound and strong-willed policies. Hence, the urban observatory represents a central element in urban control on both international and national level.

**Component 2**: Increasing the resilience of citizens (DPs and host communities): Improve awareness, ownership and capacities to respond to climate change, incl. to operate, maintain and replicate resilient water harvesting, supply and irrigation systems (in line with AF outcome 3)

This component will focus on strengthened DPs and host community's awareness and ownership of climate change adaptation measures + capacities strengthened to operate, maintain and replicate proposed adaptation measures, including skills building.

<u>Why is this needed:</u> To ensure sustainability of the proposed adaptation measures under component 3, communities need to 'own' the interventions and it needs to be clear how the proposed measures will be operated, maintained and replicated. Because there is a lack of capacities to do this at the community level, these capacities will be strengthened, as well as the awareness of adaptation options.

Above will be done by developing operation, maintenance and replication plans for proposed adaptation actions in a participatory way, including identifying responsibilities and maintenance budgets. 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.

**Component 3:** Increasing the adaptive capacity of the water sector: Expand unconventional water harvesting, supply and irrigation options, using innovative and replicable techniques suitable for the context (in line with AF outcome 4 and 6).

This component will focus on increasing the adaptive capacity within the water sector through resilient and sustainable water supply, using innovative, climate change resilient water supply techniques, which are suitable for high DPs influx context and replicable and mostly benefit vulnerable groups, also through securing water-dependent livelihoods, especially in the agriculture sector. The purpose is to reduce the demand of unsustainable water sources such as (polluted) groundwater, while increasing water supply options from non-conventional and more sustainable sources, such as rainwater harvesting and the reuse of treated wastewater.

Why is this needed This is needed because of increasing water availability challenges in both Jordan and Lebanon, exacerbated by climate change and the limited options municipal governments have to respond to these challenges.

The proposed concrete adaptation measures all aim to harvest available water from non-conventional sources (rain and wastewater) and to treat and irrigate it as efficiently as possible. The proposed interventions include rooftop rainwater harvesting systems and water saving devices, greywater treatment and reuse systems and water saving devices, efficient treatment and reuse of waste water , water-use-efficient irrigation of treated wastewater systems and permaculture demonstrations - closed loop water systems.

These proposed measures were prioritised by the project steering committees (with representatives from different ministries and the target municipalities) and beneficiary communities (through consultations).

Rooftop rainwater harvesting systems will be established in municipal buildings, schools and mosques and residential buildings in the target areas in Jordan and Lebanon. Municipal buildings were selected as demonstration / awareness raising sites, while schools and mosques were selected because of high impact and awareness raising purposes, including through curriculum and religious leaders' speeches inputs (see linked component 2). Residential buildings were selected to test these systems in all possible buildings with the purpose to identify how the rainwater harvesting intervention can be scaled-up to a municipal or national programme. In Jordan, various ministries requested UN-Habitat (see section II.I) to set-up a national programme for rainwater harvesting. Techniques will be piloted in Irbid and Mafraq, while a possible incentive mechanism will be developed under output 4.4.

Besides that, grey water treatment and reuse systems will be established in schools and mosques in Jordan, also targeting religious leaders and children for awareness raising purposes (under linked component 2).

In both Jordan and Lebanon, the quality of wastewater will be improved and water storage capacity increased to safely and efficiently irrigate agricultural land. In the target areas, release of untreated waste water and non-efficient use of treated waste water (due to lack of storage capacity and non-efficient irrigation techniques) has been identified as a major problem and priority (see section II.I). Besides that, permaculture demonstration sites will be established at Jordan University of Science and Technology (JUST) in Jordan and at the Lebanese Agricultural Research Institute (LARI) in Lebanon, targeting students and surrounding farmers to replicate the techniques.

**Component 4:** Improving knowledge and policies and regulations to increase urban resilience in the region: Project KM and replication, incl. development of regional urban risks and vulnerabilities management model in the context of climate change and urban (population) growth (incl. from DPs migration) (in line with AF outcome 7).

This component will focus on Strengthened (inter)National institutional capacity sharing and crossfertilization to manage climate change and DP crisis related urban water scarcity challenges, including 1) lessons learned and good practices collected from the implementation of the project activities at the national and local levels and shared regionally; and 2) establishing a permanent regional knowledge management (community of practice) platform as part of the ACCCP and RICCAR knowledge hub to discuss, operationalize and scale-up the regional urban risks and vulnerabilities management model and sustain experience sharing and dissemination among the concerned countries and other 3RP countries within the region beyond the project; and 3) organizing regional workshops for experience sharing among the participating countries but also the 3RP countries in addition to participating in relevant global events to advocate for the developed model beyond the region. Lessons learned, especially what worked and what did not, will be captured through monitoring of all project sub-interventions, also to identify what worked and what not. This would then feed into replication / upscaling guidelines, which will be developed for all sub-interventions (under component 2). All info will feed into output 4.3. the development of a Regional' urban risks and vulnerabilities assessment, planning and management approach model for type 2 cities. Field visits will also show what worked and what will not. As mentioned above, all collected information will be shared at the municipality, national level and international level, through workshops and conferences, but also by using a knowledge sharing platform.

<u>Why is this needed</u>: as mentioned above, there is a need for more effective, inclusive and sustainable 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 to share lessons between Lebanon and Jordan, but also in the region through the UN-ESCWA established Arab Centre for Climate Change Policies (ACCCP) and KM platform and to have the project outcomes and outputs feed into 3RP (i.e. Regional, Refugee and Resilience Plan) programming under the WASH sector (see annex 1) and replicated in cities facing similar challenges which sustains the knowledge generated by the project.

# Overview proposed project activities

**Table 6**: Jordan and Lebanon proposed project activities details and feasibility assessment outcomes. For detailed maps of target areas and conceptual drawings of concrete interventions, see annex 2.

Problem description and climate change adaptation needs statement	Adaptation measure outcome (to address the problem and needs)	Detailed outputs / activities	Target areas	Suitability	Beneficiaries (Total, Women, You W, Y and S used be		Budget (USD)	Executing entity	Effectiveness in terms of adaptation / water saving and or collection
					Direct	Indirect	1		and or collection
Component 1: Increase	sing the resilience of mu	inicipal governments: Manage urban risks and	vulnerabilities in t	he context of climate change	e, esp. water scarcity c	<u> </u>	ban (populat	tion) growth, incl	. from DPs
migration									
Lack of municipal institutional and technical capacity to manage urban risks and vulnerabilities in the context of climate change, esp. water scarcity	Strengthen municipal institutional capacity to manage climate change and DP crisis related urban water scarcity challenges by	Territorial planning and development strategy / guidelines at district level with climate change and gender mainstreamed in Lebanon. Outputs: project target areas climate change vulnerability map / profile, considering specifically drought / water scarcity challenges and floods.  Development scenarios.	Zahle District	Target municipalities experience water challenges and have largest numbers of DPs in the country  Proposed activities are aligned with national	Direct involvement T: 480 W: 40 % Y: 15 %	District: T: 429,824 W: 217,475 Y: 23,733 S: 243,465	249,000	Consultancy firm	By planning and managing water in a forward- looking and holistically way, water will be managed much more efficiently
challenges, and urban (population) growth, including from DPs migration  Lack of forward-looking planning, incl. capacity and	mainstreaming these aspects into spatial strategies + developing action / investment plans and guidelines (with identified solutions) to use water most	Spatial / urban master plans at municipal level with climate change risks and vulnerabilities and gender mainstreamed in project target areas in Lebanon. Outputs: climate change risks / vulnerability maps / profile, considering specifically drought / water scarcity challenges and floods; urban observatory	Hazerta Bar Elias El Marj Saadnayel Taanayel Taalabaya Terbol Ferzol	and municipal priorities, incl. municipal development plans  Spatial strategies and urban master plans and action / investment plans / feasibility studies	Direct involvement T: 240 W: 40 % Y: 15 %	Municipalities: T: 167,631 W: 84,815 Y: 9,256 S: 94,951	530,000	Consultancy firm + RTO	and overall demand reduced
tools at municipal level	efficiently within municipal boundaries	Spatial / urban master plans at municipal level with climate change risks and vulnerabilities and gender mainstreamed in project target areas in Jordan. Outputs: climate change risks / vulnerability maps / profile, considering specifically drought / water scarcity challenges and floods; urban observatory	Mafraq Irbid	are suitable tools to plan water within municipal boundaries	Direct involvement T: 450 W: 45% Y: 10 %	Municipalities: T: 863,691 W: 415,440 Y: 259,107 S: 205,202	562,000	Consultancy firm + Municipalitie s	
Total					930		1,341,0		
Component 2: Increase	oing the reciliones of citi	zens (DPs and host communities): Improve av	voronogo ovvocrel	ain and consoition to respons	t to alimate abance in	al ta aparata mai	00	nligato regilient	votor horvooting
supply and irrigation s		zens (DFS and nost communities). Improve av	vareness, owners	ilp and capacities to respond	a to cilmate change, in	ci. to operate, mai	mam and re	plicate resilient v	vater fiarvesting,
Lack of citizen awareness of climate change, esp. water scarcity challenges and capacities to	Strengthened DPs and host communities awareness and ownership of climate change adaptation	2.1. Community organization, awareness and capacity building + operation, maintenance and replication / upscaling plans for concrete adaptation output 3.1:  Rooftop Rainwater Harvesting in Lebanon	Zahle Ablah Hazerta, Saadnayel Bar Elias El-Marj	Citizens have limited awareness of water scarcity challenges, especially climate change-related	Direct involvement T: 55,000 W: 27,689 Y: 2,950 S: 29,300	Municipalities: T: 300,877 W: 154,582 Y: 16,548 S: 170,296	195,400	UNICEF LARI/Comp any (in line with output 3.1.)	Increased acceptance efficient water use, supply and irrigation techniques
respond to these challenges locally	measures + capacities strengthened to	2.2. Community organization, awareness and capacity building + operation, maintenance and replication / upscaling	Mafraq: Qasabit Mafraq	Capacities to operate, manage and replicate relevant techniques are	Direct involvement T: 52,855 W: 26,420	Municipalities: T: 863,691 W: 415,440	139,200	JOHUD (in line with output 3.2.)	Increased capacity to

operate, maintain and replicate proposed adaptation measures, including	plans for concrete adaptation output 3.1: Rooftop Rainwater Harvesting in Jordan	Irbid: Qasabit Irbid Bani Obeid Ramtha	limited, esp. related to water harvesting, efficient irrigation and permaculture	Y: 19,385 S: 8,728	Y: 259,107 S: 205,202			operate, maintain and replicate techniques,
skills building	23. Community organization, awareness and capacity building + operation, maintenance and replication / upscaling plans for concrete adaptation output 3.3:  Grey Water Treatment and Reuse in Jordan	Mafraq: Qasabit Mafraq Irbid: Qasabit Irbid Bani Obeid Ramtha	Large numbers of citizens can be reached through curricula, imams, demonstration sites, also in municipal government buildings	Direct involvement T: 39,582 W: 21,940 Y: 15,646 S: 6,827	Municipalities: T: 863,691 W: 415,440 Y: 259,107 S: 205,202	234,000	UNICEF (in line with output 3.3.)	including monitoring
	2.4. Community organisation, awareness and capacity building + operation, maintenance and replication and upscaling plans for concrete adaptation output 3.4: Efficient treatment and reuse of wastewater from Zahle WWTP, in Lebanon	Zahle		Direct involvement T: 816 W: 416 Y: 85 S: 766	Municipalities: T: 184,332 W: 94,705 Y: 10,140 S: 104,332	163,200	RTO LARI (in line with output 3.4	
	2.5.Community organisation, awareness and capacity building + operation, maintenance and replication and upscaling plans for concrete adaptation 3.5: Efficient treatment and reuse of wastewater in Jordan	Jerash(Ketteh ) Mafraq (Al-Ghadeer Al-Abyad and Al-Akaider)		Direct involvement T: 35 W: 5 Y: 2 S: 0	Municipalities: T: 11,229 W: 5,342 Y: 2,972 S: 727	16,000	MoWI / YARMOUK WATER COMPANY (in line with output 3.5.)	
	2.6. Community organization, awareness and capacity building + operation, maintenance and replication and upscaling plans for concrete adaptation output 3.6: Water-use-efficient irrigation of treated wastewater for fruit trees and vineyards and potato plantation in Lebanon	Zahle, Bar Elias		Direct involvement T: 4,495 W:2,293 Y: 540 S: 2,525	Municipalities: T: 184,332 W: 94,705 Y: 10,140 S: 104,332	142,100	RTO/Compa ny LARI/Comp any (in line with output 3.6)	
	2.7.1Community organization, awareness and capacity building + operation, maintenance and replication and upscaling plans for concrete adaptation output 3.7: Water-use Efficient irrigation of treated wastewater from Maerad and Al Akaider WWTPs in Jordan	Jerash (Ketteh) Mafraq (Al-Akaider)		Direct involvement T: 450 W: 200 Y: 150 S: 150	Municipalities: T: 9,568 W: 4,528 Y: 2,474 S: 561	144,800	JOHUD (in line with output 3.7.1)	
	2.7.2.Community organization, awareness and capacity building + operation, maintenance and replication and upscaling plans for concrete adaptation output 3.7: Water-use Efficient irrigation of treated wastewater from Mafraq WWTP in Jordan	Mafraq (Al-Ghadeer Al-Abyad)		Direct involvement T: 300 W: 120 Y: 180 S: 100	Municipalities: T: 1,661 W: 814 Y: 498 S: 166	114,200	BADIA (in line with output 3.7.2)	
	2.8.Community organization, awareness and capacity building + operation, maintenance and replication and upscaling plans for concrete adaptation	Irbid (Ramtha)		Direct involvement / targeted T: 300 W: 150 Y: 45	Municipalities: Students: 23,000 W: 11,500	314,600	PRI (in line with output 3.8	

		output 3 .8; permaculture demonstration  2.9.Community organization, awareness and capacity building + operation, maintenance and replication and upscaling plans for concrete adaptation output 3.9; permaculture demonstration in Lebanon	LARI Premises (located in Tal Amara) and Zahle Municipality; All Municipalities/ communities that fall within the Zahle District.		S: 30  T (Students) 270 (in 3 years) W: 135  T (Farmers) 340 W: 70 Y: 90 Syr: 70	Farmer family: 400 W: 200 Y: 60 S: 40 T (Farmers families): 3,400 T (Surrounding municipalities / community): 8 municipalities W: 700 Y: 500 Syr: 480	418,171	LARI (in line with output 3.9) and in coordination with Ministry of Education + Lebanese University)	
Total					T:101,588 W:>40 %		1,881,6 71		
					Y:>15 %				
Component 3: Increasing Lack of water	g the adaptive capacity of the Increased adaptive	e water sector: Expand unconventional water harves 3.1. Rooftop rainwater harvesting in	ting, supply and irrig	ation options, using innovative a  Target municipalities	nd replicable techniques : Direct involvement		867,262	UNICEF	1,410 m3
availability in target areas, which will worsen with climate change:  Lack of using rainwater efficiently and lack of	capacity within the water sector through resilient water harvesting options  Water to be used for toilets, gardening, etc., not drinking	Lebanon 20 systems (large) 11 Educational facilities 7 Religious buildings 1 Health facility 1 Municipal building (show room in building with RWH system, GWTR system and WSDs	Ablah Hazerta Saadnayel Bar Elias El-Marj	experience water challenges and have largest numbers of DPs in the country  Aligned with national and municipal priorities, incl. municipal	T: 55,000 W: 27,689 Y: 2,950 S: 29,300	T: 300,877 W:154,582 Y: 16,548 S: 170,296	001,202		1,4101110
showcases to build on to set-up a municipal or national rainwater harvesting programme	Showcasing water harvesting options in different buildings	3.2. Rooftop rainwater harvesting in Jordan 86 systems: 49 schools (of which 18 rehabilitation) 15 mosques 20 residential buildings 2 municipal buildings with RWH system	Irbid (Qasabit Irbid, Bani Obeid, Ramtha) Mafraq (Qasabit Mafraq)	development plans  Municipalities are mandated to manage water within municipal boundaries, which includes rainwater harvesting options  Schools and mosques are targeted because of large water harvesting potential + awareness	Direct involvement T: 52,855 W: 26,420 Y: 19,385 S: 8,728	Municipalities: T: 863,691 W: 415,440 Y: 259,107 S: 205,202	836,820	<u>JOHUD</u>	Av school saving (Irbid):528m3 Av saving for 40 schools (Irbid): 21,120m3 Av school saving (Mafraq):101m3 Av saving 9 schools (Mafr): 909m3 Total: 22,029m3
Lack of water availability in target areas, which will worsen with climate change:	Increased adaptive capacity within the water sector through resilient water treatment and reuse options in buildings	3.3.Greywater treatment and reuse in Jordan  40 systems: 35 schools 5 mosques	Irbid (Qasabit Irbid, Bani Obeid, Ramtha)	raising potential (see comp)	Direct involvement Schools: T: 39,582 W: 21,940 S: 6827	Municipalities: T: 863,691 W: 415,440 Y: 259,107 S: 205,202	843,112	UNICEF	Potential Monthly Water Quantity Treated and Reused (m3): 4,369 m3

Lack of using grey water efficiently	Water to be used for toilets, gardening, etc., not drinking		Mafraq (Qasabit Mafraq)						
Lack of water availability in target areas, which will worsen with climate change:  Lack of re-using treated wastewater efficiently due to: Lack of quality Lack of storage  Increased adaptive capacity within the water sector through resilient water treatment and reuse options - efficient use of treated wastewater systems through improved quality of treated wastewater +	3.4. Efficient treatment and reuse of wastewater from Zahle WWTP, in Lebanon Diverting the plant's treated effluent for irrigation purposes.	Zahle (Cadastres: Zahle Aradi, Zahle Haouch El-Oumara Aradi, Zahle Haouch EL- Oumara, Zahle Maallaqa Aradi)	Target municipalities experience water challenges and have largest numbers of DPs in the country  Aligned with national and municipal priorities, incl. municipal development plans	From WWTP T: 3,917 Women 2013 Youth 216 Syrians 2217	Municipalities: T: 184,332 W: 94,705 Y: 10,140 S: 104,332	846,120	RTO/Compa ny	18,000 m3 treated daily for 110 Hectares of agricultural lands	
capacity	storage capacity for efficient irrigation purposes	3.5.1 Efficient treatment and reuse of wastewater in Jordan Improving water quality and storage capacity for irrigation use from Maerad WWTP	Jerash (Ketteh)	Farmers are facing water scarcity challenges because the WWTPs do not produce and store enough clean water; waiting list for farmers exist to get	T: 77 W: 31 Y: 20 S: 15 Farms: 25	Municipalities: T: 7,919 W: 3,789 Y: 1,980 S: 396	1,053,3 32	MoWI / YARMOUK WATER COMPANY	Water Storage: 3,000m3
		3.5.2 Efficient treatment and reuse of wastewater in Jordan Improving water quality and storage capacity for irrigation use from Al Akaider WWTP	Mafraq (Al-Akaider)	access to WWTP water (through contract)  Zahle WWTP releases treated water into Litani River which does not	T: 78 W: 31 Y: 20 S: 15 Farms: 32	Municipalities: T: 1,649 W: 739 Y: 494 S: 165		MoWI / YARMOUK WATER COMPANY	Water Storage: 2,000m3
		wastewater in Jordan Improving water	Mafraq (Al-Ghadeer AL-Abyad)	directly benefit the area's farmers.  Farmers use polluted water from rivers for crop irrigation.  Treated water from WWTP in Jordan is lost during the night because of lack storage capacity and water already used by farmers lacks quality	T: 120 W: 35 Y: 20 S: 25 Farms: 40	T: 1,661 W: 814 Y: 498 S: 166		MoWI / YARMOUK WATER COMPANY	Irrigated dunums: 100
Lack of water availability in target areas, which will worsen with climate change:	Increased adaptive capacity within the water sector through water efficient irrigation options –	3.6 Water-use-efficient irrigation of treated wastewater for fruit trees and vineyards in Lebanon from Zahle WWTP, Lebanon Replace surface irrigation for fruits trees, vineyards and potato plantation with drip systems (pumps, filters, sensors, automated tools)	Zahle, Bar Elias	Target municipalities experience water challenges and have largest numbers of DPs in the country	T: 4,495 W:2,293 Y: 540 S: 2,525 F: Leb: 394; Syr: 505	Municipalities: T: 253,456 W: 130,219 Y: 13,941 S: 143,456	988,950	RTO/Compa ny	150 Hecta res

Lack of using water efficiently in agriculture practices	efficiently in treated wastewater	3.7.1 Water-use Efficient irrigation of treated wastewater from Maerad and Al Akaider WWTPs in Jordan. Modern irrigation system	Jerash (Ketteh) Mafraq (Akaider)	Aligned with national and municipal priorities, incl. municipal development plans; in Jordan, sprinklers are forbidden by law but still often used.	T: 155 W: 62 Y: 40 S: 30 Farms: 40	Municipalities: T: 9568 W: 4528 Y: 2474 S: 561	804,400	JOHUD	120 donums  Increase the amount of reclaimed water allocated for irrigation to 15%
		3.7.2Water-use Efficient irrigation of treated wastewater from Mafraq WWTP, Jordan. Modern irrigation system	Mafraq	Farmers are facing water scarcity challenges but often don't use efficient water use irrigation systems	T: 120 W: 35 Y: 20 S: 25 Farms: 40	T: 1,661 W: 814 Y: 498 S: 166		BADIA	Increase the amount of reclaimed water allocated for irrigation to 15%
Lack of water availability in target areas, which will worsen with climate change:  Lack of using water and other resources Incl. waste) efficiently in agriculture production systems	Permaculture demonstration site showing efficient water use system for student and farmers; This includes organic production examples that increase the quality and the quantity of soil (creating a bio- sponge) while	3.8 permaculture demonstration – efficient water use system  Bio-Fertilizer production; Crop Garden and Compost Egg laying Chickens; Bees / apiculture; Compost worms; Olive Orchard Monoculture Conversion to Food Forest	Jordan University of Science and Technology campus Irbid (Ramtha)	Target areas experience water challenges and have the largest numbers of DPs in the country; Farmers are facing water scarcity challenges but often don't use water efficiently; The area experiences unsustainable land use / agriculture practices that resulted in degradation	T: 300 W: 150 Y: 45 S: 30 Students: 200	Students: 23,000 W: 11,500 Farmer family: 400 W: 200 Y: 60 S: 40 Community: 2,000 W: 1,000 Y: 300 S: 200	384,046	Permacultur  e Research In stitute in cooperation with Jordan University of Science and Technology (JUST)	Water is saved by increasing the quality and the quantity of soil, creating a bio-sponge.
sponge) while producing nutrition- dense food. This system reduces water needs	3.9. permaculture demonstration efficient water use system Agricultural Waste Management for Sustainable Crop Production Urban, Peri-Urban and Rural Agriculture and Water Harvesting as Adaptation Measures Apiculture and the reduction of chemical substance use at farm level Introducing adapted crop varieties and diversifying farm production	LARI Premises (located in Tal Amara) and Zahle Municipality; All Municipalities/ communities that fall within the Zahle District.	of ecosystems leading to reduced services and food security issues	T (Students) 270 (in 3 years) W: 135 T (Farmers): 340 W: 70 Y: 90	T (Farmers families): 3,400 T (Surrounding municipalities / community): 8 municipalities W: 700 Y: 500 S: 480	885,725	LARI + involved Municipalitie s		
Total					T: 157,309 (much overlap with comp 2) W:>40 % Y:>15 %		7,509,7 67		
	g knowledge and policies and (incl. from DPs migration)	nd regulations to increase urban resilience in the regio	on: Project KM and re	eplication, incl. development of re			ement model i		nate change and
Lack of (inter)national institutional and	Strengthened (inter)National institutional capacity	Regional / international KM with focus on sharing project lessons and replication	MENA + Arab region and global	The MENA region is the most water scarce region in the world	T: 200 W:>40 % Y: >15 %	Total MENA region	280,000	UN ESCWA	By planning and managing water in a forward-

technical capacity to manage urban risks and vulnerabilities in the context of climate change, esp. water scarcity	manage urban risks and vulnerabilities in the context of climate change, esp.  climate change and DP crisis related water scarcity challenges,	Jordan and Lebanon KM with focus on project progress, best practices and lessons learned  Sub-national KM and Regional' urban risks and vulnerabilities assessment, planning and management approach model for type 2 cities	Jordan & Lebanon Target municipalities	combined with the highest share of DP urban population  Climate change action considering DPs crisis impacts, esp. in urban	T: 200 W:>40 % Y: >15 % T: 200 W:>40 % Y: >15 %	All target ministerial and municipal staff All target municipal staff	437,800 165,000	Consultancy firm	looking and holistically way, water will be managed much more efficiently and overall demand
challenges, and urban (population) growth, including from DPs migration these know Jordand MEN will be some		Incentive mechanism (financial) and regulatory framework to replicate and upscale rainwater harvesting activities en non	Jordan and possibly Lebanon	impacts, esp. in urban areas, is very limited	T: 200 W:>40 % Y: >15 %	All target municipal staff	40,362	Consultancy firm	demand reduced
Total					T: 600 W:>40 % Y:>15 %		923,162		
Grand total					T: 120,951 W:>40 % Y:>15 %		11,655, 600		

## B. Promotion of innovative solutions

**Component 1**: The proposed Territorial planning and development strategy (district-level) and urban master plans at municipal level and urban observatories aim to enable district and municipal governments to manage climate change and DP crisis related urban water scarcity challenges and flood risks, within their borders through a participatory approach. This approach will allow for more coordinated and forward-looking investment in infrastructure and services, which is currently lacking in the target areas and at the municipal level. The approach is not only unique for the target countries and target municipalities, but also for the region, as the assessment and planning approach responds to both climate change and DP crisis issues and aim to reduce tension over scarce resources. Therefore, the replication of this model will be promoted (through outputs 4.1, 4.2 and 4.3).

**Component 2**: The proposed measures aim to ensure sustainability (maintenance and replication) of the proposed concrete adaptation measures under component 3. Although this is not innovative, using community-level adaptation related planning and decision-making (also under component 1) 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 the exchange and planning process.

Component 3: The project proposes to use innovative internationally proven technologies to increase water availability from non-conventional sources and using it efficiently, while in that way reducing water demand from conventional sources such as (often polluted) groundwater. The purpose is the showcase intervention / techniques that are suitable for urban areas, considering urban-rural linkages, and that can also be used elsewhere in Jordan, Lebanon and in the region. Although some rainwater harvesting initiatives exist in Jordan and Lebanon, showcasing these in various types of buildings, including costs and benefits and replication options, will be a step to upscale such 'lose' initiatives towards municipal and even national rainwater harvesting programmes (see output 4.4), which has been pointed out as a priority in Jordan. Wastewater treatment and its use in agriculture is practiced in Jordan, but the water quality of often not good enough and storage capacity is lacking. In Lebanon, treating wastewater to a quality that it can be used in agriculture is not common practice and to showcase best practices, including standards, in both Jordan and Lebanon can be examples for both countries (which exchange to learn from both approaches (under output 4.2) and the larger region (under output 4.1.).. While drip-irrigation exists in both Jordan and Lebanon, sprinklers are still often used. Therefore, a transfer to more water-use efficient irrigation technology is needed. The innovative permaculture concept has shown to be promising in Jordan through the national AF project and will be promoted through students (to be involved with surrounding farmers and communities) and in the region (output 4.1) and in Lebanon (through output 4.2).

**Component 4**, The assessment and planning approach under component 1 is not only unique for the target countries and target municipalities, but also for the region, as it responds to both climate change and DP crisis issues and aim to reduce tension over scarce resources. Therefore, the model will be further developed under output 4.3, including best practices (and standards) of proposed concrete adaptation measures and replication of this model will be promoted through outputs 4.1, 4.2 and 4.3. Under output 4.4. mechanisms to upscale rainwater harvesting initiatives towards municipal and even national rainwater harvesting programmes will be identified, which would be a great step towards a national water saving impact.

## 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 7: Project 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	The governments, at different levels, but especially at the municipal level, will be able to better assess, plan and manage scarce water resources also considering climate change impacts and vulnerabilities, which are also of economic importance Through rainwater harvesting and grey water treatment and reuse interventions, water losses will be reduced / water saved, which will also save costs.

	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 dependent on the agriculture sector for their income	Through the treatment and reuse of wastewater interventions, water losses will be reduced / water saved, which will also save costs, both for the Water Authorities of Jordan (esp Yarmouk, which has very limited resources), but also for the farmers, as water will be provided against reasonable costs. Without this intervention, farmland may be lost, which is also a treat to food security.  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. The permaculture intervention is to show student and farmers that through this approach water and resources can be used efficiently, making it a replicable business case. It will also increase crop diversity and productivity;
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 considering climate change impacts and vulnerabilities, 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 and irrigation systems, will benefit the most vulnerable, including DPs, poor Lebanese and Jordanians, women and youth.  Water resources and water dependent livelihoods (i.e. agriculture) will be protected from pollution and through waste water treatment. This will reduce health issues, of whom the most vulnerable / poor groups suffer the most. Currently, water-related health issues are very high in the Bekaa area compared to other areas. 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  'Peacebuilding' through involving youth and thus reducing possible tension between host and DP communities that is most likely to occur among youth.
Environme ntal	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, also considering climate change impacts and vulnerabilities. Water resources and water dependent livelihoods (i.e. agriculture) will be protected from pollution and through waste water treatment. This will reduce health issues, of whom the most vulnerable / poor groups suffer the most. Currently, water-related health issues are very high in the Bekaa area compared to other areas; 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.  Rooftop rainwater harvesting increases water availability at building and residential household level, and reduces urban flash flooding probabilities and reduces illegal connection to wastewater network thus reducing manhole flooding in the streets in winter season. Introduction of unconventional water sources will help decrease pressure on the already depleting groundwater resources in some areas.  Permaculture: water needs reduced; pesticides and related soil/water pollution reduced; overall land / soil degradation reduced.

The number of direct beneficiaries is estimated at 930 for component 1, 101,588 for component 2, 157,309 for component 3 and 600 for component 4 (see table 6). Approximately one fourth of the target population is Syrian. Targets for women and youth are set at 40 percent for women and 15 percent for youth. Because there is some overlap with beneficiaries between component 2 and 3, the total number of project direct beneficiaries is estimated at around 120,000. However, with a large share of the project activities focus on replication and knowledge sharing, the number of indirect beneficiaries is expected to be very large. Moreover, indirect positive impacts of increased water availability and quality and livelihood sustainability is expected to have benefits for whole communities.

### D. Cost-effectiveness

Table 8: Proposed adaptation actions' cost-effectiveness rationale

#### Rationale why priority actions have been selected from a cost-Proposed adaptation actions / outputs effectiveness perspective and alternative actions considered 1.1. Territorial planning and development A total of over 1 million people in the project target areas (inhabitants of strategy / guidelines with CC and gender the target municipalities) will benefit from municipal level master plans. mainstreamed in Lebanon This is little over USD 1 per inhabitant. 1.2. Urban master plans at municipal level with CC and gender mainstreamed in Lebanon Municipal master plans with climate change mainstreamed into it are a 1.3. Urban master plans at municipal level with cost-effective ways to assess, plan and manage municipal assets and CC and gender mainstreamed in Jordan infrastructure, including water resources (esp non-conventional sources such as rain/stormwater), also looking at future needs. Alternatively, in a no action scenario, municipalities will continue prioritizing actions that are not climate change resilient and sustainable or don't address the source issues. Moreover, without the municipal plans, water is only managed conventionally at the governorate / national level, mostly looking at current need and supply from groundwater, which is not sustainable and doesn't allow for using nonconventional water sources such as rain/stormwater efficiently within municipal boundaries. Thus, the municipal plans will complement the national water master plans. Through the National Urban Policy and climate change data coordination mechanism between the national and municipal level (i.e. observatories) the plans will effectively complement and guide national plans. Integrated Water Resource Management is an alternative approach to comprehensively plan and manage water within a system, but this is not a ministry priority. For an overview of possible concrete measures that could be prioritized as a result of municipal planning and an indication of the contribution to adaptation, see the tables below. Participatory planning processes are required to ensure ownership over 2.1. Community organisation, awareness and capacity / skill building + operation, to be implemented concrete adaptation measures. Participatory processes to operate, maintain and replicate interventions is required maintenance and replication and upscaling plans for concrete adaptation output 3.1 to sustain them. Moreover, some monitoring activities are needed to 2.2. See above for output 3.2. measures to effectiveness and sustainability of proposed concrete 2.3. See above for output 3.3. measures 2.4. See above for output 3.4. Alternatively, interventions are planned and executed top-down, but 2.5. See above for output 3.5. this may lead to lack of ownership and capacity to operate, maintain 2.6. See above for output 3.6. and replicate proposed concrete measures, which would result in a loss 2.7. See above for output 3.7. of investment 2.8. See above for output 3.8 2.9. See above for output 3.9 See details in tables 8a and 8b below See outputs for concrete adaptation interventions below. Regional project steering committee meetings (output 4.2) are 4.1. Regional / international KM with focus on sharing project lessons and replication organised, where possible, in conjunction with relevant regional events 4.2. Jordan and Lebanon KM with focus on (output 4.1), thus avoiding double costs for travel and allowances. project progress, best practices and lessons Relevant project lessons will be shared regionally and even globally learned through an existing relevant KM platform (output 4.1), and outreach 4.3. Sub-national KM and Regional' urban risks mechanism, thus avoiding cost for this. Replicating the model and vulnerabilities assessment, planning and developed under output 4.3. (through outputs 4.1 and 4.2) may result in adoption of the model elsewhere and in that way increase efficient use management approach model for type 2 cities 4.4. Incentive mechanism (financial) and of water, also looking at the future, and in that way, avoiding related regulatory framework to replicate and upscale cost of non-adoption. rainwater harvesting activities

Possible concrete measures as a result of municipal planning include

Measures	Contribution to adaptation (efficiency) <sup>86</sup>
Regulations / by-laws to e.g. harvest water and / or reduce	Water consumption reduction: up to 30 percent
water consumption (e.g. through building codes and zoning	

which need to deal with similar situations.

Alternatively, best practices and approaches are not shared regionally, which may lead to loss of investments is countries and urban areas,

<sup>86</sup> Estimation based on: <a href="https://academicjournals.org/journal/IJWREE/article-full-text-pdf/321328465147">https://jordantimes.com/news/local/public-urged-harvest-rainwater</a>

conditions / permits or restrictions on development in risk areas (esp. for floods)	Avoidance of flood-related costs to new development and reduction of human and economic losses.		
Financial incentives to e.g. harvest water or reduce consumption (through reduced municipal taxation for building permits that abide by the municipal climate planning) or to use water saving devices			
(Green) infrastructure <b>spatial planning</b> to plan and <b>design</b> water harvesting locations, improve the efficiency of the irrigation network and reduce flood risks	Water consumption reduction: up to 45 percent  Flood prevention and avoidance of flood-related costs to new development		
(Upstream) storm/ rainwater harvesting or groundwater recharge instead of e.g. constructing downstream drainage channels to reduce flood risks.     Building-level rainwater harvesting (in other areas where concrete measures are taken under project component 3)     Agriculture: farmer-level water storage ponds (in other areas where concrete measures are taken under project component 3), change of crop varieties; change of sewing dates	Water consumption reduction: up to 37,5 percent  Avoiding costs of: - Selection of non-appropriate / non effective measures). This could be millions (USD) for drainage channels in one neighbourhood alone - Crop failure		

In Jordan, the rain/stormwater harvesting potential from roads is:

Municipality	Surface Zoned Area (km²)	(20% of areas as roads) (km²)	Annual Rainfall (mm)	Runoff Coefficient	Potential rainwater to be harvested yearly (m³/y)		
Irbid	190	38	500	0.8	15,200,000		
Mafraq	120	24	200	0.8	3,840,000		
Total					19,040,000		

Rainwater harvesting potential through building rooftops- calculated based on building licenses issued by Municipalities of Irbid and Mafraq in (2019):

Municipality	Number of Building Licenses	Building Area (m²) (Assumed average 150m²)	Annual Rainfall (mm)	Runoff Coefficient	Potential rainwater to be harvested yearly (m³/y)	
Irbid	5,653	847,950	500	0.8	339,180	
Mafraq	1,501	225,150	200	0.8	36,024	
Total					375,204	

In Lebanon, the rain/stormwater harvesting potential is:

District (covering all target municipalities)	Surface Area (km²)	Annual Rainfall (mm)	Runoff Coefficient	Potential rainwater to be harvested (m³)	(20% of areas as roads)
Zahleh	436	700 <sup>87</sup>	0.8	244,160,000	48,832,000

Built-up areas (2019 - Geo spatial identification):

District (covering all target municipalities)	Surface Area (m²)	Annual Rainfall (mm)	Runoff Coefficient	Potential rainwater to be harvested (m³)
Zahleh	320,000	700	0.8	179,200

<sup>&</sup>lt;sup>87</sup> 2019 Yearly average was 750 mm, 2020 is 650 according to the Lebanese Agriculture Research Institute (LARI)

**Table 8a:** Jordan proposed concrete adaptation actions' cost-effectiveness rationale under component 3

Adaptation measure	Total	Beneficiries		Cost-		Alternative Solutions	Justification
	project			effectiver		Alternative Solutions	Justinication
	cost			(Total Co Beneficia			
		Direct	Indirect	Direct	Indirect		
		Direct	manect	(USD/	(USD/		
				Benefic	Benefi		
3.2. Install and connect	836,820	T: 52,855	T: 863.691	iary) 15.5	ciary) 0.95	Alternative 1: Boreholes/Tubewells (groundwater	The over-abstraction from the aquifers deteriorates the groundwater
86 Rooftop rainwater harvesting systems (of which 18 rehabilitation) in 2 municipal buildings, 20 residential						abstraction).  Total cost: 1,290,000USD <sup>88</sup> Cost per beneficiary: Direct: 32.6USD  Alternative 2: Rainwater Collection from Ground Surface.	quality, increasing its salinity and deepening the static and dynamic water levels.  2. It is assumed that the additional cost implication for over-pumping is equivalent to the cost of desalination, which is estimated at 2.12USD /m3 (this figure is used for both, camps and host communities). Therefore, the
buildings, 49 schools and 15 mosques.						Total cost: Approx. 924,000*USD89	environmental cost is estimated at 99 USD/person.
and 15 mosques.							rehabilitation.
3.3. Greywater	843.112	T: 39,582	T: 863.691	21.3	0.98	<ul> <li>system and Water Saving Devices (WSD), costed at (100,000USD).</li> <li>4. Excavations and use of water cisterns will be limited to available space is limited and a mounting rectangular tar to make sure the intervention is as cost effective as possi</li> <li>5. According to the Climate Change Policy for a Resilie published by the MoWl. RWH is among the prioritized scores highly in regards to cost efficiency and synergy bet and mitigation.</li> <li>6. According to an article by former Minister of Water Eng. In 150-square-metre house in areas with average annual millimeters (mm) can collect at least 50 cubic meters of purby channeling rainwater to cisterns. And that installing a system can reduce household water bills up to 40% annually due to alleviating the need for purchasit tanks.</li> </ul>	<ol> <li>Excavations and use of water cisterns will be limited to sites where the available space is limited and a mounting rectangular tank can't be used, to make sure the intervention is as cost effective as possible.</li> <li>According to the Climate Change Policy for a Resilient Water Sector published by the MoWI. RWH is among the prioritized solutions, as it scores highly in regards to cost efficiency and synergy between adaptation and mitigation.</li> <li>According to an article by former Minister of Water Eng. Hazem Naser<sup>90</sup>, a 150-square-metre house in areas with average annual rainfall of 350 millimeters (mm) can collect at least 50 cubic meters of pure water annually by channeling rainwater to cisterns. And that installing a water harvesting system can reduce household water bills up to 40% annually.</li> <li>A study by Assayad showed that, rainwater harvesting can save 70-340 USD annually due to alleviating the need for purchasing private water</li> </ol>
treatment and reuse in 35 schools and 5 mosques	040,112	1. 33,302	1.000,081	21.0	0.90	Alternative 1: Sand Filter System Total cost: 792,000USD Cost per beneficiary: Direct: 20USD  Alternative 2: Constructed Wetlands: The wetland system composes of a rectangular basin that is constructed underground and filled with gravel or sand or a combination of both.  Total cost: 1,352,000*USD Cost per beneficiary: Direct: 34USD *Excluding potential cost of land acquisition	of greywater, however are restricted by low efficiency of BOD, COD, and TOC removal and prone to frequent clogging problem, requiring more frequent maintenance, thus, more expensive O&M cost (approx 56,000/year), or else may result in effluent that is not in compliance with the Jordanian National Standards.  2. Constructed wetlands primary requirement is a continuous supply of water, which is not the case in schools since influent flow will be intermittent.

https://backend.orbit.dtu.dk/ws/portalfiles/portal/7689720/TNA Guidebook AdaptationWater.pdf

lntermittent water supplies: challenges and opportunities for residential water users in Jordan; David E. Rosenherg, Samer Talozi and Jay R. Lund

https://jordantimes.com/news/local/public-urged-harvest-rainwater

3.5. Efficient treatment and reuse of wastewater in Jordan	Maerad Akaider Mafraq	1,053,3 32	T 275	T: 11,229	4,098.6	93.9	Alternative 1: Construction of new WWTP with a capacity of 100,000 m³ per day, Total cost: Approx. 340,000,000*USD <sup>91</sup> Cost per beneficiary: Direct: 1,236,363.6USD  Alternative 2: Expansion of existing WWTP (increase capacity by 100,000 m³) Total cost: 282,000,000USD <sup>92</sup> Cost per beneficiary: Direct: 1,025,454.6USD	<ol> <li>According to the Climate Change Policy for a Resilient Water Sector published by the MoWl. Wastewater reuse is among the prioritized solutions, as it scores highly in regards to cost efficiency and synergy between adaptation and mitigation.</li> <li>Wastewater reuse will help preserve the natural resource, and decrease illegal groundwater pumping which is decreasing the quality and quantity of water in Jordan.</li> </ol>
3.7. Water- use Efficient irrigation of treated wastewater in Jordan	Maerad Akaider Mafraq	804,400	T275	T: 11,229	2,925.1	71.6	Alternative 1: Surface drip irrigation Total cost: 563,080USD Cost per beneficiary: Direct: 2,047.6USD  Alternative 2: Flood irrigation Total cost: 171,020 Cost per beneficiary: Direct: 621.9USD	<ol> <li>Subsurface irrigation pipes and fittings usually cost 4,231USD per dunum. However, a system with pipes and fittings costing 2,000USD per dunum was successfully tested locally, and will be used for this intervention.</li> <li>Surface drip irrigation is initially cheaper to set up, however, very costly from an operational point of view, based on previous experiences at every harvest (8 times annually), pipes are damage and pulled out of place. The consulted farmers expressed that they do not prefer surface drip irrigation.</li> <li>Flood irrigation requires an amount of water much higher than the current average amount of 1-3 m³ per planted dunum, leaving some areas of land uncultivated besides the high evaporation rate. This goes against the objective of project, which is to decrease use of unsustainable water resources.</li> </ol>
3.8. Permaculi demonstration loop water sys Jordan	- closed	384,046	T: 300	25,400	1,280.2	16.7	Alternative 1: Monoculture system Total cost: 326,632USD Cost per beneficiary: Direct: 2,047.6USD	<ol> <li>Monoculture systems decrease life in the soil and results in water loss and an increase in the need to use chemical fertilizers and pesticides.</li> <li>Irrigation constituted about 53% of total water use in Jordan in 2014. (Figueroa, Mahmoud and Breisinger, 2018). In comparison with the average crop water use in Jordan, permaculture results in a 50% reduction by using compost which increases water retention in soil, 100% reduction in chemical use and up to 200% increase in yield.</li> </ol>

**Table 8b:** Lebanon proposed concrete adaptation actions' cost-effectiveness rationale under component 3

Adaptation measure	Total project cost	Beneficiarie	s	Cost-effectivenes (Total Cost/Beneficiarie		Alternative Solutions	Justification
		Direct	Indirect	Direct (USD/Be neficiary )	Indirec t (USD/ Benefi ciary)		
3.1. Install and connect 20 Rooftop rainwater harvesting systems in 11 educational facilities, 7 religious buildings, 1 health	867,262	T: 55,000	Municipalit ies: T: 300,877	15.77	2.88	Alternative 1: Boreholes/wells (groundwater abstraction of at least 50 meters with energy, pumps and filtration units – not considering O&M costs) <sup>93</sup> .  Total cost: 2,300,000USD <sup>94</sup> Cost per beneficiary: Direct: 41.8USD	Rainwater collection from ground surfaces requires constant surface rehabilitation and below ground tanks (i.e. cisterns) which require excavations.     The over-extraction from the aquifers deteriorates the groundwater quality, increasing its salinity and deepening the static and dynamic water levels.

<sup>94</sup> According to CDR reports, drilling, equipping of three medium size water wells cost 350,000USD (around 115,000USD/ well).

https://www.oecd.org/derec/adb/47174022.pdf
https://www.miga.org/sites/default/files/archive/Documents/Samra-ESIA Final Report May7.pdf
https://www.miga.org/sites/default/files/archive/Documents/Samra-ESIA Final Report May7.pdf
According to The National Geothermal Resource Assessment of LEBANON (UNDP 2014), wells cost depend on many factors and vary with time, location and the specific: material (cement, drilling mud, etc.), energy supply, logging and testing, services, pumps, heat exchanger, pipes, slop systems, filters.

facility and 1 municipal building.						Alternative 2: Rainwater Collection from Ground Surface. For the same stored quantities.  Total cost: 1,417,500USD <sup>95</sup> Cost per beneficiary: Direct: 25.77USD	
3.4. Efficient treatment and reuse of wastewater from Zahle WWTP in Lebanon.  Initially, wetlands were also proposed but these were not feasible politically.	846,120	From WWTP T: 3,917	Municipalit ies: T: 184,332	216	4.60	Alternative 1: Construction of new mobile WWTP with a capacity of 5,000 m³ per day, Total cost: Approx. 1,200,000USD <sup>96</sup> Cost per beneficiary: Direct: 306.4USD * Excluding costs of required full comprehensive ESIA studies, operation and maintenance costs, sludge disposal, energy requirements.  Alternative 2: Expansion of existing WWTP (increase capacity to maximum 35,000 m³) This requires completion of the networks upstream in Zahle Total cost: 10,000,000USD <sup>97</sup> Cost per beneficiary: Direct: 2,553USD	<ol> <li>According to the National Water Sector Strategy (MoEW). Wastewater reuse is among the prioritized solutions, especially with the continuous depletion of underground water resources, and the 8% decreased in precipitation during the last 30 years compared with earlier periods of the previous century<sup>98</sup>.</li> <li>Wastewater reuse will help preserve the natural resource and decrease illegal groundwater pumping which is decreasing the quality and quantity of water in Lebanon.</li> </ol>
3.6.Water-use-efficient irrigation of treated wastewater for fruit trees, vineyards and potato plantation in Lebanon from Zahle WWTP, Lebanon	988,950	T: 4,495	Municipalit ies: T: 253,456	220	3.9	Alternative 1: Surface drip irrigation Total cost: 937,500USD Cost per beneficiary: Direct: 208.57USD  Alternative 2: Flood irrigation Total cost: 210,415USD Cost per beneficiary: Direct: 46.8USD	<ol> <li>Subsurface irrigation pipes and fittings usually cost 4,250USD per hectares. However, a system with pipes and fittings costing 2,000USD per hectare.</li> <li>Surface drip irrigation is initially cheaper to set up, however, very costly also due to the damage caused at every harvest (8 times annually), where pipes get pulled out of place.</li> <li>Flood irrigation requires an amount of water much higher than the current average amount of 1-3 m³ per planted hectare, leaving some areas of land uncultivated besides the high evaporation rate and dry seasons.</li> </ol>
3.9 Permaculture demonstration - closed loop water system in Lebanon	885,725	T (Farmers): 340	T (Farmers families): 3400	1,452	260.5	Alternative 1: Monoculture system Total cost: 753,168USD Cost per beneficiary: Direct: 221.5USD	<ol> <li>Monoculture systems decrease life in the soil and results in water loss and an increase in the need to use chemical fertilizers and pesticides.</li> <li>Permaculture results in 50% reduction in water use by using compost which increases water retention in soil, 100% reduction in chemical use and up to 200% increase in yield.</li> </ol>

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 such as UNICEF and UN-ESCWA

2 <u>Community involvement</u> with development / construction of concrete interventions and because of community capacity building especially for youth who would ensure the sustainability of the project.

☐ Having selected technical options based on <u>cost-, feasibility and resilience/sustainability criter</u>

<sup>&</sup>lt;sup>95</sup> UN-Habitat Lebanon implemented an underground surface water catchment basin of 80 cu.m in 2018, with all needed drainages, pumps, piping, casing, insulation, connection to electricity, the final cost was 54,000USD.

<sup>&</sup>lt;sup>96</sup> Cost estimated by World Vision International for a mobile WWTP in Qabb Elias.

<sup>&</sup>lt;sup>97</sup> According to Zahle mayor.

<sup>&</sup>lt;sup>98</sup> National Water Sector Strategy (NWSS), Ministry of Energy and Water (MEW), 2010.

# E. Consistency with national or sub-national strategies

Both Jordan and Lebanon 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 table 9 below.

The project proposal especially aligns with the INDC, TNC and TNA and National Water (Sector) Strategies in both countries. In Jordan, the project 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). During the full proposal development phase, the established national project steering committees reprioritised some interventions, including the selected WWTP in Jordan. In both Jordan and Lebanon, municipalities are mandated to develop municipal master plans. Moreover, municipalities are required to manage water, especially non-conventional sources such as stormwater and rainwater, within their municipal boundaries. Although Irbid has a master plan, it is outdated and other municipalities don't have these plans, which can be used to manage water within their boundaries, including consideration of climate change, DPs migration trends and gender.

Table 9: Jordan project alignment with National and sub-national priorities

	oject align	ment with National and sub-national priorities
Policy /	Year	Relevant priorities
Document	submit	
	ted /	
	ratified	
Jordan		
Climate Change s	strategies	
Jordan's Climate Change Policy for a Resilient Water Sector (2016-2025)	2016	This document is an integral part of the National Water Strategy (2016 – 2025) and related policies and action plans published by Ministry of Water and Irrigation (MoWI). It lists a number of water-related solutions that the project aligns with. These include: Water storage e.g. dams & reservoirs and ponds  New water, water harvesting (in combination with supplementary irrigation for drought and climate-proofing and increasing the water use efficiency of primarily rain fed agriculture, which is practiced on 60% of Jordan's cropland), water transfers, wastewater collection/treatment/reuse  Water quality protection and improvement, to increase water availability for unrestricted use; Integrated water and land planning / management / zoning, water-smart land use, including urban planning  Water (and energy) demand management: via technical measures, e.g. infrastructure rehabilitation and reduction of transmission losses (according to the 3rd National Communications the main threat to rainfed cultivation in Jordan is urban expansion). Better use of rainfall, more efficient irrigation  Improvements in water use efficiency, e.g. driven by demand-management or water reallocations, these generally also translate into energy savings18;  Training and capacity development: public awareness and behavioural change e.g. mainstreaming climate expertise into water management, facilitating the use of climate data for planning and early warning (climate services); and training of experts for writing successful proposals to international climate funds.  The action plan for the Climate Change Policy can build on existing Integrated Water Resources Management (IWRM) activities. However, the implementation has been slow so far. In order to avoid such problems, the action plan needs to include incentives for effective implementation and enforcement of the Climate Change Policy.
Jordan's Third National Communication on Climate Change	2014	A document submitted to UNFCCC by the Ministry of Environment and United Nations Development Programme, it stated that the expected reduced precipitation, maximum temperature increase, drought/dry days and evaporation are the main determinants of climate change hazards. The impact of the increased evaporation and decreased rainfall

	will result in less recharge and therefore less replenishment of surface water and groundwater reserves.
	In the long term, this impact will extend to cause serious soil degradation that could lead to desertification, exacerbating future conditions and worsening the situation of the agricultural sector due to the lack of sufficient water that will affect the income of the agriculture sectors.
	The proposed project aligns with the document by; Enhancing climate vulnerability analysis at the local level. Implementing the adaptation strategies and measures suggested by the report specifically for the water sector; Rainwater Harvesting Wastewater treatment Desalination Increasing Efficiency of irrigation technologies
	Greywater Reuse
Jordan's 2015	Raise Public Awareness  The project is well aligned with some of the adaptation measures for the water sector
Intended Nationally Determined	listed in the INDC: Reducing water losses in distribution pipes; Introducing water saving technologies such as low-flow toilets and showers, and
Contribution	efficient appliances;
(INDC)	Collection of rainwater for gardens, toilets, and other applications; Promoting water saving by awareness campaigns.
	Improving wastewater treatment plants (WWTP);
	Recycling wastewater; Increasing public awareness to water related issues;
The National 2013	National Climate Change Policy, published by the Ministry of Environment of Jordan,
Climate Change Policy of the Hashemite Kingdom of Jordan (2013- 2020)- Sector	aims to achieve a pro-active, climate risk-resilient Jordan, to remain with a low carbon but growing economy, with healthy, sustainable, resilient communities, sustainable water and agricultural resources, and thriving and productive ecosystems in the path towards sustainable development. 8 of 14 Climate Change Policy are designated for a Resilient Water Sector This Policy will provide guidance to the Government of Jordan to implement
Strategic Guidance	the major climate change objectives of national priority related to adaptation  The project is aligned with numerous adaptation measures listed as follows:
<u>Framework</u>	Water Sector:  Further mainstream climate change consideration in water sector strategies, policies, and planning documents on all levels;
	Address the use of treated/recycled wastewater in the regulation/ directives on the demand-side such as grey water as part of codes and regulations for buildings including, high-rise and high-density buildings; Improve the domestic water distribution networks, including reducing water losses and energy efficiency in pumping; Develop proposals for adaptation in the water sector for financing from international climate change adaptation funds
	Agricultural/food security and production:  Develop a comprehensive insurance system for agriculture; Permaculture.  Promote water use efficiency in agriculture.
Climate Change Technology Need Assessment	The Report outlines all the adaptation technology options available for water sector in Jordan and prioritized them based on most cost-effective, sustainable and socially acceptable options. It also highlighted the main barriers to adopting each of these technologies that should be addressed.
Project of Jordan (TNA)	The top three adaptation technologies for water sector include rainwater harvesting; water users association; and desalination/brackish water treatment and re-use.
	The AF project is in line with TNA plan which has selected water and agriculture as two of Jordan's most significant adaptation sectors.
NAP (Forth	coming in 2020)
Jordan 2025- 2015	This document (Jordan 2025) represents a long-term national vision and strategy
Part 1 Jordan 2025- Part 2	(framework) rather than a detailed government action plan. The vision acknowledged the impact of climate change in widening the gap between water supply and water demand. The project is aligned with the vision's objective to maximize the utilization of
i all Z	water and the reuse of waste water.

Jordan Facesamia	2018	I The IHCP is comprised at economic tiscal and sectoral strategies that outline the
Economic Growth Plan		The JEGP is comprised of economic, fiscal and sectoral strategies that outline the vision and policies pertaining to each sector published by The Economic Policy Council.
2018-2022		The project is aligned with JEGPin terms of achieving water security through; Integrating the management of water resources by increasing the quantities of water available and storage capacity of all the WWTP. Also implementing rainwater harvesting interventions Improving the quality of water and wastewater services. Supplying water for agriculture through replacing freshwater from surface and groundwater sources with treated wastewater from wastewater treatment plants Promote efficient use of water in irrigation and high-yield agricultural products. Adopt and publish an updated "Action Plan" to reduce water sector losse.
A National Green Growth Plan for Jordan (2017-2025)	2017	This NGGP seeks to understand what prevents Jordan from implementing the goals established in Jordan's current plans and strategies, and offers suggestions in the context of green growth for other aspirations that will help to futureproof Jordan's Vision. The plan identified water as one of main six priority sectors that provide coverage of key green growth issues and opportunities for Jordan. The project is aligned with the plan in terms of:  Acknowledging that water sector presents a crucial challenge to Jordan and that climate change has exacerbated existing water security issues resulting in significant negative implications for social development. Promoting the reuse of wastewater Reallocate humanitarian funding towards more strategic interventions to boost to boost resilience and minimise environmental impacts of refugee communities e.g. microgrid renewable energy, water harvesting Implementing a water provision intervention which could take the form of a desalination plant, a dam or a form of water harvesting.  Educate the locals and different decision-making bodies on value and scarcity of water and on making water-efficient project decisions
Environmental st	rategies /	plans
Strategic Plan of	2017	This document addresses the programs and plans of the Ministry of Environment in
the Ministry of Environment in Jordan (2017- 2019)		Jordan during 2017-2019 to ensure the continuation of the ministry's pioneer and pivotal role successfully, in light of the challenges that are surrounding the region, and the accelerated changes in recent years.  The project is well aligned with one of the objectives of the plan which is to prevent and
The Aligned National Action plan to Combat Desertification in Jordan 2015- 2020	2015	reduce the negative impacts on the environment caused by pollution & climate change.  The project will contribute to achieving the objectives of this action plan through mainstreaming climate change in planning in the target areas and so strengthening the enabling environment to adapt to drought in these areas.
The National Biodiversity Strategy and Action Plan (NBSAP) in Jordan 2015 - 2020	2015	The 2015-2020 NBSAP embraces a new vision for Jordan's biodiversity as follows: The project is specifically aligned with the objective regarding ecosystem services and climate change: through enhancing the national understanding of dryland ecosystem benefits to national resilience, economic sustainability and local livelihoods. This is mainly through increasing resilience to climate-induced drought.
		especially related to water
Jordan's National Water Strategy (2016- 2025)	2016	This document represents the vision and reference of the water sector in Jordan, which sets the goals and objectives for the water sector and also provides an initial response to Jordan's commitment to the Global Sustainable Development Goals,highlighting the need for stronger intersectoral coordination and producing a National Water Master Plan, including Management Plans for managing water resources and water demand.  The proposed project is generally well aligned with the adaptation to climate change measures. In addition, the project will contribute to reducing inefficient use of water as well as increasing water supply for irrigation.
Water Demand Management Policy 2016	2016	This policy addresses the management of water demands in all sectors, including municipal, industry, tourism, agriculture and other activities of national importance and lists a wide range of capacity building, institutional, economic and technical measures for demand management.

Surface Water	2016	The project is aligned with the policy in terms of:  Maximizing the utilization of the available water and minimize water losses and conserve water resources, promote effective water use efficiency, to adapt with the challenge we face of water scarcity in order to reduce the gap between supply and demand. It supports the achievement  Updating codes and technical regulations periodically to ensure the installation of Rainwater harvesting systems in new construction (residential, commercial, industrial, tourism, etc.) where the size of the storage tank that depends on average rainfall and the surface area of the building is considered within the construction code.  Continue implementation the replacement of all inefficient plumbing fixtures, appliances and equipment with the latest most efficient models. Assist low income consumers to obtain water saving devices for free or stimulatory prices  The introduction of best technologies and modern and advanced irrigation systems in terms of the efficient water use in agriculture  Expansion in establishing water harvesting systems "dams, ponds, excavations" in all regions of the Kingdom especially in the highlands and desert areas that are suited for it, this water can be used in different purposes and agriculture in particular.  Continue public awareness campaigns and water education through several means of communication and media focusing on water scarcity and spreading the culture of awareness and responsibility to protect the water sources and its efficient use  This policy, published by MoWI as an integral part of National Water Strategy, aims to
Utilisation Policy		present in more details what is envisioned towards the maximum utilization and optimum use of surface water, its protection, its management, and propose measures needed towards successfully integrating all its components. Also it addresses the interactions between the different resources and with different qualities, especially treated wastewater, to reach the maximum amounts of supply fit for use and the optimal return per meter cube; the proposed project is aligned with the Surface Water Utilisation Policy in terms of:  Maximizing the use of surface water to the greatest extent possible by increasing the storage capacity of dams, construction of new dams, and investment in rainwater harvesting in remote areas and from rooftops.  Constructing water harvesting schemes (ponds and desert dams) in the Highlands. Increasing Jordanians' awareness of water scarcity and the importance of conserving and protecting Jordan's limited water resources.  The quality of treated wastewater from all municipal and industrial wastewater treatment plants shall comply with Jordanian standards, monitored regularly, and reviewed periodically.
Jordan's Decentralized Wastewater Management Policy (2016-2025)	2016	This Policy is an integral part of the Jordan's National Water Strategy that was published by MoWI. One of its key objectives is to seek measures to adapt to the increasing pressures from climate change on public sewer and wastewater treatment facilities. The project will follow the guidelines for wastewater reuse in all the interventions related to greywater and wastewater reuse.
Water Substitution and Reuse Policy (2016-2025)	2016	The Water Substitution and Reuse Policy, an integral part of the Jordan's National Water Strategy published by MoWI, aims at substituting freshwater with treated wastewater and possibly other non-conventional water sources, avoiding negative impacts on water and soil quality, and which also refers to the principles of IWRM. The project is well aligned with the main objectives of this policy which are: To cope with the scarcity situation by enhancing the efficiency of the management of the scarce water resources in Jordan through maximizing the benefits and returns, and proposing actions required for implementation.  To Increase the amounts of treated Wastewater (WW) and considering it as a potential water and revenue source  To ensuring sustainability and preservation of water resources.
Water Sector Capital Investment Plan 2016 – 2025	2016	This plan, which is an integral part of the Jordan's National Water Strategy published by MoWI, defines its main aim as the sustainable development and management of water resources.
		The proposed project is well aligned with the two key focus areas of the plan that are essential to respond to Jordan's increased water scarcity;  [1] The development of new water resources by implementing rainwater harvesting systems and encouraging reuse of treated wastewater and greywater  [2] The expansion of wastewater treatment services.
Water Reallocation	2016	This policy, which is an integral part of the Jordan's National Water Strategy published by MoWI, prioritizes and re-allocates water from different sources (e.g. groundwater use

Policy (2016- 2025)		considering safe yields) between the different sectors and governorates according to adaptive capacity, and at the same time at reducing non-revenue water.
		The proposed project is well aligned with the policy in term of:  Maintaining acceptable water quantities for different areas and excellent water quality
		Frequency of water supply during summer and winter by implementing rainwater
		harvesting system
		Collecting and treating wastewater for safe agricultural use.
National Strategy for Agricultural	2016	The National Strategy for Agricultural Development 2016-2025 stated that among challenges facing the agricultural sector is desertification in Jordan, which is increasing due to climate change, overgrazing and poor agricultural practices. The project is
Development 2016-2025(In Arabic)		aligned with the strategy in terms of increasing the efficiency of water use in irrigation and the use of non-traditional water resources such as greywater.
Land use plan 2007	2007	Comprehensive plan designating the land use throughout the Kingdom. This Master Plan is distinctive in that it is a directive map illustrating the natural, geographic and demographic characteristics, including the sustainability of natural resources. The plan aims to:  Preserve agricultural lands, ensure its continuity, and its development.
		Control the arbitrary urban sprawl Limitation of urban development based on natural features and actual needs
Water for Life	2008	Protect the environment from pollution.  This document is Jordan's vision for a water strategy published by MoWI prior to the
Jordan's Water Strategy 2008-2022	2000	National Water Strategy, where it emphasis on the fact that Jordan must manage its water resources giving priority to municipal and industrial needs and cap agricultural use.
		The proposed project is well aligned with the strategy in terms of; Increasing awareness among the Jordanian public and decision makers to seek
		behavioral change and lay the foundation for policy change.
		Policy and Regulation change and enforcement in the municipalities.
The National Strategy for Health Sector in Jordan 2016-	2015	This strategy represents the general framework for developing and strengthening the capacity of the health system to face the challenges and raise Jordan's leading position in the provision of health care. The threats include climate change impacts on health. In the context of this project, community consultations in most of the target areas have
2020	2047	shown that there has been an increase in diseases due to climate change.
<u>Jordan</u> Response Plan	2017	The project is well aligned with sector specific objectives under Environment and WASH Sectors as per the details below:
for the Syria		Environment sector: SSO1: Improved mechanisms to mitigate pressure and competition
<u>Crisis 2018-</u> 2020		for ecosystem services (land, water) resulting from refugee influx Wash sector: SSO1: Quantity, quality and efficiency of safe drinking water delivery
		improved and system optimized. SSO3: Strengthened sector planning, implementation,
JPR 2018-2020		monitoring and coordination. SSO5: Sustainable provision of safe and equitable access to water services in host community as per min standards.
Annex Sub-national plan	าร	to water services in most community as per min standards.
Irbid 2030:	2010	A growth plan that is designated to n provides an overall land use plan and associated
Greater Irbid Area Plan	2010	policies that direct growth within an urban–rural development concept. The overall strategy of the Plan is to integrate land use, infrastructure and transportation planning.
		The components of the plan cover 7 subjects and recognize Infrastructure, where the consumption of water and energy and production of waste and heat are inextricably connected to urban infrastructure systems.
		The proposed AF project is well aligned with the infrastructure guidelines related to water and wastewater in terms of;
		Increase wastewater treatment plant capacity to accommodate the expansion of the service area.
		Encourage treated greywater to be used for irrigation purposes.
البرنامج التنموي لمحافظة إربد 2017 - 2019	2017	The project is aligned with a number of proposed interventions by the municipality and the community including rainwater harvesting and rehabilitating water networks.  Upscaling wastewater services through rehabilitation of the existing ponds and upgrading
(Development Program for Irbid		the capacity of WWTPs  Encourage the usage of treated grey water for irrigation purposes.
Governorate 2017-		

2019_Agricultur		
e and Water		
Sectors)		
البرنامج التنموي المحافظة المفرق 2017 -2019 (Development	2017	The project is aligned with some of the proposed interventions in the agriculture sector including rehabilitation of water harvesting ponds.  Improving the efficiency of residential, manufacturing, commercial and agricultural water supply systems through rainwater harvesting and rehabilitating water networks.
Program for Mafrag		Upscaling wastewater services through rehabilitation of the existing ponds and upgrading the capacity of WWTPs.
Governorate 2017-		Legislation development
2019_Agricultur e and Water Sectors)		

Policy / Year Relevant priorities				
Document	submit			
	ted /			
	ratified			
Lebanon				
Climate Change	strategies	/ plans		
Lebanon's	2015	This project aligns with the water related climate change adaptation priorities listed in		
<u>Nationally</u>		the NDC:		
<u>Determined</u>		Rehabilitation of existing water networks		
<u>Contribution</u>		Artificial recharge of groundwater aquifers		
		Improving water efficiency and decrease water loss in irrigation		
		Increasing wastewater collection and treatment		
		Increasing water re-use, especially after wastewater treatment		
Lebanon's third	2016	The project is well aligned with some adaptation measures for the water sector listed in		
<u>national</u>		the report:		
communication		Increasing the water-use efficiency of domestic, industrial, and agricultural sectors,		
to the UNFCCC		Developing watershed-managed plans appropriate for expected changes in climate,		
		investigating the feasibility of alternative sources of water supply, and improving the		
		available information about Lebanon's water resources and water systems		
		The report prioritized the installation of rainwater harvesting systems in agricultural		
I abanania	2012	greenhouses around different locations in Lebanon		
<u>Lebanon's</u>	2012	The Report outlines all the adaptation technology options available for the water sector		
Technology Needs		in Lebanon and uses a criteria-based weighting system to prioritize the most cost- effective, sustainable and socially acceptable options. It also highlighted the main		
Assessment		barriers to adopting each of these technologies that should be addressed. The report		
project		lists a number of water related solutions that the project aligns with. These include:		
project		Rainwater harvesting from greenhouses, hill lakes and rivers.		
		Efficient water use irrigation systems		
		Use of treated wastewater in irrigation		
National Develop	oment stra			
National	2005	The NPMPLT was endorsed by a decree issued by the Council of Ministers in July		
Physical Master		2009. It is a strategic reference document that overrides all documents concerning		
Plan of the		regional and local urban development and planning. It is not only the framework for		
Lebanese		urban planning policy, but also serves as a guideline for all stakeholders participating in		
Territory		the national and land use development. The		
(NPMPLT)		NPMPLT tackles water resources management through land use plans and measures		
		consisting of the following:		
		Launching legislative and legal reforms that define the principles of land use		
		Elaboration of several local urban plans with precedence to the zones threatened by		
		urban linear expansion and agricultural lands jeopardized by urban structures.		
		The report defines different challenges that Lebanon is facing today and might face in		
5. ( 5 5		the future. One of those important challenges is wastewater management.		
Disaster Risk Re				
UNDP –DRM	2017	The report outlines national updates on strengthening disaster risk management		
Unit LEBANON		capacities in Lebanon. Target G5 of this report highlights the importance of disaster ris		
Monitoring of Sendai		information through a national flood risk map. The project is in line with this target as it also aims to control floods in target areas.		
Framework		also alilis to control ilouds ili target areas.		
2017				
Environmental s	trotogico /	nlana		

Support to	2017	Main aims:
Reforms -		increasing the effective capacity at the MoE to plan and execute environmental policy
Environmental		enforce environmental law
Governance (StREG)		mainstream environmental issues in key line ministries
Programme		
The Practical	2017	This report supports this project by presenting the problems that the municipalities face
Guide for		in the water sector, and the measures and actions that they can take to solve these
Municipalities to		challenges. It highlights all the laws and regulations related to water resources
Enhance Environmental		management as well as the roles of all stakeholders involved in that sector.
Management (2		
017		
State and	2010	This report provides an overview of the current condition of natural resources and
Trends of the		environmental management in Lebanon. It gives an analysis of past and future
<u>Lebanese</u> Environment		developments across multiple sectors. It describes the impacts of rapid population growth, urbanization and climate change on water resources, then outlines the
LIMIOIIIIEIL		opportunities for improving the water sector.
		The project is in line with the selected responses presented in this report. Wastewater
		collection, treatment and reuse is one of the main opportunities presented in this report.
		Also, rainwater harvesting is outlines as another water resource augmentation option.
Sectoral strategi MoA/FAO	<b>es / plans,</b>   2014	especially related to agriculture  The strategy specific objectives are three-fold:
Strategic Plan	2014	I) To provide safe and quality food;
2015-2019		II) To improve the contribution of agriculture to the economic and social development of
		the country;
		III) To promote the sustainable management of natural and genetic resources.
Sectoral strategi	es / plans,	especially related to water
National Water Sector Strategy		Environmental concerns: Climate change negatively impacting water resources
(NWSS) 2010-		The strategy is in line with the project since it aims at:
2020		Collection and treatment of at least preliminary levels of 80% of wastewater by 2015,
		and of 95% by 2020. Secondary treatment and reuse for all inland and for coastal
		systems where reuse is applicable by 2020. Irrigation and sanitation services through
		16 initiatives involving institutional & organizational reforms and financial, commercial and environment initiatives, refining climate change knowledge on the water sector and
		preparing the sector for private sector participation.
Strategy for the	2010	Presents a strategic roadmap to improving water sector infrastructure and
Wastewater		management.
Sector (MoE)	2005	lk's the contractional reporter when the trues due the division of the true true to a superior and
National Physical Master	2005	It's the only national master plan that was drafted. It is not yet approved and implemented. The plan has predicted that there will be an increase in demand for water
Plan of the		following population growth and increase of agricultural and industrial use of water.
Lebanese		311 3
<u>Territory</u>		
Health Strategic	2016-	Second Strategic goal set out by this plan is to improve collective public health through
Plan Lebanese Crisis	2020 2017-	water and environmental controls.  The LCRP is designed to: 1) Ensure humanitarian assistance and protection for the
Response Plan	2017-	most vulnerable among persons displaced from Syria and poorest Lebanese; 2)
(LCRP)		Strengthen the capacity of national and local service delivery systems to expand access
		to and quality of basic public services; and 3) Reinforce Lebanon's economic, social,
	<u> </u>	environmental, and institutional stability.
Sub-national pla Water Sector	<b>ns</b> 2017	Man showing existing water networks, walls and reconveirs in Pakes governorets. It
Lebanon -	2017	Map showing existing water networks, wells and reservoirs in Bekaa governorate. It also highlights projects implemented or under construction.
Bekaa		and a serious desired and a serious actions and a serious actions.
governorate		
water supply		
(Map)	2000	Drongers on action plan simple at impuration the management of the Literature of
Litani river basin management	2009- 2014	Proposes an action plan aimed at improving the management of the Litani river through awareness projects that target schools, farmers and municipalities.
support program	2017	amaionoco projecto triat target contono, iarmoro ana mannopantico.
action plan for		
water resources awareness and		

enforcement (USAID)		
Water Sector Lebanon - Bekaa and Baalback El Hermel wastewater network (Map)	2015	Map showing existing wastewater networks and wastewater treatment plants in Bekaa and Baalbeck El-Hermel. It also highlights the most vulnerable localities in the two governorates.
Water Supply and Wastewater Systems master plan for the Bekaa Water Establishment	2015- 2035	Report presents work related to the development of the Master Plan and the adoption of recommendations for the year 2035 for proposed action plans for water and wastewater sector in Lebanon.

## E. Compliance with relevant national technical standards

The project fully aligns with national technical rules, regulations and standards, including those for environmental and social risks screening and impacts assessments, building codes, land use planning, water supply / harvesting / reuse, etc. Although proposed interventions don't require risks screening and impact assessment by national laws, accredited consultant have been hired in both countries to do this anyways to comply to AF ESP and GP requirements. Outputs include feasibility assessment report, EIAs report, National ESMP and consultation report. For more information see annex 4.

#### 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, codes, 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 project initiator 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. (6) of 2017 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 and because no sub-project in the proposal entails substantial construction activities. For agriculture project, EIA are only required for cattle breeding farms.

### Figure 9: EIA compliance process

A draft Local Administration Law, a new piece of legislation is currently being drafted by the government and sent to Parliament for debate. This law will replace the decentralization law and municipalities law. It governs and organize the work of the governorate and the city at local level and defines the responsibilities of local authorities, including for climate change. The idea is to empower local authorities and ensure that all the services are secured in each governorate by the local governorates/

According to the draft law, municipalities are fully responsible for managing stormwater, floods, and for coordinating with the concerned authorities in managing the distribution of water among the population, organizing its distribution, participating in identifying water network and working to prevent pollution of springs, wadis and wells. Municipalities are also responsible for coordinating with concerned authorities on establishing wastewater network.

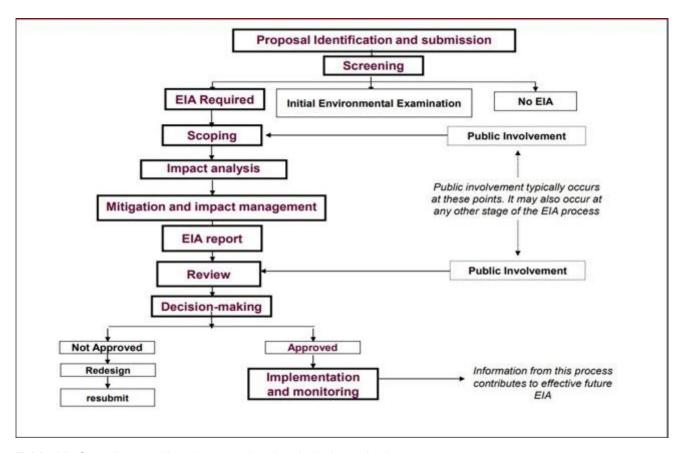


Table 11: Compliance with relevant national technical standards

Expected concrete output/intervention	Relevant rules, regulations and standards (to comply to AF principle 1)	Compliance procedure and authorizing offices
Output  1.3. Urban master plans at municipal level with CC and gender mainstreamed in Jordan  Output  2.1. Community organisation, awareness and capacity / skill building + operation, maintenance and replication and upscaling plans for concrete adaptation output 3.1 2.2. See above for output 3.2.	<ul> <li>Draft Local Administration Law</li> <li>Cities, Villages and Buildings Planning Law and Amendments thereof No (79) for the year 1966</li> <li>Building, Villages and Cities Regulating bylaw and amendments thereof for the year 2016</li> <li>Land Use Planning By-Law No. 6 of 2007</li> <li>Environmental Protection Law No. (6) of 2017</li> <li>Not relevant</li> </ul>	See compliance procedure above  Required: coordination and approval from Municipalities of Irbid and Mafraq and Ministry of Local Administration – MoLA for Land use-related affairs and strategies  Operation, maintenance and replication will be coordinated with responsible ministries, municipalities and other entities
2.3. See above for output 3.3. 2.4. See above for output 3.4. 2.5. See above for output 3.5. 2.6. See above for output 3.6. 2.7. See above for output 3.7. 2.8. See above for output 3.8 2.9. See above for output 3.9		
Output	Environmental Protection Law No. (6) of 2017 EIA Rules, regulations, standards (EIA By-law no. 37 of the Year 2005) (see above)	See compliance procedure above  EIA rules, regulations, standards and procedures have been followed and EIA, ESMP and consultations reports have been

		produced and are being approved by the Ministry of Environment (although no EIAs were required by national law (see annex 4)
3.2. Rooftop rainwater harvesting in Jordan	The Jordanian Standard for Reclaimed Domestic Water – JS No. 893/2006	See compliance procedure above
3.3. Greywater treatment and reuse in Jordan	JS:286/2015: Water – Drinking Water, mandatory regulations 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 The By-Law of Buildings and Organization of Cities and Villages and its Amendments No. 2 of 2018 Jordan Green Building Guide Instructions No. G/7 for the Year 2016: Instructions and Conditions to Use Treated	Required: coordination with and approval from target municipalities and ministry of water and irrigation for 1) construction harvesting and grey water systems; 2) water quality compliance for toilets and gardening)
3.5. Efficient treatment and reuse of wastewater in Jordan	Wastewater, Salty Water, and Brackish Water for Agricultural Use	See compliance procedure above
		Required: coordination with and approval from ministry of water and irrigation and ministry of environment
3.7. Water-use Efficient irrigation of treated	Law No. 13 of 2015 concerning Agriculture Law.) Bylaw No. (133) of 2016 Organic Agriculture	See compliance procedure above
wastewater in Jordan 3.8. Permaculture demonstration - closed loop water system in Jordan	bylaw Issued pursuant to Articles (7) and (71) of Agriculture Law no. (13) of 2015)	Required: coordination with and approval from ministry of water and irrigation, ministry of agriculture and ministry of environment
Output 4.2. Jordan and Lebanon KM with focus on project progress, best practices and lessons learned 4.4. Incentive mechanism (financial) and regulatory	Not relevant	Not relevant
framework to replicate and upscale rainwater harvesting activities		

#### 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 12: Key players and responsibilities in the water and wastewater sectors

Function	MOEW	RWEs	LRA	CDR	MOE	МОРН	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

Figure 10: Legal environmental requirement for any project activity in Lebanon 99



Table 13: 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. Territorial planning and development strategy / guidelines with CC and gender mainstreamed in Lebanon 1.2. Urban master plans at municipal level with CC and gender mainstreamed in Lebanon	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.	See compliance procedure above  Required: coordination and approval from target Municipalities and Ministry of Interior and Municipalities; Ministry of Environment; Directorate General of Urbanism (DGU);

	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.	
Output 2.1. Community organisation, awareness and capacity / skill building + operation, maintenance and replication and upscaling plans for concrete adaptation output 3.1 2.2. See above for output 3.2. 2.3. See above for output 3.3. 2.4. See above for output 3.4. 2.5. See above for output 3.5. 2.6. See above for output 3.6. 2.7. See above for output 3.7. 2.8. See above for output 3.8 2.9. See above for output 3.9	Not relevant	Operation, maintenance and replication will be coordinated with responsible ministries, municipalities and other entities
Output	decree 8633 MoE, 2012, Annex 1	See compliance procedure above. According to Decree No. 8633,2012 of MoE, the following steps were taken: -A screening form for the project and sub-project was submitted -A public consultation was held on December 18 <sup>th</sup> 2019 -A scoping report was submitted to MoE on December 30 <sup>th</sup> 2019 -The EIA report is the final step of the EIA process. It was submitted on January 13 <sup>th</sup> following the reply of MoE on scoping report.
3.1. Rooftop rainwater harvesting in Lebanon	Law 221/2000 (amendment 241/2000) and law 77/2018: Water Code  Water Code—Law 77  Water and Wastewater masterplan for the Bekaa Governorate 2015  National guidelines for rainwater harvesting systems prepared by MoEW based on potable water standards.	See compliance procedure above; Design of rainwater harvesting system follows the guidelines. Consultation with MoEW. No  Required: coordination with and approval from target municipalities and Ministry of Energy and Water for 1) construction harvesting and grey water systems; 2) water quality compliance for toilets and gardening)
3.4. Efficient treatment and reuse of wastewater in Lebanon irrigation of treated wastewater in Lebanon 3.6. Water-use-efficient irrigation of treated wastewater in Lebanon 3.9 Permaculture demonstration - closed loop water system in Lebanon	Law 221/2000 (amendment 241/2000) and law 77/2018: Water Code  Water Code—Law 77  Water and Wastewater masterplan for the Bekaa Governorate 2015  No guidelines for drip irrigation installation exist. Experimental stations at LARI have relevant experience for testing new crop varieties. No national standards for irrigation water quality. FAO standards will be adopted.	See compliance procedure above  Required: coordination with and approval from Ministry of Environment; Ministry of Energy and Water; Bekaa Regional Water Establishment; Lithani River Authority; target Municipalities; Ministry of Agriculture;  All testings and approvals will be the sole responsibility of LARI affiliated to the Ministry of Agriculture (MoA). The educational facility will develop a curriculum in coordination between

		LARI and the Ministry of Education and Higher Education (MEHE)
Output  4.2. Jordan and Lebanon KM with focus on project progress, best practices and lessons learned 4.3. Sub-national KM and Regional' urban risks and vulnerabilities assessment, planning and management approach model for type 2 cities	Not relevant	Not relevant

# F. Duplication with other funding sources

The project will avoid geographical overlap with other projects and complement existing project and use lessons learned where possible. During the project preparation phase, all projects in the target areas and have been mapped to avoid geographical overlap. Besides that, similar project in Jordan and Lebanon and in the region have been identified with the purpose to extract lessons learned and integrate those in the project. An overview of all these projects, has been included in a table 14 below. This has been done through desk research, consultations (see Part II.I) but also by requested inputs from ministries and execution entities, which lead similar project before. With e.g. UNICEF as executing partner, a wealth of knowledge and experience is available regarding WASH in the region. The same accounts for Johud and rainwater harvesting, the Water Authority of Jordan if it comes to wastewater treatment in Jordan. The Permaculture Research Institute is worldwide know institute if it comes to permaculture. UN-habitat will also work with universities and consultancy firms to further develop business cases and incentive mechanism for water harvesting options (output 4.4) and Permaculture (output 3.8). UN-habitat will continue to coordinate with all relevant stakeholders during project implementation to ensure synergies with other (potential) project, also through steering committee meetings.

Table 14: Duplication with other funding sources

Relevant projects and focus	Relevant focus and	Lessons learned	Complimentary potential
	interventions / activities		and non-duplication (see also consultation section)
Global			(see also consultation section)
'Urban permaculture' by UN-HABITAT's Cities and Climate Change Initiative in in Esmeraldas, Ecuador	Promoting resilient communities in the face of highly probable future food and energy crises and the collapse of water and sanitation services due to Climate Change  The project tries to mimic Nature and its ecological cycle with the following components: urban agriculture and healthy food, rainwater harvesting, water recycling, solid waste recycling, and dry toilets.	Greening of urban habitats and environments while harvesting water and producing food have been demonstrated; Permaculture can be used as a climate change adaptation measures in an urban context	Complementary Use lessons learned and further develop the concept in urban context for target area (through desk research) Non-Duplication In Ecuador
MENA region			
UN-Habitat – with AF funding – Enhance water and livelihood security and social cohesion through adaptation in Syria's Barada watershed (concept to be submitted) – USD 10 million	The protection of water resources (and prevent contamination of surface and groundwater resources / wells) The reduction of water losses; The increase of water use efficiency, supporting water harvesting projects and using high efficiency irrigation methods; The promotion of use of non-conventional water resources (e.g. treated wastewater) and: Improved agricultural production practices (e.g. drought tolerant crops).	Project proposal under development.	Complementary Align approach and lessons learned throughout project preparation and implementation (by ROAS) Non-Duplication In Syria
IFAD with AF funding - Building Resilience of the Agriculture Sector to Climate Change in Iraq (2018-2023) – USD 10 million	Capacity development to integrate CC adaptation and risk reduction into agriculture planning and production systems Climate-resilient Agriculture Investments	Has not started yet Monitor lessons during project formulation phase	Complementary Consider similar approach to capacity building and efficient water supply from tertiary canals up to farmland plots is secured based on climate- proof systems and technologies. ROAS to contact IFAD Non-Duplication In Iraq
FAO <u>Water Scarcity Regional Initiative (WSI)</u> Pursuing food and water securities in MENA region	Establishing community-farm demonstration fields to show the benefits of new irrigation technology Implementing a plan to envision future climate change scenarios for 'hotspots' at the regional level	Monitor results (which are not publically available yet)	Complementary Potentially complement results related to new technology. ROAS to contact FAO Non-Duplication Regional, including Jordan and Lebanon. No overlap with target areas
FAO Dutch-funded Sanaa Basin Project in Jemen (2014-2017)  Water sustainability for farmers while empowering women	Construction of wells through a <u>cash-for-work formula</u> for farmers to use for agricultural production.  All Water User Associations choose their board members through elections and 30 percent of the seats are designated for women.	Water association and women only access to water can be used as a water management system to reduce conflict between tribes	Complementary Consider building upon lessons from Water association and women only access to water approach and cash-for- work formula for farmers to use for agricultural production. ROAS to contact FAO Non-Duplication In Yemen
UN-Habitat Sustainable, Inclusive and Evidence-based National Urban Policies in selected Arab States (2015-2020)	Development of a National Urban Policy (NUP) clarifying the mandates of sub-national governments, especially municipalities, in the governance system Particular focus on mainstream climate change in the NUP	There is much interest in enhancing responsibilities of municipal, esp related to climate change. Part of this is to set-up and run urban observatories	Complementary This project will complement the NUP formulation process through setting-up and running of urban observatories to

	process and engage stakeholders in the key climate change		collect and handle climate change data
	issues to be incorporated in the National Urban Policy of Jordan		Non-Duplication
	and Lebanon		No Geographic overlap
Jordan			
CVBD The Jordanian Municipal Observatory	CVBD is implementing a national project to establish municipal observatory in all 100 municipalities to provide reliable and comprehensive database that inform policy and decision making process. The project aims to strengthen the relationship with local authorities and improve the developmental and service- oriented work of municipalities. The data form was prepared and indicators were selected. The CVDB is now validating data and reviewing it and embarking on developing a national portal.  CVDB is guiding the whole process and will be establishing the whole system at national level to which all municipalities will report.	An initial revision of the data form suggests that there is a need to review selected indicators and localize SDG 11 and 13 through municipal observatories and include indicators related to climate change and sustainable cities that could inform the development of municipal plans and help to sustain it.	Complementary The project will complement the CVDB national initiative and focus on Irbid and Mafraq and set up a pilot municipal observatory in both municipalities with specific emphasis on climate change. The project could also contribute to the development of guidance book on climate change data collection, analysis and reporting.  Non-Duplication CVDB has no major activities in Irbid and Mafraq yet.
Jordan government with AF funding - Increasing the resilience of poor and vulnerable communities to climate change impacts in Jordan through Implementing Innovative projects in water and agriculture in support of adaptation to climate change 100 (2015-2018) – USD 9,2 million	Waste water treatment plant + monitoring quality Irrigation study Rain/flood water harvesting dam / basin (400.000 m3) with solar panels to reduce evaporation Permaculture – adaptation + ecosystem management in demonstration sites	According to manager Permaculture has promising results for adaptation, reducing pollution and protecting ecosystem Water user associations / cooperation can be used to reach farmers and administer water	Complementary Use permaculture concept in real farms and in urban context Use similar approach for water harvesting basins at farms and in urban areas Water user associations / cooperation can be used UN-Habitat is already in touch with manager and specialists (see also II.I) Non-Duplication In Jordan Valley
UNICEF WASH programme	Supports the Ministry of Water and Irrigation and partners in the Water Sanitation and Hygiene (WASH) sector at three different levels Leading the emergency WASH sector coordination Ensuring access to safe water and sanitation facilities and services in refugee camps and in host communities, and strengthening the Government's capacity to prioritize, plan, implement and monitor.	In host communities, leakage along the water network results in huge losses (up to 60 per cent in some areas) and inefficient operation modalities.	Complementary UNICEF has been consulted to better understand their approach and local needs Compliment UNICEF work (emergency / humanitarian) by supporting sustainable and climate change resilient interventions UNICEF will be executing partner Non-Duplication Through coordination with UNICEF, overlap is avoided; UNICEF mainly focused on piped water
UNICEF - Water Conservation in schools Grey Water Reuse and storm water drainage system	In 2018, a proposal was made to UNICEF to pilot grey water reuse system in four schools to introduce water conservation and reuse in Zaatari refugee camp. The main activities of the project:  Reuse the grey water produced by the school for irrigation for no edible groups and flushing purposes	Water sampling and testing to ensure system efficiency.	Complementary UNICEF has been consulted to better understand their approach. UNICEF will be executing partner Non-Duplication

 $<sup>\</sup>frac{100}{\text{https://reliefweb.int/report/jordan/planning-ministry-launches-9-2}} \\ \frac{\text{https://reliefweb.int/report/jordan/planning-ministry-launches-9-2}}{\text{million-project-adaptation-climate-change}} \\ \frac{\text{https://reliefweb.int/re$ 

	Deduce the mobile beautiful and the set on level and section		In 7 start Osman
	Reduce the public health risk and impact on local ground water aquifers from the discharge of untreated grey water.		In Zaatari Camp
	Provide alternative solution for reducing the cost of desludging and		
	network operation in Zaatari camp.		
	Minimize the operation and maintenance costs.		
	Raise the awareness among the students on the proper use of		
	water reuse		
USAID Hydroponic Green farming Initiative (2015-	The USAID Hydroponic Green Farming Initiative aims to introduce	Hydroponic can be scaled up as a climate	Complementary
2017)	a model that integrates hydroponic farming and renewable energy	change adaptation measures in Jordan	Potentially complement results related to
2017)	generation for large commercial farms and small rural households.	Improve water efficiency in agriculture	new technology and water efficiency
	The greater focus will be on;	through hydroponic systems that use	Will be further consulted
	Promoting hydroponic technology in established farmer networks	significantly less water than traditional	Non-Duplication
	and targeted communities.	farming practices.	In Jordan Valley and highlands. No
	8	iaming praemees	overlap with target areas
	Demonstrating the feasibility of hydroponics.		ger areas
	Bridging the gap between traditional agricultural knowledge and		
	hydroponic systems through educational material and training		
	exercises.		
	Ensuring prospective farmers have the technical knowledge and		
	funding to access hydroponic technology.		
	Focusing on vulnerable demographics – such as women and		
	youth – when designing outreach and dissemination activities.		
USAID - Community Water	The project highlights:	Make sure of the availability of active	Complementary:
Harvesting Systems (in Mafraq and Karak)	The application of simple, low cost, and scientifically based water	community organizations with resources	Use the mentioned Guideline for
	harvesting systems in 4 sites in Mafraq and 2 in Karak.	available for the project such as land and	selecting and sizing water harvesting
	The utilization of harvested water for agricultural production.	farms	system
	The annual of the residual for agreement production		Non-Duplication
			In Mafraq and Karak, however no
			overlapping with the selected targeted
HOAIDAM O O '' D H ''' '	T		schools in Mafraq.
USAID Mercy Corps - Community-Based Initiatives for	The goal of the initiative is to reduce the social and economic	Conducting leak detection and repairs for	Non-Duplication
Water Demand Management I (CBIWDM I)	impacts of water resource limitations, as well as responding to the	municipal water systems to increase water	In all 12 governorates, however ,no
and II (CBIWDM II)	destabilizing effects in Jordan on the water and sanitation sectors	delivery/availability.	overlapping with the selected targeted area.
	caused by the influx of Syrian refugees.  The main activities/interventions, to enable rural Jordanian		area.
	communities to reduce water demand through improved resource		
	management, are as follow:		
	CBO Capacity Building Program		
	Construct rainwater harvesting reservoirs with water catchment		
	systems responds to the immediate need of water and provided a		
	convenient resource		
	Awareness Campaigns at Schools that complement the		
	construction work of rainwater harvesting cisterns implemented at		
	the schools. One of these campaigns is "For all of us" Campaign		
	(النا كلنا)		
	The initiative provide network support to the Yarmouk Water		
	Company through the provision of emergency equipment,		
	infrastructure works for improved water supply, and outreach and		
	customer service support to YWC.		
	Promote equal access to resources through the empowerment of		
	different water users requires that there is at least one woman on		
	the management committees for each CBO		

JOHUD - The Arteries of The Nation: Repairing Jordan's Water Networks (WRAP) Project	The project was initially developed in 2015 to preserve Jordan's slim water resources, and to provide adequate water resources to the populations. It focused on; Revitalise the springs that provided the local farms with water for crop irrigation in collaboration with Madaba Water Authority Improve quality and quantity of the drinking water helping to improve the health and wellbeing of around 20,000 local residents Repair canals and providing more reliable sources of irrigation water Reduce local household electricity bills, because they no longer using electric pumps to fill the rooftop water tanks.	Water Authority managers were able to determine and measure the real needs and demands in the community.	Complementary Help the targeted areas to retain its agricultural character JOHUD will be one of the executing bodies Potential similar results regarding the rehabilitation and upgrading the WWTPs. Non-Duplication Ma'een District, in Madaba Governorate
The Hashemite Fund for Development of Jodan Badia - Treated Waste Water Reuse Project – Wadi Mousa	The first community-based project was established in collaboration with the USAID. The local community was provided with technical support to use treated and reclaimed wastewater for irrigating their fodder crops.  Improve the livelihoods of local community members in the target area.  Reduce the competition on and demand for fresh water resources.  Conserve natural resources and better manage the environment through the reuse of reclaimed water.  Develop drip irrigation systems for an area of 100 hectares.		Complementary source of income for the local community members Badia Fund will be one of the executing bodies Non-Duplication Wadi Mousa, Jordan
GIZ – improvement of community water efficiency through cooperation with religious authorities	Religion-based teaching materials are developed for schools and universities and then included in religious education to raise awareness of the issue of water scarcity.  Equipping selected mosques in northern and central Jordan with rainwater collection and grey water recycling systems.	It is important to raise awareness of religious leaders and education experts on the issue of water scarcity at mosques and schools to serve as serve as water ambassadors.	Complementary Potentially complement efforts related to water efficiency and harvesting in Mosques and Schools. UN-Habitat is already in touch (see II.I) Non-Duplication Northern governorates. Through coordination with GIZ, Ministry of Water and Irrigation, Ministry of Awqaf, overlap is avoided.
FAO Project- Reduce Vulnerability in Jordan in the Context of Water Scarcity and Increasing Food/Energy Demand	The project pilots a three-pronged, community-based approach, combining water harvesting, conjunctive use of groundwater, and solar power for lifting irrigation water.  Downstream water harvesting in Al-Ghadeer Al-Abyad watershed site  Rehabilitation of Al Ghadeer Dam  Installing PV system to pump water from the dam to nearby agricultural lands.  Assessment of the water harvesting sector in Jordan which will serve as an important input into the development of a sub-sector strategy for water harvesting.	Focus on the creation of a comprehensive policy framework for water harvesting to promote the more efficient use of water resources as well as to better integrate agricultural production policies with the water harvesting efforts.	Complementary Potentially complement efforts related to upstream water harvesting. UN-Habitat is already in touch (see II.I) and intervnetions will be well coordinated Non-Duplication Al Mafraq Governorate, around Al Mafraq WWTP. Through coordination with FAO, overlap is avoided.
Permaculture Gardens for schools project  Al Jawaseri School Garden project	Al Jawaseri is a permaculture school garden in a hyper arid landscape in the Jordan Valley. A Collaboration between the Permaculture Research Institute of Australia and Kids Are Sweet International. The project enables children in a small village with severe water shortages to learn how to build soil, maximise water retention, and create garden abundance. They focused on;	Use sunken beds lined with builders plastic to retain all the water from drip irrigation.  Very successful project to promote permaculture everywhere.	Complementary Potentially upscaling this project into some vocational schools in the targeted areas Non-Duplication In Jordan Valley, Jordan

	Design a hyper-arid garden Local women empowerment, where the implementation of the project was directed by local women residents Establishment of self-replicating educational demonstration sites across the globe		
Lebanon			
UNHCR Water, sanitation and hygiene programme	UNHCR's strategy on water, sanitation and hygiene (WASH) is aimed at helping both refugees and the Lebanese communities hosting them. It targets the needs of refugees in informal settlements, as well as refugees living in Lebanese communities, through the implementation of water and waste water projects that strengthen and/or rehabilitate existing infrastructure. Rehabilitation of storm water channels to the construction of reservoirs, and even the drilling and equipping of boreholes. Nine water supply systems in the Bekaa and North Lebanon are being rehabilitated	Crucial to support both DPs and host communities.	Complementary UNHCR has been consulted to better understand their approach and local needs Use lessons learned for supporting both DPs and host communities, while adding the climate change component UN-Habitat is already in touch (see II.I) Non-Duplication Through coordination with UNHCR, overlap is avoided
UNICEF WASH programme 2013-2016	Three components: Strengthen the capacities and information systems of authorities in Lebanon; Improve access to WASH services for Syrian refugees in ISs (WASH in Emergencies); Improve WASH infrastructure to ensure better service delivery to host communities (WASH in urban areas/stabilization interventions).	Interventions should support national water plan / targets Different targeting strategies required (difference between urban and campbased refugees) Requires flexibility	Complementary UNICEF has been consulted to better understand their approach and local needs Compliment UNICEF work (emergency / humanitarian) by supporting sustainable and climate change resilient interventions UNICEF will be executing partner Non-Duplication Through coordination with UNICEF, overlap is avoided; mostly piped water
UNDP Support to Host Communities in North Lebanon in the WASH Sector (2014-2017) – USD 8,8 million	Identification, implementation of water supply / storage works and commissioning and handover of works to North Lebanon Water Establishment	Lengthy process for licensing for works	Complementary Complement UNDPs work in target area while also supporting host communities UN-Habitat is already in touch (see II.I) Non-Duplication North of Lebanon
Lebanon Recovery Fund (MOE & UNDP)	Systems for rainwater harvesting from the top of greenhouses has been installed in three sites Choueifat, Kfarmashoun and Damour in Mount Lebanon.  Collecting rainwater from the top of the greenhouses, storing it in big tanks to be used for irrigation during the dry months.	Farmers are saving all the money they used to spend on purchasing water for irrigation and on pumping.  The groundwater quality will be protected from pollution and salinization, since pumping rate and depth will both decrease.  Water quantity will be preserved as natural recharge  CO2 emissions from energy consumed for pumping water will decrease.	Complementary Benefit from UNDP's guidelines destined for all Lebanese farmers to replicate these pilot rainwater harvesting initiatives. UN-Habitat is already in touch (see II.I) Non-Duplication Mount Lebanon
IFAD with AF funding <u>Climate Smart Agriculture:</u> <u>Enhancing Adaptive Capacity of the Rural</u> <u>Communities in Lebanon</u> (2013-2017) – USD 8 million	Water Management: Rainwater harvested from greenhouse roof tops Water Management: Water efficient irrigation systems deployed Adaptation Techniques Roll-out: Capacity building on adaptation techniques for vulnerable field crops enhanced and Guidelines	Get guidelines	Complementary Consider similar approach to water harvesting and irrigation systems Will be further consulted Non-Duplication

	and recommendations on agricultural adaptation techniques for		Target is Rural communities
	vulnerable areas developed		
World Bank - Greater Beirut Water Supply Project (2010 – 2020) – USD 370 million	Bulk Water Supply Infrastructure Supply Reservoirs, Distribution Network and Metering Project Management, Utility Strengthening and National Studies Land Acquisition and Resettlement Compensation		Complementary Increase the provision of potable water to the residents in the project area within the Greater Beirut region Strengthen the capacity of the Beirut Mount Lebanon Water Establishment in utility operations UN-Habitat is already in touch (see II.I) Non-Duplication Greater Beirut Area
World Bank – Water Supply Augmentation Project (2014 – 2024) – USD 617 million	Construction and construction supervision of the Bisri Dam and the associated access road.  Construction and construction supervision of the conveyor pipelines to the existing Joun reservoir and the associated access road  Two (2) hydropower plants  Expansion of the Ouardaniyeh water treatment plant (WTP)  Technical assistance to the Ministry of Energy and Water (MOEW), Beirut Mount Lebanon Water Establishment (BMLWE) and Council for Development and Reconstruction (CDR) on the operation and maintenance of dams; on management of water resources; in developing and implementing awareness raising campaigns on the economic benefits of switching to the public water network and eventual volumetric metering water supply	People will access to clean and improved water supply service without spending additional expenses on alternative water sources.	Complementary Increase the volume of water available to the Greater Beirut and Mount Lebanon area Capacity building to the Ministry of Energy and Water (MOEW) UN-Habitat is already in touch (see II.I) Non-Duplication Greater Beirut and Mount Lebanon Area
World Vision (applied projects based on Bekaa water and wastewater masterplans)	Taalabaya Water Network Replacement and Expansion project Rehabilitation of Waste Water Treatment Plant in Ablah Project for Waste Water Treatment for Bar Elias and Dakweh in Bekaa Area	Limit water trucking and informal water services Enhance water supply for vulnerable communities.	Complementary Support to Enhance Basic Infrastructure and Economic Recovery in Lebanon The use of treated wastewater for irrigation. Benefit from network expansion. UN-Habitat is already in touch (see II.I) Non-Duplication Follows the masterplan which is coordinated by the Bekaa Water Establishment.
CDR, national government with grant from Kuwait - Rehabilitation of water systems in West Bekaa and villages in East Zahle district - US\$ 32.9 million (CDR report)	Drilling of two wells and equipping of the seven wells, building pumping stations in Shamseen, installation of pumping lines from these two stations to two central reservoirs on Mount Anjar and Mount Terbol; Construction of the two mentioned reservoirs in addition to a reservoir in Majdel Anjar and another in Sultan Yacoub al-Tahta and Construction of two local reservoirs in Jeb Jenin and Kamed el Laouz, installation of transmission line from these central reservoirs to local reservoirs in West Bekaa and East of Zahle villages, construction of transmission lines from the central reservoir in Baaloul to Jeb Jenin and Kamed el Laouz reservoirs and the distribution networks in both towns	No started yet	Complementary CDR has been consulted to better understand their approach and local needs Compliment CDR work (conventional water supply) by supporting sustainable and climate change resilient interventions UN-Habitat is already in touch (see II.I) Non-Duplication Through coordination with CDR, overlap is avoided
CDR, national government - Rehabilitation and improvement of potable	Three tier project:	No started yet	Complementary

water systems in Zahle and surroundings (CDR report)	Part 1: potable water networks in Haoush el Omara and Ksara (under USAID, US\$ 5 million) Part 2: potable water networks in the city of Zahle which are fed from the potable water treatment plant; the cost of (Ministry of Energy and Water US\$ 5 million) Part 3: potable water systems in East Zahle, Dhour Zahle, Touaite, Mouaalaka, Karak, Madina Sinaiiya, Qaa El Reem and Hezerta (US\$ 16 million and is funded by the Kuwait Fund for Arab Economic Development, the budget of the Ministry of Energy and Water, the Lebanese Government and managed by the CDR.)		CDR has been consulted to better understand their approach and local needs Compliment CDR work (conventional water supply) by supporting sustainable and climate change resilient interventions UN-Habitat is already in touch (see II.I) Non-Duplication Through coordination with CDR, overlap is avoided
The International Bank for Reconstruction and Development (IBRD): Lake Qaraoun Pollution Prevention Project (2016-2023)	Objective: reduction of sewage discharge into the Litani River and to enhance pollution management around Qaraoun Lake. Project components: Improvement of municipal sewage collection (IBRD -US\$50.5 million, GoL-US\$5 million) Promotion of Good Agricultural Practices (including Integrated Pest Management) (IBRD-US\$1.5 million) Solid Waste, Water Quality Monitoring, Capacity Building, and Project Management (IBRD-US\$3 million)		Complementary This project takes care of waste management around the Litani river, thus waste management approach in proposed project is limited Non-Duplication Focused on waste management
AgriCAL- Climate Smart Agriculture: Enhancing Adaptative Capacity of the Rural Communities in Lebanon (2012-2017)	Goal of the project: increase community resilience and adaptive capacity to climate change in Lebanon Objective: implement climate change adaptation measures in the agriculture sector in three highly vulnerable focus areas: The four outcomes of the project are: Increased water availability and efficient use through water harvesting and irrigation technologies Increased adaptation to climate change for crop production Increased resilience of shepherds and small ruminants to climate change through sustainable rangeland management Climate index insurance initiated, policy influenced, and lessons learned and shared through a knowledge management system	Risk-coping agriculture techniques Initiating a pilot climate insurance index	Complementary Assist communities in adapting by improving water harvesting and irrigation technologies Introducing adapted crop varieties to future climate condition Spreading awareness of expertise and skills Will be further consulted Non-Duplication Increase community resilience and adaptive capacity to climate change
UPLoAD, APIEU and Bekaa Water Establishment - Integrated approach for dealing with the water/urbanization problématique through the case of the city of Zahle and the Bedawni river watershed.	The idea is that in Lebanon there is little articulation - institutionally and scientifically - between urbanization management concerns (mainly defined in terms of urban development and land use management and led by local authorities) and water management concerns (mainly defined in terms of engineering adequacy of water resources and water demands and led by regional water establishments). This is problematic as, on one hand, urbanization and urban development have impacts on water flows, consumption and pollution. On the other hand, water resources are historically appropriated as local resources and integrated into local development initiatives (in agriculture, tourism and industry) and there is clear resistance to give its management to a sectorial supra-local authority (regional water establishment) especially as this authority does not concern itself with local development issues.  In this context, their approach works on: Building a platform of stakeholders (including water sector actors (Bekaa Water Establishment, Ministry of Energy and Water, Litani River Authority), Zahle municipality, representatives of the	Ongoing (year two of project); Very limited budget funded; Difficult coordination with water stakeholders in the Bekaa region; Enlargement of water management scale to encompass different surrounding regions, since the watershed is common for other regions; Working through municipalities to enhance efficient climate resilient interventions within the municipal boundaries.	Complementary Water management WASH service delivery Agriculture and urbanization trends in Central Bekaa  Non-Duplication Masterplan for Zahle

	industrial, agricultural and commercial sectors, etc.) where these issues are discussed and possibly information shared. Developing a number of synthesis studies that help understand the context.  Working with the urban planning consultant mandated by the municipality of Zahle to draw its new Masterplan (including urban development orientations and land use zoning) to allow him to integrate the results of the studies (in 2)) in his Masterplan and sensitize him to water-sensitive urban planning and design approaches (including "ville perméable" and "sponge city" approaches)  Through a participatory workshop, identify with stakeholders' possible projects/initiatives that would enhance urban water management in the city of Zahle  Based on the workshop results and available funds develop a pilot project or prepare feasibility studies that could serve other projects		
ReWater MENA managed by the International Water Management Institute and funded by SIDA http://rewater-mena.iwmi.org/	Regional project researching and promoting a safe reuse of treated wastewater in Lebanon, Egypt and Jordan.  In Lebanon, it has three main components: A study assessing the Wastewater reuse potential at national level to inform government and decision makers on where and how wastewater can be reused and the associated constraints (technical, social, financial, institutional)  Two specific studies around two respective WWTPs where reuse models will be designed in a participatory approach involving stakeholders at all levels. The outputs will be two models (technical, economic and management plans) ready to be physically implemented by the Government and donors. The Rewater MENA won't be implementing infrastructure.  Support to the Lebanese Government in developing legal standards for wastewater reuse, based on the FAO Lebanese guidelines (2010). This is currently being done within a committee recently formed by LIBNOR which consists of different relevant ministries and other stakeholders (the meetings started in September 2019).	Designing a wastewater reuse system is a complex endeavor as it entails a diversity of technical, environmental, economic, social and institutional factors. It should be carefully designed with the different stakeholders, especially plant operators and users. It should be guaranteed that The WWTP will continue operating, that water is of sufficient quality, that water is needed and wanted by farmers, that the system is economically feasible and socially accepted. Different scenarios of geographic allocation should be considered and assessed with farmers themselves.  If not, there is a risk that infrastructure won't be used. It also has to be politically accepted by the water administration.  For example, the Litani River Authority did not want to use treated water in their irrigation systems.	Complementary Adopting wastewater reuse guidelines especially in the target area Benefiting from existing coordination platforms  Non-Duplication Applying wastewater reuse projects for both irrigation and crop improvement
ELARD and UNDP – Provision of Services for the Development of Local Level Master Plans and Detailed Urban Plans in the Qaraoun Catchment. Draft Master Plan Report (April 3, 2019).	Based on the National Physical Master Plan for the Lebanese Territory recommendations, as well as on the detailed diagnostic of the study area that was prepared during the first phase of the project, this Master Plan for the Districts of Zahle, West Bekaa and Rachaya addresses challenges to be addressed at several levels including landscape, heritage and environmental, urban development structure, as well as economic development challenges.	No industrial activities in core zone New Urbanization not allowed Heavy industries to be relocated far from residential and agricultural areas The masterplan which is in line with the National Physical Master Plan for the Lebanese Territory (NPMPLT) classifies the study area into four zones: A (Agricultural), U (Urban), N1 (Peaks: high mountain above 1900m), and N3 (Valleys, quality forests and continuous ecological areas)	Complementary Continuation of the mapping exercise especially in landscapes and heritage, natural hazards, urban infrastructure and economic development challenges  Non-Duplication Thorough studies on soil, land use, hydrogeology water sheds and climate related effects on various sectors

## G. Learning and knowledge management

One of the main objectives of the project is to promote KM / learning between Jordan and Lebanon, but also beyond, also with the purpose to replicate and upscale demonstrated adaptation approaches and techniques. This is mostly done through a dedicated project KM / learning component 4.

As component 4 will be mostly executed by UN-ESCWA, learning will be promoted through their Arab Centre for Climate Change Policies (ACCCP) and existing RICCAR Arab Regional Knowledge and information hub on climate data and analysis.

At the regional / international level, learning/knowledge will be managed and promoted through the creation of a community of practice (CoP). The CoP will focus on water-related climate adaptation in urban areas hosting displaced communities with gender mainstreamed in alignment with AF gender policy (with implications of the Syrian crisis) (with documentation of good practices and lessons; replication package; project baseline and results video; etc.). The ACCCP is established pursuant to resolution 329 adopted at the 30th ESCWA Ministerial Session (Beirut, 28 June 2018) with the aim to strengthen the capacity of Arab States to better understand and address the implications of climate change for sustainable development in the Arab region.

The Virtual CoP will be established as one of the regional nodes of RICCAR targeting cities to serve as a working group of policy-makers, practitioners and researchers to increase the understanding and knowledge sharing about mainstreaming of gender-sensitive climate adaptation mainstreaming within municipal planning, taking into consideration displacement aspects. The CoP will contribute to the design, test and evaluating the impact of "the urban risks and vulnerabilities assessment, planning and management approach model for type 2 cities" resulting from this project. It will also enhance the networking, communication and coordination between urban climate action practitioners, policymakers, researchers, funders, and the communities-at-risk. Membership of the CoP will be open for all city officials (mainly 3RP countries but other cities with similar contexts in the Arab region could join), key global and regional stakeholders responsible for planning, and implementing climate change adaptation related issues. The CoP will be an open-access knowledge platform displaying developed resources and technical tools. It will include a free membership-based space for dialogue and interaction among members of the CoP. The CoP will also connect with other relevant platforms and databases relevant to urban climate action as well as the Planners for Climate Action and the 3RP platform. The core partners of the CoP will be the members of the regional SC of the project. The regional SC will act as secretariat of the CoP. feeding it with technical inputs, driving its activities and priority themes. The CoP, being part of a regional knowledge hub, could also host technical materials and capacity development opportunities shared by members of the CoP for further enhancement of knowledge about climate change adaptation mainstreaming in municipal planning and to promote a dialogue with other cities in the region regarding these important issues.

Sharing of lessons will also be done through regional / international seminars organised by UN-ESCWA (e.g. Arab water weeks, Arab Ministerial Water Councils, Regional Preparatory Meeting on Climate Change) and international events (e.g. (AMFHUD, WUF, COP side events (2x); AFSD; HLPF 2022 reviewing SDG 11 and 6 and HLPF 2023). Proceedings and contribution of the project to these events will be documented and displayed on the CoP platform.

At the national level (in and between Jordan and Lebanon), learning / knowledge will also be managed and promoted through UN-ESCWA. This will be done through regional SC meetings (where possible organised at the same time as UN-ESCWA organised regional / international seminars) and a platform/working space for communication and sharing lessons regarding the project (research; project best practices and lessons learned). Field visits to project sites will also be organised.

At the district / municipal level, learning / knowledge will be managed and promoted by a consultancy firm. UN-habitat in coordination with universities and execution entities. Geo-referenced databases and an online platform will be used to share project data produced + territorial observatories (by universities) in the target areas. The consutancy firm will also develop the 'regional' urban risks and vulnerabilities assessment, planning and management approach model for type 2 cities.

At the community level, project beneficiaries will be involved through a participatory assessment, planning approach (comp 1) and capacity and skills building (comp 2) to operate, maintain and replicate the proposed concrete adaptation techniques being developed under comp 3. Moreover, capacities of government officials, mostly at the municipal level, but also at the national level, will be strengthened to operate, maintain techniques and replicate these, as well as approaches.

Knowledge sharing tools to be used include websites, including existing platforms, social media streams (e.g. Facebook), outreach and information sessions, presentations and a project video, but also produced strategies, plans and guidelines.

Lessons learned, especially what worked and what did not, will be captured through monitoring of all project sub-interventions, also to identify what worked and what not. This would then feed into replication / upscaling guidelines, which will be developed for all sub-interventions (under component 2). All info will feed into output 4.3. the development of a Regional' urban risks and vulnerabilities assessment, planning and management approach model for type 2 cities. Field visits will also show what worked and what will not.

More details are provided below regarding the specific planned activities under each expected output of this component, thus strengthening the rationale of this regional outcome of the proposal.

For output 5.1, "Regional / international KM with focus on sharing project lessons and replication of good practices"

- Establishment of the regional and national steering committees and development of their terms of reference to ensure transfer of knowledge and documentation of good practices as well as drive the CoP activities.
- Development of specific publications/video/leaflets on lessons learned and best practices implemented in the target cities of the project that will inform other cities in Syria-neighbouring countries part of the 3RP, to be disseminated both through the CoP and 3RP platforms and presented in regional/international events. Documenting good practices and lessons learned from the onset of the project implementation and making them available in Arabic and English through the CoP that will be accessible to the stakeholders is vital given the lack of good cases of cities mainstreaming climate change in urban planning in this region. This will also enhance sustainability as it will encourage continuity of the good practices identified even beyond the project implementation period.
- Based on the deliverables under Component 1 and 2, (tools, guidelines, plans/strategies), common/harmonised guidelines on gender-sensitive climate adaptation mainstreaming in urban planning for the Arab region encountering massive displacement that can be applied by other countries and positively influence their own strategies, plans and legislation.
- Organize four regional workshops back-to-back with the regional SC meetings to disseminate these guidelines to the relevant Arab city officials and share experience. Outcomes of these workshops will be published on the CoP and other relevant platforms. The regional workshops will focus on water-related climate adaption with gender mainstreamed and identifying best practices implemented at the city level. National and local government representatives from other 3RP countries will be invited, as well as regional and global actors from academia, civil society and bi/multi-lateral donors, with the idea to promote urban climate adaptation in the region and identify opportunities for resource mobilisation and scaling-up.

For output 5.2, "Jordan and Lebanon KM with focus on project progress, best practices and lessons learned"

- Organize City-to-City exchange in and between Jordan and Lebanon to share lessons learned of the implementation of the project components 1, 2 and 3. and facilitate peer-to-peer learning and crossfertilisation among city officials but also vulnerable groups of women, youth and displaced to share and disseminate information about their newly developed skills and innovative climate adaptation measures implemented in the project.
- Undertake and exchange exploratory field visits for city officials of the project sites in the target cities of both countries of the project to learn from good practices implemented there and engage them in city dialogues on climate change adaptation in urban settings.

For output 5.3, "Sub-national KM and Regional' urban risks and vulnerabilities assessment, planning and management approach model for type 2 cities"

- A Sub-national KM and Regional' urban risks and vulnerabilities assessment, planning and management approach model for type 2 cities will be defined with key monitoring indicators to better assess the efficiency and effectiveness of the proposed approach, taking into account climate change related urban water scarcity challenges. The model will be discussed by the CoP, presented in online webinars for further refinement and endorsement.
- Develop online modules to translate the model into actionable steps easy to understand and implement by City officials with similar context. The modules will be made available on the online knowledge platform for further dissemination beyond the project timeframe.
- Participation of project partners in relevant international and regional events related to climate change adaptation, and displacement, as needed for promoting and disseminating the model, and for learning from other similar projects and approaches on-going in other Arab countries or in other regions.

For output 5.4, "Incentive mechanism (financial) and regulatory framework to replicate and upscale rainwater harvesting activities"

Development of incentive mechanism (financial) and regulatory framework to replicate and upscale rainwater harvesting activities and publish and share it with other relevant cities in Jordan through the city-to-city exchanges for further replication.

Table 15: Learning and knowledge management				
Expected Concrete Outputs	Learning objectives (lo) & indicators (i)	Outputs / knowledge products		
Outputs 1.1. Territorial planning and development strategy / guidelines with CC and gender mainstreamed in Lebanon 1.2. Urban master plans at municipal level with CC and gender mainstreamed in Lebanon 1.3. Urban master plans at municipal level with CC and gender mainstreamed in Jordan	(lo): To use strategies and plans to better plan municipal assets, esp water (taking into consideration both climate change and DPs migration (i): Number of plans; number of trainings	- Territorial planning and development strategy / guidelines, incl. toolkit on mainstreaming climate change and DPs considerations in land use planning to address water issues in type 2 cities - Urban master plans and investment plans (+ feasibility assessments) - Target areas climate change vulnerability profiles - Training reports		
Output  2.1. Community organisation, awareness and capacity / skill building + operation, maintenance and replication and upscaling plans for concrete adaptation output 3.1  2.2. See above for output 3.2.  2.3. See above for output 3.3.  2.4. See above for output 3.4.  2.5. See above for output 3.5.  2.6. See above for output 3.6.  2.7. See above for output 3.7.  2.8. See above for output 3.8  2.9. See above for output 3.9	(lo): Build community and vulnerable groups capacities and skills to operate, maintain and replicate / upscaleresilient water systems; identify best way to reduce (potential) tension between groups (i): Number of plans; number of trainings	- Operation, maintenance and replication plans for all sub-projects, including highlighting what worked and what did not - Training toolkits for building capacities at the community level - Training reports		
Output 3.1. Rooftop rainwater harvesting in Lebanon 3.2. Rooftop rainwater harvesting in Jordan 3.3. Greywater treatment and reuse in Jordan 3.4. Efficient treatment and reuse of wastewater in Lebanon 3.5. Efficient treatment and reuse of wastewater in Jordan 3.6. Water-use-efficient irrigation of treated wastewater in Lebanon	(lo): showcase best practice information on replicable innovative techniques / interventions in context of high influx of DPs and climate change impacts (i): Number of techniques / interventions showcased	- Techniques / interventions documented, including what worked and what did not highlighted. This will feed into the replication / upscaling guidelines (component 2) and Regional' urban risks and vulnerabilities assessment, planning and management approach model for type 2 cities (component 4)		

3.7. Water-use Efficient irrigation of treated wastewater in Jordan 3.8. Permaculture demonstration - closed loop water system in Jordan 3.9. Permaculture demonstration - closed loop water system in Lebanon		
Output  4.1. Regional / international KM with focus on sharing project lessons and replication  4.2. Jordan and Lebanon KM with focus on project progress, best practices and lessons learned  4.3. Sub-national KM and Regional' urban risks and vulnerabilities assessment, planning and management approach model for type 2 cities  4.4. Incentive mechanism (financial) and regulatory framework to replicate and upscale rainwater harvesting activities	(lo): Share lessons on how to address climate change impacts in type 2 cities context (i): Number of knowledge products and events in which lessons will be shared (i): % increased knowledge of stakeholders of the CoP on water-related climate adaptation with gender mainstreamed cities hosting refugees	- Community of practice on climate change in urban areas - Presentations and knowledge sharing materials at international conferences - KM platforms - Project video - Field visits - Online modules - Regional' urban risks and vulnerabilities assessment, planning and management approach model for type 2 cities - Documented proposed incentive mechanism (financial) and regulatory framework to replicate and upscale rainwater harvesting activities

# H. Consultative process

For the project preparation phase, consultations have been conducted with key stakeholders and beneficiary communities, including representatives from the government, UN agencies, NGO's and vulnerable groups. An overview of consultations conducted, including objective, outcomes and how inputs have been incorporated in the proposal is available in annex 3. Details such as completed consultation questionnaires and attendance sheets are available on request. Four type of consultations shaped this proposal. Consultations to:

- Align with National and sub-national priorities: throughout the project preparation phase, UN-Habitat worked with the AF focal points, ministries mandated to work on aspect touched by the project (i.e. water, agriculture, spatial planning, etc.) and target municipalities. The proposed project activities have been prioritised / selected with these government representatives, as well as the target areas. Both Jordan and Lebanon governments prioritised water harvesting and wastewater treatment and reuse adaptation measures (see annex 3)
- □ <u>To avoid duplication with other projects</u> (government, UN agencies, NGOs, etc.) and use lessons learned (see annex 3)
- □ <u>Identify specific needs and possible concerns of vulnerable groups</u>. In line with AF ESP and GP policies, consultations with beneficiary communities and specific groups (especially women, youth, Syrians) of each sub-project took place to identify specific needs and possible concerns regarding the proposed project activities (see annex 3, 4 and 5).
- □ <u>Identify potential environmental and social risks and impacts</u>. Related to above and in line with AF ESP and GP policies, consultations took place to identify potential risks and impacts of proposed project activities. This also includes public hearings in line with national requirements for conducting EIA ((see annex 3, 4 and 5).

**Table 16**: List of stakeholders consulted. For more details, including outcomes, see annex 3

Table 19. Elect of clarker leader contented. I of more detaile, more and all generally detectines, elect armiex of								
Stakeholder	Leb Jo	Jor		Prir	nciple choic	Method		
			To align with governm ent priorities	To avoid duplicati on with other projects	To comply with standard s, rules and regulatio ns	Identify specific needs and possible concerns vulnerable groups	Identify potential environme ntal and social risks and impacts.	
Ministry of	Х	Х	х	х	Х		Х	Private meeting Steering committee
Environment								Oteening committee

Ministry of Energy and Water	х		Х	х	Х			Private meeting Steering committee
Council for Development and Reconstruction	х		Х	Х				Private meeting Steering committee
Bekaa Water Establishment	Х		Х	Х	Х			Private meeting Steering committee Execution partner
Litani River Authority	х		Х	х	Х			Private meeting Steering committee Execution partner
Lebanese Agriculture Research Institute	х		Х	х		х		Private meeting Execution partner
Municipality of Zahle	Х		Х	х	Х	х		Private meeting Steering committee
Municipality of Bar Elias	Х		Х	х	Х	х		Private meeting Steering committee
Other target Municipalities	Х	Х	Х	х				Private meeting
Ministry of Planning and International Cooperation		Х	Х	Х				Private meeting Steering committee
Ministry of water and Irrigation		Х	Х	Х	х			Private meeting Steering committee
Ministry of Local Administration		Х	Х	х				Private meeting Steering committee
The Ministry of Awqaf Islamic Affairs and Holy Places		х	Х	х	х			Private meeting Steering committee
Ministry of Education		Х	Х	х	Х			Private meeting Steering committee
WAJ / Yarmouk Water Company		Х	Х	х	х			Private meeting Steering committee
Municipality of Irbid		Х	Х	х	х	х		Private meeting Steering committee
Municipality of Mafraq		Х	х	х	х	х		Private meeting Steering committee
UploaD	х			х		х		Calls Execution partner
UN-ESCWA	Х		Х	Х		х		Private meeting Execution partner
UNICEF	Х	Х		Х		х	Х	Private meeting Execution partner
Johud		Х				х	Х	Private meeting Execution partner
Badia Fund		Х				х	Х	Private meeting Execution partner
Permaculture Research Institute		Х	_	Х		х	Х	Private meeting Execution partner
UN Women	Х	Х		Х		х	х	Private meeting
UNHCR	Х	Х		Х		х	х	Private meeting
UNDP	Х	Х		Х				Private meeting
FAO		Х		Х				Private meeting
ILO	Х	Х		Х		х	Х	Private meeting
OHCHR	Х			Х		х	Х	Private meeting
IUCN	Х	Х		Х		Х	Х	Private meeting

GIZ	х		Х			Private meeting
Norwegian Refugee Council	х				х	Private meeting Community consultations
Solidarites International	х				х	Private meeting
WB	Х					Private meeting
Vulnerable groups, including women, youth, Syrians and farmers	Х	Х		х	х	Focus groups consultations Public hearings

During the pre-concept note development phase, consultations were conducted with the AF focal points and relevant ministries in both countries to ensure project alignment with national priorities (i.e. national strategies and plans). Since then, UN-Habitat staff in both countries continued close coordination with government representatives at the national and municipal level, also through formed steering committees.

During the concept note development phase, consultation were conducted with project beneficiary groups, including vulnerable groups, including through (12) focus group discussions. 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 project activities. 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 groups with women only followed the main discussions. Some of the community consultations were organised in collaboration with municipalities of Mafraq, Irbid and Zahle and others were organised with support of NGOs and CBOs (i.e. World Vision, Norwegian Refugee Council) working in the target areas.

Workshops with government representatives, academia, etc. were also conducted to identify the main climate change issues, needs and other projects (to avoid duplication) in target municipalities and to further select project activities. Also, "one to one" meetings targeting relevant government institutions, UN agencies, other international organisations and NGOs were conducted.

The outcomes of consultations shaped the selection of proposed interventions at that stage. Some of the proposed interventions were excluded due to cost inefficient (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. efficient irrigation techniques). Also, measures will be taken to respond to some concerns raised, especially those of Syrian DPs and women

During the full proposal development phase, accredited consultants to conduct feasibility assessments and environmental and social risks screening and impact assessment were hired in both countries. These consultants followed national requirements to do these assessments (including public hearings), as well as AF requirements (consultations with all beneficiary groups to identify potential risks and impacts, including possible concerns). Complete national feasibility assessment, ESIA-ESMP and consultation reports are available on request. In April 2020, additional consultations have been conducted to identify specific needs and possible concerns and risks regarded to permaculture intervention in Lebanon. This has been done following Covid-19 restrictions for meeting. Meetings were in person but on distance, with various representatives of vulnerable groups and especially farmers. Consultations targeting farmers were completed on field in two areas, at LARI premises and at the Municipality of Zahle. Throughout implementation, beneficiary communities and groups will participate in the works carried through

demonstration plots at LARI and on their own plots of farmland. Consultations were done in the form of an online survey through Microsoft Forms (results can be accessed through the following <u>link</u>).

Figure 11: Consultation carried out at LARI premises





Figure 12: Consultation carried out at Zahle Municipality

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



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



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



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



# I. Justification of funding request

There is little exploration of how urban systems respond to a rapid influx of new and often long-term residents by conflict combined with climate change impacts. Therefore, it is manifest and critical to build resilient communities and institutions that are equipped to respond to shocks and stresses arising from climate change in combination with displacement. This project explores and collects evidence of approaches and best practice techniques that effectively respond to these challenges faced in urban areas in Jordan and Lebanon.

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 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 urban areas 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 urban areas to cope with current and future climate change impacts exacerbated by the 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 capacity building to support

national and municipal climate action. As mentioned earlier, the target urban areas 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 affordable water.

From a regional perspective, the project can be justified by responding to some funding gaps under the regional Syrian crisis response programming (i.e. 3RP), where budget gaps exist, especially under the WASH and the social cohesion and livelihoods components, <sup>101</sup> which is most relevant in 'host' cities (see also annex 1). Besides that, considering the significance of the combined challenges posed by the climate change and the Syrian crisis, regional knowledge exchange and learning is needed, between Jordan and Lebanon, but also in the wider region, which will be done through component 4.

The project aims to maximizing the funding amount for the concrete adaptation component (component 3; USD 7,5 million, which is approx. 2/3 of the sum of the four project components); funding allocation to component 2 is required to operate, maintain and replicate the proposed concrete interventions under component 3. Funding for component 1 is needed to more efficiently assess, plan and manage water at the municipal level, including to identify additional solutions to adapt to climate change.

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 17 Overview of impact of AF funding compared to no funding (baseline) related to expected project outcomes

outcomes			
Project outcomes	Baseline (without AF)	Additional (with AF)	Comment and alternative adaptation scenario's
1.Strengthened municipal institutional capacity to manage climate change and DP crisis related urban water scarcity challenges by mainstreaming these aspects into spatial strategies + developing action / investment plans and guidelines (with identified solutions) to use water most efficiently within municipal boundaries (in line with AF outcome 1 and 2)	In Jordan and Lebanon, water is managed at the national and district scale, by looking also most solely at current demand and supply needs, with limited consideration of climate change and population movement trends.  Most of the response in target areas is still humanitarian; therefore, a sustainable water assessment, planning and management approach is lacking;	The activities related to this outcome will allow municipal governments to assess, plan and manage climate change and DPs movement related risks and vulnerabilities, especially related to (onconventional) water, in a participatory, integrated, sustainable and climate change resilient way; and inform national decision-making more efficiently  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 target areas, strategies and master plans will help municipal government to respond to the challenge effectively	Although municipalities have the mandate to develop these plans, they 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. Strengthened DPs and host communities awareness and ownership of CC adaptation measures + capacities strengthened to operate, maintain	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	The activities related to this outcome (combined with outcome 1) 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	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

<sup>101 3</sup>RP Regional Quarterly Dashboards March 2018. Online: <a href="https://data2.unhcr.org/fr/documents/download/63820">https://data2.unhcr.org/fr/documents/download/63820</a>

and replicate proposed adaptation measures, including skills building (in line with AF outcome 3 and 8)	between host communities and DPs, pose risks and threats to development gains	security;  Inclusive approaches that promote social cohesion need to be an integral part of displacement responses, especially around scare resources	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.  Alternatively, livelihoods could be diversified more, but as water is an urgent issue, this has been prioritized.
3. Increased adaptive capacity within the water sector through resilient and sustainable water harvesting, supply and irrigation options, using innovative and replicable techniques suitable for the context and benefitting vulnerable groups (in line with AF outcome 4 and 6 and 8)	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 and overextraction and pollution of groundwater. 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 in and around the target municipalities. Taking into consideration the DP and climate change context, techniques selected can be replicated in similar context areas.	Top-down proposed interventions have the risk of not being community driven and appropriate and will also not respond to the situation. The interventions selected respond to larger water system challenges, especially overextraction of groundwater and water pollution, which pose health risks and livelihood security challenges.  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. Strengthened (inter)National institutional capacity to manage climate change and DP crisis related urban water scarcity challenges, including lessons learned collected and shared regionally (in line with AF outcome 3 and 8)	National governments in the Mashriq region have limited capacity and knowledge about available models, tools, techniques + limited financial resources to respond to the combined challenges of climate change and displacement, especially in urban areas.	The activities related to this outcome will allow governments in the region, including at the municipal level, to replicate the approach / model and best practice adaptation interventions to respond to a combination of high DP influx (i.e. type 2 cities) and climate change challenges	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.

## J. Sustainability

The adaptation benefits achieved through the project will be sustained after its end, and replication and scaling-up options promoted through other (potential) funds after its end, especially through component 4. Sustainability and maintenance arrangements for concrete adaptation interventions (comp 3) are layed-out in table 18 below, as well as those for strategies and plans developed under comp 1 and capacities build under comp 1 and 2. Knowledge produced will be shared through comp 4.

At the regional level, project learning and replication and upscaling of outcomes will be promoted through comp 4, which includes knowledge and learning exchange between Jordan and Lebanon and the larger region. At the national level, the project will be sustained through the strong linkages of the proposed project activities with national and sub-national priorities (ensuring national buy-in). At the local level, the full engagement of communities and vulnerable groups in project activities, including assessments, planning and decision-making processes, should achieve building of communities' awareness and capacities and furthermore ownership and leadership in the area of water management – see component 1 and 2. Specific emphasis is given to community capacity strengthening to operate, maintain and replicate the systems (including the development of operation, maintenance and replication plans). Also, through the participatory approach, the project activities aim to contribute to avoid potential future tension over scare resources. 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.

Institutional sustainability: the project paves the way for the Jordan and Lebanon national and municipal governments, but also other governments in the region, to replicate and up-scale the project through the development of best practices assessment, planning and management approaches (comp 1) and best practices concrete adaptation measures, that will be shared regionally under comp 4. Trainings of government staff, especially at the municipal level, will be conducted to strengthen relevant government capacities to deliver and sustain project activities. This would included conducting climate change vulnerability assessments, resulting in target area climate change vulnerability profiles with specific data that should be collected when iterations of municipal plans take place (which is mandatory by law). Part of the detailed project activities under this component (see Part II.A) is the support of a monitoring system with required indicators. Besides that, UNESCWA and Riccar are developing localised climate change scenarios and vulnerability profiles, which would be matched with data from the ground in the target areas. Based on the assessments conducted, responses to the most critical climate change hazards, especially droughts and floods (and other issues identified) can be formulated and prioritised. Through the master plan, responses can be shown spatially. This means e.g. avoiding development in high risk areas or planning concrete interventions to reduce specific identified risks and vulnerabilities.

## Sustainability urban observatories:

In both Jordan and Lebanon, urban observatory staff will be supported to continue after the project through allocated municipal yearly budgets. This allocation will be part of an agreement between UN-Habitat and the municipalities. In Jordan, urban observatory focal points are already appointed in municipalities. In Lebanon, this will be done as well. In both Jordan and Lebanon, UN-Habitat will sign an agreement with the target municipalities for establishing and managing and sustaining the urban observatories. This will include an exit strategy with allocated budgets for continuation of staff. This model builds on previous experiences in sustaining urban observatories in Lebanon.

In Jordan, the cities and villages development Bank (CVDB) started a national programme to establish municipal observatories in all municipalities in Jordan, based on a prime ministry decision. They assigned a national focal point to collect data from all municipalities and they developed a draft data collection template. According to the latest re-structuring process of CVDB, a municipal observatories unit was established under the Technical Affairs Directorate 102 at the CVDB. The unit has a statistician, IT programmer, Administrative data specialist and data entry. It will be responsible for the overall project and its sustainability.

This initiative comes in line with the CVBD strategic plan 2017-2021 and Jordan 2025 as well as the draft Local Administration Law, a new piece of legislation, which is currently being drafted by the government and sent to Parliament for debate, that will replace the decentralization law and municipalities law. It governs and organizes the work of the governorate and the city at local level and defines the responsibilities of local authorities. The idea is to empower local authorities and ensure that all the services are secured in each governorate by the local governorates.

In Lebanon, UN-Habitat signed an agreement with a municipality Union of Municipalities (Southern Lebanon for the Unions of Municipalities (UoMs) of Tyre, Marjeoun and Bint Jbeil Cazas) to establish and manage and sustain an urban observatories before, including an exit strategy with allocated budgets for continuation of staff. The agreement included the following local commitments.

- Incorporate LUO operating cost within the Union of municipalities yearly budget.
- Incorporate LUO staff within the Union of municipalities administrative structure.
- Produce knowledge management and policy guiding tools.
- Establish horizontal linkages with different entities and institutions as making the data available for the different users and participants
- Ensure that information is used to strengthen decision-making and policy formulation

<sup>102</sup> http://www.cvdb.gov.jo/images/orginzation-chart2019.pdf

Social sustainability: by organizing and fully engaging community members and vulnerable groups in project activities, including assessments and planning processes during project preparation and implementation, the project aims to achieve long-lasting awareness and capacities of community members.

Economic sustainability: investing in increasing the resilience of vulnerable assets is a sustainable economic approach. It will avoid future costs related to drought / water scarcity and flood impacts, especially on the vulnerable agriculture sector.

Environmental Sustainability: the proposed project interventions support environmental sustainability by reducing the use overextracted groundwater resources and reduce pollution of water, including of streams and irrigation channels.

Financial sustainability: the proposed interventions are fully aligned with national and sub-national priorities and programmes and therefore, the government actively supports the project and interventions, including anchoring it to existing programmes and monitoring frameworks.

Technical sustainability: techniques used are innovative in the target areas but through operation and maintenance plans and the need to adopt such techniques, also identified in national priorities, sustainability will ensured.

Maintenance arrangements for the wastewater treatment plants

### Jordan:

The Government of Jordan (GoJ) is the only entity in Jordan authorized by law to manage and deliver water and wastewater services in the country either through the central Ministry of Water and Irrigation (MoWI)/Water Authority of Jordan (WAJ) or through its daughter companies in charge of such services in certain governorates. Yarmouk Water Company (YWC) is a national limited liability company wholly owned by MoWI/WAJ, which was established on 26/7/2010 for the management of water and wastewater in the four governorates of North Sector of Jordan (including the three governorates of Irbid, Mafraq, and Jerash where the three WWTP facilities of this project are located) in accordance with the provisions of the Jordanian Companies Law No (22) of 1997. YWC is managed and supervised by a board of directors consisting of (7) members, which is responsible to the General Assembly.

Realizing the big need to utilize treated wastewater for irrigation to ease the stress on freshwater resources in the country (only 265 cubic meter per year (about 56 cubic meters per year per capita considering the average size of the Jordanian family is 4.7 according to Department of Statistics-DOS), the Government of Jordan allocates constant share of financial resources for water and wastewater services in the state's annual budget, where the latter is enacted by a law annually voted on by the Parliament, which sets allocation for the year on hand and forecasts estimate budgets for the following two years to come. YWC, through MoWI/WAJ, receives its annual allocation of the budget, which include named sub-allocation for operation and maintenance of all Wastewater Treatment Plants (WWTPs) under its mandate including the three WWTPs of this project where certain amount of the allocation is particularly set to maintain the quality of treated water to meet the incumbent standard.

For example, the 2020 State Budget of Jordan, which was approved in January 2020, allocated for MoWI/WAJ under Section 8102 (attached in Arabic) a total of 364,168,000 JOD (= 513,642,576 United States Dollars) for 2020 and forecasted approximated budgets for the years 2021 and 2022. The allocation for sewage management and all other related activities for YWC for the Northern Governorates is for 2020 set under Program number 8006 with a total of 8,650,000 JOD (= 12,200,435 USD). The breakdown for each specific WWTP of the three WWTPs of this project is provided on page 5. Such allocations cover all aspects of running constant O&M costs as well as new activities (expansion, ad-hoc, emergency burdens, etc).

Thus, the GoJ is committed to finance permanently the O&M and sustainability of the water and wastewater services in the country through an institutionalized state budget. However, when water and wastewater authorities in Jordan receive financial aid from donors or grants, such as the AF's grant, that support is utilized to institutionalize the process of serving the objectives of that aid and augmenting the tailored end products (adaptation measures in this case) sought from the intervention of that extra support

while maintaining covering the costs of business as usual operations from the state budget. Such newly institutionalize measures become then part of the business as usual operations. As per the details of the proposed wastewater treatment-related activities under this project, as can be seen in the detailed budget, maintenance requirements have also been considered in terms of providing required equipment for this.

#### Lebanon

The Ministry of Energy and Water in Lebanon (MoEW)) is the only entity in Lebanon authorized by law to manage and deliver water and wastewater services in the country either through the four regional Water Establishments and/or the Litani River Authorities as per Law 221/2000 and all its related amendments. As for agricultural water services, they fall under the management of Ministry of Agriculture through the Lebanese Agricultural Research Institute (LARI).

Since water is not properly metered across Lebanon, customers connected to the water network do not pay based on the amount of water they use. 300,000 LBP (around \$200) are paid on a yearly basis for a municipal water supply of 1 m3/d. However, due to intermittent supply, this quantity is not actually supplied. Since public buildings have a high demand of water, their subscription would be more than 1 m³/d. As for the water sourced from external suppliers during dry periods, the cost of water is approximately 25,000 LBP (around \$17) for 2 m³ of water. Moreover, a small fee was recently added to the yearly fee paid by residents for wastewater connection to the network. Water Establishments rely on the applied yearly tariffs to operate and maintain the infrastructure.

Today in Central Bekaa, the operated Zahle WWTP currently discharges the treated effluent—which was deemed to be useful for irrigation—in the Litani river without making any agricultural or financial benefit. Hence, the CCAF proposal for Lebanon aligns with the *Water Sector Crisis Response Plan* (sustainable approach/plan to treatment plants) currently being developed by the MoEW and which stresses on administering proper tariffs, increasing the number of subscribers (which goes hand in hand with awareness raising campaigns and close community consultations) and training the Water Establishments' skilled staff to properly operate and maintain treatment plants across the country.

All proposed interventions of the permaculture project do ensure sustainability either through personal initiatives or through external funding resources. For instance, at the farmers' level the approach suggested/to be adopted is designed in a way to self-sustain. Water harvested for irrigation, reuse of agricultural waste (pruning twigs from vines and fruit trees, among other farm wastes ...), techniques for self-made biofertilizer production, among all the other suggested approaches in the adaptation measure's description. Also, and as part of the proposal, training sessions will be conducted on all beneficiaries which would include information on proper evaluation, monitoring and maintenance. As for the educational facility, LARI/ Ministry of Agriculture will establish a coordination between the Ministry of Education and Higher Education and the Lebanese University to ensure its long-term sustainability. As per the details of the proposed wastewater treatment-related activities under this project, as can be seen in the detailed budget, maintenance requirements have also been considered in terms of providing required equipment for this.

**Table 18**: Project activities' sustainability and maintenance arrangements, including replication and upscaling

Detailed outputs / activities	Maintenance measures	Responsible	Replication + Upscaling measures	Responsible
Component 1: Increasing the res	ilience of municipal governments: Manage urban risks and vu	ulnerabilities in the context of climate change, esp. water scarcity ch	allenges, and urban (population) growth,	incl. from DPs
Territorial planning and development strategy / guidelines at district level with climate change and gender mainstreamed (Lebanon)	Below municipal staff will be involved and trained, as well as appointed staff form higher level planning authorities to develop the strategies and guidelines for replication and to embed these in national government processes, including monitoring framework and indicators to be used	Planning: Un-H with a consultancy firm Implementation/after project: target district; Ministry of Interior and Municipalities (MoIM), Ministry of Public Works (MoPW), Ministry of Energy and Water (MoEW), Ministry of Environment (MoE), Ministry of Agriculture (MoA).	Replication at other districts, informing area-based planning to the Directorate General of Urban Planning (under the MoPW)	Line Ministries
Urban master plans at municipal level with climate change and gender mainstreamed (Lebanon)	As municipalities are mandated to develop master plans and to manage water within municipal boundaries, dedicated staff will be appointed and trained to deliver and sustain project activities, including through a monitoring framework and indicators to be used. For the Urban observatories, focal points of the Urban observatory (one regional) will be appointed and annual municipal budgets will be dedicated for O & M	Planning: Un-H with a consultancy firm Implementation/after project: target district; Ministry of Interior and Municipalities, Ministry of Public Works, Ministry of Energy and Water, Ministry of Environment.	Replication at other Municipal levels of the district. Informing Municipal strategic planning to the MoIM	Line Ministries
Urban master plans at municipal level with climate change and gender mainstreamed (Jordan)	As municipalities are mandated to develop master plans and to manage water within municipal boundaries, dedicated staff will be appointed and trained to deliver and sustain project activities, including through a monitoring framework and indicators to be used. For the Urban observatories, focal points for each municipality have already been appointed and annual municipal budgets have been dedicated for O & M	Planning: Un-H with Consultancy Firm Implementation: target municipalities; Ministry of Local Administration;	Replication across all remaining municipalities	Line Ministries
Component 3: Increasing the ada	aptive capacity of the water sector: Expand unconventional w	ater harvesting, supply and irrigation options, using innovative and r	replicable techniques suitable for the conf	text
Rooftop rainwater harvesting in Lebanon	Under comp 2. Output 1 Operation, maintenance and replication plans Awareness raising campaigns and capacity development trainings	During implementation: UNICEF/ Lebanese Agriculture Research institute (LARI under MoA) After project end: Buildings owners and Municipalities	Through the Municipal zoning and building permits	Municipalities
Rooftop rainwater harvesting in Jordan in	Under comp 2. Output 2 Operation, maintenance and replication plans Awareness raising campaigns and capacity development trainings	During implementation: JOHUD After project end: Ministry of Education and Ministry of Awqaf Residential Building owners	Applying similar interventions to other schools, mosques and residential buildings. Initiate a national programme in collaboration with MoLA to enforce the installation of RWH at household level through building licences and permits. Financial incentive mechanism to support the scaling up of the project.	Directorate of Education: Building Department Ministry of Awqaf: Construction and Maintenance Department
Greywater treatment and reuse in buildings in Jordan in	Under comp 2. Output 3 Operation, maintenance and replication plans Awareness raising campaigns and capacity development trainings	During implementation: UNICEF After project end: Ministry of Education and Ministry of Awqaf	Applying similar interventions to other schools and mosques	Directorate of Education: Building Department Ministry of Awqaf: Construction and

				Maintenance Department
Efficient treatment in and reuse from wastewater from Zahle WWTP, Lebanon	Under comp 2. Output 4 Operation, maintenance and replication plans Awareness raising campaigns and capacity development trainings Allocated maintenance budget from regional water establishment (Bekaa Water Establishment) Allocated maintenance budget for the canal from Zahle municipality	During implementation: The Regional Technical Office (RTO), Litany River Authorities (LRA), Bekaa Water Establishment (BWE) After project end: BWE (mandated to operate and maintain WWTP after being handed over by the Council for Development and Reconstruction CDR), Zahle Municipality	Through applying similar interventions to other WWTP	BWE, MoEW
Efficient treatment in and reuse of wastewater from Mafraq WWTP, Jordan	Under comp 2. Output 5 Operation, maintenance and replication plans Awareness raising campaigns and capacity development trainings Allocated maintenance budget from national government andmaintenance equipment provided The allocation for sewage management and all other related activities for YWC for the Northern Governorates is for 2020 set under Program number 8006 with a total of 8,650,000 JOD (= 12,200,435 USD).	During implementation: MoWI/YWC After project end: YWC YWC, through MoWI/WAJ, receives its annual allocation of the budget, which include named sub-allocation for operation and maintenance of all Wastewater Treatment Plants (WWTPs) under its mandate including the three WWTPs of this project	Ensure reclaimed water remains of high quality and up to Jordanian Standards: Law No. (22) of 1997	YWC
Efficient treatment in and reuse of wastewater from Maerad WWTP, Jordan	Under comp 2. Output 5 Operation, maintenance and replication plans Awareness raising campaigns and capacity development trainings Allocated maintenance budget from national government andmaintenance equipment provided The allocation for sewage management and all other related activities for YWC for the Northern Governorates is for 2020 set under Program number 8006 with a total of 8,650,000 JOD (= 12,200,435 USD).	During implementation: MoWI/YWC After project end: YWC YWC, through MoWI/WAJ, receives its annual allocation of the budget, which include named sub-allocation for operation and maintenance of all Wastewater Treatment Plants (WWTPs) under its mandate including the three WWTPs of this project	Ensure reclaimed water remains of high quality and up to Jordanian Standards: Law No. (22) of 1997	YWC
Efficient treatment in and reuse of wastewater in Akaidr WWTP, Jordan	Under comp 2. Output 5 Operation, maintenance and replication plans Awareness raising campaigns and capacity development trainings Allocated maintenance budget from national government andmaintenance equipment provided The allocation for sewage management and all other related activities for YWC for the Northern Governorates is for 2020 set under Program number 8006 with a total of 8,650,000 JOD (= 12,200,435 USD).	During implementation: MoWIYWC After project end: YWC YWC, through MoWI/WAJ, receives its annual allocation of the budget, which include named sub-allocation for operation and maintenance of all Wastewater Treatment Plants (WWTPs) under its mandate including the three WWTPs of this project	Ensure reclaimed water remains of high quality and up to Jordanian Standards: Law No. (22) of 1997	YWC

Water-use-efficient irrigation of treated wastewater from Zahle WWTP, Lebanon	Under comp 2. Output 6 Operation, maintenance and replication plans Awareness raising campaigns and capacity development	During implementation: RTO, Zahle Municipality After project end: Farmers and Municipality	Through irrigation masterplans	LARI, MoA,Zahle Municipality Farmers Cooperatives
Water-use-efficient irrigation of treated wastewater from Mafraq WWTP, Jordan	trainings Under comp 2. Output 7 Operation, maintenance and replication plans Awareness raising campaigns and capacity development	During implementation: BADIA Fund After project end: Farmers	Through irrigation masterplans	Members of the Water Association
Water-use-efficient irrigation of treated wastewater from Maerad WWTP, Jordan	trainings Under comp 2. Output 7 Operation, maintenance and replication plans Awareness raising campaigns and capacity development trainings	During implementation: JOHUD After project end: Farmers	Through irrigation masterplans	Members of the Water Association
Water-use-efficient irrigation of treated wastewater from Akaidr WWTP, Jordan	Under comp 2. Output 7  Operation, maintenance and replication plans  Awareness raising campaigns and capacity development trainings	During implementation: JOHUD After project end: Farmers	Through irrigation masterplans	Members of the Water Association
Permaculture demonstration – efficient use of water	Under comp 2. Output 8  Operation, maintenance and replication plans  Awareness raising campaigns and capacity development trainings	During implementation: PRI in cooperation with JUST After project end: PRI in cooperation with JUST	Landscape rehabilitation plan(s) by students and PRI team for surrounding areas, including technical replication guidebook (under comp 2); Permaculture site at JUST will function as a 2 <sup>nd</sup> PRI regional demonstration site	PRI in cooperation with JUST
Permaculture demonstration – efficient use of water in Lebanon	Under comp 2. Output 9  Operation, maintenance and replication plans Awareness raising campaigns and capacity development trainings	During implementation: LARI in cooperation with municipalities, MEHE, farmers, and UN-Habitat After project end: LARI in cooperation with municipalities, MEHE, farmers	Landscape rehabilitation plan(s) by students and LARI for surrounding areas, including technical replication guidebook (under comp 2); Permaculture sites at LARI will continue to function as a national demonstration site	LARI and municipalities
Component 4: Improving knowle	dge and policies and regulations to increase urban resilience	in the region: Project KM and replication, incl. development of region	onal urban risks and vulnerabilities manag	gement model in the
Regional / international KM with focus on sharing project lessons and replication	kan (population) growth (incl. from DPs migration)  Knowledge will be embedded and shared through the UN-ESCWA Arab center for climate change policies knowledge hub, which is sustained by UN-ESCWA already. The project will feed into refugee response plans in the region	UN-ESCWA + Un-Habitat	This component is specificially designed to share all project lessons (above), also with the purpose to replicate and upscale these. Therse this component can be regarded as	UN-Habitat in cooperation with UN-Escwa and other key stakeholders
Jordan and Lebanon KM with focus on project progress, best practices and lessons learned Sub-national KM and Regional'	National knowledge sharing will also be sustained through UN-ESCWA  Knowledge will be embedded and shared through the	UN-ESCWA + Un-Habitat Ministries of Environment  UN-Habitat in cooperation with a consultancy firm and	part of the replication and upscaling mechanism for the the project activities.	
urban risks and vulnerabilities assessment, planning and management approach model for type 2 cities	UN-ESCWA <u>Arab center for climate change policies</u> knowledge hub, which is sustained by UN-ESCWA already. The project will feed into refugee response plans in the region	municipalities and universities	This will be done through the UN- ESCWA <u>Arab center for climate</u> <u>change policies</u> knowledge hub,	

Incentive mechanism (financial)	UN-Habitat in cooperation with ministries	which is sustained by UN-ESCWA	
and regulatory framework to		already.	
replicate and upscale rainwater			
harvesting activities			

## K. 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 Part 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 3 and 4, 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 assessment and baseline, containing disaggregated data and approach, containing specific approaches for women and youth, has been developed – see annex 5.

Normative, planning and capacity development activities (i.e. non-concrete interventions) under components 1, 2 and 4 consist of strategies and plans development, capacity development and knowledge exchange. The project will ensure beneficiary groups will be equally represented and equal benefit from the project activities – see annex 4.

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 will be operated and maintained by water authorities, municipal staff and communities, where possible, who have a stake in avoiding environmental and social risks and impacts, potential direct impacts are limited. Indirect impacts and transboundary impacts are highly unlikely given that water quality improvement activities will only result in improved water quality, not a degradation. Target streams are not transboundary. Given this, cumulative impacts are also unlikely. Because of this, the entire project is regarded as a medium risk (Category B) project. Annex 4 provides an overview of risks screening and impact assessment outcomes conducted in both Lebanon and Jordan. In both countries, risks screening sheets have been completed for each proposed project activity. Besides that, accredited consultants prepared country-specific ESIAs, ESMPs and consultations reports in compliance with the AF ESP and GP and national requirements for conducting ESIAs. The outcomes have been consolidated in the proposal. A scoping report has been prepared, submitted and approved by the Lebanese government.

The country specific ESIAs, ESMPs and consultations reports are available through above website. The completed risks screening sheets for each project activity are available on request. The country-specific ESIA, ESMP and consultation reports are accessible here: https://unhabitat.org/af-lebanon-jordan

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. Consultation to comply to the AF ESP and GP have been completed – see Part II.I, Annex 3 and above publications The adaptation actions proposed have been selected together with ministries (through already established project steering committees), mayors, and community and vulnerable group representatives, making sure they are culturally and specific area-appropriate

## **Summary of outcomes:**

Principle 1: Relevant laws and standards have been identified, including how the project and sub-project / outputs comply. Principles, 2,3 and 5, detailed stakeholder mapping has been conducted, vulnerable groups consulted and an inclusive assessment, planning and management approach for project implementation proposed. Principle 4 and 6: the human rights and core labour rights not ratified have been identified and relevant agencies consulted to identify related potential risks and mitigation measures. Principle 7: no indigenous groups were identified in the target areas. Principle 8: all involuntary resettlement will be avoided; all interventions will be on public land or in building of which owners and managers agreed with the proposed interventions. Principle 9 and 10: no protected natural habitat would be harmed, as confirmed by IUCN. 11 and 12: project activities may result in small increase of energy use. This will be companesated through installation of PV. Principle 13. Although project activities aim to improve water quality, there may be a risk that the quality does not comply to standards. Risks mitigation measures are in place to reduce the risk. Principle 14, no heritage sites were identified in the target areas (as per UNESCO website). 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 info see Part II.F, Part II.I and annex 3, 4 and 5.

 Table 19: Overview of the environmental and social impacts and risks. For more details see section annex 4.

Checklist of	Principle	nmental and social impacts and risks. For more details see section annex 4.  Justification.
environmental and social principles	triggered during risks screening	(For potential impacts and risks see annex 4 and country-specific assessments conducted)
Compliance with the Law	No	All relevant rules, regulations and standards have been identified for all proposed project activities, including procedures / steps to comply to these.
Access and Equity	No	All project beneficiaries (i.e. population; groups) have been mapped for each project activity / output. Community consultations and focus groups discussions have been conducted per beneficiary group to identify possible rivals, disputants and concerns related to equal access of project benefits
Marginalized and Vulnerable Groups	No	All project beneficiaries (i.e. population; groups), including marginalised and vulnerable groups have been mapped for each project activity / output. Desk research, expert consultations and community consultations and focus group discussions have been used to identify possible risks / adverse impacts of project activities on marginalized and vulnerable beneficiary groups (i.e. specific needs, limitations, constraints and requirements of groups).
Human Rights	No	Possible project human rights issues have been identified by assessing whether Jordan and Lebanon are cited in any Human Rights Council Special Procedures, and to confirm and understand possible issues through consultations with 'experts.' Communities have also been consulted about possible human rights issues with the purpose of design activities appropriately
Gender Equity and Women's Empowerment	No	All project beneficiaries (i.e. population; groups), including women and youth have been mapped for each project activity / output. Desk research, expert consultations and community consultations and focus group discussions have been used to identify possible risks / adverse impacts of project activities on women and youth. A annex containing a gender assessment has been developed
Core Labour Rights	No	Possible Core labour rights compliance issues have been assessed by analysing if Jordan and Lebanon ratified relevant conventions and by understand possible issues through consultations with ILO
Indigenous Peoples	No	No indigenous people are present in the project / programme target areas.
Involuntary Resettlement	No	No physical or economic displacement will take place due to the project/programme. This has been determined by mapping project target sites land ownership (private, public) and land use, also informally, and through consulting communities / users on the possible risk of resettlement and to get agreement on proposed interventions (i.e. no interventions will take place without the consent of inhabitants in the targeted areas). Land owners, private or public, have agreed with using their land for project activities.
Protection of Natural Habitats	No	It has been checked if any critical natural habitats exist in the target location, including their location, characteristics and critical value (i.e. legal protection status, common knowledge or traditional knowledge), as well as possible negative impacts on these due to project activities. This has been done by checking IUCN Red list and by consulting IUCN (regional office)
Conservation of Biological Diversity	No	It has been checked if any important biodiversity exist in the target location, including their protection status and other recognised inventories as well as possible negative impacts on these due to 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 was confirmed through consultations with IUCN (regional office).
Climate Change	No	Although very limited, energy use could be increased because of pumping of water from WWTP to farm lands. To compensate for this, PV will be installed at the plants
Pollution Prevention and Resource Efficiency	YES	An analysis of possible risks of inefficiencies in energy and material resource use and waste and pollution risks of each activity has been conducted. Irrigation of waste water from the Zahle WWTP for instance has been designed to serve farmers through a gravity system. There may be a small risks of contamination of soil, surface water and groundwater because of project activities at WWTP. Therefore some risks mitigation measures are put in place.
Public Health	YES	To avoid potential negative health impacts for project activities and other activities safety signs and equipment will be provided in line with core labour rights (155 and 187). Although the project intends to improve the quality already used for irrigation,

		water quality monitoring is required. The same accounts for the rainwater harvesting and greywater treatment and reuse interventions. Therefore some risks mitigation measures are put in place to make sure there will be no health risks because of water use.
Physical and Cultural Heritage	No	It has been checked if physical or cultural heritage sites are present or near project sites, as well as possible risks of impacts on these due to project activities.  UNESCO listed Heritage sites in target area: Anjar has been identified as a heritage site in Lebanon (in the district of Zahle). However, this is not in the target areas
Lands and Soil Conservation	NO	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, The proposed intervention will reduce the loss or degradation of the soil, reducing any related risk.

## PART III: IMPLEMENTATION ARRANGEMENTS

## a. Arrangements for project management

The following arrangements for project management (oversight, coordination and execution) have been agreed upon with AF DAs, the project steering committees and Execution Partners in Jordan and Lebanon.

Figure 15: Project Organigram

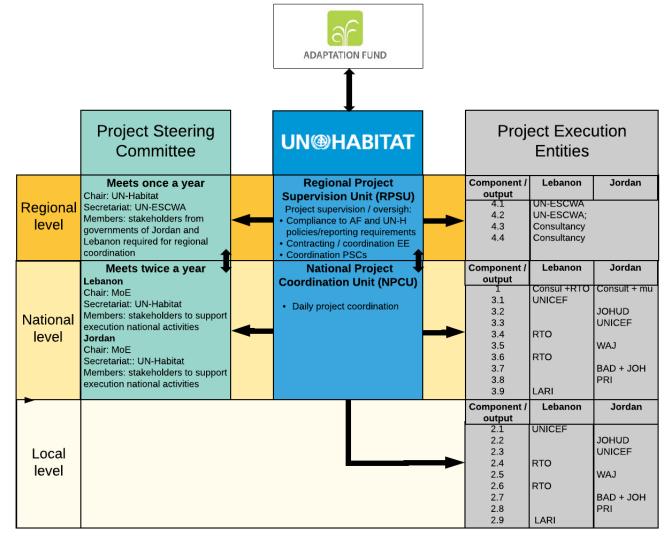


Table 20: Key project organigram stakeholders and roles and responsibilities

Stakeholder	Role and responsibility
UN-Habitat	Project oversight / supervision and coordination Compliance with AF and UN-H policies and reporting / M&E requirements, incl. safeguarding system Contracting and coordination execution partners Coordination with Project Steering Committees to execute project components / activities
Project Steering Committees	Providing technical inputs to ensure smooth implementation of the project from start to completion, including providing advice on how to deliver project outputs and the achievement of project outcomes in a timely matter in line with national and subnational strategies and technical standards:  Required coordination with relevant ministries and authorities  Approve annual work plans and review key project periodical reports;  Review any deviations and consider amendments to work plans and contractual arrangements.
Project Execution Entities	Execute specific project components / activities

The organigram above (Figure 15) shows how the project will be supervised, coordinated and executed at the regional, national and local level. As UN-Habitat is the Multilateral Implementing Entity (MIE) of the project, UN-Habitat will be responsible for the overall implementation of the project, including contracting of execution partners and coordination with stakeholders that have a 'stake' or say in the project, mostly through Project Steering Committees.

Regional level: at the regional level, project implementation will be supported through a Regional Project Supervision Unit (RPSU). This 'Unit' will be responsible for project supervision / oversight, including coordination with and between National Project Coordination Units (NPCUs), the Regional-level Project Steering Committee (PSC) and the Project Execution Entities (PEE). The Regional Project Supervision Unit will be responsible for ensuring project compliance with the AF and UN-H policies and reporting requirements, for contracting the Project Executing Entities and it will chair the Regional-level Project Steering Committee. It will also support on climate change and guide the community of practice. This Regional-level Project Steering Committee will be responsible for 'steering the 'whole' project from start to completion and for ensuring that the regional component (i.e. component 4) of the project is realized.

<u>National level:</u> at the national level, project implementation will be supported through **National Project Coordination Units (NPCUs)**. These 'Units' will be responsible for daily project coordination in Jordan and Lebanon, including coordination on execution of the project activities with the Project Execution Entities. The 'Units' will also be a member of the **National-level Project Steering Committees (PSCs)** in Jordan and Lebanon. These National-level Project Steering Committees will be responsible for 'steering the country specific project activities from start to completion.

<u>Local level:</u> at the local level, project implementation will be supported through the **National Project Coordination Units (NPCUs).** The **National-level Project Steering Committees (PSCs)** will also have (government) representatives from the sub-national level, including from the target municipalities.

 Table 21: Stakeholders in the project steering committee

Project	Steering Committees (PS	C)		
Stakeholders	Regional	N	National	
		Lebanon	Jordan	
UN-Habitat	Chair	Member	Member	
UN-ESCWA	Co-chair	Member	Member	
Lebanon MoE	Member	Chair		
Lebanon MoEW	Member	Co-chair		
Lebanon CDR		Member		
Lebanon Bekaa Water Establishment		Member		
Lebanon Litani River Authority		Member		
Lebanon Agrarian LARI Research Institute		Member		
Lebanon Municipality of Zahle	Member	Member		
Lebanon Municipality of Bar Elias	Member	Member		
Lebanon Execution Entities	On request	On request		
Jordan MoEnv	Member		Chair	

Jordan MoPIC	Member		Member
Jordan MoWI			Co-chair
Jordan MoLA			Member
Jordan MAIAHP			Member
Jordan MoE			Member
Jordan Municipality of Irbid (GIM)	Member		Member
Jordan Municipality of Mafraq (GMM)	Member		Member
Jordan Execution Entities	On request		On request
Total	9 + invitees	10 + invitees	10 + invitees

In both Lebanon and Jordan, The National-level Project Steering Committees have been established, and chairs, co-chairs and members have already been identified and agreed upon. These Committees have already been functioning to support the development of this project proposal, including approving proposed Project Execution Entities, activities, budgets, etc.

## Key stakeholders and roles and responsibilities

Table 22: overview main stakeholders and roles and responsibilities

Regional level

togional lover				
Stakeholder	Role and responsibility			
	Current	Project		
UN-ESCWA	Regional coordination between governments in Arab region, including on climate change and urban agenda	Co-chair PSC at regional level Execution component 4 Coordination execution component 4 at national level		

## National and local level - Lebanon

Government	Government				
Stak	ceholder	Role and responsibility			
Main	Sub + Commissions	Government	Project		
Ministry of Environment (MoE)	AF DA Office of the Minister Climate Change Department Urban Environment department	Manage the environment through policies, plans and legislation, including conserving water resources	Member PSC at regional level Chair of the PSC at national level Policy advice and coordination and focal point on national Environmental and Social Policies and standards compliance Scaling up adaptive measures to mitigate pollution to water bodies through the environmentally friendly and sound interventions.		
Ministry of Energy and Water (MoEW)	Office of the Minister Water Resource department	Manage water resources and energy through policies, plans and legislation	Member PSC at national level Advise on execution component 3 on Wastewater reuse and diversion, also on O&M. Scaling up wastewater reuse and climate adaptive measures related to water scarcity.		
Council for Development and Reconstructio n (CDR)	Water resources department	Engages in all phases of project implementation from planning, feasibility analysis, detailed design, bidding, expropriation, execution, and operation and maintenance of most public facilities on the behalf of the Government	Member PSC at national level Policy advice and coordination, including to comply to project national standards for public facilities Operation and Maintenance of large projects until handed over to Water Establishments.		
Bekaa Water Establishment (BWE)	Office of Director General Water resources department	Applies strategies and master plans for the Bekaa area, done in collaboration with the MoEW; Operation and Maintenance of water and wastewater facilities and main networks. Provision of Water services. In charge of monitoring water resources and the measurement of flows,	Member PSC at national level Advise on execution component 3 on especially on the management of water and wastewater facilities (operates under the MoEW)		

		estimation of water needs, allocation of water resources in all of the Bekaa regions.	
Lebanese Agriculture Research Institute (LARI)	Director	Working under the supervision of the Minister of Agriculture; conducts research and experiments to solve problems facing the agricultural sector in this area; Has at its disposal eight experimental stations in an area of 280 hectares of agricultural land; Keeps close ties to the farmers and tries to develop research activities aiming at solving their problems.	Member PSC at national level Advise on execution component 3 on all irrigation projects, farmers and crops (operates under the MoA) Scaling up and training more farmers to adopt climate change adaptive measures in agriculture.
Municipality of Zahle  Municipality of Barr Elias  Municipalities of Hazerta, Bar Elias, El Marj,	Public works committee of both municipalities Municipal council members	Manage all public work projects, including water, electricity, and garbage collection according to law 118/1977; Public works and infrastructure implementation spent for municipal budget. Operation and maintenance  Municipalities are responsible for managing unconventional water sources and supply within their boundaries, such as rainwater harvesting; Municipalities are also responsible for developing and managing municipal master plans in coordination with DGU	Member PSC at regional level Member PSC at national level Policy advice and coordination, including to align with local plans Advise on execution component 1 and 3 Member PSC at regional level Member PSC at national level Policy advice and coordination, including to align with local plans Advise on execution component 1 and 3 and especially adopting construction measures to harvest rainwater in new constructions.  Member PSC at national level Policy advice and coordination, including to align with local plans Advise on execution component 1 and
Saadnayel, Taanayel, Taalabaya, Terbol, Ferzol			especially tackling climate change adaptive measures in territorial planning.
Non-governmen UNICEF	t in the second	Coordination of the inter-agency humanitarian response of the education and water sector and the child protection sub-sector in support of the Government; main government partner on WASH	Execute outputs: 3.1

## National and local level - Jordan

Government					
Stak	eholder	Role and responsibility (policy / M&E, implementation, etc)			
Main	Sub + Commissions	Government	Project		
Ministry of Environment (MoEnv)	AF DA Directorate of the Climate Change	Manage the environment through policies, plans and legislation, including conserving water resources	Member PSC at regional level Chair of the PSC at national level Policy advise and coordination and focal point on national Environmental and Social Policies and standards compliance		
Ministry of Planning and International Coordination (MoPIC)	International Cooperation Department  Local Development & Enhanced	Responsible for improving development policies and promoting active participation in the process, including coordinating and managing the necessary funding for development projects; responsible for preparing and updating Joint Response Plan (JRP) for Syrian crisis	Member PSC at regional level Member PSC at national level Policy advise and coordination, especially on JRP and platform		

	Productivity Programs		
Ministry of Water and Irrigation (MoWI)	Climate Change Unit, Wastewater and sanitation Affairs (Design and Feasibility Study Directorate and Supervision and Technical Support Directorate), and Water Demand Management Directorate)	Manage water and irrigation through policies, plans and legislation. Awareness and Media Unit established a showcase room of water saving devices in the ministry	Member PSC at national level Policy advise and coordination, including to comply to national water strategies, plans and policies Advise on execution component 3 on rooftop water harvesting (JVA) and the showcase rooms in municipal government buildings
Ministry of Local Administration (MoLA)	Zoning Directorate, Legal Unit, Higher Planning Council	Technical, financial and administrative advisor for all the local councils in the Kingdom	Member PSC at national level Policy advise and coordination, including on execution component 4: adopting a national programme for water harvesting from rooftops at municipal levels in the project selected governorates, incl. providing incentives/ exemption to encourage the installation of rainwater harvesting and scale it up at national level
The Ministry of Awqaf Islamic Affairs and Holy Places (MAIAHP)	Construction and maintenance department, Directorates of Awqaf at Irbid and Mafraq Governorates	Responsible for the Hajj & Umrah, Mosques –their reconstruction, rehabilitation, their needs and workers (Imam, etc)-;	Member PSC at national level Policy advise and coordination on activities in Mosques Facilitate(d) coordination with Directorates of Awqaf in Irbid, Ramtha and Mafraq to select Mosques where activities related to greywater reuse and rooftop rainwater harvesting will be implemented. Contribute to the public awareness campaigns and training in Mosques (through Imam) Directorates - Supervise the O&M of the installed systems in mosques
Ministry of Education (MoE)	Directorate of Education in Iribd and Mafraq	Responsible for the Jordanian educational system	Member PSC at national level Facilitate(d) coordination with Schools Building Directorates in Irbid and Mafraq to select schools where activities related to rooftop rainwater harvesting and greywater reuse will be implemented. Provide capacity building and trainings to M. Of Education's building directorates' engineers Directorate - Contribute to the public awareness campaigns and training on the operation and maintenance of the installed systems at schools.
MoWI / Yarmouk Water		Management of water in the north sector in accordance with the provisions of the Jordanian companies Law No. (22) of 1997, which is wholly owned by the Jordan Water Authority.	Execute interventions related to enhancement of the treated wastewater quality and the management of its reuse by farmers in Mafraq, Maerad and Al Akaider around the WWTPs.  Continue to monitor the performance and operation of installed infrastructures and used treated effluent quality.  Facilitate coordination with farmers  Manage the reuse of reclaimed water by farmers, local NGOs and WUAs.  Support the public awareness campaigns related to installation of WSDs
Greater Irbid Municipality (GIM)		Manage all public work projects, including water, electricity, and garbage collection.	Member PSC at regional level Member PSC at national level

Greater Mafraq Municipality (GMM)	Municipalities are responsible for managing unconventional water sources and supply within their boundaries, such as rainwater harvesting; Municipalities are also responsible for developing and managing municipal master plans	Policy advise and coordination, including to align with local plans Advise on execution component 1 and 3, esp. water harvesting, incl. enforce the installation of rooftop rainwater harvesting system and tanks and issue relevant permits Facilitate coordination with other local authorities and stakeholders Member PSC at regional level Member PSC at national level Policy advise and coordination, including to align with local plans Advise on execution component 1 and 3, esp. water harvesting, incl. enforce the installation of rooftop rainwater harvesting system and tanks and issue relevant permits Facilitate coordination with other local authorities and stakeholders
Non-government		
The Jordanian Hashemite Fund for Human Development (JOHUD)  UNICEF	Johud is a local Non-Governmental Organization which has 51 Community Development Centers (CDCs) throughout the kingdom targeting the less fortunate groups, and remote and poor communities. Their work focuses on promoting water conservation awareness and providing livelihood opportunity in agriculture, water, energy and environment.  UNICEF is WASH sector lead in Jordan and their work focuses also on education and child protection in support of the Government. They have implemented WASH related activities in the Syrian refugee	Executing interventions related to rainwater harvesting from rooftops of mosques, schools, selected households and municipal buildings in addition to manage the treated wastewater reuse intervention in the farmlands around Maerad andAl Akaider WWTPs and establish new and efficient irrigation technology.  Capacity building and training on the installation of the irrigation system.  Executing component 3, the intervention related to grey water treatment and reuse in schools and mosques.
The Hashemite Fund for the Development of Jordan Badia	camps in Jordan.  The fund is mandated to establish the concept of sustainable development in the Jordan Badia by implementing environmental, social and economic projects, while maintaining and respecting the existing culture and habits. The implemented a number of projects related to treated wastewater reuse, fodder cultivation enhancement and livestock production	Execute and manage the treated wastewater reuse intervention in the farmlands around the treated wastewater reuse intervention around Mafraq WWTP and establish new and efficient irrigation technology.  Capacity building of farmers and public awareness on water management and efficient irrigation systems.
Permaculture Research Institute (PRI)	PRI is a not-for-profit organisation, specialized in education, training and practical applications of permaculture design worldwide.	Execute the permaculture intervention at the Jordan University of Science and Technology (JUST).  Provide capacity building and training to (JUST).

## Legal and financial arrangements

UN-Habitat and the ministries of Environment (with the AF DAs) in Lebanon and Jordan will sign a joint **Memorandum of Understanding** to which this Project Document will be attached, to ensure that all partners are fully committed to the project.

UN-habitat will contract Project Execution Entities in Lebanon and Jordan through **Memorandum of Understanding (MoU) or Agreements of Cooperation (AoC)**, which are legally binding financial tools, and **UN to UN agreement** to contract UNICEF and UN-ESCWA. The contract will be negotiated by the

Regional Project Supervision Unit and cleared by UN-Habitat ROAS / HQ. For the UN to UN agreements, overheads will be passed through from the 7 percent PSC from the project cycle management fees, so there will be no double charge

The Regional Project Supervision Unit will develop an operational manual that clearly outlines the roles and responsibilities of the key project stakeholders and contain all the necessary tools, forms and templates required to administer the project. The operation manual will be shared with the National Project Coordination Units for inputs. While UN-Habitat takes responsibility of audits in line with AF requirements (each year), all contractors will be required to have 'external' audits of their budgets. The contractors will also be required to support the independent final evaluation.

# Roles and responsibilities for environmental and social risks management / AF ESP and GP compliance

The Regional Project Supervision Unit will be responsibility for environmental and social risks management, including implementation of the Project ESMP. An AF and UN-H policies and reporting compliance expert will be part of the RPSU. This expert will also supervise Project Execution Entities on the implementation of the Project ESMP. Guidelines showing how to comply to the AF ESP and GP will be shared with all execution entities and they will be guided on process, including monitoring. A Safeguarding system compliance expert will also be part of the RPSU. Monitoring staff part of the RPSU will require having expertise in social risk management and be familiar with the AF safeguarding system. The RPSU will be backstopped by UN-Habitat HQ, with experts on climate change, human rights, environmental and social risks managements and gender policies.

In both Lebanon and Jordan government stakeholders responsible for compliance to national environmental and social policies and standards will be part of the Regional- and National-level Steering Committees, as well as government gender focal points.

All project-related ToR's and contracts will include clauses stating contractors will need to comply to the AF ESP, especially principle 1 (law), 4 (human rights), 5 (gender) and 6 and 13 (labour and safety) and the AF GP.

Adaptive management: when changes in project activities or additional activities are required, these will need to go through a new risks screening and impact assessment process in compliance with AF, UN-habitat and national policies and standards. When this is required, this will be led by the RPSU and the Regional-level Project Steering Committee would need to approve the changes. For instance, when allocated budget allow targeted additional buildings for installing RWH systems, this would be possible following above process.

### Launch of the project

At the launch of the project, UN-Habitat's, together with UN-ESCWA will organize **an inception workshop** inviting members of the Regional-level Project Steering Committees, Execution Partners and other key stakeholders. The project approach and the proposed outputs and outcomes of the project will be presented and discussed with the purpose to solicit feedback and inputs in a participatory manner. Comments and feedback will be incorporated in project frameworks and workplans. The Inception Workshop aims to:

- (i) Enhance participants' understanding of the project objectives and activities and take ownership of the project
- (ii) Discuss and confirm the organizational structure of the project, including roles and responsibilities
- (iii) Confirm / agree upon project monitoring framework and workplan
- (iv) Confirm / agree upon project risks management framework
- (v) Discuss and agree upon project knowledge management framework and plan
- (vi) Confirm / agree upon the project Environmental and social Risks Management Plan
- (vii) Agree on the annual work plan for year one.

The inception workshop will be organised within three months after signing the project agreement between the Adaptation Fund and UN-Habitat.

This project will conduct a climate change mandate segregation exercise at the inception phase to differentiate the confusing climate change roles of the national government (Ministry of

Environment/Ministry of Local Administration-Municipalities) versus the roles of the local (municipal) level as this will be the unique contribution (credit card) of this project. Since this project creatively proposes to have the staff of the to-be-established Urban (Municipal) Observatories as the entities in charge for climate change function at municipalities, the needs of the staff of such Urban Observatories will be assessed at the inception phase of the project and robust mandate/ToR will be drafted for them and based on that their training needs and capacity gaps will be determined much more clearly.

## B. Measures for financial and project risk management

Under guidance of the regional project manager, supported by the National Project coordinators, Monitoring Officers will monitor the status of financial and project management risks, including those measures required to avoid, minimise or mitigate these risks, throughout the project (please see also Section Part III.D).

The table below gives an overview of overall potential project management and financial risks, an assessment of the significance of the pertaining risks in terms of likelihood and impact and outlines measures that have been embedded in the project design in order to manage and/or mitigate these risks.

Table 23: overview of financial and management risks and measures to mitigate these

			management risks and measures to mitigate th	
Potential risks	Likeli	Impa	Mitigation measures	Indicator to verify
	hood	ct		
	(1-5)	(1-5)		
Institutional				
1 Delay of project start-up because critical staff is not in place and / or lengthy contracting process, incl. negotiations with execution entities	3 Med	3 Med	1.1 UN-Habitat appointed critical staff at UN-H ROAS to start the process required to start the project, incl. putting project staff in place and preparing the inception workshop immediately after signed project agreement between UN-Habitat and the AF; 1.2 All execution entities have been identified and proposed project activities and budgets have already been agreed upon. 1.3. UN-habitat commits to organise the inception workshop within three months of the signed project agreement between UN-Habitat the AF	The inception workshop was organised within three months of the signed project agreement between UN-Habitat;  Execution entities to execute activities in the 1st project year are contracted within six months after the inception workshop
2 Loss of government support (at ministerial and municipal level) for the project and activities because of elections and related functions of the project steering committee, which may result in lack of prioritization of AF project activities or different pace of execution of activities in Jordan and Lebanon	1 Low	3 Med	2.1 National Project Steering Committees (PSCs) have already been formed during the project preparation phase and these have approved proposed project activities and budgets, etc. This shows a participatory and inclusive project design process took place with ownership of the project as a result. If due to elections, new members of the PSCs will need to be selected, this will be requested by UN-Habitat and AF DA as soon as possible and records of decisions made during earlier PSC will be shared.  2.2 Delays in one country don't have to result in delays in the other country because of functioning national PSCs  2.3 UN-Habitat will establish agreements with the MoE in Lebanon and MoEnv in Jordan (with nonchanging AF DA) (through MoUs) to ensure above	Confirming steering committee members and roles and responsibilities during inception workshop + report  Government focal point to coordinate SC appointed at inception workshop  MoU signed within 6 months six months after the inception workshop

3 A lack of coordination between and within national government Ministries and Departments and municipalities	1 Low	3 Med	3.1 Regional and National PSCs are to ensure coordination. Representatives from the target municipalities are members of both regional and national PSC.  3.2 Roles and responsibilities related to project implementation of PSC members, also for operation, maintenance and sustainability of activities, have already been identified and focal points within the ministries and municipalities will be appointed through an official letter.  3.3 Should UN-Habitat observe coordination problems, the agency will try to resolve issues directly with government focal point and / or concerned parties	See above
4 Capacity constraints of executing entities, local institutions, communities and the private sector may limit the effective implementation of interventions	1 Low	3 Med	4.1 The project has a strong capacity building and training component (component 2), designed to operate, maintain, sustain and replicate project activities, esp. at the community level 4.2 UN-Habitat will have dedicated project staff with expertise in spatial / urban planning, climate change, community organization and technical design, M&E and safeguards to ensure quality control from UN-Habitat side.	Capacity building indicators to be established Critical staff as mentioned being part of project staff
5 Communities may not adopt activities during or after the AF project, including infrastructure maintenance	2 Low	4 High	5.1 A strong participatory approach at the community level is used and will be used (component 2) during project implementation to ensure ownership and support of communities to the realised interventions in the targeted project areas. UN-Habitat works with UNICEF and NGOs partners already well established in the target area, to build on relations already established.  5.2 Capacity building and training of communities will be undertaken to improve their awareness and understanding of the benefits of the activities, including infrastructure operation and maintenance (component 2).	See above
Financial managemer	nt and Re	quisite Ir		
_				l <b>-</b> ,
6 Complexity of financial management and procurement. Certain administrative processes could delay the project execution or could lack integrity or needed capacity	2 Low	2 Low	6.1 Financial management arrangements have been defined during project preparation, including identification of all executing entities, which already agreed on the activities and budgets (see also 1.2. above); 6.2 UN-Habitat's control framework, under the financial rules and regulations of the UN secretariat, will ensure documentation of clearly defined roles and responsibilities for management, internal auditors, the governing body, other personnel and demonstrates proof of payment / disbursement; In line with AF and UN-Habitat policies, audits will take place annually and / or for each contract of USD 500k. 6.3 Activity specific procurement will be managed by the executing entities as agreed through standard Agreements of Cooperation (with relevant conditions, incl. evidence of recognised procurement policies and procedures and specific terms and conditions for timely disbursement of funds for project activities while at the same time ensure provisions on good financial management, hence minimizing the risk of fund mismanagement or corruption). The RPMU has a certifying role (for key procurements / expenditures).	Timely audit reports (inception and yearly + following UN-H regulations)  Timely evidence of recognised procurement policies and procedures provided by Execution Entities

7 Inflation and instability of the national currency leading to budget issues and increased prices for infrastructure delivery  Physical	3 Med	1 Low	7.1 All budgets will be in US\$ 7.2 Include clauses in all contract, incl. with private sector, that they can't increase the costs during the project duration.	All budgets in US\$  Clauses in all contract, incl. with private sector, that they can't increase the costs during the project duration.
8 Political instability and COVID-19 in the target localities inhibits movement and access to target areas	1 Low	4 High	8.1 The selected project sites are labelled as being safe. However, UN-habitat will only let field work proceed if agreed with the UN security unit and in line with COVID-19 procedures 8.2 Execution entities will require having permanent field staff at project sites, recuing the need to travel 7.3 If target areas are not accessible, UN-Habitat and the proposed execution entities will identify alternative intervention locations and request approval from the SC and AF	Permanent field staff at project locations
Environmental				
9 Poor weather conditions (especially in winter) affect implementation of activities	2 Low	1 Low	9.1 UN-habitat and the proposed execution entities have developed their work plan according to expected weather conditions and the majority of activities should be able to be carried out despite severe weather conditions as they are inside closed areas. If unexpected weather patterns occur, the proposed activities and work plan will be reviewed to make practical adaptations.	Work plans avoiding critical concrete works being planned in winter

## C. Measures for environmental and social risks management

Part II.L of this proposal shows the outcome of the environmental and social risks screening and impacts assessment that has been conducted for this project to comply to the AF ESP and GP. Part II.I describes the consultation process conducted to support the development of this proposal, including for this project to comply to the AF ESP and GP. In annex 3 it shows what consultations have been conducted to identify potential environmental and social risks and impacts, including with key stakeholders such as UN agencies and beneficiary groups (i.e. potentially vulnerable groups, including women and youth). Part III.A describes the allocated roles and responsibilities for environmental and social risk management, including for the implement of the project ESMP. A designated budget for environmental and social risks management, including the implementation of the ESMP, has been included in part III.G. In Annex 4, all the details of the risks screening, impact assessment, ESMP, incl. the risks monitoring system and budget, are provided.

Based on the screening against the 15 AF principles, the project has been categorised as a "B" category project in terms of the environmental and social risks it poses.

According to the Jordan's EIA Regulations, particularly the EIA By-Law No. 37 of the Year (2005), the project has been categorized as "Category III" project, which imply that the proposed interventions in Jordan have no considerable risks or adverse impacts, thus not requiring full EIAs. This is due to the fact that all of the construction activities and installations of proposed sub-projects are not substantial and will be constructed or installed in already built and operating facilities, such as fully-functioning WWTPs, which at the time of original construction have been subjected to MoEnv's incumbent EIA regulations and supervision. However, although no impact assessments were required by national law, a full ESIA and ESMP report has been developed for the proposed project activities / outputs in Jordan, accompanied by a consultations report.

According to Lebanese decree 8633 MoE, 2012, Annex 1, the proposed project activities / outputs don't required full EIAs. Similarly to Jordan, all of the construction activities and installations are not substantial and will be constructed or installed in already built and operating facilities . To comply to the

AF requirements, risks screening and impact assessments have also been conducted for all proposed project activities.

Country specific ESIA-ESMP and consultation reports can be found here: <a href="https://unhabitat.org/af-lebanon-jordan">https://unhabitat.org/af-lebanon-jordan</a>

Table 24: ESP and GP compliance requirements and how the proposal complies to these requirements

ESP and GP compliance requirements	Project compliance to the AF ESP and GP	Reference / evidence
Have all potential environmental and social risks been identified for all project/programme activities prior to funding approval?	All potential environmental and social risks (incl. for gender and considering their significance) have been identified) for all project/programme activities at the project preparation phase. In both Jordan and Lebanon, accredited consultants prepared country-specific ESIAs, ESMPs and consultations reports in compliance with the AF ESP and GP and national requirements for conducting ESIAs; Outcomes have been consolidated in the proposal	Part II.I Part II.L Annex 4 (ESP annex) Annex 5 (GP assessment annex)
Has the environmental and social assessment been completed before the project/programme proposal submission to the Adaptation Fund, and its findings included in the proposal document?	In compliance with the AF ESP and GP and national requirements for conducting ESIAs, above reports have been reviewed and approved by the Jordan and Lebanon ministries of environment. Outcomes have been consolidated in the proposal.	https://unhabitat.org/af- lebanon-jordan
Has an ESMP been developed and does this include safeguard measures to be implemented during a project/programme?	A project ESMP has been developed, including safeguarding measures. The following has been included in the ESMP: Allocated roles and responsibilities environmental and social risk management / implement of the ESMP Opportunities for adaptive management Arrangements to supervise executing entities for implementation of ESMP Budget provision to manage environmental and social risks / implement of the ESMP Measures to avoid, minimize, or mitigate potential risks Risks monitoring system / indicators Grievance mechanism	Part III.A (roles and responsibilities for env. and social risk management)  Annex 4 (ESP annex)
Will a grievance mechanism be put in place and how will it be made widely known to identified and potentially affected parties	A project grievance mechanism will be put in place, as described in the ESMP. It will be made widely known to identified and potentially affected parties through community mobilisers, posters and online content	Annex 4 (ESP annex)

## D. Arrangements for monitoring, reporting and evaluation

## M & E Framework and plan

Monitoring and Evaluation (M & E) arrangements for this project will be in compliance with the AF M&E guidelines and ESP and GP and with UN-Habitat M & E policies and guidelines. This means, as a minimum, the following will be monitored and evaluated: project Milestones, Financial data, Procurement data, Risks assessment, ESP Compliance, GP Compliance, Project indicators, Lessons learned, project Results. The M & E of progress in achieving project results will be based on targets and indicators (also for gender) established in the Project Results Framework (see Part III.E).

The annual project performance reports (PPRs) will include a section on the status of implementation of any environmental and social management plan, including those measures required to avoid, minimize, or mitigate environmental and social risks. The reports shall also include, if necessary, a description of any corrective actions that are deemed necessary. The terminal evaluation report will include an evaluation of the project's performance with respect to environmental and social risks.

UN-Habitat will ensure timely and high-quality M & E by keeping oversight of the process by providing guidance to the Project Execution Entities and national government partners through full briefing of M & E

requirements. Where possible, the M & E process will be participatory, involving key stakeholders at national, municipal and communities. Project activities will be monitored by the RPSU and NPCUs with dedicated monitoring staff, which will require having expertise of M & E compliance to the AF ESP and GP. The M & E framework and plan will also need to be endorsed by the Regional-level Project Steering Committee. Audits of the project's financial management will follow AF regulations and rules and applicable audit policies. The M&E plan will be implemented as proposed in the table below.

Table 25: M & E plan

Table 25: W & E plai			
Type of M&E Activities	Responsible Parties	Time Frame	Reporting
Inception Workshop and Report	UN-Habitat ROAS & Regional project coordinator Coordinated with: UN-ESCWA Regional-level Steering Committee	Workshop: within first three months of signing between AF and UN-habitat Report: within one month after inception workshop	Inception Report, including 1st year workplan, monitoring framework and plan; project risks management framework and plan; environmental and social risks management framework and plan; knowledge management strategy
Periodic status/ progress reports	UN-Habitat ROAS & Regional project coordinator	Annually	Annual Report, mid-term, final
Compliance with ESP and GP	Coordinated with: NPCUs and Project EE and IOIS	Annual, as well as upon receipt of complaints, grievances or queries	Annual Report, mid-term, final
Audits		As per AF (annually)	Audit Reports
Terminal project performance report		No later than one months after project completion	Terminal project performance report
Final Evaluation	UN-Habitat ROAS & Regional project coordinator Coordinated with: External consultants and NPCUs, Project EE	No later than three months after project completion	Final Evaluation Report
Community consultations / workshops / trainings, etc.	Project EE Coordinated with: NPCUs	Within one week after each event	Documentation
Visits to field sites	UN-ESCWA Coordinated with: UN-Habitat ROAS & Regional project coordinator Regional-level Steering Committee	At least every year	Field visit Report
Video with 'before' and 'after' the project	UN-Habitat ROAS & Regional project coordinator Coordinated with: UN-ESCWA Regional-level Steering Committee	Video one: before start of concrete interventions Video two: after completion concrete interventions	Video compilation of project results

For the M & E budget and a breakdown of how MIE fees will be utilized in the supervision of the M & E function, please see the detailed budget (Part III.G). For related data, targets and indicators, please see the project proposal results framework (Part III.E).

## **M&E Activities**

## a) Inception workshop and Project Steering Committee meetings

During the first Regional-level Project Steering Committee meeting, which will be organized in conjunction with the project Inception Workshop. The Committees will monitor / review project progress and provide technical guidance. During the first Regional-level Project Steering Committee meeting, the following will be reviewed: the project organizational structure, includes roles and responsibilities, the project monitoring framework and workplan, the project risks management framework, the project knowledge management framework and plan, the project Environmental and social Risks Management Plan and annual work plan for year one. The Regional-level Project Steering Committee will meet every year and the National Project Steering Committees will meet every six months, and ad-hoc meetings will be held as needed.

b) Periodic project monitoring and terminal project performance reporting

Annual project performance monitoring will be conducted using the AF PPRs template. This will include monitoring of project: Milestones; Financial data; Procurement data; Risks assessment; ESP Compliance; GP Compliance; Project indicators; Lessons learned; Project Results

### c) ESMP implementation monitoring

The implementation of the project Environment and Social Management Plan (ESMP) as described in Annex 4 will be monitored. The ESMP includes monitoring indicators and responsibilities for identified potential risks, impacts and mitigation measures. A dedicated budget for monitoring the compliance to the AF ESP and GP has been included in Part III.G

#### d) Financial Audits

A professional, certified and independent organization will review the financial management of the project and adherence to required standards and regulations.

#### e) Final Evaluation

No later than three months after project completion, a final evaluation will be conducted following AF and UN-Habitat policies and guidelines. It will be conducted by an independent team of international and national experts in consultation with executing entities and national stakeholders as a participatory process.

## f) Community Level Participatory Monitoring

Part of the detailed project monitoring framework and plan will be identified through activities to involve Project Execution Entities and beneficiaries at the community level in monitoring activities. This would include community-level monitoring of Gender and Youth responsiveness and impact of the project.

## g) Periodic Project Site Visits

Members of the Regional-level Project Steering Committee and representatives of UN-Habitat will visit project sited and hold meetings with the local stakeholders to monitor the implementation of project activities.

## h) Video with 'before' and 'after' the project

Also, as part of the knowledge management strategy and plan, a video recording project results will be produced using 'birds' eye' views and recording of project activities and beneficiaries

#### Reporting

#### a) Inception Workshop and Report

Within one month after the inception workshop, an Inception Report will be submitted to the AF and project steering committees' members. Reports will include: (i) agreement on organizational structure of the project, including roles and responsibilities; (ii) monitoring framework and workplan; (iii) project risks management framework; (iv) knowledge management framework and plan; (v) Environmental and social Risks Management Plan; (vi) year one work plan.

### b) Annual project performance reports, including final report

The Annual project performance reports, which will be submitted to the AF, will include:

- (1) Milestones
- (2) Financial data
- (3) Procurement data
- (4) Risks assessment
- (5) ESP Compliance
- (6) GP Compliance
- (7) Project indicators
- (8) Lessons learned
- (9) Project Results

## c) Community Level Meeting /Workshop / Training Reports and site visit

Reports on all community-level meetings, workshops, and training will be prepared by Project Execution Entities within one week of the event. Photo documented site visit reports, also to monitor women participation, will also be prepared by Project Execution Entities.

#### d) Final Evaluation Report

Independent consultant will prepare the Final Evaluation report in line with AF and UN-habitat evaluation policies and guidelines and norms and standards for evaluation in the UN system.

## E. Project proposal results framework

**Table 26:** Project results framework with indicators, their baseline, targets, risks & assumptions and verification means. \*Beneficiaries T = Total; F = Female; Y = Youth.

Expected Result	Indicators	Baseline data	Targets	Risks & assumptions	Data collection method	Frequenc	Respon
Project component 1: Mana	l age urban risks and vulnerabili	l ies in the context of	climate change,	esp. water scarcity challenges, and	l d urban (population) growth, incl. from	l y n DPs migrati	sibility on

UN-H in Outcome 1 No and type of targeted Collect guidelines, strategies, Baseline, Assumption: Decisioninstitutions with increased plans, how these are being Strengthened municipal mid-term cooperati makers at capacity to minimize disseminated (online) and assess institutional capacity to and end on with all levels and key sectors are manage climate change exposure to climate change if climate change is mainstreamed EE and willing (in line with AF results and DP crisis related in it. aovernm to mainstream urban water scarcity indicator 2.1) through ent climate change Calculate number of target challenges by strategies / guidelines and entities considerations into institutions and municipal plans mainstreaming these urban master plans with 0 10 (8 in planning and developed and disseminated aspects into spatial climate change and gender Lebanon and programming in a Assess if climate change and strategies + developing mainstreamed. 2 in Jordan) timely manner gender are mainstreamed in the action / investment plans Number of institutions at Assumption: There is a and guidelines (with plans and ensure criteria to do so district level political will to embrace are clear identified solutions) to use Number institutions at changes in the local and water most efficiently municipal level Means of verification: semi-annual sectoral plans. within municipal and annual project reports, final boundaries Assumption: local authorities evaluation, field visit reports committed to fund and \*In line with AF outcome 2: implement the plans Strengthened institutional capacity to reduce risks Risk: lack of coordination associated with climatebetween local and sectoral induced socioeconomic authorities for effective implementation of the and environmental losses municipal plans and prioritizing climate change Reduced exposure to Relevant threat and hazard 10 (8 in climate-related hazards information generated and Lebanon and and threats at the disseminated through to 2 in Jordan) stakeholders on a timely municipal level basis (in line with AF results \*In line with AF outcome 1: Reduced exposure to indicator 1) climate-related hazards Evidence-based Municipal and threats plans with climate change mainstreamed in them developed, disseminated during project and operational % increased capacity of the UN-H in Output 1.1. Workshop/training reports Territorial planning and trained to respond cooperati

development strategy / guidelines with CC and gender mainstreamed in Lebanon *In line with AF output 2.1: Strengthened capacity of national and regional centres and networks to respond rapidly to extreme weather events	to, and mitigate impacts of, climate-related events (in line with AF results indicator 2.1.1) through assessment and planning processes (workshops/trainings) Number of staff / people Women participating Youth participating	0 0 0	T: 480 W: >40 % Y: >15 %	Assumption: staff will be actively engaged in the trainings  Assumption: women and youth are interested and available to increase knowledge and awareness on climate change mainstreaming in urban planning and to be involved in trainings and climate change	Participation lists and photos  Women feedback reports (training reports)  Youth feedback reports (training reports)  Calculate number of staff from	Baseline, mid-term and end	on with EE and governm ent
Output 1.2 Urban master plans at municipal level with CC and gender mainstreamed in Lebanon *In line with AF output 2.1: Strengthened capacity of national and regional centres and networks to respond rapidly to extreme weather events	respond to, and mitigate impacts of, climate-related events (in line with AF results indicator 2.1.1) through assessment and planning processes (workshops/trainings) Number of staff / people Women participating Youth participation	0 0 0	T: 240 W: >40 % Y: >15 %	planning activities  Assumption: relevant institutions –included the ones that deal with women and gender issues -have been identified and are interested  Risk: cultural perceptions are strong and limit women engagement	target institutions participating workshops/trainings  Collect and analyse vulnerability assessment data collected and mainstreamed in municipal plans  Count municipal inhabitants covered by municipal plans		
	% awareness/knowledge on the need to take gender informed decisions on climate change	0	50%	Risk: officials are overwhelmed by other tasks and have a passive and non-interactive approach towards			
Municipal plans developed or modified to respond to new conditions resulting from climate variability and change  In line with AF output 1.1: Risk and vulnerability assessments conducted	No of municipal plans with climate change mainstreamed into them based on vulnerability data developed or adapted (in line with AF results indicator 1.1)	0	8	the trainings  Assess what % of neighborhoods and populations are covered by the vulnerability assessment data collected (where collected) and proposed response			
and updated  Municipal inhabitants in target areas are coved by municipal plans with	Percentage of municipal inhabitant in target areas covered by the municipal plans Percentage of women, youth	0	50 %	actions (what locations)			
climate change mainstreamed in it, including women and Syrians	and Syrians in target areas covered by the municipal plans	0	50 %				

*In line with AF output 1.2:	Above is in line with AF results framework indicator				
Targeted population	1.2.1.)				
groups covered by adequate risk reduction					
systems					
Output 1.3	No. of staff trained to				
Urban master plans at	respond to, and mitigate impacts of, climate-related				
municipal level with CC and gender mainstreamed	events (in line with AF				
in Jordan	results indicator 2.1.1)	0	T: 450		
*In line with AF output 2.1:	through assessment and	0	W: >45 %		
Strengthened capacity of national and regional	planning processes (workshops/trainings)	0	Y: >15 %		
centres and networks to	Number of staff / people				
respond rapidly to extreme	Women participating				
weather events	Youth participating				
Municipal plans developed	No of municipal plans with	0	0		
or modified to respond to	climate change	U	2		
new conditions resulting from climate variability and	mainstreamed into them based on vulnerability data				
change	developed or adapted (in				
*In line with AF output 1.1:	line with AF results indicator				
Risk and vulnerability	1.1)				
assessments conducted and updated					
and apaated					
Municipal inhabitants in	Percentage of municipal				
target areas are coved by municipal plans with	inhabitant in target areas	0	50 %		
climate change	covered by the municipal plans				
mainstreamed in it,	Percentage of women, youth	0	50 %		
including women and Syrians	and Syrians in target areas		SU %		
*In line with AF output 1.2:	covered by the municipal plans				
Targeted population					
groups covered by	Above is in line with AF				
adequate risk reduction systems	results framework indicator				
•	1.2.1.)				

Component 2: Increasing the resilience of citizens (DPs and host communities): Improve awareness, ownership and capacities to respond to climate change, incl. to operate, maintain and replicate resilient water harvesting, supply and irrigation systems

Outcome 2	Percentage of targeted direct			Assumption: proposed	Surveys: use scale from 1 to 5 to	Baseline,	UN-H in
Strengthened DPs and	population aware climate			adaptation measures have an	summarize findings of analysis	mid-term	cooperati
host community	change and appropriate			impact at the district/municipal		and end	on with
awareness and ownership	responses to climate change	0	W: >40 %	level			EE and
of climate change	(in line with AF results	0	Y: >15 %	Assumption: DPs and host			governm
adaptation measures +	indicator 3.1)	0	30 %	communities including women			ent
capacities strengthened to	Women aware	0	50 %	and youth are available and	Replication and upscaling plans		
operate, maintain and	Youth aware			interested to increase			
replicate proposed	% of targeted direct	0	8 (including	awareness about and replicate	Count the number of replication		
adaptation measures,	population with skills		gender	proposed climate adaptation	and upscaling plans produced and		
including skills building	enhanced using acquired		consideration)	measures	gender consideration		
g g	climate information and		,	Assumption: DPs and host			
*In line with AF outcome 3:	knowledge to undertake,			communities are sensible to			
Strengthened awareness	operate, maintain and			messages about climate-			
and ownership of	replicate proposed			related risks and adaptation to			
adaptation and climate risk	adaptation measures			climate change			
reduction processes at	adaptation moderation			Engagement of target direct			
local level	Innovative adaptation			population in awareness			
*In line with AF outcome 8:	practices / technologies			raising activities and O & M			
support the development	encouraged to be replicated			plans development			
and diffusion of innovative	and upscaled through			piano aovoiopinoni			
adaptation practices, tools	replication plans (in line with						
and technologies	AF results indicator 8)						
Output 2 .1.	No. of tools and guidelines			Ensure criteria of O & M plans	O & M plans produced and shared	Baseline,	UN-H in
Community organisation,	developed and shared with			and replication guidelines are	within the target bulding	mid-term	cooperati
awareness and capacity	relevant stakeholders (in line			clear and that 'sharing' of	management and users	and end	on with
building + operation,	with AF results indicator	0	20	plans is measured	management and users	and chu	EE and
maintenance and	3.2.2)	0	20	plans is measured			governm
replication and upscaling	Number O & M plans	0	1				ent
plans for concrete	produced and shared	0	<b>'</b>				CIII
adaptation output 3.1:	Number of replication						
Rooftop rainwater	guidelines produced and						
harvesting in Lebanon	shared						
*In line with AF Output 3.2:	Silaieu						
strengthened capacity of							
national and subnational							
stakeholders and entities							
to capture and							
disseminate knowledge							
and learning (also applies							
to below outputs)	N. C. I. I. I.						
Output 2 .2.	No. of tools and guidelines						
Community organisation,	developed and shared with						
awareness and capacity	relevant stakeholders (in line						
building + operation,	with AF results indicator	0	86				
maintenance and	3.2.2)						

/ [

irrigation of treated wastewater in Lebanon							
Output 2 .7. Community organisation, awareness and capacity building + operation, maintenance and replication and upscaling plans for concrete adaptation output 3.7: Water-use-efficient irrigation of treated wastewater in Lebanon	No. of tools and guidelines developed and shared with relevant stakeholders (in line with AF results indicator 3.2.2)  Number O & M plans produced and shared  Number of replication guidelines produced and shared	0 0	1 for 220 dunum farmland)				
Output 2 .8. Community organisation, awareness and capacity building + operation, maintenance and replication and upscaling plans for concrete adaptation output 3.8: permaculture demonstration	No. of tools and guidelines developed and shared with relevant stakeholders (in line with AF results indicator 3.2.2)  Number O & M plans produced and shared Number of replication guidelines produced and shared No. of students completed permaculture curriculum with vertificate Students with certificate Women	0 0	1 1 T: 200 W: >50 %	Calculate number of students which completed the curriculum	Certificates and / or plans developed by students	Baseline, mid-term and end	UN-H in cooperati on with EE and governm ent
Output 2.9. Community organisation, awareness and capacity building + operation, maintenance and replication and upscaling plans for concrete adaptation output 3.8: permaculture demonstration	No. of tools and guidelines developed and shared with relevant stakeholders (in line with AF results indicator 3.2.2)  Number O & M plans produced and shared Number of replication guidelines produced and shared No. of students completed permaculture curriculum with certificate  Students with certificate	0 0	1 1 T: 270	Calculate number of students which completed the curriculum	Certificates and / or plans developed by students	Baseline, mid-term and end	UN-H in cooperati on with EE and governm ent

	Women		W: >50 %				
Component 3: Increasing the		r sector: Expand u		ter harvesting, supply and irrigation	on options, using innovative and replic	able techniqu	ues
suitable for the context		·				•	
Outcome 3 Increased adaptive capacity within relevant development and natural resource sectors and *In Line with AF outcome 4: Increased adaptive capacity within relevant development and natural resource sectors and *In Line with AF outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas *In line with AF outcome 8:	Ha of farmland with more sustained climate-resilient livelihoods – see outputs  Innovative techniques / interventions – see outputs	See outputs					
support the development and diffusion of innovative adaptation practices, tools and technologies  Output 3.1.  Rooftop rainwater harvesting in Lebanon *In line with AF output 4: Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability *In line with AF output 8: Viable innovations are rolled-out scaled up, encouraged and / or accelerated	Number of RWH systems installed  Volume of rainwater collected and stored to supply safe and clean freshwater during dry periods	0	20	System must be functional, effective and satisfactory of users	Photos of systems  Assess effectiveness (water harvested) and satisfactory through measurements and surveys	Baseline, mid-term and end	UN-H in cooperati on with EE and governm ent
Output 3.2. Rooftop rainwater harvesting in Jordan *In line with AF output 4: Vulnerable physical, natural, and social assets strengthened in response	Number of RWH systems installed  Volume of rainwater collected and stored to supply safe and clean freshwater during dry periods	0	86 (of which 18 rehabilitated)				

to climate change impacts, including variability *In line with AF output 8: Viable innovations are rolled-out scaled up, encouraged and / or accelerated  Output 3.3.  Greywater treatment and reuse in Jordan	Number of GWTR systems installed	0	40			
*In line with AF Output 4: Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability *In line with AF output 8: Viable innovations are rolled-out scaled up, encouraged and / or accelerated						
Output 3.4.  Efficient treatment and reuse of wastewater in Lebanon  *In line with AF output 4:  Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability  *In line with AF output 8:  Viable innovations are rolled-out scaled up, encouraged and / or accelerated	Irrigation channels (1x1 meters with 0.25m thick walls) constructed (in meters) 18000 m3 water flow through channel from Zahle WWTP	Baseline quality	3000 meters  Compliant to standard 18000 m3	Channel must be able to support 18000 m3 and comply to standards	Quantity and quality water and channel Map / coordinates and photos  Identify any visual construction weaknesses  Map / coordinates and photos Quantity and quality treated	
Output 3.5. Efficient treatment and reuse of wastewater in Jordan  *In line with AF output 4: Vulnerable physical, natural, and social assets	Water storage constructed / installed  Water quality	Baseline quality	1x3000 m3 1x2000 m3 Compliant to standard	Storage must be irrigatable and quality compliant to standards	Quantity and quality water and storage tanks - map / coordinates and photos	

-4						
strengthened in response to climate change impacts, including variability						
*In line with AF output 8: Viable innovations are rolled-out scaled up, encouraged and / or accelerated						
Output 3.6. Water-use-efficient irrigation of treated wastewater in Lebanon  *In line with AF output 4: Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability *In Line with AF output 6 No and type of adaptation assets created or strengthened in support of individual or community livelihood strategies *In line with AF output 8: Viable innovations are rolled-out scaled up, encouraged and / or accelerated	Treated and channelled water from Zahle WWTP irrigating farmland (ha) and thus sustaining climateresilience of agriculture livelihoods	0	150 ha	Calculate ha of farmlands being irrigated by treated wastewater	Map / coordinates and photos	
Output 3.7 Water-use-efficient irrigation of treated	Conveyor irrigation pipeline 6' size installed (in meters)	0	4000m			
wastewater in Jordan *In line with AF output 4: Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability	Treated and stored channeled water from Maered WWTP irrigating farmland (ha) and thus sustaining climate-resilience of agriculture livelihoods	0	60 dunum			
*In Line with AF output 6 No and type of adaptation assets created or strengthened in support of	Treated and stored channeled water from Al Kaider WWTP irrigating farmland (ha) and thus	0	60 dunum			

	1		1			
individual or community livelihood strategies *In line with AF output 8: Viable innovations are rolled-out scaled up, encouraged and / or	sustaining climate-resilience of agriculture livelihoods  Treated and channeled water from Mafraq WWTP irrigating farmland (ha) and thus sustaining climate-	0	100 dunum			
accelerated	resilience of agriculture livelihoods Treated and channeled water from small ponds and thus sustaining climateresilience of agriculture livelihoods	0	15 ponds	Calculate number of ponds		
Output 3.8	Permaculture demonstration			Calculate numbers	Map / coordinates and photos	
Permaculture	site established, including:			<u>.</u>		
demonstration	Biofertilizer site	0	1	Assess effectiveness of	Assess reduction water use (soil	
*In line with AF output 4: Vulnerable physical,	Crop garden and compost egg laying chickens (30	0	30 chickens	reducing water use	moist)	
natural, and social assets	chickens)					
strengthened in response	Beehives	0	3			
to climate change impacts,	Compost sub-od worm farms	Ö	5			
including variability	Olive trees (Orchard	0	180			
*In line with AF output 8:	Monoculture Conversion to	0	1			
Viable innovations are	Food Forest)					
rolled-out scaled up,						
encouraged and / or						
accelerated	_					
Output 3.9.	Permaculture demonstration			Calculate numbers	Map / coordinates and photos	
Permaculture	site established, including:					
demonstration *In line with AF output 4:	- Agricultural Waste	0	30	Assess effectiveness of	Assess reduction water use (soil	
Vulnerable physical,	Management for Sustainable			reducing water use	moist)	
natural, and social assets	Crop Production	0	20			
strengthened in response	- Urban, Peri-Urban and Rural Agriculture and Water					
to climate change impacts,	Harvesting as Adaptation					
including variability	Measures					
*In line with AF output 8:	- Apiculture and the	0	80			
Viable innovations are	reduction of chemical	•				
rolled-out scaled up,	substance use at farm level	0	10			
encouraged and / or	- Introducing adapted crop					
accelerated	varieties and diversifying					
	farm production					

Component 4: Improving knowledge and policies and regulations to increase urban resilience in the region: Project KM and replication, incl. development of regional urban risks and vulnerabilities management model in the context of climate change and urban (population) growth (incl. from DPs migration)

Outcome 4. Strengthened (inter)National institutional capacity to manage climate change and DP crisis related urban water scarcity challenges, including lessons learned collected and shared regionally *In line with AF outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level	Strengthened capacity of national and subnational stakeholders and entities to capture and disseminate knowledge and learning (in line with AF results indicator 3.2 )  % increased of gendersensitive good practices /lessons learnt per country at national and city level that are shared	0	30 %	Assumptions: Countries are keen to share experience and learn from each other's	Content of the good practices disseminated and shared  Survey to assess awareness of the good practices shared	Baseline, mid-term and end	UN- Habitat
Output 4.1. Regional / international KM with focus on sharing project lessons and replication *In line with AF Output 3.2: strengthened capacity of national and subnational stakeholders and entities to capture and disseminate knowledge and learning	Number of technical committees formed to ensure transfer of knowledge (in line with AF results indicator 3.2.1.) Regional steering committee formed National steering committees formed Number of tools and guidelines developed and shared with relevant stakeholders through the CoP (in line with AF results indicator 3.2.2). Project video developed and shared with relevant stakeholders No of good practices per city shared Number of regional workshops held	0 0 0 0	1 5 4 2 1 5	Assumption: countries are keen to be part of the CoP, learn from each other and share good practices  Risk: organizational and bureaucratic delays in organizing regional workshops  Risk: weak interaction between the CoP members  Risk: Political factors might limit the engagement of some countries and cities  Risk: delay in documenting and sharing good practices among the countries and receiving feedback	Content of the good practices disseminated and shared  Survey to assess awareness of the good practices shared  Agenda, minutes and photos of meetings and workshops.  Video online  Content of new/revised municipal plans  Field visits reports and agenda  Field visits feedback reports	Baseline, mid-term and end	UN- Habitat
Output 4.2. Jordan and Lebanon KM with focus on project progress, best practices and lessons learned *In line with AF Output 3.2: strengthened capacity of national and subnational	Nr. of municipal plans on gender sensitive climate adaptation that have been developed/revised (for incorporating the good practices) Nr. of bilateral city-to-city meetings held among Jordan	0	8 (6 in Lebanon and 2 in Jordan)  At least 6 exchange in both countries	Risk: lack of interest/ support/participation in field visits by countries Risk: limited participation of women in field visits			

stakeholders and entities to capture and disseminate knowledge and learning	and Lebanon on gender sensitive climate adaptation practices No. of field visits conducted and lessons learned shared No. of field visits exchanged with a focus on gender and climate change No. of participants to the visits (gender disaggregated	0	20 (50 % Women)	Risk: logistic delays in organizing field visits by countries			
Output 4.3. Sub-national KM and Regional' urban risks and vulnerabilities assessment, planning and management approach model for type 2 cities *In line with AF Output 3.2: strengthened capacity of national and subnational stakeholders and entities to capture and disseminate knowledge and learning	Number of tools and guidelines developed and shared with relevant stakeholders (in line with AF results indicator 3.2.2). Regional' urban risks and vulnerabilities assessment, planning and management approach model developed and shared No of views of the online modules Presentations of the model given / shared at events and webinars % increased interest in applying the model in other cities/countries % increased awareness of the content of the module	0 0 0	1 (with gender consideration) 500 5 30 %	Assumption: Steering committee members will share knowledge through international events including planning approach, best practices, etc.  Risk: lack of interest in online modules and webinar  Risk: logistics issues limiting accessibility to the modules and webinars	Online and presented  Presentation + audience type and number in events  Online feedback for the modules and webinar from the participants  Content of the model shared	4 <sup>th</sup> year	UN-H in cooperati on with EE and governm ent
Output 4.4. Incentive mechanism (financial) and regulatory framework to replicate and upscale rainwater harvesting activities *In line with AF Output 3.2: strengthened capacity of national and subnational stakeholders and entities to capture and disseminate knowledge and learning	Number of tools and guidelines developed and shared with relevant stakeholders (in line with AF results indicator 3.2.2). Incentive mechanism (financial) and regulatory framework to replicate and upscale rainwater harvesting activities developed/published and shared % increased interest in replicating upscale rainwater harvesting in other cities in Jordan	0 o	1 30 %	With a focus on Jordan			

Table 27 Indicative Core Indicator Targets

Table 27 Indicative Core Indicator Targets									
Impact-level results	Core indicator	Disaggregated data and targets	Comment						
Increased adaptive capacity of	Number of beneficiaries (direct) Component 1 and 2	Total: 930 Women:>40 % Youth: >15 %	Direct beneficiary numbers in overview table 6						
communities to respond to the impacts of climate change	Number of beneficiaries (direct) Component 3	Total: 101,588 Women: 69% Youth: 34 % Syrian: 41 %	include all project activities, while those in the results framworks focus on						
	Number of beneficiaries (direct) Component 4	Total: 157,309 Women: 69% Youth: 33 % Syrian: 42 %	specific activities such as O & M. Indirect						
	Number of beneficiaries (direct) Component 5	T: 600 W:>40 % Y: >15 %	beneficiaries, see also project overview table 6						
	Assets produced, developed, improved, or strengthened RWH systems GWRT systems 3km irrigation channel Zahle WWTP treated water irrigated through channel Water storage constructed / installed Modern / water efficient irrigations systems Permaculture demonstration site	106 40 1 1 (18000 m3 of water) 1 (60,000 m3 with 6000 m3 water flow 2 (1x2000 m and 1x3000 m3) 5 (one covering 150 ha; one covering 40 ha; 2 covering 60 dunum; 1 covering 100 dunum	All 'concrete' adaptation activities are designed to increase climate change-related water scarcity resiliece						
	Increased income, or avoided decrease in income	See ha of farmland being more water stress resilient, thus sustaining resilient agriculture livelihoods	The 'concrete' adaptation activities related to the WWTPs and irrigation interventions are designed to support increased resilience of the agriculture livelihoods						

Methodology to apply: <a href="https://www.adaptation-fund.org/wp-content/uploads/2016/04/AF-Core-Indicator-Methodologies.pdf">https://www.adaptation-fund.org/wp-content/uploads/2016/04/AF-Core-Indicator-Methodologies.pdf</a>

## F. Project alignment with the Adaptation Fund results framework

Table 28 Project alignment with the Adaptation Fund results framework

Project Outcome	Project Outcome	Fund Outcome	Fund Outcome	Grant
	Indicator		Indicator	Amount
				(USD)

Outcome 1 Strengthened				1
	No and type of targeted	Outcome 2:	2.1. Capacity of	1,341,000
	institutions with strategies /	Strengthened	staff to respond to,	
municipal institutional	guidelines and urban master	institutional capacity	and mitigate	
capacity to manage	plans with climate change and	to reduce risks	impacts of, climate-	
climate change and	gender mainstreamed.	associated with	related events from	
DP crisis related	Number of strategies /	climate-induced	targeted institutions	
urban water scarcity	guidelines (district-national level)	socioeconomic and	increased	
challenges by	Number of urban master plans in	environmental	4.5.1	
mainstreaming these	Lebanon	losses	1. Relevant threat	
aspects into spatial	Number of urban master plans in Jordan		and hazard information	
strategies +	Jordan	Outcome 1		
developing action / investment plans and	Relevant threat and hazard	Reduced exposure	generated and disseminated to	
guidelines (with	information generated and	to climate-related	stakeholders on a	
identified solutions)	disseminated through to	hazards and threats	timely basis	
to use water most	stakeholders on a timely basis		unicly basis	
efficiently within	(in line with AF results indictaor			
municipal boundaries	1)			
mamoipai boandanes	Municipal plans with climate			
<b>5</b>	change mainstreamed in it			
Reduced exposure to	disseminated during project			
climate-related	a.ccommatou darnig project			
hazards and threats	1			
at the municipal level  Outcome 2	Percentage of targeted direct	Outcome 3:	2.1 Doroontogo of	1,881,671
Strengthened DPs	population aware of adaptation	Strengthened	3.1. Percentage of targeted population	1,001,0/1
and host community	measures being implemented	awareness and	aware of predicted	
and nost community awareness and	Women participating	ownership of	adverse impacts of	
ownership of CC	Youth participating	adaptation and	climate change, and	
adaptation measures	routi participating	climate risk	of appropriate	
+ capacities		reduction processes	responses	
strengthened to		at local level	responses	
operate, maintain	Technologies replication and	Outcome 8:	8. Innovations	
and replicate	upscaling plans	support the	adaptation practices	
proposed adaptation	apodamig plants	development and	are rolled-out,	
measures		diffusion of	scaled up,	
		innovative	encouraged and / or	
		adaptation	accelerated at	
		practices, tools and	regional, national	
		technologies	and / or subnational	
		ŭ	level	
İ	See outputs	Outcome 4:	4.1. Development	
Outcome 3	occ outputs			7,509,767
Outcome 3	oce outputs	Increased adaptive	sectors' services	7,509,767
Increased	occ outputs	Increased adaptive capacity within	sectors' services responsive to	7,509,767
Increased adaptive capacity	occ outputs	•		7,509,767
Increased adaptive capacity within the water		capacity within	responsive to	7,509,767
Increased adaptive capacity within the water sector through	occ outputs	capacity within relevant development and natural resource	responsive to evolving needs from changing and variable climate	7,509,767
Increased adaptive capacity within the water	occ outputs	capacity within relevant development and	responsive to evolving needs from changing and variable climate 4.2. Physical	7,509,767
Increased adaptive capacity within the water sector through resilient and sustainable water		capacity within relevant development and natural resource	responsive to evolving needs from changing and variable climate 4.2. Physical infrastructure	7,509,767
Increased adaptive capacity within the water sector through resilient and sustainable water harvesting, supply	occ outputs	capacity within relevant development and natural resource	responsive to evolving needs from changing and variable climate 4.2. Physical infrastructure improved to	7,509,767
Increased adaptive capacity within the water sector through resilient and sustainable water harvesting, supply and irrigation		capacity within relevant development and natural resource	responsive to evolving needs from changing and variable climate 4.2. Physical infrastructure improved to withstand climate	7,509,767
Increased adaptive capacity within the water sector through resilient and sustainable water harvesting, supply		capacity within relevant development and natural resource	responsive to evolving needs from changing and variable climate 4.2. Physical infrastructure improved to withstand climate change and	7,509,767
Increased adaptive capacity within the water sector through resilient and sustainable water harvesting, supply and irrigation options, using		capacity within relevant development and natural resource	responsive to evolving needs from changing and variable climate 4.2. Physical infrastructure improved to withstand climate change and variability-induced	7,509,767
Increased adaptive capacity within the water sector through resilient and sustainable water harvesting, supply and irrigation options, using innovative and		capacity within relevant development and natural resource sectors	responsive to evolving needs from changing and variable climate 4.2. Physical infrastructure improved to withstand climate change and variability-induced stress	7,509,767
Increased adaptive capacity within the water sector through resilient and sustainable water harvesting, supply and irrigation options, using innovative and replicable techniques	See outputs	capacity within relevant development and natural resource sectors  Outcome 6:	responsive to evolving needs from changing and variable climate 4.2. Physical infrastructure improved to withstand climate change and variability-induced stress 6.1 Percentage of	7,509,767
Increased adaptive capacity within the water sector through resilient and sustainable water harvesting, supply and irrigation options, using innovative and replicable techniques suitable for the		capacity within relevant development and natural resource sectors  Outcome 6: Diversified and	responsive to evolving needs from changing and variable climate 4.2. Physical infrastructure improved to withstand climate change and variability-induced stress 6.1 Percentage of households and	7,509,767
Increased adaptive capacity within the water sector through resilient and sustainable water harvesting, supply and irrigation options, using innovative and replicable techniques suitable for the context and		capacity within relevant development and natural resource sectors  Outcome 6: Diversified and strengthened	responsive to evolving needs from changing and variable climate 4.2. Physical infrastructure improved to withstand climate change and variability-induced stress 6.1 Percentage of households and communities having	7,509,767
Increased adaptive capacity within the water sector through resilient and sustainable water harvesting, supply and irrigation options, using innovative and replicable techniques suitable for the context and benefitting vulnerable		capacity within relevant development and natural resource sectors  Outcome 6: Diversified and strengthened livelihoods and	responsive to evolving needs from changing and variable climate 4.2. Physical infrastructure improved to withstand climate change and variability-induced stress 6.1 Percentage of households and communities having more secure	7,509,767
Increased adaptive capacity within the water sector through resilient and sustainable water harvesting, supply and irrigation options, using innovative and replicable techniques suitable for the context and benefitting vulnerable		capacity within relevant development and natural resource sectors  Outcome 6: Diversified and strengthened livelihoods and sources of income	responsive to evolving needs from changing and variable climate 4.2. Physical infrastructure improved to withstand climate change and variability-induced stress 6.1 Percentage of households and communities having more secure (increased) access	7,509,767
Increased adaptive capacity within the water sector through resilient and sustainable water harvesting, supply and irrigation options, using innovative and replicable techniques suitable for the context and benefitting vulnerable		capacity within relevant development and natural resource sectors  Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable	responsive to evolving needs from changing and variable climate 4.2. Physical infrastructure improved to withstand climate change and variability-induced stress 6.1 Percentage of households and communities having more secure (increased) access to livelihood assets	7,509,767
Increased adaptive capacity within the water sector through resilient and sustainable water harvesting, supply and irrigation options, using innovative and replicable techniques suitable for the context and benefitting vulnerable		capacity within relevant development and natural resource sectors  Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted	responsive to evolving needs from changing and variable climate 4.2. Physical infrastructure improved to withstand climate change and variability-induced stress 6.1 Percentage of households and communities having more secure (increased) access to livelihood assets 6.2. Percentage of	7,509,767
Increased adaptive capacity within the water sector through resilient and sustainable water harvesting, supply and irrigation options, using innovative and replicable techniques suitable for the context and benefitting vulnerable		capacity within relevant development and natural resource sectors  Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable	responsive to evolving needs from changing and variable climate 4.2. Physical infrastructure improved to withstand climate change and variability-induced stress 6.1 Percentage of households and communities having more secure (increased) access to livelihood assets 6.2. Percentage of targeted population	7,509,767
Increased adaptive capacity within the water sector through resilient and sustainable water harvesting, supply and irrigation options, using innovative and replicable techniques suitable for the context and benefitting vulnerable		capacity within relevant development and natural resource sectors  Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted	responsive to evolving needs from changing and variable climate 4.2. Physical infrastructure improved to withstand climate change and variability-induced stress 6.1 Percentage of households and communities having more secure (increased) access to livelihood assets 6.2. Percentage of targeted population with sustained	7,509,767
Increased adaptive capacity within the water sector through resilient and sustainable water harvesting, supply and irrigation options, using innovative and replicable techniques suitable for the context and benefitting vulnerable		capacity within relevant development and natural resource sectors  Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted	responsive to evolving needs from changing and variable climate 4.2. Physical infrastructure improved to withstand climate change and variability-induced stress 6.1 Percentage of households and communities having more secure (increased) access to livelihood assets 6.2. Percentage of targeted population with sustained climate-resilient	7,509,767
Increased adaptive capacity within the water sector through resilient and sustainable water harvesting, supply and irrigation options, using innovative and replicable techniques suitable for the context and benefitting vulnerable		capacity within relevant development and natural resource sectors  Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted	responsive to evolving needs from changing and variable climate 4.2. Physical infrastructure improved to withstand climate change and variability-induced stress 6.1 Percentage of households and communities having more secure (increased) access to livelihood assets 6.2. Percentage of targeted population with sustained	7,509,767 923,162

(inter)National institutional capacity to manage climate change and DP crisis related urban water scarcity challenges, including lessons learned collected and shared regionally	stakeholders and entities to capture and disseminate knowledge and learning (in line with AF results indicator 3.2 )  % increased of gender-sensitive good practices /lessons learnt per country at national and city level that are shared	awareness and ownership of adaptation and climate risk reduction processes at local level	aware of predicted adverse impacts of climate change, and of appropriate responses	
	Technologies replication and upscaling plans	outcome 8: support the development and diffusion of innovative adaptation practices, tools and technologies	8. Innovations adaptation practices are rolled-out, scaled up, encouraged and / or accelerated at regional, national and / or subnational level	
Project Output	Project Output Indicator	Fund Output	Fund Output Indicator	Grant Amount (USD)
Output 1.1 Territorial planning and development strategy / guidelines with CC and gender mainstreamed in Lebanon Output 1.2. Urban master plans developed or modified at municipal level with CC and gender mainstreamed (respond to new conditions resulting from climate variability and change) in Lebanon Output 1.3. Urban master plans developed or modified at municipal level with CC and gender mainstreamed (respond to new conditions resulting from climate variability and gender mainstreamed (respond to new conditions resulting from climate variability and change) in Jordan	No of municipal plans with climate change mainstreamed into them based on vulnerability data developed or adapted  Percentage of municipal inhabitant in target areas covered by the municipal plans Percentage of women, youth and Syrians in target areas covered by the municipal plans  No. of staff and population directly involved in assessment and planning processes through workshops/trainings  Number of staff / people  Women participating  Youth participating	Output 1.1 Risk and vulnerability assessments conducted and updated  Output 1.2. Targeted population groups covered by adequate risk reduction systems  Output 2.1: Strengthened capacity of national and regional centres and networks to respond rapidly to extreme weather events	1.1. No. of projects/programme s that conduct and update risk and vulnerability assessments (by sector and scale)  1.2.1. Percentage of target population covered by adequate risk-reduction systems  2.1.1. No. of staff trained to respond to, and mitigate impacts of, climate-related events	530,000
Output 2 .1, 2 .2. 2 .3. 2 .4. 2 .5. 2 .6. 2 .7. 2 .8.2.9 Strengthened DPs and host community awareness and ownership of climate change adaptation measures + capacities strengthened to operate, maintain and replicate	No. of O & M plans and staff and population directly involved with development of these plans Total staff / population: Women participating Youth participating No. of students completed permaculture curriculum Total students Women	Output 3.2 Strengthened capacity of national and subnational stakeholders and entities to capture and disseminate knowledge and learning	3.2.2 No of tools and guidelines developed and shared with relevant stakeholders	500,000 Approx - see details in budget notes)

proposed adaptation				
measures				
Output 3.1. Rooftop rainwater harvesting in Lebanon	o rainwater installed Vulnerable physical ing in natural, and social assets strengthened in	Vulnerable physical, natural, and social assets	4.1.2. No. of physical assets strengthened or constructed to withstand conditions resulting	7,509,767
Output 3.2. Rooftop rainwater harvesting in Jordan	Number of RWH systems installed	change impacts, including variability  Output 6: Targeted individual and	from climate variability and change  6.1. No and type of	
Output 3.3. Greywater treatment and reuse in Jordan	Number of GWTR systems installed	community livelihood strategies strengthened in relation to climate change impacts,	adaptation assets created or strengthened in support of individual or community	
Output 3.4. Efficient treatment and reuse of	Irrigation channels (1x1 meters with 0.25m thick walls) constructed (in meters)	including variability	livelihood strategies	
wastewater in Lebanon	18000 m3 water flow through channel from Zahle WWTP	Output 8: Viable innovations are rolled-out scaled up, encouraged and	8.1 No of innovative adaptation practices, tools and	
Output 3.5. Efficient treatment and reuse of wastewater in Jordan	Water storage constructed / installed Water quality	/ or accelerated	technologies accelerated, scaled- up and / or	
Output 3.6. Water-use-efficient	Treated and channelled water from Zahle WWTP irrigating		replicated	
irrigation of treated wastewater in Lebanon	farmland (ha) and thus sustaining climate-resilience of agriculture livelihoods;			
Output 3.7 Water-use-efficient irrigation of treated	Conveyor irrigation pipeline 6' size installed (in meters)			
wastewater in Jordan  Output 3.8.	Treated and stored channelled water from Maered WWTP irrigating farmland (ha) and thus sustaining climate-resilience of agriculture livelihoods; Treated and stored channelled water from Al Kaider WWTP irrigating farmland (ha) and thus sustaining climate-resilience of agriculture livelihoods; Treated and channelled water from Mafraq WWTP irrigating farmland (ha) and thus sustaining climate-resilience of agriculture livelihoods Treated and channelled water from small ponds and thus sustaining climate-resilience of agriculture livelihoods Permaculture demonstration site			
Permaculture demonstration	established, including: Biofertilizer site Crop garden and compost egg laying chickens (30 chickens) Beehives			
	Compost sub-od worm farms Olive trees (Orchard Monoculture Conversion to Food Forest)			

	T =		T	T
Output 3.9	Permaculture demonstration site			
Permaculture demonstration	established, including:			
demonstration	- Agricultural Waste			
	Management for Sustainable			
	Crop Production			
	- Urban, Peri-Urban and Rural			
	Agriculture and Water Harvesting as Adaptation			
	Measures			
	- Apiculture and the reduction of			
	chemical substance use at farm			
	level			
	- Introducing adapted crop			
	varieties and diversifying farm			
	production			
Output 4.1.	Number of technical committees	Output 3.2	3.2.2 No of tools	923,162
Regional /	formed to ensure transfer of	Strengthened	and guidelines	
international KM with	knowledge (in line with AF	capacity of national	developed and	
focus on sharing	results indicator 3.2.1.)	and subnational	shared with relevant	
project lessons and	Regional steering committee	stakeholders and	stakeholders	
replication	formed National steering committees	entities to capture and disseminate		
	formed	knowledge and		
	Number of tools and guidelines	learning		
	developed and shared with	<del>-</del>		
	relevant stakeholders through	Output 8: Viable	8.1 No of innovative	
	the CoP (in line with AF results	innovations are	adaptation	
	indicator 3.2.2).	rolled-out scaled	practices, tools and	
	Project video developed and	up, encouraged and	technologies	
	shared with relevant	/ or accelerated	accelerated, scaled-	
	stakeholders		up and / or	
	Nb of good practices per city		replicated	
	shared			
	Number of regional workshops			
0.1.1.10	held			
Output 4.2.	Nr. of municipal plans on			
Jordan and Lebanon KM with focus on	gender sensitive climate			
project progress,	adaptation that have been developed/revised (for			
best practices and	incorporating the good practices)			
lessons learned	Nr. of bilateral city-to-city			
	meetings held among Jordan			
	and Lebanon on gender			
	sensitive climate adaptation			
	practices			
	No. of field visits conducted and			
	lessons learned shared			
	No. of field visits exchanged with			
	a focus on gender and climate change			
	No. of participants to the visits			
	(gender disaggregated			
Output 4.3.	Number of tools and guidelines			
Sub-national KM and	developed and shared with			
Regional' urban risks	relevant stakeholders (in line			
and vulnerabilities	with AF results indicator 3.2.2).			
assessment,	Regional' urban risks and			
planning and	vulnerabilities assessment,			
management	planning and management			
approach model for	approach model developed and			
type 2 cities	shared			
	Nb of views of the online			
	modules  Procentations of the model given			
	Presentations of the model given / shared at events and webinars			
	/ Silated at events and weblindis		I	<u> </u>

	% increased interest in applying the model in other cities/countries % increased awareness of the content of the module
Output 4.4. Incentive mechanism (financial) and regulatory framework to replicate and upscale rainwater	Number of tools and guidelines developed and shared with relevant stakeholders (in line with AF results indicator 3.2.2). Incentive mechanism (financial) and regulatory framework to
harvesting activities	replicate and upscale rainwater harvesting activities developed/published and shared % increased interest in replicating upscale rainwater harvesting in other cities in
	Jordan

## G. Detailed budget

Table 29 Detailed Budget. For all budget notes, see annex 6

				Year	Year	Year	Year
Project Components	Expected Concrete Outputs	Expected Concrete Outcomes	TOTAL	1	2	3	4
				12 m	12 m	12 m	12 m
Component 1 Manage urban risks and vulnerabilities in the context of	Output 1.1. Territorial planning and development strategy / guidelines with CC and gender mainstreamed in Lebanon	Outcome 1.1 Strengthen municipal institutional capacity to manage climate change and DP crisis	249,000	249,000	-	1	-
climate change, esp. water scarcity challenges, and urban	Output 1.2. Urban master plans at municipal level with CC and gender mainstreamed in Lebanon	related urban water scarcity challenges by mainstreaming these aspects into spatial	530,000	260,000	241,000	17,000	12,000
(population) growth, including DPs migration trends	Output 1.3. Urban master plans at municipal level with CC and gender mainstreamed in Jordan	strategies + developing action / investment plans and guidelines (with identified	562,000	267,000	237,000	34,000	24,000
	TOTAL	solutions) to use water most efficiently within municipal boundaries	1,341,000	776,000	478,000	51,000	36,000
Component 2 Improve awareness, ownership and capacities to respond to climate change impacts, incl, to	Output 2.1. Community organisation, awareness and capacity building + operation, maintenance and replication and upscaling plans for concrete adaptation output 3.1	Outcome 2.1 Strengthened DPs and host communities awareness and ownership of CC adaptation measures + capacities strengthened to	195,400	36,700	51,750	54,750	52,200
operate, maintain and replicate resilient water harvesting, supply	Output 2.2. See above for output 3.2.	operate and maintain proposed adaptation measures, including skills building	139,200	31,200	43,500	46,500	18,000
and irrigation systems	Output 2.3. See above for output 3.3.		234,000	36,000	82,000	82,000	34,000
	Output 2.4. See above for output 3.4.		163,200	61,300	29,900	56,850	15,150
	Output 2.5. See above for output 3.5.		16,000	-	-	6,000	10,000
	Output 2.6. See above for output 3.6.		142,100	39,150	28,150	58,150	16,650
	Output 2.7. See above for output 3.7.		259,000	90,400	83,800	32,400	52,400
	Output 2.8. See above for output 3.8.		314,600	113,000	66,200	65,200	70,200
	Output 2.9. See above for output 3.9.		418,171	123,157	125,457	117,457	52,100
	TOTAL		1,881,671	530,907	510,757	519,307	320,700
Component 3 Expand climate change resilient	Output 3.1. Rooftop rainwater harvesting in Lebanon	Outcome 3.1 Increased adaptive capacity within the water	867,262	11,364	400,767	443,767	11,364
(unconventional) water	Output 3.2. Rooftop rainwater harvesting in Jordan	sector through resilient and sustainable	836,820	5,000	471,410	355,410	5,000
harvesting and supply options, using innovative, low-cost and	Output 3.3. Greywater treatment and reuse in Jordan	water harvesting, supply and irrigation options, using innovative and cost-effective	843,112	11,364	410,192	410,192	11,364
replicable techniques	Output 3.4. Efficient treatment and reuse of wastewater, incl in Lebanon	techniques suitable for the context and replicable and benefitting vulnerable groups	846,120	16,224	829,896	-	-
	Output 3.5. Efficient treatment and reuse of wastewater in Jordan		1,053,332	-	1,053,332	-	-
	Output 3.6. Water-use-efficient irrigation of treated wastewater in Lebanon		988,950	6,600	497,775	484,575	
	Output 3.7. Water-use Efficient irrigation of treated wastewater in Jordan		804,400	10,800	780,400	6,600	6,600

	Output 3.8. Permaculture demonstration - closed loop water system in Jordan		384,046	210,289	57,919	57,919	57,919
	Output 3.9. Permaculture demonstration – closed loop water system in Lebanon		885,725	307,080	236,975	187,710	153,960
	TOTAL		7,509,767	578,721	4,738,666	1,946,173	246,207
Component 4 Project Knowledge management	Output 4.1. Regional / international KM with focus on sharing project lessons and replication	Outcome 4.1 Strengthened (inter)National institutional	280,000	45,000	35,000	95,000	105,000
and replication and development of regional urban risks and	Output 4.2. Jordan and Lebanon KM with focus on project progress, best practices and lessons learned	capacity to manage climate change and DP crisis related urban water scarcity	437,800	110,620	105,280	96,180	125,720
vulnerabilities management approach model	Output 4.3. Sub-national KM and Regional' urban risks and vulnerabilities assessment, planning and management approach model for type 2 cities	challenges, including lessons learned collected and shared regionally	165,000	-	68,000	20,000	77,000
	Output 4.4. Incentive mechanism (financial) and regulatory framework to replicate and upscale rainwater harvesting activities		40,362	-	-	36,000	4,362
	TOTAL		923,162	155,620	208,280	247,180	312,082
Sub-total Project Components Costs			11,655,600	2,041,248	5,935,703	2,763,660	914,989
Project Execution Costs	Regional Project coordination		264,000	66,000	66,000	66,000	66,000
	National Project execution		827,400	227,100	218,100	191,100	191,100
	Travel Related to Execution		37,810	10,543	8,362	8,362	10,543
	Operations		69,000	15,000	15,000	15,000	24,000
	Terminal evaluation		25,000	-	-	-	25,000
Sub-total Project Execution Costs		9.50%	1,223,210	318,643	307,462	280,462	316,643
SUB-TOTAL Component + execution fee			12,878,810	2,359,891	6,243,165	3,044,122	1,231,632
Project Cycle Management Fee	UN-H ROAS Project Support Costs: AF and UN-H policies compliance Progress / evaluation Travel	1.50%	193,182	35,399	93,648	45,661	18,474
	UN-H HQ Project Support Costs: Overall project supervision, incl. compliance to UN-H policies and standards (gender, human rights, climate change, etc.)	7.00%	901,517	165,192	437,022	213,089	86,214
Sub-total Project Cycle Managam	ent Fee	8.50%	1,094,699	200,591	530,670	258,750	104,688
Amount of Financing Requested			13,973,509	2,560,482	6,773,835	3,302,872	1,336,320
For an averyiou of milester	200 000 0ppoy 7						

For an overview of milestones, see annex 7

Table 30: M & E budget

	M&E							
Type of M & E Activity	Activity	Entity	Row	Total	1	2	3	4
Measurements of means of verification (baseline	Workshop	UN-ESCWA		20,000	20,000			
assessment and M & E plans) as part of inception	Reports preparation and EE compliance to AF ESP and GP	UN-H ROAS		29,499	29,499			
Direct Project Monitoring and Quality Assurance including annual progress and financial reporting, project revisions, technical assistance and ESP and GP compliance (from execution fee M & E and safeguards)	M & E UN-H offices	UN-H National offices		100,800	25,200	25,200	25,200	25,200
Overall project monitoring and evaluation (from cycle management fee)		UN-H ROAS		32,197	5,900	15,608	7,610	3,079
Audits	In line with AF requirements	OIOS		-	-	-	-	-
Terminal external evaluation		Independent		25,000				25,000
Total				207,496	80,598	40,808	32,810	53,279
From Project Execution fee				100,800	25,200	25,200	25,200	25,200
From Project Cycle Management fee				61,696	35,398	15,608	7,610	3,079

## H. Disbursement schedule

Table 31 Disbursement schedule

	Year 1	Year 2	Year 3	Year 4
Schedule	1st disbursement –	2 <sup>nd</sup> disbursement –	3 <sup>rd</sup> disbursement - Two	4 <sup>th</sup> disbursement –
		One Year after project	years after project	Three years after project
		inception	inception	inception
Milestones	Milestones	Milestones (by end of year):	Milestones (by end of year)	Milestones (by end of year)
	Upon agreement signature	Upon First Annual Report Upon financial report indicating disbursement of at least 70% of funds of 1st year	Upon Second Annual Report Upon financial report indicating disbursement of at least 70% of funds of 2 <sup>nd</sup> year	Upon Third Annual Report Upon financial report indicating disbursement of at least 70% of funds of 3 <sup>rd</sup> year

Schedule date	Upon Signing	One Year after project inception	Two years after project inception	Three years after project inception
A. Project Funds (US\$)	2,041,248	5,935,703	2,763,660	914,989
B. Programme Execution (US\$)	318,643	307,462	280,462	316,643
C. Programme Cycle Mgt (US\$)	200,591	530,670	258,750	104,688
Sub-total (US\$)	519,234	838,132	539,212	421,331
TOTAL (US\$)	2,560,482	6,773,835	3,302,872	1,336,320

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

#### A. Record of endorsement on behalf of the government 103

Saleh Al-Kharabsheh Minister, Ministry of	Date: January 22, 2020
Environment, Jordan	
Fadi Jreissati, Minister, Ministry of	Date: January 20, 2020
Environment, Lebanon	



Ref. No 7-2-776 Date 22-1-2020

> 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 both displaced persons and host communities to climate change-related water challenges in Jordan and Lebanon".

In my capacity as designated authority for the Adaptation Fund in Jordan, I confirm that the above regional 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 Jordan. The project aligns specifically with Jordan's climate change policy and Intended Nationally Determined Contributions (INDC). The regional approach shall also improve management of water challenges and pressure on resources regionally and foster our cooperation with Lebanon, including under the Regional Refugee and Resilience Plan 2020-2021.

Also, the Ministry of Environment reviewed and approved the Environmental and Social Impact Assessment and the Environmental Risk Management and Monitoring Plan that was submitted by UN-Habitat as part of this project.

Accordingly, I am pleased to endorse the above project/programme proposal with support from the Adaptation Fund. If approved, the project/programme will be implemented by UN-Habitat and executed in Jordan by the mentioned entities in the proposal document.

Sincerely,

Minister of Environment

Dr. Saleh Al-Kharabsheh

THE HASHEMITE KINGDOM OF JORDAN

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

<sup>&</sup>lt;sup>103</sup>Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.



Beirut, 20 /JAN/2020 Our Ref.: 4206/B/2018

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 both displaced persons and host communities to climate change-related water challenges in Jordan and Lebanon"

In my capacity as designated authority for the Adaptation Fund in Lebanon, I confirm that the above regional 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. The project aligns specifically with Lebanon's climate change policy and Intended Nationally Determined Contributions (INDC). The regional approach shall also improve management of water challenges and pressure on resources regionally and foster our cooperation with Jordan, including under the Regional Refugee and Resilience Plan 2020- 2021.

Also, the Ministry of Environment reviewed and approved the Environmental and Social Impact Assessment and the Environmental Risk Management and Monitoring Plan that was submitted by UN-Habitat with the exception of the Constructed Wetlands' which is still under review (EIA report approval pending).

Accordingly, I am pleased to endorse the above project/programme proposal with support from the Adaptation Fund. If approved, the project/programme will be implemented by UN-Habitat and executed in Lebanon by UNICEF, Litani River Authority (LRA), Bekaa Water Establishment (BWE), and Lebanese Agricultural Research Institute (LARI).

Sincerely

Minister of Environm Fady Jreissati

Cc: - Ministry of Energy of nt; Litani River Authority

- Ministry of Agriculture: Minister; Let - Ms. Samar Malek, UNFCCC Focal P ral Research Institute

mtal Technology, MoE

Ms. Nancy Khoury, Head of Depar elations and External Affairs, MoE - Mr. Vohakn Kabakian, Climate Cha ange Projects, MoE

#### B. Implementing Entity certification

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans in Jordan and Lebanon, including INDC, 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.

Raf Tuts
Director, Global Solutions Division, UN-Habitat
Implementing Entity Coordinator

Date: 04/17/2020 Tel. +254-20-762-3726

E-mail: raf.tuts@un.org

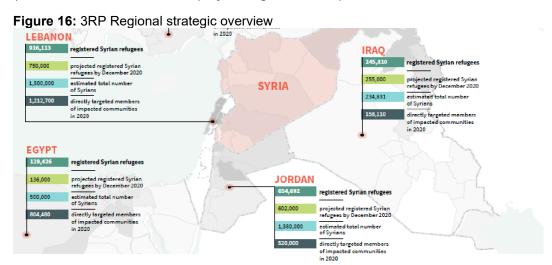
Project Contact Person: Erfan Ali and Soha Farouk, Regional

office for Arab States

Email: erfan.ali@un.org soha.farouk@un.org

### ANNEX 1: Refugee crisis statistics and project alignment with 3RP (regional refugee and resilience plan)<sup>™</sup> and climate change scenarios and vulnerabilities in project target areas.

Below figures show a need for funding for increasing the resilience of DPs / refugees, including for the WASH sector, which will be impacted by climate change, especially in Jordan and Lebanon. It also show the current numbers of refugees registered, those between 2013-2020 and the geographical location (which shows most are in the project target locations).





#### Refugee **Total Requirements** COUNTRY Component (USD) Component (USD) 2020 (USD) Needs 2021 (USD)

Resilience

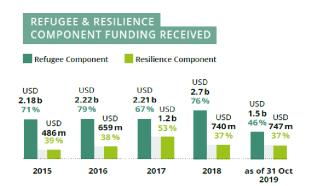
FINANCIAL REQUIREMENTS

Estimated Total

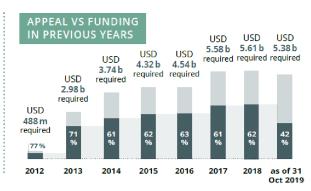
TURKEY	554,009,139	620,919,147	1,174,928,285	973,000,000
LEBANON	1,363,938,455	1,310,450,672	2,674,389,127	твс
JORDAN	913,505,965	161,989,717	1,075,495,682	твс
IRAQ	173,209,275	86,733,027	259,942,303	241,023,436
EGYPT	121,851,102	32,312,103	154,163,205	166,983,477
REGIONAL	92,970,742	3,000,000	95,970,742	ТВС
TOTAL	3,219,992,177	2,214,897,167	5,434,889,344	TBC

NOTE: All figures subject to change pending finalization/ release/launch of the 3RP country chapters. Jordan figures are pending review by the Government of Jordan and therefore may be subject to change in due course. The total requirements 2020 figure does not include the appeal requirements of the government in Jordan (JRP) or Lebanon (LCRP).

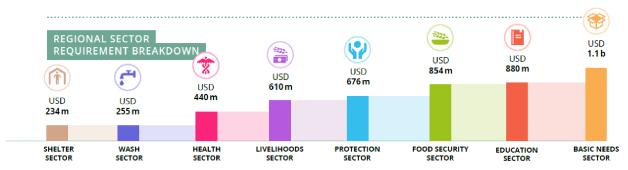
https://data2.unhcr.org/en/documents/download/67370



NOTE: The percentages of component funded against component requirements.



NOTE: This graphic covers funding under the 3RP since 2015 and its predecessors, the Refugee Response Plans (RRPs), since 2012.



NOTE: This does not include regional funding requirements and some other country-level requirements which have not yet been allocated a sector.



#### WASH SECTOR





#### LIVELIHOODS & SOCIAL COHESION SECTOR

2020 Requirements in USD	610,276,633
Targeted Population	850,200
Number of Books and	
Number of Partners	211
Reach in previous years	
Number of individuals assist	ted to access wage
employment opportunities	_
employment opportunities	93,03
employment opportunities	93,03
	93,03

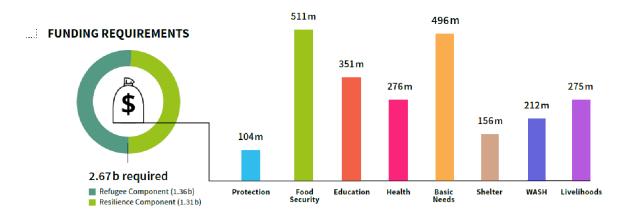
2016

2017

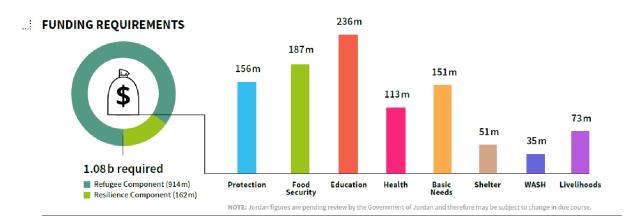
2014

2015

2018



JORDAN

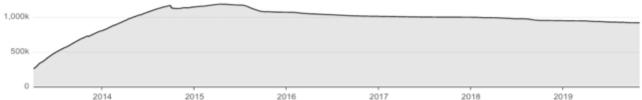


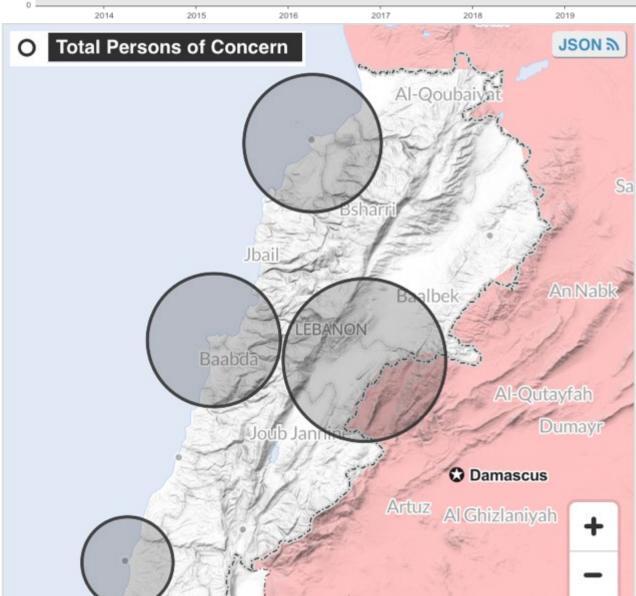
### DPs in Lebanon<sup>105</sup>

Total Persons of Concern: 918,974

Location name	Source	Data date	Population	*
Bekaa	UNHCR	31 Oct 2019	37.3%	342,875
North Lebanon	UNHCR	31 Oct 2019	26.5%	243,125
Beirut	UNHCR	31 Oct 2019	24.8%	228,009
South Lebanon	UNHCR	31 Oct 2019	11.4%	104,965

#### Registered





 $<sup>\</sup>frac{105}{\text{https://data2.unhcr.org/en/situations/syria/location/71#\_ga=2.248854471.1978193527.1540994637-1966626473.1540994637}$ 

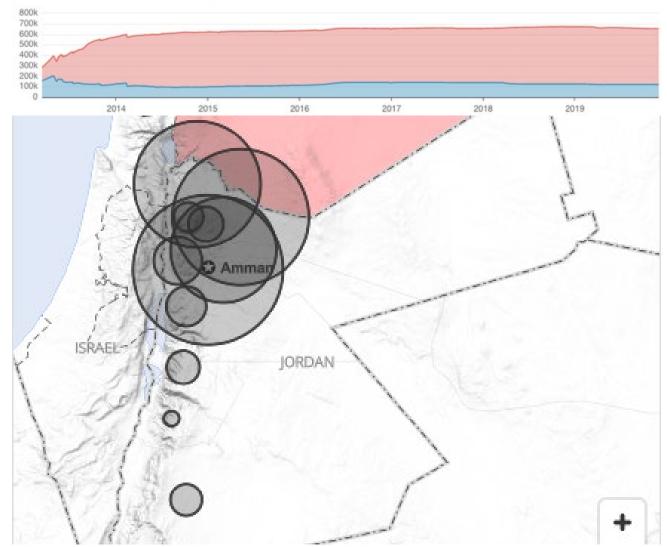
## DPs in Jordan<sup>106</sup>

<b>Total Persons of Concern</b>	÷	654.1	192
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Location name	Source	Data date	<b>\$</b>	Population	
Amman Governorate	UNHCR	1 Dec 2019		29.5%	192,667
Mafraq Governorate	UNHCR	1 Dec 2019		24.8%	161,933
Irbid Governorate	UNHCR	1 Dec 2019		20.6%	134,585
Zarqa Governorate	UNHCR	1 Dec 2019		14.5%	94,619
Balqa Governorate	UNHCR	1 Dec 2019	■ 2.8%		18,446
Madaba Governorate	UNHCR	1 Dec 2019	2.0%		13,096
Jarash Governorate	UNHCR	1 Dec 2019	1.4%		9,301
Karak Govenorate	UNHCR	1 Dec 2019	1.3%		8,526
Maan Governorate	UNHCR	1 Dec 2019	■ 1.3%		8,376
Ajlun Governorate	UNHCR	1 Dec 2019	1.0%		6,590
Aqaba Governorate	UNHCR	1 Dec 2019	1 0.6%		3,621
Tafilah Govenorate	UNHCR	1 Dec 2019	1 0.3%		1,738
Refugees from Syria by dat	e				.CSV 🖎 JSON 🖎

Refugees from Syria by date





 $<sup>\</sup>frac{106}{\text{https://data2.unhcr.org/en/situations/syria/location/36\#ga=2.22371195.1978193527.1540994637-1966626473.1540994637}{\text{https://data2.unhcr.org/en/situations/syria/location/36\#ga=2.22371195.1978193527.1540994637-1966626473.1540994637}}$ 

#### Jordan climate change scenarios and vulnerabilities in project target area

Multiple climate scenario modeling and vulnerability assessment studies have been conducted for Jordan in the last 10 years. Additional to the "formal" climate scenario modeling and vulnerability assessment study conducted as part of the latest Third National Communication Report of Jordan to UNFCCC (2014)<sup>107</sup>, which simulated general or country-wide level of climate scenario modeling and vulnerability assessment and will be used here for general-level remarks, there are two more site-specific climate modeling studies, which are considered almost directly (Wade et al. 2010<sup>108</sup>) and 100% directly (Hammouri et al. 2016<sup>109</sup>/Hammouri 2009<sup>110</sup>) representative studies to the locations of the interventions of this proposal.

## (1) THIRD NATIONAL COMMUNICATION (TNC) REPORT'S (2014) CLIMATE SCENARIO MODELING AND VULNERABILITY ASSESSMENT

According to the TNC (2014) climate scenario modeling and vulnerability assessment, and based on long historical data obtained from Jordan Metrology Department (JMD), climatic variables at all over the country are changing significantly at both national and station level, indicating that climate change is becoming more apparent. Both the Mann-Kendall rank trend test and linear regression trends indicate that the annual precipitation tends to decrease significantly with time at a rate of 1.2 mm per year. In addition, the historic data tested in both annual and monthly basis indicated that precipitation reduction is highly significant during the whole rainy season except for January. Similarly during the dry seasons of June, July and August, the precipitation has tended to increase over time, although this increase is considered negligible in its quantity as indicated by the magnitude of the slope. Interpolated spatial maps shows the locations of these changes to be more apparent at both northern and southern parts. Simultaneously, the mean, maximum and minimum air temperature tends to increase significantly by 0.02, 0.01, and 0.03 °C/year, respectively.

Dynamic downscaling for this study was achieved using Africa CORDEX domain, in which 43 grid points with 50 km resolution were crossed throughout the country. Nine different GCM coupled with two RCMs for two RCPs (4.5 and 8.5) were used to assess future projections as compared to reference historic data (1980-2010). Three time horizons were selected; 2020-2050, 2040-2070, and 2070-2100.

The projections' results totally agree with previous work of Second National Communication (SNC<sup>111</sup>) to UNFCCC and are consistent with IPCC-AR5. For the year 2085, the two RCPs extremely likely predicted rise in mean temperature for all of the country, up +2.1°C [+1.7 to +3.1°C] for RCP 4.5, and +4°C [3.8-5.1°C] for RCP 8. The increase was predicted to be homogeneous for the RCP 4.5, and stronger for the Eastern and the Southern regions for RCP 8.5. Future dynamic projections predict extremely likely warmer summer compared to other seasons.

Compared to the SNC that used CMIP3 results, multiensemble projections of CMIP5 results coupled with regional climate models in CORDEX give a more consistent trend to a likely drier climate. In 2070-2100, the cumulated precipitation could likely decrease by 15% [-6% to -25%] in RCP 4.5, by -21% [-9% to -35%] in RCP 8.5. The decrease would be more marked in the western part of the country. It is more likely to have drier autumn and winter as compared to spring, with a median value of precipitation decrease reaching -35% in autumn in 2070-2100.

<sup>107</sup> Third National Communication Report of Jordan to UNFCCC (2014), UNDP and Jordan Ministry of Environment.

Wade, A., Black, E., Brayshaw, D., El-Bastawesy, M., Holmes, P., Butterfield, D., Nuimat, S., and Jamjoum, K. 2010, 'A model-based assessment of the effects of projected climate change on the water resources of Jordan', Philosophical Transactions of the Royal Society A, 368, 5151–5172.

Nezar Hammouri, Jan Adamowski, Muwaffaq Freiwan, Shiv Prasher (2016) Climate change impacts on surface water resources in arid and semi-arid regions: a case study in northern Jordan, Acta Geod Geophys DOI 10.1007/s40328-016-0163-7. Online first: 19 Feb 2016. (https://eis.hu.edu.jo/deanshipfiles/pub10367100124.pdf)

<sup>110</sup> Nezar Hammouri (2009), International Conference and Exhibition on Green Energy & Sustainability for Arid Regions & Mediterranean Countries, Le Royal Hotel Amman, Jordan November, 10-12 2009 https://www.weap21.org/Downloads/ClimateChangeImpactsJordan.pdf

<sup>111</sup> Second National Communication (SNC) to UNFCCC (2009). UNDP and Jordan Ministry of Environment.

Also, the dynamic projections predict more extremely likely heat waves where the analysis of summer temperature, monthly values and the inter-annual variability reveal that some thresholds could be exceeded especially for a summer month where the average of maximum temperature for the whole country could exceed 42-44°C.

Drought events were likely predicted as indicated by the two indices of consecutive dry days and SPI. The maximum number of consecutive dry days would likely increase in the reference model of more than 30 days for the 2070-2100. Potential evaporation would also likely increase.

Based on the outcomes of the climate scenario modeling and vulnerability assessment conducted for the TNC, climate exposure, risks, sensitivity, impacts were assessed and adaptive measures were introduced.

For the Water Sector in particular, results revealed that based on the climate trends analysis using CORDEX and RCP 4.5 and 8.5 the main climate hazards that the water sector faces in Jordan are temperature increases, increased incidents of drought, increased evaporation, and precipitation decreases. Climate sensitivity indicators in water sector were determined as reduced groundwater recharge, groundwater quality deterioration, stream flow reduction and increased water demand.

Assessment of sensitivity showed that the average sensitivity level is 3.71. Adaptation strategies and measures suggested for the water sector in the TNC are:

- Rainwater harvesting
- Wastewater treatment
- Desalination
- Increasing Efficiency of irrigation technologies
- Grey water Reuse
- Public awareness

It is obvious that 5 out of the 7 adaptation measures advanced to water sector in Jordan are covered in this proposal.

#### (2) WADE EL AL. (2010) CLIMATE SCENARIO MODELING AND VULNERABILITY ASSESSMENT

This study was concerned with the quantification of the likely effect of anthropogenic climate change on the water resources of Jordan (one case study from the Northern part and one from the Southwestern part) by the end of the twenty-first century (2100). The study has two parts. In the first part, the effects of daily and seasonal precipitation patterns on streamflow in the upper River Jordan are explored using climate scenarios as inputs to the modelling framework. In the second part, the same methodology is applied to a site in southwestern Jordan, the Wadi Faynan, which is considered representative of the wadis draining to the lower Jordan, although the Wadi Faynan itself drains to the Dead Sea in the south rather than the Jordan River. Considered together, these two components provide insight into the mechanisms by which the projected changes in precipitation and near-surface air temperature will affect the hydrological cycle in semi-arid environments.

Specifically, a suite of hydrological models were used in conjunction with modelled outcomes from a regional climate model, HadRM3, and a weather generator to determine how future flows in the upper River Jordan, which forms the northwestern boundary of the Yarmouk Water basin where the two intervention sites of this proposal (Irbid and Mafraq) are located. Climate projections were extracted from HadRM3 RCM simulations of the 1961–1990 control and the 2071–2100 future periods. The hydrological components of the model framework are the Pitman rainfall–run-off model and the Integrated Catchments model (INCA v. 1.11.10). The Pitman model is a conceptual, process-based model of the rainfall–run-off relationship.

The results indicate that groundwater will play an important role in the water security of the country as irrigation demands increase. Given future projections of reduced winter rainfall under the A2 scenario for the 2071–2100 period, which is predicted to be for the upper Jordan for the largest monthly reductions around 30% during December and January and increased near-surface air temperatures, the already low groundwater recharge will decrease further. Simulations of the said study projected <u>no increase</u> in flood magnitude in the upper River Jordan. The reduction in winter rainfall can be related to changes in the largescale circulation and is predicted by most climate models (e.g. Kitoh et al. 2008; Evans 2009; Hemming et al. 2010; Jin et al. 2010), the same cannot be said for the spring precipitation, which leads to

large uncertainties in the prediction of rain in this season (Black et al. in press). At the peak of the rainy season, the number of rainy days is projected to decrease, reflecting reductions in both the PRR and the PDR, of approx. 25 per cent (PRR reduced from approx. 0.6 to 0.4–0.5 and PDR reduced from approximately 0.2 to 0.15). The overall picture is, therefore, of a longer rainy season with a less pronounced peak, with the mean annual rainfall decreasing in the headwaters of the River Jordan and the Wadi Faynan. The reduction in rainfall is accompanied by an increase in mean annual temperature by 2°C and hence potential evaporation increases.

As a result of the reduced winter rainfall, and this indicates that flood magnitudes will be reduced. Increases in the flow extremes, in terms of flood magnitude and occurrence, are not evident, which is consistent with Black (2009), who found no significant changes in rainfall intensity in these projections for this region. Discussions in the said paper presents results of other interesting modeling studies and focuses on the implications of reduced water availability in Jordan. For example, the said paper highlites that the reduction in the mean annual rainfall and the increase in near-surface air temperatures suggest that irrigation requirements will increase, worsening the water shortage in the region. This suggestion is supported by preliminary applications of the CROPWAT model in the Water, Life and Civilisation study and by applications of a soil–vegetation–atmosphere transfer (SVAT) model TRAIN, which indicate increases in evapotranspiration and water demand (Menzel et al. 2009). The preliminary predictions of the CROPWAT model suggest that, at Ramtha in northwest Jordan, the irrigation demand will increase from 62 to 132mm of water when growing vegetables under the A2 scenario for 2071–2100 using HadRM3 and an assumed irrigation efficiency of 70 per cent. The TRAIN model provides an overview of the Jordan Valley region, and the modelled outcomes suggest a 6 per cent increase in the water demand for agriculture over the entire region and up to a 50 per cent decrease in water availability in northwest Jordan

## (3) HAMMOURI EL AL (2009 & 2016) CLIMATE SCENARIO MODELING AND VULNERABILITY ASSESSMENTS

the groundwater resource.

(HadCM3, A1B scenario, 2021–2050 compared with 1961–1990 control period). An overall increase in local and regional irrigation demand has serious implications for Jordan since further stress will be put on

The most relevant and recent study conducted for the northern part of Jordan per se, where the activities of this project are located, is the recent study conducted by a group of national and international (Canadian) researchers, meteorology and climate experts published in 2016<sup>112</sup>. In the said study, lead by the deeply involved in climate modeling in Jordan, Professor Nezar Hammouri from Hashemite University, the Soil and Water Assessment Tool (SWAT), a watershed scale model developed by the USDA Agricultural Research Service (ARS), was used to assess climate scenarios, vulnerability and potential impacts of climate change on water resources in the northern regions of Jordan, Yarmouk Basin under different future climate scenarios. Yarmouk Water Basin, which spans the northern part of Jordan and southern part of western Syria and emptying into the Jordan River (Figure A), is the major surface water basin in Jordan where Irbid and Mafraq regions are located-Figure A, and Jerash (or Jarash) is only few kilometers to the south laying in another water basin named Amman Zarqa Basin, Figure B, which was assessed in another study by the same researcher 113. In the said studies, Global Climate Models (GCMs) were used to assess the future impacts of climate change on water resources in the three study areas. To study potential impacts of climate change on hydrological system and water resources, two river basins have been selected in the territory of Jordan: the Amman- Zarga River and the Yarmouk River Baasin. To simulate potential changes in runoff, the WEAP hydrological model has been applied with three selected global circulation models (GCM) which are HADGEM1, CSIROMK3 and ECHAM5OM scenarios.

The Amman-Zarqa River Basin (AZRB) (Figure B) is the second main tributary to River Jordan after Yarmouk River, and thus one of the most significant basins in the country with respect to its economical, social and agricultural importance.

Nezar Hammouri, Jan Adamowski, Muwaffaq Freiwan, Shiv Prasher (2016) Climate change impacts on surface water resources in arid and semi-arid regions: a case study in northern Jordan, Acta Geod Geophys DOI 10.1007/s40328-016-0163-7. Online first: 19 Feb 2016. (https://eis.hu.edu.jo/deanshipfiles/pub10367100124.pdf)

<sup>113</sup> Nezar Hammouri (2009), International Conference and Exhibition on Green Energy & Sustainability for Arid Regions & Mediterranean Countries, Le Royal Hotel Amman, Jordan November, 10-12 2009 <a href="https://www.weap21.org/Downloads/ClimateChangeImpactsJordan.pdf">https://www.weap21.org/Downloads/ClimateChangeImpactsJordan.pdf</a>

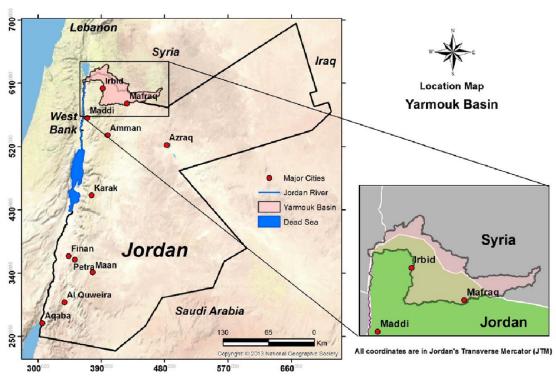


Figure A Geographical location of the Yarmouk River Basin within Jordan where the two (Irbid and Mafraq) of the three sites of this project in Jordan are located.



Figure B Location map of Zarqa Basin (where Jerash intervention site is located) and Yarmouk Basin (where Irbid and Mafraq intervention sites are located) catchment areas.

Yarmouk Basin has the semiarid climate of the Mediterranean Sea region with a limited amount of rainfall and high temperatures. The mean annual rainfall is about 410 mm, while mean annual temperatures is about 18 °C, respectively. About 60 % of the Yarmouk basin's agricultural lands are rainfed, and 20 % are irrigated. Due to over-pumping of groundwater and the construction of dams in Syria's portion of the basin,

the river witnessed a sharp drop in base flow in Jordan's northwest, during the late 1990s and early 2000s. Currently, the summer base flow of this river is about 158 MCM.

In the methodology followed by the above climate scenarios and vulnerability studies, climate, topography, soil and land use data were collected and downloaded to allow the calibration and validation of the GIS-assisted ArcSWAT model based on current conditions in the basin (i.e., baseline scenario). The three Global Climate Model (GCM) models best suited to the study area served to provide separate predicted climate data under different land management options for the ArcSWAT model. The validated SWAT model and using future climatic data provided an assessment of the impacts of climate change on water resources of the study areas. The adopted methodology to achieve the said study's objective is illustrated in Figure C.

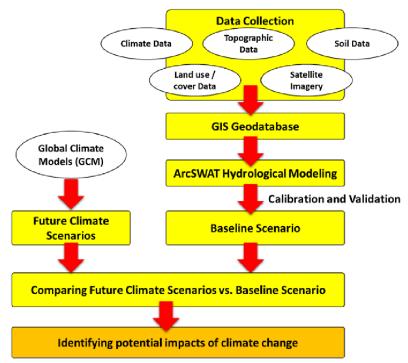


Figure C: Methodology adopted to assess the impacts of climate change in Jordan's Yarmouk River Basin.

Different sets of data were collected (which could be obtained from the researcher), which included:

- Digital Elevation Model (DEM) data
- Soil Data
- Landsat ETM ? Imagery data
- Meteorological Data
- Hydrological modeling using SWAT data (SWAT has been widely used to assess the impacts of climate change on water resources).
- General Circulation Models (GCM) Data for assessment of climate change impacts on water resources

In the said study, two types of future climate data were used:

- (1) Incremental scenarios (Figure D)
- (2) GCM scenario

Type of Scopario	Precipitation	Temperature Increase				
Type of Scenario	Change	+ 1°C	+ 2°C	+ 3°C	+ 4°C	
Dry Voore	-20%	S1	S2	S3	<b>S</b> 4	
Dry Years	-10%	S5	S6	S7	S8	
Normal Year	No Change	S9	S10	S11	S12	
Wet Year	+10%	S13	S14	S15	S16	
vvet fear	+20%	S17	S18	S19	S20	

Figure D Incremental scenarios utilized

Future climatic data were used to assess the impacts of climate change on water resources. Two types of future data were used in the said study. The first type of future data is incremental scenarios, where 20 different climatic scenarios were created to represent the dry, normal and wet year conditions. SWAT simulated results for the 20 incremental scenarios are shown in Figure E. The simulation results of these 20 scenarios showed that precipitation is the major factor that affects the vulnerability of surface runoff values. It was also determined that temperature plays a minor role in changes in surface runoff amounts.

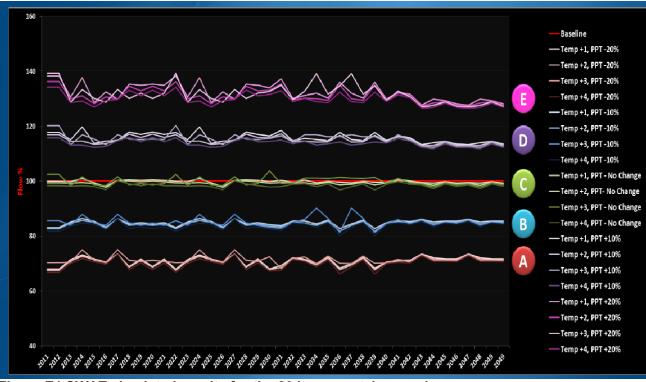


Figure E1 SWAT simulated results for the 20 incremental scenarios

The second type of future climate data used were the Global Climate Model (GCM) scenarios. To assess the impacts of climate change on water resources in the Yarmouk basin, GCMs were used to generate future climate data records. In the said study, temperature and precipitation outputs of 13 GCMs over the period of 1961–2005 were downloaded from the Canadian Climate Change Scenarios Network website (http://www.cccsn.ec.gc.ca/). According to Jordan's Second National Communication to the United Nations Framework Convention on Climate Change (MEJ-UNDP, 2009), there are three GCM models that best match Jordan's climatological records. These include the (i) CSIROMK3 model developed by the Commonwealth Scientific and Industrial Research Organization (CSIRO), Australia, (ii) ECHAM5OM model, the 5<sup>th</sup> generation of the ECHAM general circulation model developed by the Max Planck Institute for Meteorology, Germany, and (iii) HADGEM1, the Hadley Center Global Climate Model, developed in the UK. For these three models SRES A2 climate models scenarios were used where regional economic development, high population growth and slow technological change are assumed (IPCC 2010). Future climate data from these models were downloaded on daily time scale to cover the period from 2010 to

2060. Daily precipitation, minimum and maximum temperature data from these three models where downscaled using a Statistical Downscaling Model (SDSM), a decision support tool developed to assess local climate change impacts, using a robust statistical downscaling technique (Wilby and Dawson 2004)<sup>114</sup>.

Global Climate Models were used in the above-mentioned study to generate future climate records for the 70 year-period (2010–2080) for the Yarmouk basin study area. These data were used as inputs to the calibrated and validated SWAT model to assess the impacts of climate change on water resource of the study area. Each GCM scenario generated one set of stream flow predictions for the Yarmouk basin. Despite using three different GCM climate models, similar results were obtained.

Various magnitudes of decline in surface flow rates were expected in different months. The CSIROMK3 model predicts a major decrease in stream flow rates in February (about 41 %), 37 % in March, 18 % in December and 13 % in January. The net change for rainy months according to this model is 24 % decrease in stream flow rates. For the German model, ECHAM5OM, results similar to those of the CSIROMK3 model were obtained, except for October and November, where the model expect a decrease in stream flow rates with 10 %. The maximum drop is also expected in February (also roughly 40 %). For the entire rainy season, the net flow is projected to drop by 22 %. For the British model, HADGEM1, projected results are more catastrophic. For February, 50 % of the flow rates will decrease. For March, the three GCM models combined predict a drop in stream flow of 30 %. Across the three GCMs maximum drops in the surface flow rates are expected for February and March (45 and 35 % respectively). A minor (\5 %) increase is expected in October and November. The three models projected that the net flow will drop by 22 % for the entire rainy season by the year 2080. This decrease will be particularly severe in the months of maximum peak flow (February and March), perhaps reaching as much as 35–40 %. Therefore, it is crucial to review Jordan's 2008-2022 National Water Strategy and take this into consideration when developing national and local (municipal) plans. Water for irrigation, in particular, represents 71 % of the water demand and 64 % of the water supply. According to Jordan's Water Strategy for the years 2008 to 2022 (MoWI 2009), the deficit in the available water resources was approximately 45 % in 2005, while the projected deficit in 2022 is expected to be around 30 %. This assumes that additional sources of water should be secured and exploited and some mega projects will be implemented. Such projects should include rainwater harvesting projects, greywater reuse projects and wastewater treatment for reuse projects. Furthermore, it is indispensable for Jordan to reconsider policies and strategies to assist the country adapt to the impacts of climate change and to reflect on these strategies and policies in the context of Jordan's National Water Strategy.

Based on these results, impacts of climate change are projected to raise **water deficits** in Jordan particularly in the northern part where the influx of refugee has worsen the situation. The considerable amount of data and information available from the climate modeling studies and vulnerability assessments described above will be thus the base for proposed municipality urban master plans at municipal level integrating climate and gender considerations to contribute to increasing resilience of such communities in line with SDG 5 and 13 and in coordination with other initiatives in the region such as the Enabling Communities for Climate Change Adaptation Planning :Understanding Gender Roles. Mainly Targeting SDG 5 and 13.

X

Wilby RL, Dawson CW (2004) Using SDSM Version 3.1 – a decision support tool for the assessment of regional climate change impacts. User Manual. 67 pp. http://unfccc.int/resource/cd\_roms/na1/v\_and\_a/Resoursce\_materials/Climate/SDSM/SDSM.Manual.pdf. Viewed 16 Oct 2013

# Lebanon climate change scenarios and vulnerabilities in project target area

#### Water Quantity Issue:

Human pressure on water resources has increased drastically since the 1970s, as confirmed by:

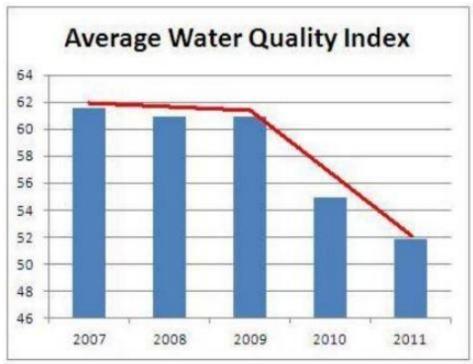
- Significant decrease in river flows, due to increased water withdrawals, through tapping of springs and direct pumping or diversion from the river for irrigation (personal purposes)
- Substantial groundwater depletion, due to extensive pumping both for domestic and irrigation needs.

As stated by National Council for Scientific Research (CNRS), the average annual discharge (mm3) in rivers and springs, namely the Litani river, from 1965 to 2015-17 (over 5 decades) decreased substantially, reaching up to 55%.

#### Water Quality Issue:

The quality of surface waters in the Litani River Basin varies seasonally and partially but is generally bad. Untreated wastewater discharges, both domestic and industrial, are one of the primary sources of pollution. According to the Litani River Authority (LRA), the average water quality index has been decreasing drastically since 2009.

Poor water quality is a serious public health issue. Water-borne diseases, worldwide, are one of the leading causes of mortality. The occurrence of Dysentery, Typhoid fever and Hepatitis A in the Bekaa is 7.5 annual cases per 10,000 residents, which is twice the national average (2009 statistics from the Ministry of Public Health). These are reported cases only, actual cases could be 5-10 times higher. 115



Average Water Quality Index (LRA)

Analysis of the state of water-quality deterioration and land degradation in the Litani River Basin (LRB) showed that the main sources of contamination in the basin imply a chaotic urban expansion with resulting loss of arable lands and pressure on water resources in terms of both quantitative and qualitative aspects. Dumping of dAnalysis of the state of water-quality deterioration and land degradation in the Litani River Basin (LRB) showed that the main sources of contamination in the basin imply a chaotic urban expansion

<sup>115</sup> Retrieved from Nassim Abou Hamad (Head of Water Governance Department at LRA): <a href="https://www.pseau.org/outils/ouvrages/office national du litani climate change effect on irrigation 2018.pdf">https://www.pseau.org/outils/ouvrages/office national du litani climate change effect on irrigation 2018.pdf</a> (p.9–10, 14)

with resulting loss of arable lands and pressure on water resources in terms of both quantitative and qualitative aspects. Dumping of domestic sewage into streams caused significant bacteriological contamination. A dangerous disposal of liquid and solid waste, including industrial and municipal waste, was observed, which put an increasing pressure on the chemical contamination of surface waters. The LRB represents the most intensive agricultural areas of the country, and thus poor agricultural practices result in the excess use of chemicals and accumulation of nitrates and soluble pollutants in the soil–water ecosystemomestic sewage into streams caused significant bacteriological contamination. A dangerous disposal of liquid and solid waste, including industrial and municipal waste, was observed, which put an increasing pressure on the chemical contamination of surface waters. The LRB represents the most intensive agricultural areas of the country, and thus poor agricultural practices result in the excess use of chemicals and accumulation of nitrates and soluble pollutants in the soil–water ecosystem. 

116

According to climate predictions from the PRECIS model, by 2040 temperatures will increase from around 1°C on the coast to 2°C in the mainland, and by 2090 they will be 3.5°C to 5°C higher. Rainfall is also projected to decrease by 10-20% by 2040 and by 25-45% by the year 2090, compared to the present. This combination of significantly less wet and substantially warmer conditions will result in an extended hot and dry climate. Temperature and precipitation extremes will also intensify. The drought periods, over the whole country, will become 9 days longer by 2040 and 18 days longer by 2090 (MoE, 2011). 117

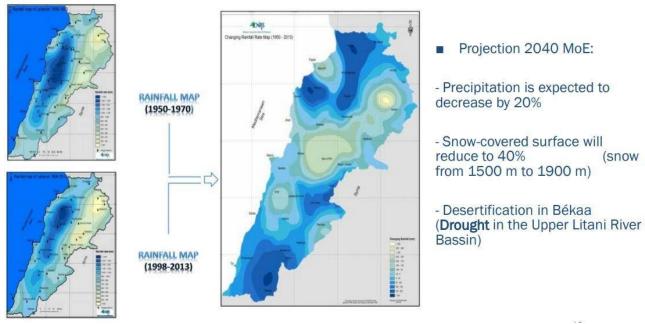
Table 3: Changes in temperature (Tmax, Tmin) and Precipitation (Prcp %) over Beirut, Zahle, Daher and Cedars from the PRECIS model for winter (DJF), spring (MAM), summer (JJA) and autumn (SON), 2025-2044

	7-	Beirut	Zahle	Daher	Cedars
D (0/)	DJF	-7,95	-23,50	-0,99	-1,82
	MAM	-8,60	35,50	-0,38	-15,50
Prcp (%)	JJA	-26,80	-84,20	-39,00	-49,80
	SON	-8,87	23,80	14,10	12,60
T <sub>max</sub> (degrees C)	DJF	1,08	1,23	1,92	1,77
	MAM	0,87	1,14	1,53	1,28
	JJA	2,15	2,14	2,28	2,13
	SON	1,48	1,64	1,67	1,70
T (1 0)	DJF	1,22	1,28	1,63	1,27
	MAM	0,90	1,09	1,36	1,06
T <sub>min</sub> (degrees C)	JJA	2,13	2,36	2,46	2,24
	SON	1,83	2,08	1,96	1,98

Obs. As changes from 2001-2010 averages Source: MoE (2011)

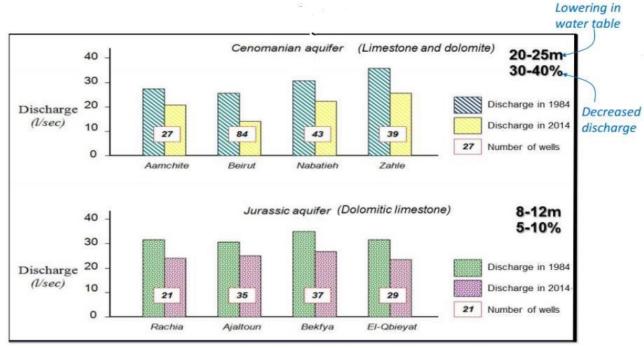
Retrieved from (2018 publication): <a href="https://www.researchgate.net/publication/324265200">https://www.researchgate.net/publication/324265200</a> The National Plan for Litani River Remediation

Retrieved from (2014 publication): <a href="https://www.aub.edu.lb/ifi/Documents/publications/working-papers/2013-2014/20140722">https://www.aub.edu.lb/ifi/Documents/publications/working-papers/2013-2014/20140722</a> Higher order CC.pdf (p. 10)



Climate projections: Rainfall quantities (LRA)

Overall, there is a tendency for more rapid warming at higher elevations and with distance from the coast. Warming is most pronounced in spring at coastal sites and for summer at locations inland. The largest reductions to annual rainfall are found for sites in the coastal zone, and within the Bekaa Valley, where changes could be in the range 10–30 percent by the 2050s and 20–50 percent by the 2080s. The Bekaa Valley was estimated to consume 1.5 times the annual ground and surface water replenishment, leading to declining groundwater tables (Irrigation in the Near East Region, 1996).



Groundwater depletion in the major aquifers; 245 boreholes (CNRS)

Approximately 8 percent of Lebanon's population—roughly 300,000 people—live under conditions of extreme poverty, meaning that they are unable to meet basic food and non-food needs (Laithy, Abu-Ismail, and Hamdan 2008). Poverty in Lebanon is mostly an urban phenomenon, with only 25 percent of people

living below the national poverty line being rural (International Fund for Agricultural Development 2003). Northern and southern Lebanon are the poorest regions, with the Bekaa Valley not far behind.<sup>118</sup>

Bekaa Climate Profile (WB	2011)119
Temperature Effects	The Bekaa region depends substantially on irrigation to grow crops, and the long dry summers commonly cause water shortages; The Bekaa Valley contains 46 percent of Lebanon's cultivated land (FAO 2011); pressure on the land base has led to a decline nationally in wheat production in favor of high-value crops such as vegetables; Apple, cherry, peach, and grape crops in the Bekaa region have been harmed by the higher temperatures, decreasing their yields.
Precipitation Effects	In Lebanon, agriculture uses 60–70 percent of the country's available water (Ministry of Environment (Lebanon) 2011); Lebanon is already experiencing substantial changes in water availability: Shaban (2009) estimates that rainfall and snow cover have decreased between 12 percent and 16 percent in the last 40 years, rivers and groundwater between 23 percent and 29 percent, springs by 43 percent, and local reservoirs by 79 percent;
Pests and Pathogen Management	There is limited monitoring of pests and relevant environmental conditions to inform pesticide applications, often resulting in applications at the maximum levels (Zeid 2007)
Effects of Livestock	Meat and milk from goats, sheep, and cows, are prevalent agricultural products in Lebanon, but are secondary to other forms of agricultural production (Asmar 2011). Goats and sheep are particularly concentrated in the Bekaa Valley. Effects of overgrazing and land fragmentation due to urban sprawl have decreased herd numbers. This decrease in grazing has subsequently led to increased biomass growth, and, with it, increased intensity and frequency of forest fires (Asmar 2011).

Retrieved from: <a href="http://documents.worldbank.org/curated/en/115381468249300050/pdf/Middle-East-Increasing-resilience-to-climate-change-in-the-agricultural-sector-of-the-Middle-East-the-cases-of-Jordan-and-Lebanon.pdf">http://documents.worldbank.org/curated/en/115381468249300050/pdf/Middle-East-Increasing-resilience-to-climate-change-in-the-agricultural-sector-of-the-Middle-East-the-cases-of-Jordan-and-Lebanon.pdf</a> (p. 10, 55–60) lbid.

#### **ANNEX 2: Project activities visualisation and target area maps**

Figure 17: Needs and proposed concrete interventions in Zahle and surrounding municipalities

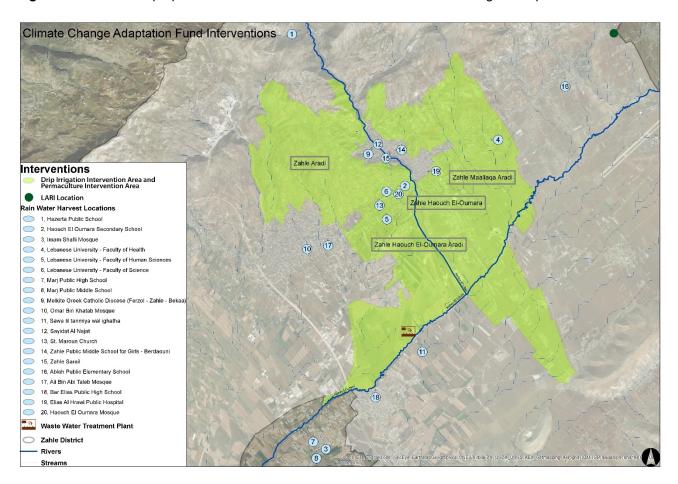
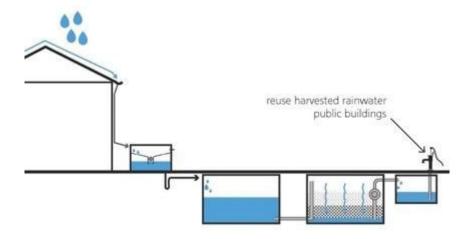


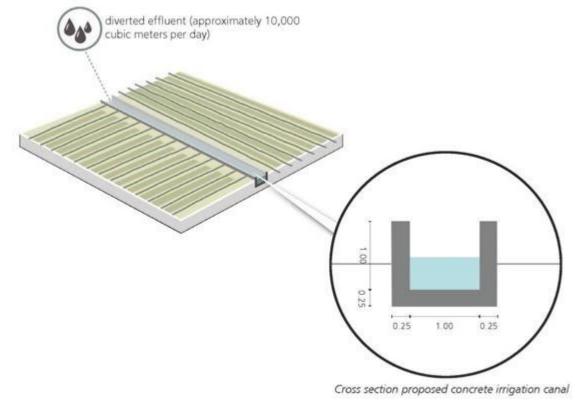
Figure 18: Schematic detail section of the Rainwater harvesting systems proposed for public buildings in the Bekaa area



**Figure 19:** Map showing the reuse of the Zahle Wastewater Treatment Plant (ZWWTP) effluent for irrigation through the instalment of a new open concrete irrigation canal



Figure 20: Schematic detail drawing of the proposed open concrete irrigation canal of the ZWWTP



**Figure 21**: Water-efficient irrigation: schematic detail drawing introducing drip irrigation for potato plantations instead of the existing mini-sprinklers in Bar Elias



**Figure 22**: Water-efficient irrigation: schematic detail drawing introducing drip irrigation for fruit trees and vineyards instead of the existing surface irrigation in Zahle

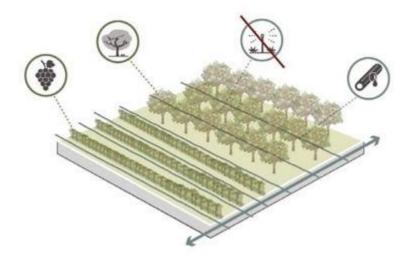
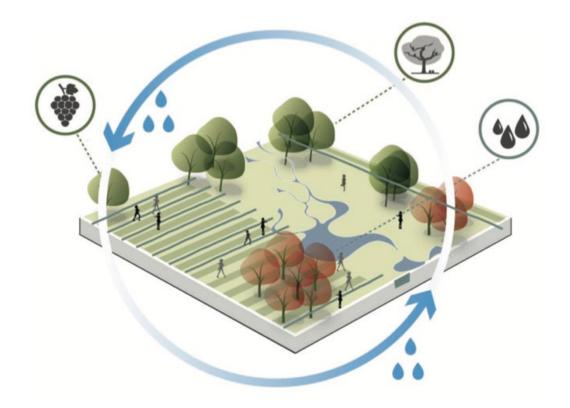
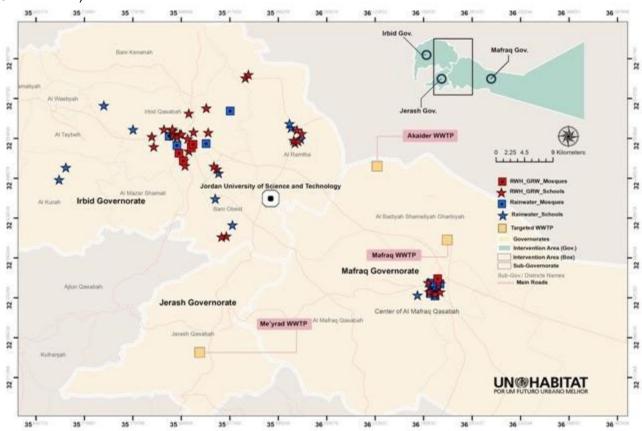


Figure 32: Permaculture demonstration site in Lebanon



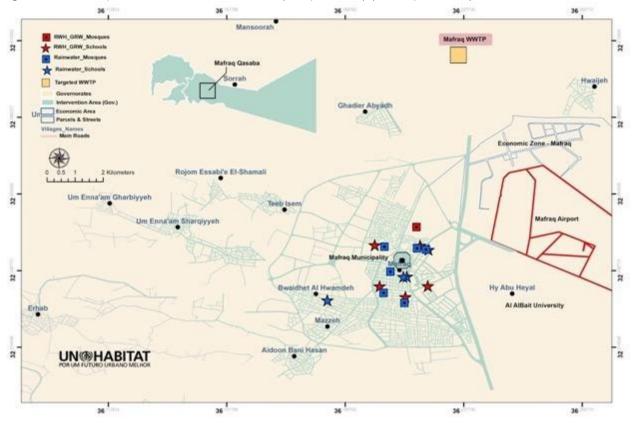
**Figure 23** : Proposed concrete interventions (component 3) in Jordan (Irbid, Mafraq and Jerash Governorates)



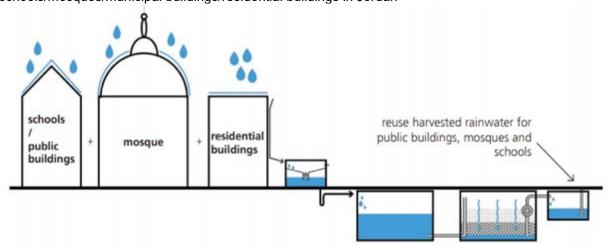
Al Marine Governorate

Figure 24 : Proposed concrete interventions (component 3) (Irbid Zoom-in)





**Figure 26** : Schematic detailed drawing of rainwater harvesting systems proposed for schools/mosques/municipal buildings/residential buildings in Jordan



**Figure 27** : Greywater treatment and reuse: schematic detail section for greywater treatment and reuse system in schools and mosques

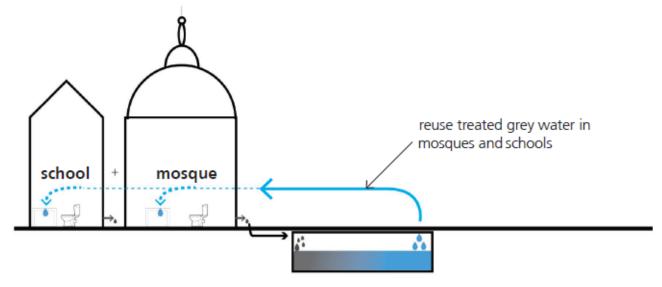


Figure 28 : Location maps for three existing WWTP in Jordan to be upgraded



Waste water treatment plant Akaidr



Waste water treatment plant Maered



Waste water treatment plant Mafraq

**Figure 29**: Water-efficient irrigation: schematic detail drawing introducing drip irrigation for farms in Mafraq and Jerash instead of the existing surface irrigation

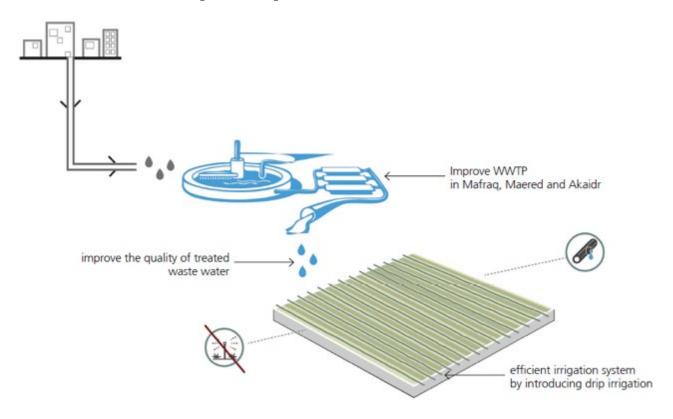
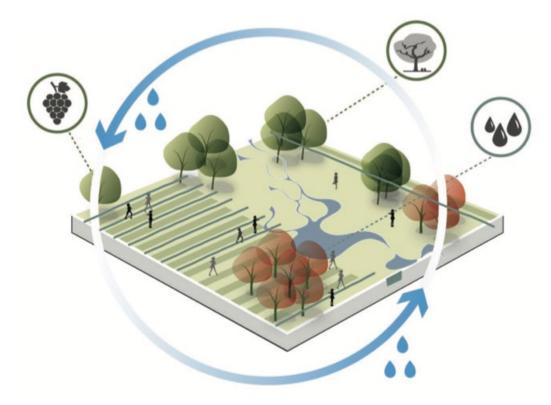
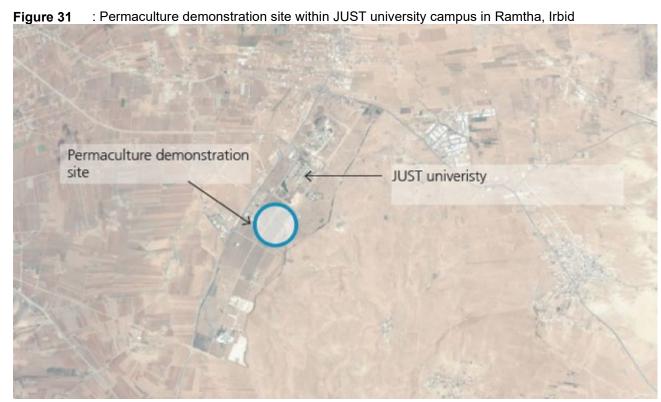


Figure 30 : Permaculture demonstration site





## ANNEX 3: Consultation outcomes, incl. for ESP and GP compliance

Table 32: Consultations conducted specifically to comply to AF ESP and GP						
Environ mental and social principle s	Required to comply to AF ESP and GP	Consulted	AF ESP and GP compliance			
Complia nce 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	Ministry of Environment (Leb) Ministry of Energy and Water (MoEW - Leb) Litany River Authorities (LRA – Under the Lebanese MoEW Leb) Lebanese Agriculture Research Institute (LARI – Affiliated to the Lebanese Ministry of Agriculture (MoA)) Council for Development and Reconstruction (Leb) Ministry of Environment (Jord) Ministry of Water and Irrigation (Jord) The Ministry of Awqaf Islamic Affairs and Holy Places (Jord) Ministry of Education (Jord)	Relevant laws and how to comply have been identified (see section II.F)			
Access and Equity	Identify needs and potential issues and concerns related to proposed project actions	Beneficiary groups, including women, youth, Syrians and farmers  UNHCR;	Detailed stakeholder mapping has been conducted  Consultations with vulnerable groups have been conducted  Detailed stakeholder			
Marginali zed and Vulnerab le Groups		Beneficiary groups, including women, youth, Syrians and farmers	mapping has been conducted  Consultations with vulnerable groups have been conducted  UNCHR has been consulted to understand specific needs and possible concerns of DPs			
Human Rights		OHCHR;  Beneficiary groups, including women, youth, Syrians and farmers	Detailed stakeholder mapping has been conducted  Consultations with vulnerable groups have been conducted  UN-Habitat checked what core human rights have been ratified; OHCHR has been consulted to identify possible project human rights risks			
Gender Equity and Women's Empowe rment		UNICEF; UN Women; Beneficiary groups, including women, youth, Syrians and farmers	Detailed stakeholder mapping has been conducted  Consultations with vulnerable groups have been conducted			

	Т	T	115134
Core Labour Rights		ILO; Beneficiary groups, including women, youth, Syrians and farmers	UN Women and UNICEF have been consulted to understand specific needs and possible concerns of DPs. A gender baseline and approach has been developed based on a gender assessment Consultations with vulnerable groups have been conducted  UN-Habitat checked what core Labour rights have been ratified; ILO has been consulted to identify possible
			risks of non-compliance to
Indigeno us		Detailed stakeholder mapping has been conducted	Core Labour Rights Some Bedouins are now official Lebanese and
Peoples Involunta		Municipalities;	Jordanians Resettlement will be avoided
ry Resettle ment		Beneficiary groups, including women, youth, Syrians and farmers	in all cases. All proposed activities are on public land or at building level where management / owners have agreed with the intervention
Protectio n of Natural Habitats	Identify any protected areas in target area	IUCN	UN-Habitat checked the IUCN Red list and consulted with IUCN regional office
Conserv ation of Biologica I Diversity	Identify potential endangered species in target area	IUCN	
Climate	Identify potential emissions	Risks screening and impact assessment	ESIA, ESP and consultation
Change Pollution Preventi on and Resourc e Efficienc	from proposed interventions Identify if considered interventions will use large quantity of energy	studies, including public hearings / consultations with vulnerable groups	reports have been developed by accredited national consultants; these are in the process of being approved by the ministries of environment
У			Energy use (for e.g. wastewater treatment systems) will be compensated with PV
Public Health	Include specific questions in vulnerable groups survey	Beneficiary groups, including women, youth, Syrians and farmers	All interventions will support clean water supply in accordance with international standards; health risks mitigation measures are taken
Physical and Cultural Heritage	Identify heritage sites Include specific questions in vulnerable groups survey	UNESCO website	No heritage sites have been identified in close to proposed project activities areas
Lands and Soil Conserv ation	Map any fragile and valuable lands in target area	IUCN; studies	Proposed interventions will support sustainable land/ soil use and avoid degradation

 Table 33: Detailed overview of consultations conducted.

Stakeholder	Consultation objective		Incorporation into project design	Evidence
Ministries				
Samar Malek Acting Head of Service Environmental Technology Ministry of Environment (MoE) Lebanon	Align with government (ministry) priorities Avoid duplication with other projects (ministry projects) Confirm approach and focus is in line with priorities	MoE supports project on water focused in water harvesting and waste water reuse Zahle area is in high need but also complex environment If integrated water management approach / local adaptation plans are possible that would increase water use efficiency and better understanding and matching of demand and supply Lessons (for replication) from city level climate change adaptation options are very much needed in the region and this project could be an important contribution	Focus on water supply of most vulnerable through water harvesting and waste water reuse Explore feasibility and buy-in of local integrated water management approach / local adaptation plans to better match demand and supply while taking into consideration climate change projections and impacts (e.g. change in water availability from snow)	Date: multiple times since 2018 Technique: discussion and SC meetings
Randa Nemr Advisor to the minister Ministry of Energy and Water (MoE) Lebanon	Align with priorities and needs of the ministry Mapping of relevant projects and lessons learned Understand mandates	Main priority (National water master plan) is waste water reuse because far behind on targets Water harvesting is possible when fit Connection waste water reuse to agriculture would be efficient but would require a detailed irrigation study	Focus on water supply through water harvesting and waste water reuse in target area in line with National water master plan Identify options for connecting waste water reuse to agriculture	Date: multiple times since 2018 Technique: discussion and SC meetings
Youssef karam Irrigation, water, sewage & infrastructure department manager  Council for development and reconstruction CDR Lebanon	Align with priorities and needs of the ministry Mapping of relevant projects and lessons learned Understand mandates	Priority of ministry of water is to construct dams to profit from water Projects with small check dams, to harvest and irrigate water, which is possible in Zahle area, is needed Water from Zahle waste water treatment plant can be used for agriculture irrigation; however, irrigation study is needed Studies required for project: impact of snow melt, impact of more rain in less time	Sub-projects with small check dams, to harvest and irrigate water in Zahle (also identified my mayor) Water from Zahle waste water treatment plant can be used for agriculture irrigation. Irrigation study is needed Studies within project: impact of snow melt, impact of more rain in less time	Date: multiple times since 2018 Technique: discussion and SC meetings
Dr Ahmad N. Abdel-Fattah General manager (AF project in Jordan)	Identify lessons learned from AF project Coordinate with MOPIC	Permaculture approach is promising as adaptation measure, also in urban context  No national initiative for rooftop harvesting in Jordan while top priority in TNA – explore option for cooperation with water authority and municipality to set-up nationa programme with cost-sharing and possible tax measures to promote rooftop water harvesting  Awareness raising required, e.g. at schools	Permaculture in urban context and in farms considered as option Explore options to set-up national initiative for rooftop rainwater harvesting, including on schools	Date: 18-11-2018 + follow-ups Technique: discussion

Colin Gleichmann Head of Environment & climate portfolio  Rahel Hermann Project manager  GIZ (in Ministry of Environment Jordan)	Mapping of relevant projects and lessons learned Understand priorities in forthcoming NAP which is being developed by GIZ	Emerging issue and mentioned in forthcoming NAP are pressure of refugees on water services and floods	Refer to NAP in proposal	Date: 18-11-2018 Technique: discussion
Ms. Dina Kisbi, Director of Climate Change Directorate Ms. Sarah Al Haleeq, head of Adaptation Section, And Mr. Bilal Shaqareen Ministry of Environment	Align with priorities and needs of the ministry Mapping of relevant projects and lessons learned Understand mandate and role	MoEnv is currently working on NAP with GIZ Water harvesting is a top priority in the TNA There is a lack of land use management plans that take into consideration climate change Building codes is not compatible with climate change	Refer to NAP in proposal Scale up rooftop rainwater harvesting Mainstream climate change adaptation into local spatial plans. Review building codes and incorporate rooftop rain water harvesting.	Ministrator of Environment  Dina Yahya Kisbi  Director of Climate Change Directorate  161, 962 6 5560113  Mos 962 77 74997945  Date: 24-10-2018  Technique: discussion
Eng. Mohammad Al Dwairi, Acting Secretary General Assistant for Strategic Planning, and and Mr. Adel Alobeiaat and Dr. Basim Hassan, Strategic Planning Specialist.  Ministry of Water& Irrigation	Align with priorities and needs of the ministry Mapping of relevant projects and lessons learned Understand mandate and role	Priority of ministry of water is to focus on rainwater harvesting. Focus on water efficiency and invest in rainwater harvesting in remote areas and from rooftops. The Ministry is currently working on drought assessment.	Rooftop rainwater harvesting at household level and in farms considered as option. Identify options to incorporate water saving devices and raise public awareness.	Eng. Mohammad AL Dwairi, Acting Secretary General Assistant for strategic Pt Ministry of Water& Irrigation 07 7574 4046  Date: multiple times since 2018 Technique: discussion and SC meetings
Ms. Dalal Eliwah Study and Design Manager- technical Affairas, Yarmouk Water Company	Align with priorities and needs of the Yarmouk Water Company Mapping of relevant projects and lessons learned Understand mandate and role	Complement the needs of YW projects current and future projects Contribute in reduction water demand of YW beneficiaries through providing additional water supplies resources	Increase rain water harvesting from rooftops Increase the use of Water Saving Devices to conserve precious water resources Enhance regular use of greywater treatment and reuse in public buildings to relief increasing demands on fresh water resources.	Engineer Dalal Eliwah  Study & design manager - Technical affairs Yamouk Water Company  Matter company  Date: multiple times since 2018 Technique: discussion and SC meetings

Eng. Lamia Sharif Al- Qawasmeh, Director of Planning and Development Department, previously Ministry of Municipal Affairs (MoMA), now, Ministry of Local Administration (MoLA)	Align with priorities and needs of the ministry Mapping of relevant MSSRP projects funded by the WB and lessons learned Understand mandate and role	Urban flooding is an issue in municipalities Coordinate to avoid possible duplications of actitivities, e.g. constructing box culverts in Mafraq Follow up on Innovation Fund outcomes in order to avoid \ complement and align the activities of the two projects (i.e. MSSRP and AF-Project)	Rehabilitation of exsiting water collection system such as existing ponds which colelcts runoff water from wadis and streets during winter time. Follow up on the relevant outcomes of the needs guide being prepared by the MSSRP.	Eng. Lamile Sharif Al-Qawameh  Addisor to N.E. The Minister  Develor of Parameter and
Dr. Sami Alawiyeh Chairman/ General Manager of LRA (Lebanon)	Align with priorities and needs of LRA combatting pollution on the litany River Mapping of relevant projects and lessons learned, esp benefits to the surrounding ecosystem and agriculture Understand mandates	High discharge of waste water, industrial waste and other wastes into Litany River  Farmers pumping sewage water to irrigate crops around the river  High violations on the river banks  River buffer zone 200m from its banks	Constructed Wetlands in Bar Elias on plots owned by LRA	Dr. Sami Alawieh Charman / General Manager  SmitFax + 961-3-666 661-2-3-4 Mobile + 961-3-612 7116 Enalt general director/(intant gov.th)  Date: 05-12-2019
Ihab Jomaa, PhD  Head of the Department of Irrigation and Agrometeorology at the LARI (Lebanon)  UN agencies (relevant project	Align with priorities and needs of the MoA Mapping of relevant projects, trainings for farmers, and lessons learned Understand mandates	Efficient irrigation techniques are often misused by farmers Involvement in crops testing and experiments and farmers training (LARI releases new varieties of wheat and barley after testing them to climate conditions on a yearly basis to the market)  No national guidelines for wastewater reuse, using FAO 2010 instead.  Farmers do not pay for irrigation water	Efficient irrigation techniques for potato crops  Efficient irrigation techniques for fruit trees  Capacity building for farmers cooperatives  Confirm permaculture standards and application  Other virtual meeting during COVID-19 lock down	Date: 05-12-2019  Date: 06-02-2020

Olivier Thonet Chief of WASH UNICEF Lebanon	Mapping of relevant projects and lessons learned Understand needs and issues in target area Consultations for AF ESP and GP compliance (gender assessment) Discuss possible cooperation /	UNICEF follows MoE (National water master plan) and municipal needs to increase connections of settlements to water resources, especially ground water wells UN-H can complement UNICEF work with focus on climate change adaptation in target area	Compliment UNICEF work in target area by focus on water harvesting and reuse and consideration of climate change	Date: multiple times since 2018 Technique: discussion and SC meetings
Jose A. Gesti canuto Chief of WASH UNICEF Jordan	coordination	UN-H can complement UNICEF work with focus on climate change adaptation in target area UNICEF possible executing partner		Date: multiple times since 2018 Technique: discussion and SC meetings
Renata Raad WASH Officer UNHCR Lebanon	Mapping of relevant projects and lessons learned Understand needs and issues in target area Consultations for AF ESP and GP compliance (equall access, vulnerable groups and human	Important to have a community approach to avoid social tension over water resources (equal access)  UNHCR has specific focus on women headed households, children without care and disabled  Water supply project require risk mitigation measures on waste and soil (to have access to water in environmentally friendly way) and water rights (since these are not clear UN-H can complement UNHCR work with focus on climate change adaptation	Design project so it avoids risks related to social tension over water resources, pollution and environmental unfriendly use (waste and soil) and water rights Consider needs women headed households, children and disabled	Date: 06-11-2018 Technique: discussion
Vincent Dupin Senior technical officer Roelof Wentzel WASH offcer UNHCR Jordan	rights approach) Discuss possible cooperation / coordination	UNHCR has relevant refugee vulnerability profile related to livelihood and shelter Issue identified: municipality has challenges providing enough water in dry season Possible innovative technique: easy to dismantle and to be shipped to other location waste water treatment plant (in container)	Explore option of using possible innovative technique: easy to dismantle and to be shipped to other location waste water treatment plant (in container) – relevant for uncertain urbanization, e.g. with influx and departure refugees	Date: 18-11-2018 Technique: discussion
Vahakn Kabakian AF focal point, also working for UNDP UNDP Lebanon	Mapping of relevant projects and lessons learned Understand needs and issues in target area	Focus on water supply of most vulnerable through water harvesting and waste water reuse	Focus on water supply of most vulnerable through water harvesting and waste water reuse	T& A

				Date: 09-11-2018 Technique: discussion
Nedal M.Al-Ouran Head of env. CC and DRR portf UNDP Jordan		GCF proposal under review – other geographic focus but UNDP and UN-H will coordinate proposal development UNDP is piloting rainwater harvesting in public building Suggest to identify unused or not properly used already existing water harvesting systems and make better used of these	Include focus on identifying unused or not properly used already existing water harvesting systems (make better use of them) Conduct educational awarenss programmes on climate related-water issues Promote non-conventional water options and focus on alternastive water sources such as grey water. Contact and involve governance councils and boost their decentralisation role Benefit and disseminate indigenous knowledge on water harvesting.	Date: 19-11-2018 Technique: discussion
Nasredin Hag Elamin Representative in Jordan Talal Al-Fayez Programme expert FAO Jordan	Mapping of relevant projects and lessons learned Understand needs and issues in target area Consultations for AF ESP and GP compliance (lands and soil conservation)	FAO to share study on existing and potential water harvesting locations in Jordan FAO to share best practice on water harvesting options in Mafraq	A sub-sector strategy for water harvesting is needed to ensure the continued development of this alternative in a way that is effective and sustainable.  Developing a sub-sector strategy on water harvesting and ensure equitable approach that benefits all groups.  Diversify agricultural water supply and to improve agricultural water security. Water harvesting could be particularly useful in Mafraq Region for supporting the cultivation of fodder crops, given the existing importance of livestock in the area.	Date: 19-11-2018 Technique: discussion
Sarah El jamal Programme officer Regional office for Arab States ILO Lebanon	Mapping of relevant projects and lessons learned Understand needs and issues in target area Consultations for AF ESP and GP compliance (core labour rights)	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	Refer to core labour rights, technical conventions for safety and health and CBA in any contract Ensure safety and health measures are taken during project (especially for women and DPs) and are inspected during project Coordinate with ILO on skills needs and ILO projects	Date: 16-11-2018 Technique: discussion

Patrick Daru Country coordinator		Main potential issue / risk in Jordan: Convention 81 – labor inspection convention. Although ratified		
ILO Jordan		there is limited inspection capacity Increase in child labor (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)		Date: 19-11-2018 Technique: discussion
Faten Tibi Programme Manager Women and Youth Empowerment Programme in Host communities  UN Women Lebanon + Syria	Mapping of relevant projects and lessons learned Understand needs and issues in target area Consultations for AF ESP and GP compliance (gender assessment)	Many women (incl. Beduin) work in agriculture + food processing. Men work in agriculture, transport and markets Education of women is in general more modest than men Syrians only work in agriculture (allowed) In women empowerment project there are no issues between Syrian and Lebanese women Need to ensure secure / safe environment (i.e. protection) for women during work since gender-based violence can still be an issue in the region	Consider women roles in agriculture and water handling when designing the project Ensure women protection measures are in place for the project (when needed)	Date: 08-11-2018 Technique: discussion
Hazar Asfoura Programme Analyst, Women's Economic Empowerment Resileince and Empowerment Unit.  UN Women Jordan		Many women are working in agricultural sector in Jordan and thus affected by water scarcity.  Due to water scarcity women who are engaged in agriculture sector are moving from one place to another following water availability  Water scarcity is one of the reasons that prevent women from getting decent working opportunities in agricultural sector.  Rural women's existing theoretical knowledge and understanding of climate change and adaptation remain limited, impeding their ability and willingness to act and find long term adaptive solutions. When asked about the services they would like better access to, only 25% of Women reported wanting better access to water compared to 37% of men. This is mainly influenced by gendered household roles.	Raising rural women's awareness on conservation techniques and climate change processes, proper greywater re-use and water harvesting techniques to strengthen climate-change adaptation processes.  Strengthening rural women's leadership capacities so that they better engage in adaptive responses to climate change. fostering rural women's capacities to act and make significant achievements in adapting to climate change	Date: 30-12-2018 Technique: Discussion

			<u>,                                      </u>	
Mazan Shaqoura Deputy regional representative OHCHR Lebanon	Mapping of relevant projects and lessons learned Understand needs and issues in target area Consultations for AF ESP and GP compliance (human rights)	Jordan and Lebanon have both not ratified core Human right 120 W - 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) HAVE EQUAL ACCESS TO WORK OPTIONS AND ARE EQUALLY TREATED / REWARDED.	Include measures and clauses in contract to ensure on the left	Date: 16-11-2018 Technique: discussion
Ali Hayajneh Water and CC programme IUCN regional (Lebanon and Jordan)	Mapping of relevant projects and lessons learned Understand needs and issues in target area Consultations for AF ESP and GP compliance (natural habitats, biodiversity and soils)	IUCN is developing water security action plans at municipal level IUCN helped to identify potential (sub-project risks related to natural habitats, biodiversity and fragile soils in target areas Irbid and Mafraq are located within two eco-regions, there is one national designed protected area in Irbid (Yarmouk forest reserve) and there are some important bird areas Zahle district and surrounding municipalities are part of two eco-region. Zahle distract includes 5 Hima areas; Kafer Zabad 20km2, Anjar 20km2, Kherbet kanfar 21.4km2, Ainzebde5.5Km2, Tarshish 10km2, these area are important for the local communities as they provide a common practice of grazing and Agriculture production. There are also some important bird, mammal and flora areas close-by	The target areas are located in ecoregions with some vulnerable protected areas and animals. Proposed interventions are planned in urban areas and are expected to don't negatively interrupt these because of limited disruption of water flows (of seasonal streams) and land / soil interventions. However, during the full proposal, this will be studies and assessed in detail.	Date: 19-11-2018 Technique: discussion
Sally Zgheib Water supply & sanitation specialist;  Amal Talbi Senior Water Resources Management Specialist  Shafick Hoossein Head of Environment and natural resources of Mashreq regions (Washington D.C)  World Bank	Mapping of relevant projects and lessons learned Understand needs and issues in target area Discuss possible cooperation / coordination	Ensure to avoid social tension between groups and areas, also by understanding impact on interventions upstream and downstream – use intergrated water management approach Using treated waster water from Zahle plant is a good option to increase water use efficiency.	Avoid social tension and negative impacts of interventions through impact assessment (full proposal) Use intergrated water resource management approach if agreed by national government and local authorities	Date: 08-11-2018 Technique: discussion

<sup>120</sup> https://www.ohchr.org/EN/Countries/MENARegion/Pages/JOIndex.aspx

Mirage for Waste Management & Environmental Services Zahle waste water treatment plant operator. Lebanon	Understand needs and issues in target area and how waste water can be used for agriculture	Waste water is currently being directed to Litani river but could be used for agriculture, especially in low(er) lying areas to avoid much pumping Feasibility waste water reuse for agriculture depends on crop and level of treatment	Design option for waster water reuse from Zahle waste water reuse plant for agriculture use and specific type of crops (fruit)	Date: multiple times since 2018 Technique: discussion and SC meetings
Aya Housheimi  WASH Coordinator – Zahle-Lebanon Norwegian Refugee Council Lebanon	Mapping of relevant projects and lessons learned Understand needs and issues in target area Consultations for AF ESP and GP compliance (human rights and ILO standards and approach for Syrian refugees)	The refugees rely on agricultural boreholes and shallow boreholes for household water supply. Due to drought those boreholes are getting drier, and more contaminated. Diseases, as a result of lessened personal hygiene, and household hygiene.  Safety Protection Risks: Refugees, mainly women and children, travel long outside ITS looking for other water resources, which puts them in danger.	Rain water harvesting	Date: 07-12-2018
Steering Committee Meetings Lebanon (MoE representative, MoEW representative, UNICEF, UN-Habitat and Consultant)	Align with priorities and needs of the ministries Mapping of relevant projects and lessons learned Understand mandates	Farmers not paying for the treated waste water usage Proper O&M of the Zahle WWTP Irrigation guidelines still not issued, currently being developed between MoEW and LIBNOR	Physical interventions cleared	State of the company

## ANNEX 4: ESP annex, incl. ESMP

#### Content:

- **1.1.** Introduction, purpose, method, project overview / summary of project risks management approach
- **1.2.** Risks screening and categorization
- **1.3.** Environmental and social impact assessment (quantification)
- **1.4.** Environmental and social management plan, including monitoring

#### 1.1. Introduction, including summary description of the project/ programme

#### Introduction

Social and environmental policies are essential tools to prevent and / or mitigate undue harm of projects and project activities to people and their environment. In line with the Adaptation Fund's ESP and UN-Habitat's Environmental and Social Safeguard Policy (ESSP), UN-Habitat and partners are required to categorize the risk of the project as a whole and to manage potential risks and impacts.

#### **Purpose**

The purpose of this 'ESP annex' is to demonstrate (in an overview) how this project complies to the AF ESP. The annex shows what potential environmental and social risks and co-benefits and opportunities have been identified per project activity, the potential impacts of the risks and how these will be managed. This proposal and related country-specific ESIA-ESMP and consultation reports are being published on UN-habitat ROAS website: <a href="https://unhabitat.org/af-lebanon-jordan">https://unhabitat.org/af-lebanon-jordan</a>

#### Methodology

To ensure compliance with the AF ESP, all proposed project activities have been screened against the 15 AF principles (i.e. safeguards) to identify potential environmental and social risks and to assess related potential impacts. Where risks have been identified, impact assessments have been conducted and where needed, measures to avoid or mitigate risks and impact, identified (+ monitoring arrangements)

In both Jordan and Lebanon, risks screening sheets have been completed for each proposed project activity. Besides that, in both countries, accredited consultants prepared country-specific ESIAs, ESMPs and consultations reports in compliance with the AF ESP and GP and national requirements for conducting ESIAs. **Details in these reports, including risks mitigation measures, will be integrated in (sub)project execution plans, including for construction, operation and maintenance**. Below shows an overview / summary of these report (most important findings) and the outcomes have been consolidated in the proposal, including in the budget. The country specific ESIAs, ESMPs and consultations reports are available through above website. The completed risks screening sheets for each project activity are available on request.

Data and analysis are provided based on collected disaggregated data focused on identification of climate change related needs, limitations, constraints and requirements specific for marginalized and vulnerable groups, especially of women and youth. Activity prioritization and the identification and verification of potential risks and impacts and, where needed, identification of measures to avoid or mitigate potential risks have been done with project beneficiary groups (through community surveys, focus groups discussions and community planning and decision-making processes during project preparation).

## Overview / summary of project risks management approach

**Table 34** overview / summary of project risks management approach.

ESP principle	Initial environmental or social risks present as per table in Part II.L Y/N	Impacts assessment	Safeguard measures	Monitoring indicator(s)	Baseline condition for each monitoring indicator
1 - Compliance with the law	No				
2 - Access and equity	No				
3 – Marginalized and vulnerable Groups	No				
4 – Human rights	No				
5 – Gender equality and women's	No				
empowerment					
6 – Core labour rights	No				
7 – Indigenous peoples	No				
8 – Involuntary resettlement	No				
9 – Protection of natural habitats	No				
10 – Conservation of biological diversity	No				
11 – Climate change	No				
12 – Pollution prevention and resource efficiency	Yes. Pollution. On-plant accidental spills, overflows, seepages and discharges of wastewater treatment may contaminate soil, groundwater or surface water from WWTP	Spills, overflows and seepages are at plant level and can be contained there	Carry out regular inspections and routine tests to avoid spills, overflows, seepages and discharge of low-quality water (see also water quality testing below); include detailed risks mitigation measures identified in country-specific ESIA-ESMP reports in construction, operation and maintenance plans;	Monitoring of wastewater handling and possible spills, overflows and seepages. Construction and O & M report addressing above	Check standards for water quality, treatment and construction
13 – Public health	Yes. Safe water: water quality from RWH and GWTR systems may not comply to standards	Jordan: 86 RWH and 40 GWRT systems with following direct beneficiaries: 52,855  Lebanon: 20 RWH systems with following direct beneficiaries: 8,753	Rainwater collected will be treated using sand and carbon filter, a micro filter, and chlorine. This will ensure water quality compliance. Note that tap water is not used for drinking or cooking. Water and roofs will be regularly monitored, especially at the start of the rainy season; Filter will be changed annually, as per supplier recommendation. The chlorine tank should not be empty so there will be no pumping of air that impacts water quality; Students and building staff will be made aware (through	Water quality monitoring complying to standards; Awareness raising campaign; O & M (training) reports with attendance lists and photos; checking of filters and chlorine tank	Water quality check (compliance to tap water quality standards)  Check filters and chlorine tank

	Yes. Safe water: treated waste water used for irrigation may not comply to quality standards / unmonitored irrigation water may reduce quality of crops; also covid-19 may be detected in water entering the treatment facility	Jordan: Extra from Maerad WWTP: storage tank with a capacity of 3,000m3 Exra from Al Kaider: Storage tank with a 2,000m3 Extra from Mafraq: 9,000 m3 Lebanon: From Zahle WWTP:	curriculum) of requirements of using water + involved in operation and maintenance; Remote monitoring systems will be installed Although the project intervention aims to increase the quality of water for irrigation, regular testing of water quality, incl for covid-19 is required and irrigation will only begin after testing; Farmers will be made aware of requirements for use + involved in operation and maintenance;	Water quality monitoring of the effluent from the WWTP . The level of treatment is tertiary. This needs to be checked on a regular basis.	Water quality check (compliance with FAO guidelines for irrigation)
		18,000 m3			
14 – Physical and cultural heritage	No				
15 – Lands and soil conservation	No				

#### 1.2. Screening and categorization

Based on the screening against the 15 AF principles, the project has been categorised as a "B" category project in terms of the environmental and social risks it poses. See Part II.L

According to the Jordan's EIA Regulations, particularly the EIA By-Law No. 37 of the Year (2005), the project has been categorized as "Category III" project, which imply that the proposed interventions in Jordan have no considerable risks or adverse impacts, thus not requiring full EIAs. This is due to the fact that all of the construction activities and installations of proposed sub-projects are not substantial and will be constructed or installed in already built and operating facilities, such as fully-functioning WWTPs, which at the time of original construction have been subjected to MoEnv's incumbent EIA regulations and supervision. However, although no impact assessments were required by national law, a full ESIA and ESMP report has been developed for the proposed project activities / outputs in Jordan, accompanied by a consultations report.

According to Lebanese decree 8633 MoE, 2012, Annex 1, the proposed project activities / outputs don't required full EIAs, Similarly to Jordan, all of the construction activities and installations are not substantial and will be constructed or installed in already built and operating facilities. To comply to the AF requirements, risks screening and impact assessments have also been conducted for all proposed project activities.

For an overview of project activities' screening results against the 15 AF principles see table below. For details, see the next section.

Detailed outputs / activities	Risk screening result	Explanation why triggered or not
Component 1: Increasing the resilience of municipal governments: Manage urban risks and vulnerabilities in the (population) growth, incl. from DPs migration	e context of climat	te change, esp. water scarcity challenges, and urban
Territorial planning and development strategy / guidelines at district level with climate change and gender mainstreamed (Lebanon)	No risks identified	Activities involve assessment and planning processes. Potential risks considered are those related to unequal access and equity
Urban master plans at municipal level with climate change and gender mainstreamed (Lebanon)		also for vulnerable groups and gender, throughout the assessment and planning processes and identification of gende sensitive action plans.
Urban master plans at municipal level with climate change and gender mainstreamed (Jordan)		However, the execution entities involved will be required to involve beneficiary groups, including identified vulnerable group (and women and youth) in the activities. Targets and quotas will be used. These will be verified during the project inception phas with execution entity specific baseline and targets and action plans, also to involve women and youth and other vulnerable groups.
Component 2: Increasing the resilience of citizens (DPs and host communities): Improve awareness, ownershi replicate resilient water harvesting, supply and irrigation systems	ip and capacities to	o respond to climate change, incl. to operate, maintain and
Community organization, awareness and capacity building + operation, maintenance and replication / upscaling plans for concrete adaptation output 3.1: Rooftop Rainwater Harvesting in Lebanon	No risks identified	Activities involve awareness raising and capacity building activities. Potential risks considered are those related to unequa
Community organization, awareness and capacity building + operation, maintenance and replication / upscaling plans for concrete adaptation output 3.1: Rooftop Rainwater Harvesting in Jordan		access and equity, also for vulnerable groups and gender.
Community organization, awareness and capacity building + operation, maintenance and replication / upscaling plans for concrete adaptation output 3.3: Grey Water Treatment and Reuse in Jordan		However, the execution entities involved will be required to involve beneficiary groups, including identified vulnerable group.
Community organisation, awareness and capacity building + operation, maintenance and replication and upscaling plans for concrete adaptation output 3.4 : Efficient treatment and reuse of wastewater from Zahle WWTP, in Lebanon		(and women and youth) in the activities. Targets and if needed, quotas will be used. These will be verified during the project
Community organization, awareness and capacity building + operation, maintenance and replication and upscaling plans for concrete adaptation output 3.5: Efficient treatment and reuse of wastewater in Jordan		inception phase with execution entity specific baseline and targets and action plans, also to involve women and youth and
Community organization, awareness and capacity building + operation, maintenance and replication and upscaling plans for concrete adaptation output 3.6: Water-use-efficient irrigation of treated wastewater for fruit trees in Lebanon		other vulnerable groups.
Community organization, awareness and capacity building + operation, maintenance and replication and upscaling plans for concrete adaptation output 3.7: Water-use Efficient irrigation of treated wastewater from Maerad and Al Kaider WWTPs in Jordan		
Community organization, awareness and capacity building + operation, maintenance and replication and upscaling plans for concrete adaptation output 3.7: Water-use Efficient irrigation of treated wastewater from Mafraq WWTP in Jordan		
Community organization, awareness and capacity building + operation, maintenance and replication and upscaling plans for concrete adaptation output 3 .8; permaculture demonstration		
Community organization, awareness and capacity building + operation, maintenance and replication and upscaling plans for concrete adaptation output 3.9; permaculture demonstration		
Component 3: Increasing the adaptive capacity of the water sector: Expand unconventional water harvesting, satisfactors for the context	supply and irrigation	on options, using innovative and replicable techniques
Rooftop rainwater harvesting in Lebanon	Potential health risk (AF 13)	Safe water: water quality from RWH and GWTR systems may not comply to standards

Rooftop rainwater harvesting in Jordan  Greywater treatment and reuse in Jordan	(with some linkage to pollution prevention (AF 12)	
Efficient treatment and reuse of wastewater from Zahle WWTP, in Lebanon  Efficient treatment and reuse of wastewater in Jordan (Maered WWTP)	Potential health risk (AF 13) (with some	Safe water: water used for irrigation may not comply to quality standards / unmonitored irrigation water may reduce quality of crops. Also covid-19 may be detected in water entering the
Efficient treatment and reuse of wastewater in Jordan (Al Akaider WWTP)	linkage to pollution prevention (AF	reatment facility  Pollution: there is a small risk of contamination of soil,
Efficient treatment and reuse of wastewater in Jordan (Mafraq WWTP)	12)	groundwater or surface water from on-plant accidental spills, overflows, seepages and discharges.
Water-use-efficient irrigation of treated wastewater for fruit trees in Lebanon from Zahle WWTP, Lebanon	No risks identified	Activities mainly involve installing water efficient irrigation systems. The source of water will come from activities under
Water-use Efficient irrigation of treated wastewater from Mearad and Al kaider WWTP		outputs above, so potential risks related to safe water are handled under above outputs. Under comp 2, target communities will be organised and involved.
Water-use Efficient irrigation of treated wastewater from Mafraq WWTP, Jordad	]	
Permaculture demonstration – efficient water use system	No risks identified	Activities are very localised at JUST site LARI presemises and other private farms premsies
<b>Component 4:</b> Improving knowledge and policies and regulations to increase urban resilience in the region: Pr vulnerabilities management model in the context of climate change and urban (population) growth (incl. from Di		cation, incl. development of regional urban risks and
Regional / international KM with focus on sharing project lessons and replication	No risks identified	Activities include knowledge exchange though meetings, site visits, events, etc. UN-Habitat and UN-ESCWA will ensure equal
Jordan and Lebanon KM with focus on project progress, best practices and lessons learned		involvement / representation.
Sub-national KM and Regional' urban risks and vulnerabilities assessment, planning and management approach model for type 2 cities	No risks identified	Activities include desk top consultancy work
Incentive mechanism (financial) and regulatory framework to replicate and upscale rainwater harvesting activities	No risks identified	Activities include desk top consultancy work

#### Details and results of the risks screening process

\*For more details see country-specific ESIA reports

#### Principle 1: Compliance with the Law.

#### Screening result: no potential risk

*Explanation:* During project preparation, all relevant rules, regulations and standards have been identified for all proposed project activities, including procedures / steps to comply to these. These are shown in Part II.F. Where required by national law, EIAs have been completed before the start of the project. Therefore, no potential risk of non-compliance exists.

Below has been done for Jordan and Lebanon. Although no EIA was required by law in Jordan, an accredited consultant in Jordan conducting risks screening and impact assessments to comply to AF requirements. Besides that an accredited consultant firm in Lebanon conducting risks screening and impact assessments to comply to AF requirements.

**Table 36**: Summary of the EIA Procedures in Jordan and Lebanon

Stage	Activity
Initial Filing and Screening	The Project Proponent completes a Project Information Form (PIF) of the intended project and submits it to the Ministry of Environment for screening.  An Inter-ministerial Central Licensing Committee reviews the PIF, and after conducting site surveys determines if the project is classified as:  Category I projects for which an EIA report is required Category II projects for which an initial EIA is only required Category III for which no environment analysis is required
Scoping	The Ministry issues legally binding guidance on the Scope of the Assessment Proponent prepares a ToR, after a mandatory public consultation.  An Inter-Ministerial Technical Review Committee (TRC) reviews and approves the ToR. Accredited consulting entity commences with EIA.

Table 37: EIAs completed as required by national law

Output / activity	National EIA requirements and procedure	Outcome
None	According to Decree No. 8633,2012 of MoE, the following steps were taken:	Environmental
	-A screening form for the project was submitted	Management and
	-A public consultation was held on December 18th, 2019	Monitoring Plan
	-A scoping report was submitted to MoE on December 30 <sup>th</sup> , 2019.	for the risks and
	-The EIA report is the final step of the EIA process. It was submitted on	impacts identified
	January 13 <sup>th</sup> , 2020, following the reply of MoE on scoping report (see reply	in EIA.
	letter below)	
	The EIA report is not relevant anymore because the wetlands are not part of	
	the proposal anymore	

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المساولة ال		المنطقة والمراحاء والمنطقة وا	المنطقة والترام المنطقة والمنطقة والمنطقة والمنطقة والمنطقة والمنطقة والمنطقة المنطقة	المنافع المنا	المنافع المنا	المنافع المنا	المستود المنافع المنا	المساور المنافع المنا	المنطقة التالي المنطقة والتالي المنطقة والتالي المنطقة التالي المنطقة المنطق	المنطقة التالي المنطقة والتالي المنطقة والتالي المنطقة التالي المنطقة المنطق	المنطقة والتاريخ.    المنطقة التاريخ المنطقة والتاريخ المنطقة التاريخ السيل لغذي المنطقة التاريخ السيل المنطقة التاريخ السيل في وزرة البية تحت الريم ١٩٥٠   المنطقة التاريخ السيل في وزرة البية تحت الريم ١٩٥٠   المنطقة التاريخ السيل المنطقة التاريخ السيل في المنطقة التاريخ السيل المنطقة التاريخ التاري	المنافع المنا	المنطقة النافع المنطقة النافع السعل مع وارد النافع المنطقة النافع السعل المنطقة النافع السعل المنطقة النافع السعل المنطقة النافع السعل المنطقة النافع المنطقة النافع المنطقة النافع الن	المنطقة المنطقة المنطقة السيل المنطقة	المساورة المراقب المساورة ا	المساعدة على المساعدة المساعد	المنطقة المنافعة الم	المنطقة الناع المنطقة والمنطقة والمنطقة والمنطقة والمنطقة المنطقة الناع المنطقة المنطقة الناع المنطقة	المسلود و المسلود المالة المسلود المالة المسلود المالة المسلود المالة المسلود المسلو	المستاد والمردوع المستاد المستاد المستاد المستاد المستاد المردوع المستاد المس	المنطقة التاع السيلة المنطقة التاع ال	المسلما على المقارية المسلمة والمواقع المسلمة والمواقع المسلمة والمواقع المسلمة والمواقع المسلمة والمواقع المسلمة والمواقع المسلمة ال	المنطقة المنافقة المنطقة المن
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تعهد والمرحي السيئين اعلان.  عدم والمرحي السيئين اعلان.  عدم الشيئين اعلان.  عدم المنافع المن	عود المدين الماد المدين ا	تعدود الاردي المسلم ال	منابع الركبة المنافع والمرح المنافع والمرح المنافع ال	معنوا و المراقع المرا	مناور المنافر الإنجام بكف الوليان المنافر الم	مناور المنافر الإنجام بكف الوليان المنافر الم	منال الآباد المستقد ا	من و رسيع في الميان أعلان.  عداد من المن المراكب المن المن المناف المنا	المساورة ال	المساورة ال	المنافعة على المنافعة المنافع	تعبد على المستوان ال	المستقا المستق	المنطقة المنط		المنطقة المنط	تربر تعديد بشار التوارية الطورية الموارية الموا	المستود المست	عبد المستواد المستوا	المنطقة والالدوم المبينين اعلان.  المنطقة المنطقة بالمسلول المراكبة المنطقة بالمسلول ورادا للهابة بالمسلول ورادا للهابة المنطقة بالمسلول والمسلول والمنطقة بالمسلول والمسلول المسلول المسلول والمسلول المسلول المسلول المسلول والمسلول المسلول المسلول والمسلول المسلول  المسلول المسلولة المسلولة والالالولية والالالولية والالالولية والالالولية والالالولية والالولية والالالولية والالولية والمسلولة والمسلولة والالولية والمسلولة والمسلولة والالولية والمسلولة والم	المنطقة المنط	المنطقة المنط	تحق والدرجة المبينان اعادن.  عملت الأولي المراحة المبينان اعادن.  عملت الأولي المراحة المبينان اعادن.  عملت الشاع السطوب استكمله المبينة والمراحة المبينان اعادن.  المبين
مشده الانهاز المالة المستداد المستداد المستداد المستداد المستدان المالة المستداد ال	والمنطقة التراق المنطقة المنط	من و و و الدري الدين اعلان اعلى الدين	مند و العرب المنافذ ا	مسله الركبة المسلم والمراح			على المثار إلى المث	على والرحي الدينين اعلان.  على الاركة الدينية والدرج الدينية المستوحة الدينية والدرج الدينية المستوحة الدينية والدرج الدينية الدينية والدرج الدينية المستوحة الدينية الدينية والدرج الدينية الدينية الدينية والدرج الدينية الدين	عور الدرج الميلان اعلانه المنظري المنافر الميلان اعلانه المنظري المنافر المنا	عور الدرج الميلان اعلانه المنظري المنافر الميلان اعلانه المنظري المنافر المنا	معلقة فيق السيان اعلان.  معلقة فيق السيان في روارة فيقة تحت في ١٩٠٥.  معلقة فيق السيان في روارة فيقة تحت في ١٩٠٥.  معلقة والقارية الشيان اعلان.  المين المراحة المينة والقاصة المنطقة بتصنيف المريم فكر ذلك المين المراحة في المرحة في المراحة في المرحة في المرحة في المراحة في المراحة في المراحة في المراحة في المرحة في ال	منافع الرحمة المستقدة المستقد	المنطقة المنافق المنطقة المنط	مناع والعرجي السيئيان اعلان.  تعبة طبية.  تعبة طبية المناعة المناعة والمناطق المناعة والمناطق المناعة المناطق المناعة المناطق المناطق المناطق المناطق المناطق المناطق المناطق المناطقة على المناطقة على المناطقة الم	على بدائر رقم ( المجاد المسلم المورد المسلم المورد المسلم المورد المسلم المورد المسلم المورد المسلم المورد المسلم المسلم و المورد المورد المسلم و المورد المورد المسلم و المورد المورد المسلم و المورد المورد المورد المسلم المورد المور	منتوع والمرجع المبيليان أعلان.  تحف طبيع المبلغين اعلان.  تحف طبيع المبلغين اعلان.  تحف طبيع المبلغين اعلى المبلغين المبلغي	مندع والدرج الدينيان أعلان.  التحوظ الدينيان أعلان.  التحوظ الدينية والدراء التحاري المسالة المنافعة بالمسالة والأولام المنافعة بالمسالة والأولام المنافعة بالمسالة والأولام المنافعة بالمسالة والأولام المنافعة بالمسالة المنافعة بالمسالة المنافعة بالمسالة المنافعة المنافعة بالمسالة المنافعة المنافعة المنافعة المنافعة بالمسالة المنافعة المنافعة المنافعة المنافعة المنافعة المنافعة المنافعة بالمسالة المنافعة المنافعة بالمسالة المنافعة المنافعة بالمسالة المنافعة المنافعة بالمسالة المنافعة	منطات الاثابة المنطقة بالمسال المنطقة بالمسال المنطقة المنطقة المنطقة المنطقة المنطقة المنطقة المنطقة بالمسال المنطقة	جمعة و الدرج الدينيين اعلان، التعلق بتسنيك المرات التعلق المسلم المراز إلى المسلم المسلم المراز إلى المسلم ا	على والدرج الدينيان اعلان.  على والدرج الدينيان اعلان.  على والدرج الدينيان اعلى المستوى الدينية الدي	مناع والدرج البيانين أعلان، منافذ والمرابع المنافذ ال	مناع والمرجع الدينيان اعلان،  علات الارتية  علات الارتية  علات المنافق المناف	على التوريخ السينين أعلان.  على الترجيخ السينين أعلان.  على الترجيخ السينين أعلان.  الترجيخ التعالى المنابة والمحاصة التنابقة بتصاليف المتابة والمحاصة المنابة بتصاليف المتابة والمحاصة المنابة المحاصة المحا
المستوب استكماله المستوب استكماله المستوب استكماله المستوب استكماله المستوب استكماله المستوب استكماله المستوب المستوب المستوب استكماله المستوب المستو	المطلوب استكملة المعترد العبر المعترد العبر المعترد العبر المعترد العبر المعترد المعترد العبر المعترد العبر المعترد المعترد العبر المعترد الم	النيش المطلوب استكداء المهرار المهران	المنافع المنا	الركبة:  المنطق	النها	النها	المنتفع المنتفقة بتسنيف المنتفة بتسنيف المنتفعة بتسنيف المنتفعة بتسنيف المنتفعة بتسنيف المنتفعة بتسنيف المنتفعة بتسنيف المنتفعة المنتفقة	المنافر التركية:  المنافر الت	المطلوب استكداله المبرّر المب	المطلوب استكداله المبرّر المب	تحية طلية المطلوب استكماله الميثوب ا	النبية المنطوب استكماله المنبر النبية النبية المنبر النبية النبية المنبر النبية المنبر النبية النبي	المحلوب استكماله العبار الركبة المحلوب استكماله العبار الركبة المحلوب المحلوب استكماله العبار الركبة المحلوب	الكين التعلق ال	المنوق العالمة والفاصلة المنطقة بتصنيف الميتر ذكر ذلك المناوية المنطقة المنطقة بتصنيف الميتر ذكر ذلك المناوية المنطقة	المعلوب استعداد العبرر العبر المعلوب استعداد العبرر العبر العبرر المعلوب المعلوب المعلوب العبرر المعلوب الم	المعلوب استكماله العبر	المعلوب استعداد العبر العبر المعلوب استعداد العبر الع	عدات الارتبة:    المعلوب استكماله المعلوب المعل	المنطقة العالم التعلقة بتصنيف المنزر العالم التعلق	المنطق الانتهاق المنطق المنطقة المنطق	المنطق المنطق المنطق المنطقة	المحقوب المحقوب استكماله العبرر العبر المحقوب المتكملة بتصنيف العبرر العبرر العبرر المحقوب المتكملة المحقوب المتكملة المحتوب المحقوب المتكملة المحتوب المحقوب المحقوب المحقوب المحتوب
العطوب استكماله العير المن المن المن المن المن المن المن المن	العظوب استكمله العبر المنافعة	البيتي المطلوب استكماله المهزار المهز	بالإشارة في المطلوب استكماله العيزر المستقدة ال	المنطوب استكمله العنزر المنافعة المناف	المنطقة المنطقة بتصنيف المنزد المنطقة بتصنيف المنزد المنطقة ا	المنطقة المنطقة بتصنيف المنزد المنطقة بتصنيف المنزد المنطقة ا	المطلوب استكماله العبرار الموسوع المستواب المعترد الم	المنظوب استحداء العبر إلى المنتداء العبر إلى العبر إلى المنتداء العبر إلى ال	المطلوب استكماله المطلوب استكماله المهزر العين العزر الله المساور المهزر العين العزر المهزر العين العزر المهزر العين المهزر العين المهزر العين المهزر العين المهزر العين المهزر العين المهزر ا	المطلوب استكماله المطلوب استكماله المهزر العين العزر الله المساور المهزر العين العزر المهزر العين العزر المهزر العين المهزر العين المهزر العين المهزر العين المهزر العين المهزر العين المهزر ا	المنظوب استكمله المنظوب استكمله المنزو المناقة بتسنين اعلاء (مراق وبداً)؛  المنزوط العامة التنبية المنطوب استكمله المنطوب استكمله المناقة بتسنين اعلاء (مراق وبداً)؛  المنطقة على الفرور اللغة المناقة بتسنين اعلاء (مراق وبداً)؛  المنطقة على المنطقة بتسنين المناور والإعتاق المناقة بتسنين اعلاء (مراق وبداً)؛  المنطقة على المناور المناقة بتسنين المناور والإعتاق المناقة بتسنين المناور والإعتاق المناقة بالمناقة المناقة بالمناقة المناقة المن	المستوال المستود المس	المطلوب استكداله العيزر المن العطوب استكداله العيزر المن العرار العر	العبرر المنافقة المنافقة بتسنيف المبرر المنافقة المنافقة بتسنيف المبرر المنافقة المنافقة بتسنيف المبرر المنافقة المنافق	المطلوب استكماله المجازر المراق الم	المطلوب استكماله المجازر المراق العالمة التحقية المكانة بيصب العراق العالمة التحقية المكانة بيصب القرار الميان اعده (مراق ريطاً) المائة المراق العالمة المراق المراق العالمة العالمة المراق العالمة العالمة المراق العالمة العا	المطلوب استكماله المطلوب استكماله المبرز المباد المتعالد المبرز المباد المتعالد المبرز المباد المتعالد المبرز المباد المتعالد المبرز المباد المبرز ا	المطلوب استكداله المطلوب استكداله المبور المباد المبور المباد المبور المباد المبور المباد المبور المباد ال	المنطقة المنطقيب استكماله المبور المنطقيب استكماله المبور المنطقة المنطقة بتصطيف المبور المنطقة المنطقة بتصطيف المبور المنطقة المنطقة بتصطيف المبور المنطقة المنطقة بتصطيف المبور المنطقة المنطقة المبورة الم	المنطقب المطلوب استكماله العيزر المنافية العين المدار المنافية ال	المنطوب استكداله العيزر البنت العند المنطوب استكداله العيزر البنة تقيد الشخط المنطقة الشخط المنطقة ال	المطلوب استكداله المطلوب استكداله المعاور المستوات المعاور المستوات المعاور المستوات المس	العطاوب استكماله العنوز المنافعة المخافة بوحب العراق المنافعة المخافة بوحب العراق المنافعة المخافة بوحب القرار المنافعة المخافة المخافة المخافة المخافة المخافة المخافة المخافة المخافة المنافعة المخافة
و المتعال المتعارد و المتعارفة المتعارفة بتعسيف لم يتم ذكر ذلك المديد من هذه المتعارفة المتعارف	واستدا بي المنه والفاسمة المنابة بتصنيف الم يتم ذكر ذلك المناب المنطقة بتصنيف الم يتم ذكر ذلك المنطقة	واستان أن المروط العامة والخاصة المتعقة بتصنيف لم يتم تكل الله المتعقدة والخاصة المتعقة بتصنيف لم يتم تكل الله المتعقدة والخاصة المتعقدة بتصنيف لم يتم تكل المتعقدة	واستان المروة العامة والخاصة المتعلقة بتصنيف لم يتم ذكر ذلك المستان المروة العامة والخاصة المتعلقة بتصنيف لم يتم ذكر ذلك المستان المروة العامة والخاصة المستان المروة العامة المستان	واستان في تعديد المنافذة المن	المنطقة المنط	المنطقة المنط	المنطقة المنط	والأمثر المنطقة بتسليف المنطقة المنطقة بتسليف المنطقة بتسليف المنطقة بتسليف المنطقة المنطقة بتسليف المنطقة بتسليف المنطقة بتسليف المنطقة ال	و استدا إلى تور البغة الشغة بتصليف لم يتم ذكر ذلك المدود المدار المدارة على المراجعة المراقع والإعادة إلى المراقع والإعادة والمراقع والإعادة والإعادة إلى المراقع والإعادة والإعادة إلى المراقع والإعادة والإعادة إلى المراقع والإعادة والإعادة إلى المراقع والإعادة وا	و استدا إلى تور البغة الشغة بتصليف لم يتم ذكر ذلك المدود المدار المدارة على المراجعة المراقع والإعادة إلى المراقع والإعادة والمراقع والإعادة والإعادة إلى المراقع والإعادة والإعادة إلى المراقع والإعادة والإعادة إلى المراقع والإعادة والإعادة إلى المراقع والإعادة وا	واستدا في تور البدة التنبية المنطقة بمصنيف لم يتم ذكر ذلك الشروط العلمة والخاصة المنطقة بمصنيف لم يتم ذكر ذلك الشروط العلمة والخاصة المنطقة بمصنيف لم يتم ذكر ذلك المنطقة المنطقة بمصنيف الم يتم ذكر ذلك المنطقة المنطقة بالمنطقة المنطقة الم	الشروط العامة والعامة المتعلقة بتصنيف له يتم تكو ذلك المتعلقة المتعلقة المتعلقة بتصنيف له يتم تكو ذلك المتعلقة المتعلقة بتصنيف له يتم تكو ذلك المتعلقة المت	المنطقة المنط	والاستدان المنطقة المنطقة المنطقة بتصطيف للمنطقة المنطقة المن	والتشد الأسروط العامة والخاصة المتعلقة بتصطيف المربق وملا)  الشروط العامة والخاصة المتعلقة بتصطيف المربق والإعداد المنطقة المتعلقة بتصطيف المربق والإعداد المنطقة المتعلقة بتصطيف المربق والإعداد المنطقة المتعلقة والانتزام المتعلقة المتعلقة المتعلقة المتعلقة المتعلقة المتعلقة والانتزام المتعلقة المتع	واستدا في ترور العبلة والخاصة المتعلقة بتصنيف لم وتم تكر ذلك المنطقة المنطقة بتصنيف لم وتم تكر ذلك المنطقة المنطقة والمنطقة المنطقة والمنطقة المنطقة والمنطقة المنطقة والمنطقة والمنطق	و استفاق على تقرير الحب التناق المنطقة المنطق	واستدة الى ترور البناة المستوجة المن اعدد (مرق رسف) اعدد (مرق رسف) اعدد (مرق رسف) اعدد المستوجة المن اعدد (مرق رسف) المستوجة المنتخذة على المستوجة المنتخذة	واستدا في تقرير البلغة والقاصة الشعلة بتصنيف لم يتم تكر ذلك الشير والمسات الشيرة المسات المس	وليتنا إلى تقوي الله المناب والقاصة التلكان المستود المناب المنا	ولستانا إلى تقرير للبغة الشهة التعلقة بتصنيف لم ينم ذكر ذلك المناسبة المنا	واستدة إلى تقوير البعدة التقديم المستوات المستعلقة بتصنيف الم يتم ذكر ذلك المستعلقة بتصنيف الم يتم ذكر ذلك المستعلقة بتصنيف المستعلقة بتصنيف المستعلقة بتصنيف المستعلقة والانتزام يكلقة المستعلقة المستعلة المستعلقة المستعلة المستعلة المستعلقة المستعلقة المستعلقة المستعلقة المستعلقة المس	الشروط العلمة والخاصة المتطقة بتصنيف لم يتم ذكر ذلك المدود العلمة والخاصة المتطقة بتصنيف لم يتم ذكر ذلك المدود المدود المدود العلمة والخاصة المتطقة بتصنيف لم يتم ذكر ذلك المدود
الشروط العامة والخاصة المتعلقة بتصنيف الم بين ذكر ذلك المنطقة المتعلقة بتصنيف الم بين المنطقة المتعلقة المتعلق	الشروط العامة والغاصة المنطقة بتحليف لم يتم ذكر ذلك الشروط العامة والغاصة المنطقة بتحليف لم يتم ذكر ذلك المنطقة المنطقة بتحليف بتحليف المرتدي والمنطقة المنطقة المنطق	البيني ورحة العامة والفاسة التعلقة بتسنيف الم يتم تكل التعلقة الم التعلقة التصوص التعلق الم يتم تكل التعلق ال	الشروط العامة والخاصة المتنقة بتسنيف الم يتم ذكر ذلك المستقد المستقد المستقدة المست	الشروط العامة والقاصة المتعقة بكسنيف المروط العامة والقاصة المتعقة بكسنيف المراوط العامة والقاصة المتعقة بكسنيف المراوط العامة والقاصة المتعقة بكسنيف المراوط العامة والقاصة المتعقة المراوط العامة المتعقة المتعقق المراوط العامة المتعقة المتعقق المراوط العامة المتعقق المتعقق المراوط العامة المتعقق ال	الشروط العامة والفاصة التعلقة بتصنيف الم يتم تكل الله والمنافعة بتصنيف الم يتم تكل الله والمنافعة بتصنيف الم يتم تكل الله والمنافعة المنافعة المنا	الشروط العامة والفاصة التعلقة بتصنيف الم يتم تكل الله والمنافعة بتصنيف الم يتم تكل الله والمنافعة بتصنيف الم يتم تكل الله والمنافعة المنافعة المنا	المنطقة المنطقة المتعلقة المت	النبور على العامة والمعاملة المستقبة ا	الشروط العلمة والخاصة الشغلة بتصنيف الم يتم فكر ذلك المساهدة المساهدة المساهدة الم يتكنة والمائلة بتصنيف الم يتم فكر ذلك المساهدة الم يتكنة التصوص القونية ألك المساهدة الم يتكنة التصوص القونية ذلك المساهدة المساهدة الم يتكنة التصوص القونية ذلك المساهدة الم يتكنة التصوص القونية ذلك الموساء المساهدة الم يتكنة التصوص القونية ذلك الموساء المساهدة الم يتكن المساهدة المس	الشروط العلمة والخاصة الشغلة بتصنيف الم يتم فكر ذلك المساهدة المساهدة المساهدة الم يتكنة والمائلة بتصنيف الم يتم فكر ذلك المساهدة الم يتكنة التصوص القونية ألك المساهدة الم يتكنة التصوص القونية ذلك المساهدة المساهدة الم يتكنة التصوص القونية ذلك المساهدة الم يتكنة التصوص القونية ذلك الموساء المساهدة الم يتكنة التصوص القونية ذلك الموساء المساهدة الم يتكن المساهدة المس	البيني المنطقة بتصنيف المنطقة بتصنيف المنطقة بتصنيف المنطقة بتصنيف المنطقة بتصنيف المنطقة الم	الشروط العامة والخاصة المتعلقة بتمسئوف المورد المساورة المنظلة المعروض المتعلقة بتمسئوف المورد المساورة المساو	الشروط العامة والخاصة المتعلقة بتصليف الم يتم ذكر نلك الشروط العامة والخاصة المتعلقة بتصليف الم يتم ذكر نلك الشروط العامة والخاصة المتعلقة بتصليف الم يتم ذكر نلك المستودة المتعلقة ال	الشروط العامة والخاصة المتعلقة بتصابف ليريق وكر ذلك الشروء المتعلقة بتصابف ليريق وكان المتعلقة المتعل	الشروط العلمة والخاصة المتطقة بتصنيف لم يتم ذكر ذلك المستخدم والمستخدم والم	الشروط العلمة والخاصة المتعلقة بتصنيف لم يتم ذكر ذلك المساعدة على المساعدة	الشروط العلمة والخاصة المتعلقة بتحسيف المرتم ذكر ذلك التساول المتعلقة بتحسيف المرتم ذكر ذلك المتعلقة بتحسيف المرتم ذكر ذلك التساول المتعلقة والاقترام بكلة الصحوص القانونية في تعريب المتعلقة والاقترام بكلة المتعلقة	الشروط العلمة والخاصة المتطقة بتصليف لم يتم تكر ذلك السنطة المسلمات المسلم	الشروط العلمة والخاصة المنطقة بتصليف لم يتم تكو ذلك الشروط العلمة والخاصة المنطقة بتصليف لم يتم تكو ذلك الشروط العلمة والخاصة المسلود	الشروط العلمة والخاصة المتعلقة بتصنيف لم يتم تكل تلك المنافعة بتصنيف لم يتم تكل تلك المنافعة بتصنيف لم يتم تكل تلك المنافعة المن	الشروط العامة والعناصة المتعلقة بتصنيف لم يتم ذكر ذلك المسلمة المتعلقة بتصنيف لم يتم ذكر ذلك المسلمة	الشدوط العامة والغناصة المتعلقة بتصنيف الم يتم ذكر ذلك المنطقة الم المنطقة ال	الشروط العلمة والخاصة المتعلقة بتصنيف لم يتم تكو ذلك الشروط العلمة والخاصة المتعلقة بتصنيف لم يتم تكو ذلك الشروط العلمة والخاصة المتعلقة بتصنيف لم يتم تكو ذلك الشروط العلمة والخاصة المتعلقة بتصنيف لم يتم تكو ذلك الشيئة المتعلقة والانتزام بالمحول المتعلقة والمتعلقة والمتعلقة والمتعلقة والانتزام بالمحول المتعلقة والانتزام بالمحول المتعلقة والمتعلقة وا
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البيني	برار - إنسانة والانتزام وكانة اللاصوص التانونية ذلك - لم يتم ذكر العديد من هذه الصوص التانونية ذلك - لم يتم ذكر العديد من هذه الصوص التانونية الله على سيل المثال العصر العربيوم التانونية المنتونية العديد المساعدة على سيل المثال العصر العربيوم التانونية والمسات المساعدة المنتونية العديد المساعدة المساعدة المساعدة المساعدة المساعدة المنتوب	الين - الشاقة والاقترام بكانة اللحموس التقوتية التحد المستحد	الييني  الياني  الياني	البيني - الشاقة والالزام إكامة اللموس القاونية فات - لموقع مثك العديد من هذه المساقة	البيني	البيني	الله المستقد	اليني	المر - إنساقة والانترام وكانة النصوص القانونية فلك - لم يتم ذكر العديد من هذه النصوص القانونية فلك - لم يتم ذكر العديد من هذه النصوص القانونية فلك - الم يتم ذكر العديد من هذه - مناسلة والانترام وكان والمسلك - مناسلة وكان وكان وكان وكان وكان وكان وكان وكان	المر - إنساقة والانترام وكانة النصوص القانونية فلك - لم يتم ذكر العديد من هذه النصوص القانونية فلك - لم يتم ذكر العديد من هذه النصوص القانونية فلك - الم يتم ذكر العديد من هذه - مناسلة والانترام وكان والمسلك - مناسلة وكان وكان وكان وكان وكان وكان وكان وكان	والإطنار والإطنار والإنتاء والالتزاء وكلة التصوص التقرنية ذات والإطنار والمسات والمسات وا	البيني	والإنظر المنطقة والانتزام يكلة التصوص التقونية ذات المنطقة والانتزام يكلة التصوص التقونية ذات المنطقة والانتزام يكلة التصوص التقونية المنطقة والانتزام يكلة التصوص التقونية والمنطقة المنطقة والتصويم وتم التصوص التقونية المنطقة والتصويم وتم التصوص التقونية التصوص التقونية التصوص التقونية التصوص التقونية التصوص التقونية التصوص التصوص التقونية التصوص التقونية التصوص التص التصوص التص التصوص التصوص التصوص التصوص التصوص التصوص التصوص التصوص التص التص التصوص التصوص التص ال	اليني	اليبني	البيني	البيني	المناف ا	ور البنين	البيني	البيلني - النباقة والالتزام بكلة التصوص التقوية ذات - لم يتم ذكر العديد من هذه الصوص التقوية ذات - لم يتم ذكر العديد من هذه الصوص التقوية ذات - لم يتم ذكر العديد من هذه الصوص التقوية ذات - لم يتم ذكر العديد من هذه الصوص التقوية ذات - لم يتم ذكر كفة المؤسسات المساعدة عن الميان المشان الموسوع وقم الميان	البيلي	البيني والإطر - إساعة والانزلز الم بكافة التصوص القانونية فلك - الم يتم تكل العديد من هذه المسلم على المسلم على المسلم على المسلم على معيل المسلم على المسلم على المسلم على المسلم ال
- المسلمة والالتزام بكلة النصوص التقرنية ذات - الم يتم ذكر العديد من هذه المسلمة المس	المنافة والالآزام وكافة القصوص القانونية ذات الم يتم ذكر العديد من هذه الصوص القانونية ذات الم يتم ذكر العديد من هذه الصوص القانونية ذات الم يتم ذكر العديد من هذه الصوصات المنافة المعنفية بالمشروع المعنون من هذه الصوصات المنافة المعنفية بالمشروع الم المعاركة الموسوم القانونية والموسوم القانونية والموسوم القانونية والموسوم القانونية والموسوم القانونية والموسوم وقم مع توضيح بدور كل منها المعاركة الموسوم وقم مع توضيح بدور كل منها المعاركة الموسوم وقم مع توضيح بالمشروع المعاركة الموسوم وقم المعاركة المعار	والإطر - إنسانة والانترام بكفة النصوص القوتية ذلك - لم يتم كل العنيد من هذه المساعة على المساعة المساعة المساعة المساعة على المساعة المساعة المساعة المساعة المساعة على المساعة المساعة المساعة المساعة المساعة على المساعة ا	- المواقعة والالتراز مركفة المسوس التالولية فالك المصرر الدرسوم التالولية فالك المصرر الدرسوم التالولية فالك المصرر الدرسوم المتالول المصرر الدرسوم التالولية فالك المصرر الدرسوم التالولية فالك المصرر الدرسوم من المتالول المصرر الدرسوم من المتالول المصر الدرسوم من المتالول المصرر الدرسوم من المتالول المصرر الدرسوم من المتالول المصرر الدرسوم من المتالول المعالفة المعافية المعافة المعافية المعافية المعافية المعافية المعافية المعافية المعافة المعافية المعافية المعافية المعافية المعافية المعافية المعافية المعافة المعافية المعافة المعافية المعافة المعافية المعافة المعافة المعافية المعافة ا	ولاهنز البند التسوق التاورية التا المحدر الدرسوم التاورية التا المحدر الدرسوم التاورية التا المحدر الدرسوم التاورية التا المحدر الدرسوم التاورية التا المحدود المحدود المحدود المحدود المحدود التاورية التا المحدود ا					رِيْر - إِسَانَة وَالاَثْرَاءِ بَكُنَةُ النصوص التَّنْوَيْةِ ذَاتَ - لَمِ يَمْ ذَكَ العندِ مِن هذه النصوص التَّنْوَيْةِ المَّلِيّةِ فَلَيْنِ المَّلِّيِّةِ المَّلِيّةِ المَّلِيّةِ المَّلِيّةِ المَّلِيّةِ المَّلِيّةِ المَّلِيّةِ المَّلِيّةِ المَّلِيّةِ المُلِيّةِ الْمُلِيّةِ المُلِيّةِ الْمُلِيّةِ المُلِيّةِ المِلْمِيِيِيْلِيّةِ المُلِيِّةِ المِلْمِي المُلِيِّةِ المِلْمِيِيْلِيِيْلِي المِلْمِي المُلِيِّةِ	رِيْر - إِسَانَة وَالاَثْرَاءِ بَكُنَةُ النصوص التَّنْوَيْةِ ذَاتَ - لَمِ يَمْ ذَكَ العندِ مِن هذه النصوص التَّنْوَيْةِ المَّلِيّةِ فَلَيْنِ المَّلِّيِّةِ المَّلِيّةِ المَّلِيّةِ المَّلِيّةِ المَّلِيّةِ المَّلِيّةِ المَّلِيّةِ المَّلِيّةِ المَّلِيّةِ المُلِيّةِ الْمُلِيّةِ المُلِيّةِ الْمُلِيّةِ المُلِيّةِ المِلْمِيِيِيْلِيّةِ المُلِيِّةِ المِلْمِي المُلِيِّةِ المِلْمِيِيْلِيِيْلِي المِلْمِي المُلِيِّةِ	والإطر - إشاقة والالذام وكلة التصوص التقونية فات - أبويتم فكر العديد من هذه التصوص التقونية فات - أبويتم فكر العديد من هذه التصوص التقونية فات - أبويتم فكر العديد من هذه التصوص التقونية فات التصوص التقونية التصوص التقونية التصوص التقونية التصوص التقونية التصوص التقونية التصوص التقونية المعتبد التصوص التصوص التصوص التصوص التصوص التصوص التقونية التصوص التصوص التقونية التقونية التقونية التقونية المعتبد التصوص التقونية التقونية التقونية التقونية المعتبد التصوص التقونية التقونية التقونية التقونية المعتبد التصوص التقونية التقونية التقونية التقونية التقونية المعتبد التقونية التقونية التقونية التقونية التقونية المعتبد التقونية التقونية المعتبد التقونية	والاطر المسالة والالتزام يكلة التصوص التقوية ذلك المساوص التقوية ذلك التصوص التقوية ذلك المساوص التقوية ذلك التصوص التقوية المساوص التقوية التصوص التصوص التصوص التقوية التصوص التص التص التصوص التصوص التصوص التصوص التص التصوص التصوص التصوص ال	والإنظر المنافة والانتزام يكلة التصوص التقرنية ذات المنافعة والانتزام يكلة التصوص التقرنية ذات المنافعة والانتزام يكلة التصوص التقرنية دات المنافعة والانتزام يكلة التصوص التقرنية دات المنافعة والانتزام يكلة المنافعة والمنافعة على مبيار المنافعة المنافعة والمنافعة و	والإنظر المركلة المصوص التقوية فات المرتم فك العديد من هذه التصوص التقوية فات المرتم فك العديد من هذه التصوص التقوية فات المرتم فك العديد من هذه التصوص التقوية في المرتم فك العديد من هذه التصوص التقوية المناب المرتم في العديد المرتموم التقوية المناب المرتموم التقوية المناب المرتموم التواقية العديد المرتموم التقوية المناب	والإنظر المسلمة على سيل المثال لا المصر التنونية ذاك المسرص التنونية ذاك المسرك ال	وثير المنطقة والانترام بكلة النصوص التقوتية ذلك - 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الم يتم شكل العديد العرب التعديد العرب العديد العرب العديد العرب التعديد العرب التعديد العرب التعديد العرب العديد العرب العرب العديد العرب	ور النظر المنافق النظرية المنافق المن	و الإنظر المسلم التقوية ذات المرتم ذكر العديد من هذه التصوص التقوية التصوص التصوص التصوص التقوية التصوص التصوص التصوص التصوص التصوص التصوص التقوية التصوص التص التصوص التصوص التصوص التصوص التصوص التصوص التصوص التصوص التصوص	ور البيئة المنافر المنافرية فات المرتب المنافرية فات المرتب المنافرية فات المرتب المنافرية المن	والإطر - إيضافة والانتزام بكافة التصوص القانونية فلت - لم يتم ذكر العبد من هذه المسلم
والإطراب المسلم المعنوب المعنوب المسلم المعنوب المعنوب المسلم	- إنساقة و الانتزام بكافة التصوص التاونية ذات - لم يتم ذكر العديد من هذه الصوص التاونية ذات - لم يتم ذكر العديد من هذه الصوص التاونية ذات - لم يتم ذكر العديد من هذه الصوص التاونية ذات - لم يتم ذكر العديد من هذه الصوصات الرصعية المعنية بالمشروع - لم يتم ذكر العديد المعنية المعنية بالمشروع - لم يتم ذكر العديد المعنية المعنية بالمشروع - لم يتم ذكر ذلك الرصعية المعنية بالمشروع - لم يتم ذكر ذلك المعنو التعربية المعنية بالمشروع - لم يتم ذكر ذلك العديد و كل ما يتم ذكر ذلك المعنو و كل المعنو المعنية المعنية بالمشروع - لم يتم ذكر ذلك المعنو ال	- المرتم ذكر العند من الله والآثرام إلكانه الصوص القانونية ذلك المرتم ذكر العند من هذه الصوص القانونية ذلك المرتم ذكر العند من هذه الصوص القانونية ذلك المرتم ذكر العند من المرتم ذكر العند المرتمات المرتم ذكر العند من المرتم ا	والإطار - إنسانة و الانتزام إلكفة النصوص الفتونية فلك - الموقع فك المدين من هذه النصوص الفتونية فلك - الموقع فك المدين المساعدة على المدين ال	والاطر المنافقة والانتزام بكفة الصوص للتادنية فلك للمسلم المنافقة والانتزام بكفة الصوص للتادنية فلك للمسلم المنافقة والانتزام بكفة الصوص للتادنية فلك للمسلم المنافقة والانتزام بكفة الصوص للتادنية فلك المسلم المنافقة والمنافقة فل سيال المناف الالمسلم المنافقة والمنافقة والمنا	- الموقع المعلق التعلق المحلوم التقولية فلات المسلم التعلق المعلق المعل	- الموقع المعلق التعلق المحلوم التقولية فلات المسلم التعلق المعلق المعل		- المرتب ذكر العديد من هذه المسلمات الرسوس القانونية ذلك المسلمات المرتب ذكر المسلمات الرسوس القانونية ذلك المسلمات المرتب المر	المنافة والانتزام بكفة التصوص القاونية ذات - 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والاطر - إضافة والاثنار المكلة التصوص التقوية فات - ام يتم نكل العديد من هذه المسلوم التقوية في المسلوم التقوية والاثنار العصر الدرسوم - المسلوم التقوية - الم يتم نكل العديد من هذه - المسلوم التقوية - الم يتم نكل العديد من هذه المسلوم - المسلوم التقوية - الم يتم نكل كل العديد المسلوم والتقوية المطفئة المطلوم والتقوية المطلق المسلوم والتقوية	المستقد الانتزاء وكافة القصوص القنونية فات الصدة على بديل المدأل لا الحصر الدرسوم القنونية فات الصدة على بديل المدأل لا الحصر الدرسوم القنونية فات الصدة على بديل المدأل لا الحصر الدرسوم القنونية فات الدرسية المعنية المعني	- إشاقة والاثنزام إكفة الصوص القاونية فلت - لم يتم ذكر كلفة الصوص القاونية فلت - لم يتم ذكر كلفة الصوص القاونية الم الماسلام المنسلام المنسلا	والإنشر المساعدة والانزام وكلة التصوص التقونية ذلك المصر الدرسوم التقونية والمدال المصر الدرسوم المساعدة على سبيان المشال لا المصر الدرسوم المساعدة على سبيان المشال لا المصر الدرسوم من المساعدة على ا	والانشر المنافرة والانزام بكانة الصوص الثانونية فات الموسوم الثانونية في الموسوم الموسوم الثانونية في الموسوم الثانونية في الموسوم	والإنشر المنافرة والانزام يكلفه الصوص القانونية فات - 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إضافة والاثنام بكلغة التصوص القانونية فات - ام يتم نكن العديد من هذه التصوص القانونية فات - ام يتم نكن العديد من هذه التصوص القانونية فات - ام يتم نكن العديد من هذه - حيث المسلم المرسوم المرسوم - معتقد المرسوم - المرسوة المعنية	و الإنشر المسلوم التقريبة فات الموس التقريبة والمائة على سيل المثال لا المصر العرب التوريبة المعربة الموسات الموسوم التقريبة المعربة الموسات الموسوم التقريبة المعربة الموسات الموسوم التقريبة المعربة المعربة الموسات الموسوم التقريبة المعربة المعربة المعربة الموسات الموسوم التقريبة المعربة	والإنشر المساعدة على سيان الشكل لا العصر التقولية ذلك - الم يتم ذكل العديد من هذه العصر المرسوم - المساعدة على سيان الشكل لا العصر المرسوم - المساعدة على المرسوء ال	و الإنشر - إهناية والالتزام بكلة التصوص التقولية ذات - لم يتم نكل العديد من هذه التصوص التقولية دات - الم يتم نكل العديد من هذه التصوص التقولية - وزا اعلام ورفيات المسروع الم التقولية - الم يتم نكل العديد المرسوم - الم المسروع المرسوع - الم يتم نكل الله الموسوع التقولية - الم يتم نكل الله الموسوع الم	والإنشر المستقبط الم	والاطر - إشناة والانتزام بكلة التصوص التاتونية ذات - لمرتم نكل العديد من هذه و المستخط المستخ	والاطر - إضافة والانترام بكلة التصوص القتونية فاتف - لم يتم فكر العديد من هذه التصوص القتونية المعنية بالمشروع - معنان المسلمة على سبيل الشأل لا العصر العرسوم - معنان المسلمة على سبيل الشأل لا العصر العرسوم - معنان المسلمة المعنية بالمشروع - لم يتم فكر كافة المؤسسات الرسمية المعنية بالمشروع - لم يتم فكر كافة المؤسسات الرسمية المعنية بالمشروع - لم يتم فكر العرسوم رقم مع فوضيح ورك كامنيا المسلمة المعنية بالمشروع - لم يتم فكر العرسوم رقم مع فوضيح ورك كامنيا المسلمة المعنية بالمشروع - لم يتم فكر العرسوم رقم مع فوضيح ورك كامنيا المسلمة المعنية بالمشروع - لم يتم فكر العرسوم رقم مع فوضيح ورك كافة المؤسسات الرسمة المعنية بالمشروع - لم يتم فكر العرس من المسلمة المعنية بالمشروع على العرب المسلمة المسلم	و الانظر - إضافة والانزام بكلة النصوص القاتونية المعنية المعن	- المنطقة والالترام بكلة التصوص التقولية فات - المرتم لكر التعديد من هذه التصوص التقولية فات - المرتم لكر التعديد من هذه التصوص التقولية والمناب المساوص التقولية - 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إشاقة والانتزام يكلفة النصوص القانونية فلت - لم يتم ذكر للعديد من هذه النصوص القانونية فلت - لم يتم ذكر للعديد من هذه المسلوص القانونية فلت - لم يتم ذكر كلفة المؤسسات - حساسة المراورية المبلغة بالمشروع - لم يتم ذكر كلفة المؤسسات - المبلغة المبلغة المؤسسات - المبلغة المبلغة المؤسسات - المبلغة المب
- والا المسلمة على بيال المسلم والده بين المسلم والده	ورارة المسابق والمرابع المسترية المرارية للمنترية الموادية المسترية المرارية للمنترية المرارية للمنترية المسترية المسترية الموسسات الرسعية المعتبرة المسترية المستروع المسترية المستروع المسترو	والاهر والاهر المساق المسروس القاتونية المسروس القاتونية والمساق المسروس القاتونية والمساق المسروس المساق المسروس الم	والراف المسلوم المتوقية المسلوم المتوقية الموسسات المسلوم ا	- والمنافذ على بيال المنال لا العصر الدرسوم - والمنافذ والمنافز المنافذ والمنافز المنافذ والمنافز المنافذ والمنافز المنافذ والمنافذ والمن	- وزار السلة على بيال مشال لا الحسر المرسوم القتونية - بينان فالل لا الحسر المرسوم القتونية - بينان فالل لا الحسر المرسوم القتونية المناق المرسوم الم	- وزار السلة على بيال مشال لا الحسر المرسوم القتونية - بينان فالل لا الحسر المرسوم القتونية - بينان فالل لا الحسر المرسوم القتونية المناق المرسوم الم	- وزاد الشارة والمنتاز المسلم المرسوم التاوتية المسلم المرسوم المسلم المرسوم التاوتية التاوتية المرسوم التاوتية المرسوم التاوتية ال	- وزار العلية ولين - هيره الورية فشرية الموسية الفارية الميني المسلوح القاولية المسلوح القاولية المسلوح القاولية المسلوح المرسوم وقم مع توضيح يور كل منها الرسية الموسية المرسوع المسلوح المرسوم وقم مع توضيح يور كل منها الرسية الموسية المسلوح المسلوح المرسوم وقم مع توضيح يور كل منها المرسوة المسلوح المسلوح المسلوح المرسوح وقم مع توضيح يور كل منها المرسوة المسلوح ال	و وزر المنطق والمراب علي المنطق المنطق المنطق المنطقة	و وزر المنطق والمراب علي المنطق المنطق المنطق المنطقة	- وزار المنافق والمنافق المنافق المنا	- وزارة اللبية والده البياس المسلوس المقاولية المسلوس المقاولية المسلوس المقاولية المسلوس الم	- والأخذ المسلود المراقب المر	- ورا ناهند روسيد المربوم التحوية المسروس القاتونية - المرتب المسروس العربوم التحوية المسروس القاتونية - المرتب المسروس العربوم المربوم - المرتب المسروم المربوم - المرتب المسروم المربوم - المرتب المسروم المربوم - المرتب المسروم المربوم ا	- ورا تعلق و الرسيد المرسوم القاتونية - معاذات المساهدة و الرسيد المرسوم المرسوم المرسوم المرسوم - المساهدة المائية المعتبر المرسوم - المساهدة المعتبر المرسوم المرسوم - المساهدة المعتبر المساهدة المعتبر المرسوم المرسوم - المساهدة المعتبر المرسوم	- وزار المشاب والمرسم المرسوم	- والأستاد على بيال المثال لا الحصر العربيوم القدونية - والمسالة والمسالة على بيال المثال لا الحصر العربيوم القدونية - والمسالة على المسالة على المسالة المعنية بالمشروع - المرتم ذكر كافة المؤسسات الرسعية المعنية بالمشروع - المرتم ذكر كافة المؤسسات الرسعية المعنية المعن	- واراد انتظافه والمساب الرسوم المرسوم المرسو	- والمنطقة والمنطبة والمنطبة بيل المثلل لا المحسر العرسوم القاتونية - والمنطقة والمنطبة والمنطبة بيل المثلل لا المحسر العرسوم - والمنطقة المنطقة المن	- وراز اطليا والمرسب المعدن العرب ومرس القاتونية - مينا المعدن العرب ومرس القاتونية - الم يتم ذكر كافة المؤسسات الرسيدة المعدن العرب وم المعدن العرب ومن المعدن العرب العر	- ورا تعلق و و رسم بيني امثال لا الحصر العربوم التقونية - مطاة النام على المسروع المراوع المسروع المراوع المسروع المراوع المراوع المسروع المراوع المسروع المراوع المسروع المراوع المسروع المراوع المسروع المراوع المر	- ودار اضطار طريب المناب الراب فعلي والمراب المنازية والمراب فعلي المناز الا المنافع المناب ا	والإهدار . الصالة على منطق الشال المصر الموسوم القانونية
حق (۱۹۳۲/۱۲۱۱) . وزراه البينة و البينة و و كامنها و البينة البينة و و كامنها و البينة البينة و كامنه البينة و	- تحديد الموسسات الرسعية المطنية بالمشروع - لم يتم تكر كفة المؤسسات الرسعية المطنية بالمشروع - لم يتم تكر كفة المؤسسات الرسعية المطنية المطني	تحديد الموسسة المعنية بالمشروع - لم يتم ذكر كلفة المؤسسات الرسمية المعنية بالمشروع - لم يتم ذكر كلفة المؤسسات الرسمية المعنية بالمشروع - لم يتم ذكر كلفة المؤسسات الرسمية المعنية بالمشروع - لم يتم ذكر خلك - الم اعدة من التنسيق - دعوة المزار عن واصحفاب المعنية المؤسسات المسلومية المسلو	حديد الموسدة المعنية بالمشروع - لمرية تكر كلفة لمؤسسات - المرية المعنية المعن	حد الالتراك الموسعة المعنية بالمشروع - لمرتب الموسعة المعنية	حق ۱۹۳۲/۱۲۱۱ من المستقد المعنية بالمشروع - ليزم تكر كلة الموسسك - المستقد المعنية الم	حق ۱۹۳۲/۱۲۱۱ من المستقد المعنية بالمشروع - ليزم تكر كلة الموسسك - المستقد المعنية الم	- تحديد المساعدة المعنية المع	تعديد المساعدة وي المساعدة على المساعدة المساعدة على المساعدة على المساعدة المسا	- تحديد الدوسسات الرسمية المطنية بالمشروع - لويتم تكر كفة لمنوسسات الرسمية المطنية بالمشروع - لويتم تكر كفة لمنوسسات الرسمية المطنية بالمشروع - لويتم تكر كفة لمنوسسات الرسمية المطنية المطنية الموسوع رقم مع توضيح سبب تكر العرب مور رقم الم يتم تكر ذلك - الم يتم تكر ذلك الموسوع رقم من بياد الموسوع رقم من بياد الموسوع رقم من بياد الموسوع رقم الموسوع رقم من بياد الموسوع الموسوع رقم الموسوع رقم الموسوع رقم من بياد الموسوع رقم من بياد الموسوع رقم من بياد الموسوع رقم من بياد الموسوع رقم الموسوع رقم من بياد الموسوع رقم من بياد الموسوع رقم الموسوع رقم الموسوع رقم من بياد الموسوع رقم الموسوع رقم من بياد الموسوع رقم الموسوع ا	- تحديد الدوسسات الرسمية المطنية بالمشروع - لويتم تكر كفة لمنوسسات الرسمية المطنية بالمشروع - لويتم تكر كفة لمنوسسات الرسمية المطنية بالمشروع - لويتم تكر كفة لمنوسسات الرسمية المطنية المطنية الموسوع رقم مع توضيح سبب تكر العرب مور رقم الم يتم تكر ذلك - الم يتم تكر ذلك الموسوع رقم من بياد الموسوع رقم من بياد الموسوع رقم من بياد الموسوع رقم الموسوع رقم من بياد الموسوع الموسوع رقم الموسوع رقم الموسوع رقم من بياد الموسوع رقم من بياد الموسوع رقم من بياد الموسوع رقم من بياد الموسوع رقم الموسوع رقم من بياد الموسوع رقم من بياد الموسوع رقم الموسوع رقم الموسوع رقم من بياد الموسوع رقم الموسوع رقم من بياد الموسوع رقم الموسوع ا	تعديد المستات الرسوية المعنية بالمشروع - ليم تكر كلفة المؤسسات - وزارا المبتاء المبتا	ر المستقدية المعنية بالمشروع - لما تعديد المستقدية المعنية بالمشروع - لما تعديد المستقدية المعنية المعنية بالمشروع - لما تعديد المستقدية المعنية المع	- تلاد المستدة المحديدة بالمشروع - لمستدة المحديدة بالمشروع - لمستدة المحديدة المحد	- شريع المستقد المعدد الموسسات الرسية المعدد الموسسات المستقد المعدد الموسسات المستقد المعدد الموسسات المستقد المعدد الموسسات المستقد المعدد الموسسات المعدد المستقد المستقد المعدد المستقد المعدد المستقد المعدد المستقد المعدد المستقد المس	ر قد الالارارات الدوسية المعنية بالمشروع - لدية ذكر كافة المؤسسات - الديسية المعنية ا	رقد المعربة المعلية بالمشروع - المعربة المعلية المعلي	رقد المعربة المعلية بالمشروع - المعربة المعلية المعلي	- المنافر الم	رقد (۱۹۳۲/۱۱) و المنطقة المعلية بالمشروع - المنطقة الموسسات المعلية ا	رقد الالارارات وركا المانية المعلوة بالمشروع - المانية المعلوة المعلوسات - المانية المعلوة المعلوسات - المانية المعلوة المعلوب المسلمة المسلمة المسلمة المسلمة المسلمة المعلوب المعلوب المسلمة المعلوب المعلو	حقد المتدرية (1877/171) . ورا المناب المعلية بالمشروع - ليتر ذكر كافة المؤسسات - المناب المعلية بالمشروع - المناب المعلية الم	ر من (۱۹۳۲/۱۱ من المعند المعن	رقد (۱۳۲۷۲۱) المستوة المطبقة بالمشروع المستوة المطبقة المؤتمة المستوة
معنو توسيع مور كل منها المعنوة المعنو	مع توضيح سبب نكر العرسوم رقم مع والمعافية المعافية المعا	- يعطيه المعنية المعن	مع توضيح دور كل مفها المخترة على المخترة المخترة المخترة على المخترة المخترة المخترة المخترة على المخترة المخ	مع المساعدة و كل مغيا المعنية	مع توضيح دور كا مغيا المعنية	مع توضيح دور كا مغيا المعنية	مع توضيح ورز كل منها الدعنية الدعنية - است الثبا التي معينة الدعنية الدعنية الدعنية الدعنية الدعنية الدعنية الدعنية الدعنية المعينة الدعنية الدعنية الدعنية الدعنية الدعنية الدعنية الدعنية المعينة الدعنية ا	عن قوضيح يور كل مفها المخترة المخترة المخترة المخترة المخترة المختر الله المختر المخت	- وزرا على مسلمة فيه المعنية	- وزرا على مسلمة فيه المعنية	- تحقيق المغنية المغن	ورامية المعنية المعني	عن توليد و المسلمة المغنية المعنية المغنية المغنية المغنية المغنية المعنية ال	مع قوشيح دور كل مغيا الرسعية المعنية	مع توضيح دور كل مغيا الرسعية المعنوة - وزرا الله معنده فيه الستان عبد المنافق المعنوة المعنوة المعنوة المعنوة - وزرا الله معنده فيه الستان عبد المنافق المناف	- Mile Mile Mile Mile Mile Mile Mile Mile	- Mile Mile Mile Mile Mile Mile Mile Mile	- Later   Comparison   Comparis	- المستقب المعنوة الم	- معلد المعربة المعنوة - معلد المعربة المعنوة - وزرا المهاب المعربة المعنوة - المعربة المعر	- تحليد في المستود المعنوة المعنوة - وزار اعلى مستده في المستود المعنوة المعنوة المعنوة - وزار اعلى مستده في المستود المعنوة المعنوة - وزار اعلى مستده في المستود الم	مع توضيح دور كل مغيا الترسية المعنية المعنية	- وزرا الله - مسلمة الله المعلقة المع
- توضيح سبب ذكر العرسوم رقم الم المساعدة على المساعدة المساعدة على المساعدة على المساعدة على المساعدة على المساعدة ا	- توضيح سبب نكر الدرسور رقم الله بالمشروع - لم يتم ذكر ذلك المرسور والم المساعدة في التنديق المالي الثامن، بلوك ١٩٩٧ - المرسورة المعالى الثامن، بلوك ١٩٩٧ - المرسورة المعالى الثامن، بلوك ١٩٨٩ - فكس: ١١/٢٧٢٧ ببروت، لبنان - يعلقه: وورادة البيغة موقع المعارية، الطابق الثامن، بلوك ١٨٩٠ - فكس: ١٥٩٥ - المينم فكس التعاريم المرادة التعاريم ال	- توضيع سبب ذكر المرسوم وهم المها المالية بالمشروع - لم يتم ذكر ذلك المساعدة على العرارية البيلة، مولا العرارية البيلة، مولا العرارية البيلة، مولا العرارية العليق العمن، يلوك ١٩٨٣ - فتكن: ١٠٧٥ - فتكن: ١١٧٥ - فتكن: ١١٥٥ - فتكن: المشروع على العرار التناق المدارية المدالية المدالي	- توضيح سبب ذكر العرسوم رام الم المستروع - لم يتم ذكر ذلك المستروع - لم يتم ذكر ذلك المستروع - لم يتم ذكر ذلك المستروع	- توضيح سبب ذكر العرسوم رقم . لم يتم ذكر ذلك لم يتم ذكر ذلك	- توضيح سبب ذكر العرسوم رام الم المستروع - لم يتم ذكر ذلك المستروع - لم يتم ذكر الله و المستروع - لم يتم ذكر الله و المستروع المستروع المستروع المستروع المستروع - لم يتم ذكر ذلك المستروع المستروع المستروع - وصف المستروع - وصف المستروع - وصف المستروع - المستروع عن المستروع - المستروع عن المستروع عن المستروع عن المستروع - المستروع عن المسترو	- توضيح سبب ذكر العرسوم رام الم المستروع - لم يتم ذكر ذلك المستروع - لم يتم ذكر الله و المستروع - لم يتم ذكر الله و المستروع المستروع المستروع المستروع المستروع - لم يتم ذكر ذلك المستروع المستروع المستروع - وصف المستروع - وصف المستروع - وصف المستروع - المستروع عن المستروع - المستروع عن المستروع عن المستروع عن المستروع - المستروع عن المسترو	عن المراقع والم المراقع والم المراقع والم المراقع والم المراقع والمراقع وا	- توضيع سبب ذكر العرسوم رقم المحمد المستود على المستو	- توضيح سبب نگر الدرسوم رقم - ام يتم نگر ذلك  - الم يتم نگر الله المشتروع - الم يتم نگر ذلك  - المان بنون ۱۹۹۸ و صلته بالمشتروع - الم يتم نگر العزارية، الطبق اللهن، بنون ۱۹۰۳ هـ هناف: ۱۹۹۸ مناف: ۱۹۳۹ مناف الله الرباعي: ۱۹۷۹ مناف الله الرباعي: ۱۹۷۹ مناف ۱۹۷۹ مناف الله الرباعي: ۱۹۷۹ مناف الله الله الله الله الله الله الله ال	- توضيح سبب نگر الدرسوم رقم - ام يتم نگر ذلك  - الم يتم نگر الله المشتروع - الم يتم نگر ذلك  - المان بنون ۱۹۹۸ و صلته بالمشتروع - الم يتم نگر العزارية، الطبق اللهن، بنون ۱۹۰۳ هـ هناف: ۱۹۹۸ مناف: ۱۹۳۹ مناف الله الرباعي: ۱۹۷۹ مناف الله الرباعي: ۱۹۷۹ مناف ۱۹۷۹ مناف الله الرباعي: ۱۹۷۹ مناف الله الله الله الله الله الله الله ال	- توضيع سبب ذكر العرسوم وهم الم الم يتم ذكر الله الم الم يتم ذكر الله الم الم يتم ذكر الله الم الم يتم المالية المشروع - لم يتم المالية المشروع على المرابع ا	- توضيح سبب ذكر العرسوم راجم المستروع	- توضيع سبب ذكر العرسوم رقم الم المستقد المستقد مو المستقد مو المستقد	- توضيح سبب ذكر العرسوم راهم الم المستوع المس	- توضيح سبب ذكر العرسوم رقم الم المستروع - لم يتم ذكر ذلك المستروع - لم يتم ذكر ذلك المستروع - لم يتم ذكر ذلك المستروع - لم يتم المرزال المستروع ا	- توضيح سبب ذكر العرسوم راجم الم المستعدد و المستعدد المرتبع	- توضيح سبب ذكر العرسوم راجم الم المستعدد و المستعدد المرتبع	- توهنيج سبب نكي الفرسوم رقم . لم يتم نكر ذلك	- توضيح سبب نكي العرسوم رقم . لم يتم تكر ذلك	- توضيح سبب ذكر العرسوم راجم . لم يتم ذكر ذلك	- توضيح سبب ذكر العرسوم رقم الم المستروع الم المستروع ال	- توضيح سبب ذكر العرسوم رقم الم المستروع الم المستروع ال	- توضيع سبب نكر الدرسور والم - الم يتم ذكر ذلك الدرسور والم - الم يتم ذكر ذلك الدرسور والم - الم
من بين: ١١/١٢٧٢ بيروت، نينان - هنان: ١١/١٢٧٤ و هنا الزمان بلوك ١٩٨٧ - و قال المنطق الثامن، بلوك ١٩٨٧ - و قامن: ١٩٨٥ - و قامن:	ما المساعدة على التنسيق موق المعالى الثامن بلوك ١٩٥٠ - والرة البيعة، موق المعالى الثامن بلوك ١٩٥٠ - والرة البيعة، موق المعالى الثامن بلوك ١٩٥٠ - والرة البيعة، موق المعالى الثامن بلوك ١٩٥٠ - والمعالى الثامن بلوك ١٩٥٠ - والمعالى المعالى ال	نافي من الادارات المناسدة من المعاورية الطبي اللهن بيوك ١٩٤٢ - المناسدة المناسدة المناسدة من المعاورية الطبي اللهن الإدارات المناسدة من الادارات الرسمية المناسدة من الادارات الرسمية المناسدة من الادارات الرسمية المناسدة من الادارات الرسمية المناسدة المنا	من بين ١١٠/١٧٢١ بيروت، لبنان - هلغي هم يخ اللغوارية، الطبي الثامن، بلوك ١٩٤١ عن ١٩٤٠ المساعدة على التسميل المساعدة المساعدة على التسميل المساعدة المس	من بين ١١/٢٧٢٠ وقرارة البينة مريخ اللغوارية، الطبيق الثمن، بلوك ١٩٩٢ - فاصر: ١٧٥٠ - فاصر: ١١٠٥ - المنافر كة المنافر كة المنافر كة المنافر كة المنافر كة المنافر كة المنافر واصر: المنافر واصر: ١١٠٥ - ا	من بن ۱۱/۱۲۲۱ بيروت، لبنان - هلغي هم هن اللموارية، الطبي اللمن بيوك ١٩٤١ - (١٩٤١) أو هلغه الرقم الرياحية ١٩٤١ - (١٩٤١) أو هلغه الرقم الرياحية ١٩٤١ - (١٩٤١ - ١٩٤٤) أو هلغه الرقم الرياحية ١٩٤١ - فكسر: ١٩٤٥ - ألم يتم ذكل المعاد لو المناف المنا	من بن ۱۱/۱۲۲۱ بيروت، لبنان - هلغي هم هن اللموارية، الطبي اللمن بيوك ١٩٤١ - (١٩٤١) أو هلغه الرقم الرياحية ١٩٤١ - (١٩٤١) أو هلغه الرقم الرياحية ١٩٤١ - (١٩٤١ - ١٩٤٤) أو هلغه الرقم الرياحية ١٩٤١ - فكسر: ١٩٤٥ - ألم يتم ذكل المعاد لو المناف المنا	من بين ١٩٠٨/١٠ بيروت، لبنان - هفتي هم من الله وارية، الفلي الثانين، يلوك ١٩٠١ - فتصن ١٩٠٥ من ١٩٠٠ - فتصن ١٩٠٥ من ١٩٠٠ - فتصن ١٩٠٥ من	المساعدة في التسوية المساعدة في التساعدة المساعدة	نافي من بين ۱۱/۱۷۷۸ و الله الله الله الله الله الله الله ال	نافي من بين ۱۱/۱۷۷۸ و الله الله الله الله الله الله الله ال	دای _ وزارة البینة مرکز اللاواریة الطبق الثان، بدول به المحد المحد و وزارة البینة مرکز اللاواریة الطبق الثان، بدول ۱۷۸۳ - فلکس ۱۷۸۱ - و ۱۷۸۸ - فلکس ۱۷۸۱ - فلکس ۱۷۸۱ - فلکس ۱۷۸۹ - فلکس ۱۷۸۱ - فلکس ۱۸۸۱ الاورسیة المدودة علی الترسیق الترسیق المدودة علی الترسیق الترسیق التربی التربی المدودة علی التربی	ناف من التستورية الفليق الثامن، بلوك ١١/٢٧٢٧ من والما الفليق الثامن، بلوك ١٧٥٠٠ من ١٧٠٠ من ١٧٠٠ من ١٧٠٠ من ١٧٠٠ من ١٧٠٠ من ١٠٠٠ من ١٧٠٠ من ١٠٠٠ من ١٠	من بين ١١/١٧٢١ بيروت، نينن - عنف مويخ الشعورية، الطبق الثامن بيوك ١٩٤٧ - فلكس: ١٧٩٠ - فلكس: ١٩٥٠ - أم الم ذكر ذلك المساعدة في الشعورية على العرب المستعلى المستعلى والمستعلى المستعلى	مناي من بلاك ١٩٠٤ - فالمن بلاك ١٩٠٥ - وزارة البيغ، مريخ اللغال اللمن بلاك ١٩٠٥ - فالمن المن بلاك ١٩٠٥ - فالمن المن المن المن المن المن المن المن	منه مرقد اللمتورية الطبق الثامن، بلوك A-4 New مرقد اللمتورية اللمتورية الطبق الثامن، بلوك ١٧٨٠ - فاكس: عند المسلمة في التنسيق المناه النواد المناه المناه النواد المناف النواد المناف النواد المناف النواد المناف النواد المناو المناف النواد المناف المناف النواد المناف المناف النواد النواد المناف النواد المناف النواد المناف النواد المناف النواد المناف النواد المناف المناف النواد المناف النواد المناف المناف المناف المناف النواد المناف	مناي _ وزارة الهيدة مريخ اللغوارية الطبيق اللمن بلوك ١٩٠٨ - والمنا الطبيق اللمن بلوك ١٩٠٨ - فكمن: ١٧٨٠ - فكمن: ١٨٨٠ - فكم	مناي _ وزارة البينة مريخ اللغوارية الطبي اللمن بلوك A-4 New عن بلوك و المعالى اللمن بلوك المعالى اللمن بلوك المعالمة على المعالى اللمن بلوك المعالمة المعالى اللمن المعالى اللمن المعالى اللمن المعالى المعال	مناي _ وزارة البينة مريخ اللغوارية الطبي اللمن بلوك A-4 New عن بين المعالى اللمن بلوك (١٩٤١) مريخ اللغوارية الطبي اللمن بلوك ١٧٨٠ وعد ١٧٨٠ مريخ اللغوارية الطبي اللمن بلوك ١٩٤٠ عن ١٧٨٠ عن ١٩٥٠ عن ١٧٨٠ من المعالى ال	من بين ١١/٢٧٢٧، بيروت، نينن - هفتي هفتي هفتي هفتي هفتي هفتي هفتي هفتي	ناي وزارة البينة، مركز اللغة الوثية الطبق الثامن، بلوك ١٩٢٨ مركز اللغة الوثية الطبق الثامن، بلوك ١٩٢٨ ومن ١٩٠٠ ومن ١٩٠٠ ومن المن المن المن المن المن المن المن ال	منافي وزارة البيئة مرفز اللملازية، الطلق الثامن، بلوك A-4 New مرفز اللملازية، الطلق الثامن، بلوك 4-4 New مرفز اللملازية، الطلق الثامن، بلوك 1707 من وجاءة المستحدة الإنترنت: 1704 - فاتصن 1707 من واحدة الإنترنت: 1704 - فاتصن 1707 من واحدة الإنترنت: 1704 - فاتصن 1707 من واحدة المرفز	مناي وزارة البيئة مريخ اللغوارية الطبي الثانين بلوك A-4 New على الثاني الثانين بلوك 1747) و مناه الرفيا الثانين الثاني الثانين الثاني الثانين بلوك 1747) ميروت، لبنان - مناعة الإشرائية الطبي الثانين بلوك 1747 - فاكس: 1740 - فا	منان مناعدة من الشخص من المناعدة
وزارة البينة، موقز الطعزارية، الطبق الثامن، يلوك ١٧٨٥ - فلكسن، ١٧٤٥ - فلكسن ١٧٨٥ - فلكسن ١٨٨٥ - فلكن ١٨٨٥	من بين ١١/١٧٢٧، بيروت، لبنان - هلقية، مريخ اللغزارية، الطبيق اللغن، بلوك ١٧٨٩ - فلكس: ١٧٠٥٠٠ من ١٧٠٠ - فلكس: ١٧٠٠٠ - فلكس: ١٧٠٠ - فلكس: ١٠٠٠ اللغزية المناسة المناس	وزارة البينة، موكن التعارية، الطبق الثامن، يلوك ١٧٨٣ - فتصن: ١٧٨٥ - فتصن: ١٨٨٥ التعارية خلال إعداد تواسة تقويم الإثرات الرسطية العارية خلال إعداد تواسة تقويم الإثرات الرسطية العارية خلال إعداد تواسة تقويم الإثرات الرسطية العارية	من بين ١٧٩٠ عنية موق الفرارية الطبق الثامن بلوك ١٧٩٠ عنية ١٩٩٠ عنية ١٩٩٥ عن	عن ب: ١١/١٧٢٧، بيروت، لينان - هنفد هند (١٤٦٥) أو هناك الرقم الراباعي: ١٧٨٥ - فلكس: ١٨٨٥ - المنابعة المنابة خلال إعداد در اسه تقريم الآثر المنابرة ال	على المساعدة في التنسيق موق العزرية الطبق الثامن بلوك ١٧٨٠ - فتكس: ١٨٨٠ - فتكس: ١٨	على المساعدة في التنسيق موق العزرية الطبق الثامن بلوك ١٧٨٠ - فتكس: ١٨٨٠ - فتكس: ١٨	(وزارة البيغة، مريز اللغوارية، الطابق الثامن، بلولت ١٧٨٧ - فاتصن ١٧٩٥-١٠٠٠ - فاتصن ١٩٩٥-١٠٠٠ - فاتصن ١٩٩٥-١٠٠ - ف	من بين ١٧٩٠ من المنافذ قد ١٩٠٥ من المنافذ قد المنافذ قد المنافذ ال	وزارة البينة، مرفز المغازارية، الطابق الثامن، بلوك A-4 New بلوك المعارب الثامن، بلوك A-4 New من المعارب المعا	وزارة البينة، مرفز المغازارية، الطابق الثامن، بلوك A-4 New بلوك المعارب الثامن، بلوك A-4 New من المعارب المعا	وزارة البيئة، وهزارة البيئة وهزارة البيئة وهزارة البيئة وهزارة المنافق النامن، بلوك ١٧٨٨ - فتكس: ١٧٢٥٠ - فتكس: ١٠٠٠	وزارة البينة، موق القدارية، الطبق الثامن، يلوك ١٧٨٥ - من ١٧٨٠ - من ١٧٨٥ - من ١٧٨٠ - من ١٨٨٠ - من ١٧٨٠ - من ١٨٨٠ - المن ١٨٨١ - الم	وزارة البيعة، وهزي المعارارية، الطابق اللهنان، بلوك المعارات المعارات المعارات المعارات المعارات المعارفة الطابق اللهنان، بلوك المعارفة الطابق المعارفة الرياض ( ١٧٦٠ - فتصن: ١١/١٢٧٠ - فتصن: ١١/١٢٧٠ - فتصن: ١١/١٢٧٠ - فتصن: ١١/١٢٧٠ - فتصن المعارفة	من ب.: ۱۷۸۱ بيروت، لبنان - هاغان الله العالم الله الله الله الله الله الله الله ا	وزارة البينة، موقد المعترارية الطباق المان، بادوت المعارية الطباق المان، بادوت المعارية الطباق المان، بادوت المعارية المعارية الطباق المعارية المع	وزارة البينة موكز المعارفة بينان على المعارفة المهابي اللمان، بيوك ١٩٨٧- (١٩٨١- أو المتا الرقم الرياعي: ١٩٨٩- في المتا الرقم الرياعي: ١٩٨٩- في المتا الرقم الرياعي: ١٩٨٩- في المتابعة	من ب.: ۱۱/۲۷۲۷ بيروت لبنان - هنتان « ۱۹۰۵ (۱۹۰۵ ) و هنا الرقم الريامي ۱۷۹۱ - فتص: ۱۷۹۳ - فتص: ۱۷۹۳ - فتص: ۱۷۹۳ - فتص: ۱۷۹۳ - فتص: ۱۷۳۳ - فتص: ۱۷۳۳ - فتص: ۱۳۳۳ - فتص: ۱۳۳ - فتص: ۱۳۳۳ - فتص: ۱۳۳ - فتص: ۱۳۳ - فتص: ۱۳۳ - فتص: ۱۳۳ - فتص:	وزارة البيدة بركز المعاورية الطابق الثامن بلوك المعاورية الطابق الثامن بلوك المعاورية الطابق الثامن بلوك المعاوري المعاوري المعاورية الطابق التعاورية الطابق التعاورية الطابق التعاورية المعاورية ا	وزارة البيغة، مرفز الفعارارية، الطفيق الثامن، بلوك ١٩٠٧- عندن، ولوك ١٩٠٤- عندن، ولوك ١٩٠٤- عندن، ١٩٠٥- ١٩٠٥- ١٠٠٥- ١٩٠٥	عن به: ١١/٢٧١٧، بيروت، لبنان - يمتقاد موكز المعترارية، الطبق الشمن يلوك ١٩٨٥ - فاصل ١٩٨٥	وزارة (البيئة، موقد المعرازية، الطباق المامن، بادو سنة (المعرازية، الطباق المامن، بادو ۱۹۸۳) ميروت. لبنان ـ هناغة: (۱۹۸۹ ـ فاتلف: ۱۹۸۱ ـ فاتلف: ۱۹۸۹ مناف: ۱۹۸۹ ـ فاتلف:	عن. ب: ۱۱/۲۷۲۷ بيروت، لبنان ـ هلتان هروز المعاقرية، الفابق الشمن بلوده الرياعية الفابق الشمن بلوده (۱۹۹۲) و هلتا الرقم الرياعية ۱۷۸۱ ـ فلاس: ۱۷۸۰ ـ فلاس: المساعدة في التنسود المساعدة في التنسود المساعدة المسادة المس	وزارة البينة مرفز التعاريف، الطابق الثامن، بلوك ١٠/١٧٢٠ من بلوك ١٠٠٠ على ١٠٠٠ على المساعدة من التصوف المساعدة على المساعدة الإثنرلت: ١٧٠١ - فلكس: ١٧٠٠ - فلكس: ١٧٠٠ - فلكس: ١٠٠٠ - المساعدة على التصوف المساعدة على التصوف المساعدة الإثنرلت المساعدة الإثنرلت المساعدة المساعدة الإثنرلت المساعدة
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العشارة الثانية خلال   عداد خراسة الثانية خلال   عداد خراسة الثانية الإثر التاني   التريني التريني   التريني   التريني   التشارع ضبية الى river   المقترح ضبية الى buffer zone and floodplain   - لم يتم ذكر ذلك - توضيع شاملة خديثة عباد قبير الغزايل وتناصيله   - حديد كانة تناصب م كذات الدراء   - حديد كانة تناصب الم كانة كانة كانة كانة كانة كانة كانة كانة		- وصف المشروع - النيني المحيطة المناوع في النيني المحيطة المناوع في النيني المحيطة المناوع عن التجمعات المناوع النينية المحيطة المناوع عن التجمعات المناوع النينية المحيطة المناوع عن التجمعات المناوع عن التجمعات المناوع عن التجمعات المناوع النينية المحيطة النينية المناوع النينية المناوع النينية المناوع النينية النينية المناوع النينية النينية المناوع النينية النين		وصف المشروع النسبة المستدان التنبية خلال عام المستدان ال					- المساعدة في التنسيق - دعوة المؤالر عن 1 المساهد المس	- المساعدة في التنسيق - دعوة المؤار عز و المسدد "	العامة الثانية بيوا	حسف المشروع - وسف المشروع - الليني التراث المشروع - وسف المشروع - الليني التراث المشروع - المشروع - المشروع - المشروع - المشروع المشروع المشروع المسروع المسلوع المسروع المسلوع المسروع المسلوع المسروع المسلوع المسروع المسلوع المسروع المسلوع المسروع المسروع المسلوع المسروع المسلوع المسروع المسلوع	النباغي على المسلم الم	- وصف المشروع - التنبغ خلال أعداد دراسة تقييم الإن المقتر - تحديد موقع المشروع سية الله المستورع المشروع سية الله المستورع المشروع سية الله المستورع المستو	- وصف المشروع - المشاه المائية خلال إعداد دراسة تقييم الأخ التيني - تحلاد موقع المشتقيم الأخ المغتر - تحلاد موقع المشروع - تحلاد موقع المشروع المبية الى river - لونقد ذك ذلك		وصف الفتروع والمستخدم المستوعة المستوع	وصف العشروع التيم خلال المشروع المسلم التيم الال المشروع المسلم التيم الال المشروع المسلم الله المشروع المسلم الله المسلم المسل	العامة الثانية عالى المستورة - وصف المشتروع - وصف المشتروع - تحديد ما وقد الدن تتييم الأثر المثان المشتروع - تحديد ما وقد الدن - تحديد ما وقد الدن المثان ا	المنظمة الثانية خلال إعداد من المنظمة المنظ	العباد التعالق التعال	العباد المسلم ال	العلمة الثانية خلال أعداد دراسة تقييم الأثر العداد دراسة تقييم الأثر
العشارة الثانية خلال   عداد خراسة الثانية خلال   عداد خراسة الثانية الإثر التاني   التريني التريني   التريني   التريني   التشارع ضبية الى river   المقترح ضبية الى buffer zone and floodplain   - لم يتم ذكر ذلك - توضيع شاملة خديثة عباد قبير الغزايل وتناصيله   - حديد كانة تناصب م كذات الدراء   - حديد كانة تناصب الم كانة كانة كانة كانة كانة كانة كانة كانة	العقدة الثانية غلام الثانية التي الثانية التي الأنانية التي hiver وعد المشتر وع المشروع المشروع المشتر من المستروع المسترو	- وصف المشروع - النيني المحيطة المناوع في النيني المحيطة المناوع في النيني المحيطة المناوع عن التجمعات المناوع النينية المحيطة المناوع عن التجمعات المناوع النينية المحيطة المناوع عن التجمعات المناوع عن التجمعات المناوع عن التجمعات المناوع النينية المحيطة النينية المناوع النينية المناوع النينية المناوع النينية النينية المناوع النينية النينية المناوع النينية النين		وصف المشروع النسبة المستدان التنبية خلال عام المستدان ال						with the same and	العامة الثانية بيوا	حسف المشروع - وسف المشروع - الليني التراث المشروع - وسف المشروع - الليني التراث المشروع - المشروع - المشروع - المشروع - المشروع المشروع المشروع المسروع المسلوع المسروع المسلوع المسروع المسلوع المسروع المسلوع المسروع المسلوع المسروع المسلوع المسروع المسروع المسلوع المسروع المسلوع المسروع المسلوع	النباغي على المسلم الم	- وصف المشروع - التنبغ خلال أعداد دراسة تقييم الإن المقتر - تحديد موقع المشروع سية الله المستورع المشروع سية الله المستورع المشروع سية الله المستورع المستو	- وصف المشكر الثانية خلال إعداد دراسة تقييم الأخ التغيي المشكر على المشكر المشكر المشكر المشكر المشكر المشكر المشكر المسكر المشكر المسكر المس		وصف الفتروع والمستخدم المستوعة المستوع	وصف العشروع التيم خلال المشروع المسلم التيم الال المشروع المسلم التيم الال المشروع المسلم الله المشروع المسلم الله المسلم المسل	العامة الثانية عالى المستورة - وصف المشتروع - وصف المشتروع - تحديد ما وقد الدن تتييم الأثر المثان المشتروع - تحديد ما وقد الدن - تحديد ما وقد الدن المثان ا	المنظمة الثانية خلال إعداد من المنظمة المنظ	العبدة الثانية خلال المستعد العبدة الثانية خلال إحداد واستعد العبدة الثانية خلال إحداد واستعداد التيديد الأور	العباد المسلم ال	العلمة الثانية خلال أعداد دراسة تقييم الأثر العداد دراسة تقييم الأثر
العشارة الثانية خلال   عداد خراسة الثانية خلال   عداد خراسة الثانية الإثر التاني   التريني التريني   التريني   التريني   التشارع ضبية الى river   المقترح ضبية الى buffer zone and floodplain   - لم يتم ذكر ذلك - توضيع شاملة خديثة عباد قبير الغزايل وتناصيله   - حديد كانة تناصب م كذات الدراء   - حديد كانة تناصب الم كانة كانة كانة كانة كانة كانة كانة كانة	العامة اللانفية خلال اللانفية خلال اللانفية خلال اللانفية خلال اللانفية المال اللانفية خلال اللانفية المالية اللانفية اللانفية الانفية الانفية الانفية الانفية المالية الانفية اللانفية اللانفي	- وصف المشروع - النيني المحيطة المناوع في النيني المحيطة المناوع في النيني المحيطة المناوع عن التجمعات المناوع النينية المحيطة المناوع عن التجمعات المناوع النينية المحيطة المناوع عن التجمعات المناوع عن التجمعات المناوع عن التجمعات المناوع النينية المحيطة النينية المناوع النينية المناوع النينية المناوع النينية النينية المناوع النينية النينية المناوع النينية النين		وصف المشروع النسبة المستدان التنبية خلال عام المستدان ال					all wall was a second of the s		العامة الثانية بيوا	حسف المشروع - وسف المشروع - الليني التراث المشروع - وسف المشروع - الليني التراث المشروع - المشروع - المشروع - المشروع - المشروع المشروع المشروع المسروع المسلوع المسروع المسلوع المسروع المسلوع المسروع المسلوع المسروع المسلوع المسروع المسلوع المسروع المسروع المسلوع المسروع المسلوع المسروع المسلوع	النباغي على المسلم الم	- وصف المشروع - التنبغ خلال أعداد دراسة تقييم الإن المقتر - تحديد موقع المشروع سية الله المستورع المشروع سية الله المستورع المشروع سية الله المستورع المستو	- وصف المشكر الثانية خلال إعداد دراسة تقييم الأخ التغيي المشكر على المشكر المشكر المشكر المشكر المشكر المشكر المشكر المسكر المشكر المسكر المس		وصف الفتروع والمستخدم المستوعة المستوع	وصف العشروع التيم خلال المشروع المسلم التيم الال المشروع المسلم التيم الال المشروع المسلم الله المسلم المس	العامة الثانية عالى المستورة - وصف المشتروع - وصف المشتروع - تحديد ما وقد الدن تتييم الأثر المثان المشتروع - تحديد ما وقد الدن - تحديد ما وقد الدن المثان ا	المنظمة الثانية خلال إعداد من المنظمة المنظ	العبدة الثانية خلال المستعد العبدة الثانية خلال إحداد واستعد العبدة الثانية خلال إحداد واستعداد التيديد الأور	العباد المسلم ال	العلمة الثانية خلال أعداد دراسة تقييم الأثر العداد دراسة تقييم الأثر
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- تحديد كاند بالدر . - تحديد كاند كاند كاند الدر	- تحديد كالة تقاصيل ومكونات للمشروع في - تحديد كالة تقاصيل ومكونات للمشروع في - در العزيل وكلونات للمشروع في -	- تحديد كالهدة تعديد الهديدة ويور الغزيار و تقاصطله - وصنف اليونة المحيطة - تقدير الراز اليين المحيطة بالمشروع - الم يتم ذكر ذلك المشروع - الأثر العندية المحتروع عن التجمعات السكنية المحتراة المستروع - الأثر العندية المحتروع عن التجمعات السكنية المحتراة المتروع عن التجمعات السكنية المحتراة المتراوع عن التجمعات السكنية المحتراة المتراوع عن التجمعات السكنية المحتراة المح	- تحديد كله تفاصيل و محد كلت المشروع في المستقدة المحديدة المحديد	- تحديد كاله كالمسلوم و كو كذات المشروع في - تحديد كاله كالمشروع في - تحديد كاله كالمشروع في - الم يتم ذكر ذلك - المشروع عن التبدعة المحتولة بالمشروع عن التبدعة المحتولة بالمشروع عن التبدعة المحتولة بالمشروع عن التبدعة المحتولة المشروع عن التبدعة المشروع عن التبدينية المحتولة المشروع عن التبدينية المحتولة المشروع عن التبدينية المحتولة المشروع التبدينية المحتولة المشروع عن التبدينية المحتولة المسلوم	- تحديد كالة تفاصيل و للمسلول و المسلول ا	- تحديد كالة تفاصيل و للمسلول و المسلول ا	- تحديد كالة تفاصيل ومركولات النشروع من المسلوم الله الله الله الله الله الله الله الل	- تحديد كافة تفاصيل مرحكولات النشروع في المشروع المستود المست	river مصفروع المتروع نسبة الى river - لم يقد ذي ذلك.	العقدة الثانية خلال أخط المستعدد الثانية خلال أخط المستعدد العداركة - و مستعدد الد	المتن المشروع - تخلام مؤسلا	م دور کاری الغزیل و تفاصیله	وصنيح تشاط تعينة مياه تيم التقليل و تقاصيله	" توضيح نشاط تعدة ما له زير الان الان الان الان الان الان الان الا	4. 411 N m 20 M T			hutter zone and work		river and a co-dolain			
	ند اسة قدر الله ا				= وصف البيئة المحيطة - تقصيل وصف البيئة المحيطة بالمشروع - الميئة المحيطة بالمشروع - المؤلف البيئة المحتملة - الأثار البيئية المحتملة - المشروع عن التجمعات السكنية - المشروع - حد المؤلف المشروع - حد المؤلف المشروع - حد المؤلفة المحتملة المحتملة المحتملة - تحليل الميئة المحتملة المحتمل	= وصف البيئة المحيطة - تقصيل وصف البيئة المحيطة بالمشروع - الميئة المحيطة بالمشروع - المؤلف البيئة المحتملة - الأثار البيئية المحتملة - المشروع عن التجمعات السكنية - المشروع - حد المؤلف المشروع - حد المؤلف المشروع - حد المؤلفة المحتملة المحتملة المحتملة - تحليل الميئة المحتملة المحتمل			المرابع المراب	- وصعف المشروع - الطبقة الثانية علال أعظ المساورة المساورة الثانية الثانية علال أعظ المساورة الأسراد المساورة	المقتر و 2 من المقدر موق المشاروع لمسية الى river - لع نقد لك ذلك.		تحديد كافة تفاصيل و م كنات الا ع	م د در کان می است سود نهر انعراض و تفاصیله	وتستيح تساط تعيثة مياه تعيد القذاب تدا	وصلح نشاط زيورة بالدران	- توضيح نشاما كسنة ب		nullel zone and				militer zone une
وصف البيئة المحيطة - تصال البيئة المحيطة - تصال البيئة		_ بالمستورع نهويتم دكل ذلك نهويتم دكل ذلك نهويتم دكل ذلك المواقع دلك نهويتم دكل ذلك المواقع دلك	- بالمشروع - لم يتم تكر ذلك - المشروع - لم يتم تكر ذلك - الأثار البيئية المختملة - المسكنية - لم يتم تكر ذلك - المشروع - الم المتراكبة - المسكنية - المسكنية - المستملة - المستم	- المشروع - المستملة بالمشروع مع - لم يتم ذكر ذلك - الم يتم ذكر ذلك - الم يتم ذكر ذلك - الم يتم ذكر ذلك - المراتب المستملة المشروع عن التجمعات السكنية المستملة المشروع عن التجمعات السكنية المستملة - الم يتم ذكر ذلك - المراتب المستملة - المراتب المراتب المستملة - المراتب المراتب المراتب المراتب المستملة - المراتب الم	- بالمشروع - لم يتم تكر ذلك المشروع - الم يتم تكر ذلك المشروع - در السنة دلانا الله من الله من الله من المشروع - در السنة دلانا الله من ال	- بالمشروع - لم يتم تكر ذلك المشروع - الم يتم تكر ذلك المشروع - در السنة دلانا الله من الله من الله من المشروع - در السنة دلانا الله من ال		- بالمشروع - تحديد ابعاد المشروع - تم يتم ذكر ذلك - الم يتم ذكر ذلك - تم يتم ذكر دلك - تم يتم دلك	د اسة تقدر الأخراء .	العبادة المثانية خلال أعاد لد واسد العباد الأدر اسد العباد المثانية خلال أعاد لد واسد العباد الأدر اسد العباد المثانية المثانية الس المثانية الس المثانية الس المثانية الس المثانية الس المثانية المثاني	المقتر ع كوفع - تعديد موقع المشروع نسية الى river - الم يتم ذكر ذلك buffer zone and foodplain - توضيع نشاء مها ديد الزائر و قاسطيا -			المسيد كافه تقاصيل و مكه زات بال الم	- تحدید کافهٔ تناصیل و مک لات ال	- تحدید کاله تقاصدالی یک کال ۱۳ در اور کال ۱۳ در اور اور ان کال ۱۳ در اور اور ان کال ۱۳ در اور اور کال ۱۳ در ا	ا تحدد كالتي المالية مياه نهر الغزيل وتفاصيله	م كردند كاليّ من الغزيل وتفاصيله	م دري کان د مايد د د د کان د د د کان د د د کان د د د د د کان د د د د کان د د د کان د د د کان د د د کان د د کان د د کان د د کان د د د کان د	buffer zone and Hoodpain.  - توضيح شاط نعينة مياه نهر الغزيان و تفاصيله  - توضيح شاط نعينة مياه نهر الغزيان و تفاصيله	buffer zone and Iloodynam المنظمة الم	buffer zone and floodpain  - توضيح شاط کبينة مياه نهر الغزياء و تفاصيله	الم أحدد كان من الفراد الغزيل وتفاصيله
داهن وصف النبية المحدما ق. ال ه	_ بالمسروع ـ _ ـ ـ ـ ـ ـ ـ ـ	المحتملة	Linear C a Marie C a	للمشروع	- تسكير وع - تسكيل المشروع - در اسة بدانا ، الدين ما تراق عرب	- تسكير وع - تسكيل المشروع - در اسة بدانا ، الدين ما تراق عرب	للمشروع - دراسة بدلال المشروع المحتملة لجهة العباد - الم يتم ذكر ذلك المشروع المحتملة المجهة العباد - الم يتم ذكر ذلك المشروع المحتملة المجهة العباد المشروع المحتملة المحت	- تحليل البدائل المشروع - دراسة بدائل المشروع المحتملة المهاة المياه - لم يتم ذكر ذلك المسلم وعلى المسلم المسلم والمسلم المسلم والمسلم المسلم والمسلم	المشروع المسروع المسروع المساوع المساو	وصف المشروع - الليني الماسروة المستوحة التالية خلال على المستوحة التالية خلال على المستوحة التالية المستوحة السياس المستوحة السياس المستوحة المستو	المقترح ودع	وصف البيئة المحتطة من الأكر للبيني	در اسمة تقدر الأثر ال	د اسة تقدر الخب المستروع في	د اسة نقر، الأراد المشروع في	در امدة كقاد الأدار ال	- تحديد كالحدة مياه دفير الغزيا، وتفاصيله - تحديد كالحدة تفاصير كالحديث المشروع في المضروع في المشروع في المض	- تعدید کافته میاد نفر الغزیل و تفاصیله - تعدید کافه تفاصیل و کردان المشروع فی در اسه تقد ، 193 را می کافت المشروع فی	- تحديد كالة تخاصيل ومكونك المشروع في - تحديد كالة تخاصيل ومكونك المشروع في دو أسد تشدر رايخ س	• huffer zone and Hoodpain:  - أوضية بشاط لموتلة كبيلة بالغزيل أو الغزيل الغزيل و الغزيل و الغزيل أو تقاصيله  - تحديد كالة تقاصيل ومكولات المناجر ع عي  - لا اسة تتدب كلا تقاصيل ومكولات المناجر ع عي	buffer zone and floodphan:  - توضیح البند الغذایا الله دیند الغذایا الله و الغذایا الله  - تعدید کافه تعلیسای دیر الغذایا الله  - تعدید کافه تعلیسای دیر الغذایا الله	* ما بنام بخور دست buffer zone and Hoodpani * وخوست بنام تلف تقیدا بر الغزام از مقامسیله * تخدید کفافه تقامسیل و مکولت المشاری * دارسه تقدیر و علی	- تحديد كالة تعلق عيادة به الغزيا و تقاصيله - تحديد كالة تقاصيل ومكونات المشروع في
معمور ع ما معمور ع مع - لم يتم ذكر ذلك المدور ع من التجمعات المدور ع من التجمعات المدور ع من التجمعات المدور ع	Line Company of the C	للمشروع			- تعطيل البدائل للمشروع - در اسة بدائل الشروع المتال الشروع المتال الشروع المتال الشروع المتال الشروع المتال المشروع المتال المشروع المتال المشروع - در اسة بدائل المشروع - در اسة بدائ	- تعطيل البدائل للمشروع - در اسة بدائل الشروع المتال الشروع المتال الشروع المتال الشروع المتال الشروع المتال المشروع المتال المشروع المتال المشروع - در اسة بدائل المشروع - در اسة بدائ	حطيل البدائل المشروع - دراسة بدائل المشروع المحتملة الجهة الميد - لم يتم ذكر ذلك     المحالية، الموجراء، والنبتات النتجة عن	- تدليل للبدائل للمشروع - دراسة بدائل المشروع المحتملة لمهة العياد - لم يتم ذكر ذلك المشروع المحتملة لمهة العياد - لم يتم ذكر ذلك المشروع والنباتات للناتجة عن	الآثاء النبية العداد المشروع عن التجمعات الميكلية	وصف المشروع السيم  السيم السيمة السيم	المتترح ودع المستودع نسبة الى river من المستودع نسبة الى river من المستودع نسبة الى river من المستود	وصف البيئة المحيظة - تقصيل وصف البيئة المحيظة -	- وصف البيئة المحيطة - تتميل الإنتازية المحيطة دائية الحجيطة دائية الحجيطة دائية الحجيطة دائية الحجيطة دائية الحجيطة دائية الحجيلة ال	- وصف البيئة المعيطة - تصيل وصف البيئة المحيطة بالمشروع في المشروع المسابل وصف البيئة المحيطة بالمشروع في المشروع في الم	- وصف البيئة المحيطة - تصيل ومسا البيئة المحيطة بالمشروع في الأسلام البيئة المحيطة بالمشروع في المساوية المساو	وصف البيئة المحيطة - تفصيل وصف البيئة المحيطة الشارع على المثار ع المثار ع على الم	- تصديد كلة قاعدس و مجاود في الأراب و قامديله - تصديد كلة قاعدس و مجاود الشروع فامديل - وصدت اللبينة المحيطة - وصدت اللبينة المحيطة الشروع على المحيطة	- وصف اللبنة المحيطة و تقوي الأراض و تفاسيله - وصف اللبنة المحيطة و تقوي الأراض و تفاسيله - وصف اللبنة المحيطة و تقوي الأراض و	- تحديد كافة تفاصل وحكرات المشروع في الليغة المحلولة و الخزاق وتغاصلية وصف الليغة المحلولة المشروع في المشروع في المشروع في المشروع في المشروع وعدل المشروع في المشروع وعدل ا	* huffer zone and Hoodpain*  - "وضيية السلط لمتع غيار بنا و للغزيال و للغزيال و تفاصيله  - وصيف البيئة المحيطة " تتويم الأثر البيئة المحيطة المتعلقة المحيطة المتعلقة المحيطة الشناء عدم المتعلقة المحيطة المتعلقة المتعلق	• huffer zone and floodphant و توضيح للمنظ المنظ بديا في المغزل المنظ المنظ بديا المغزل المنظ المنظ بديا المغزل و المغزل المنظر و على المغزل المنظر و على المنظ ا	hurfer zone and Hoodpant و توصيع نشاط تعلق مها به مها يكو كنك - وصيف الله تعلق المعالم المعال	- مديد كالمها مواد مرا الغزاق الغزاق و br>- وصعف البيئة المحيطة - تعصيل الأرسمة المها المحيطة الشدوع في - تعصيل المصديدة المحيطة الشدوع في - المصديدة المحيطة المحيطة المحيطة المحيطة الشدوع في المصديدة المحيطة
Line of the state	- religible 11.5 - ce lunk etil 11.5 - ce lunk			- تحقيل للبدائل للمشروع - دراسة بدائل المشروع المحتدلة المدائل المشروع المحتدلة المدائل	المحتملة نجهة المياه - أو دلك ذكر الاد	المعالجة المحرب النبات التاريخ	المعاجه الوجرات والنباتات الناتجة عن	المعتجه الوجول والنبائث للثانية عن	Line Company of the C		المقترح و المستود المستود المستود الله المستود الله المستود الله المستود الله المستود الله الله الله الله الله الله الله الل	وضعا اللهذة المحولة . - المسروع - المسروع - المواتم ذكر ذلك المحتملة المستوع - المواتم ذكر ذلك المحتملة المستوع - المواتم ذكر ذلك المحتملة المحتملة المحتملة المحتملة المحتملة المحتملة المحتملة المحتملة - المواتم المحتملة المحتملة - المحتملة	- وصف اللبينة المحيطة - تفصيل وصف البينة المحيطة - تفصيل وصف البينة المحيطة المح			- وصطف الليئة المحيطة - تصبل وصف الليئة المحيطة بالشروع من المحيطة بالشروع عن التجمعات المحيطة بالمشروع - لم يتم ذكر ذلك المراكز المحيطة بالمشروع عن التجمعات المكتبة المحتملة المكتبة المكتبة المحتملة المكتبة المكتبة المحتملة المكتبة ال	حسف البينة المحيطة من المستوع في منا نبر الأزبار وتفاصيله ومضا البينة المحيطة منا المستوع في المستوع في المستوع المستوع منا البينة المحيطة منا المحيطة المستوع عن التجمعات السكتية المحيطة المستوع عن التجمعات السكتية المحتملة المستوع عن التجمعات السكتية المستوع عنا التجمعات المستوع عنا التحديد المستوع عنا المستوع عنا المستوع عنا التحديد المستوع عنا	- وصف البينة المحيطة - تقصول وصف البينة المحيطة المحتملة المحتملة المحتملة المحتملة المحتملة المحتملة المحتملة المحتملة المحتملة - المحتملة المحتملة - المحتملة المحتملة المحتملة - المحتملة - المحتملة - المحتملة المحتملة - المحتملة - المحتملة - المحتملة - المحتملة - البينة المحتملة - ال	منظم المستقبة المحيطة و الخزيا و كالمسيلة المحيطة و الخزيا و كالمسيلة المحيطة و الخزيا و كالمسيلة المحيطة و المستقبة المحيطة	- وموسة المولة المحيدة المحيدة المسلوم - المسلوم المس	- وتوسق اللهائة المتعلقة المت	burfer zone and Hoodphan     "جوسعية للملك للقرية للموقع الملك للملك للملك للملك للملك للملك للملك الملك الم	- تحديد كانة تفصيل وعرفت الغربة على الغربان و تفاصيله و تحديد كانة تفسيل و تحديد كانة تفسيل و تحديد كانة تفسيل و تحديد المشروع في المستورة و تصديد المستورة و المشروع عن التجمعات السكنية المستورة على التجمعات السكنية المستورة عن التحديد المستورة عن التحديد التح
تخطيل البدائل للمشروع - در اسة بدانا، الدن ما المتاريخ	المستروع المحتملة لجهة المياه   - لديته ذك ذاك	- تحليل البدائل للمشروع - در اسة بدلال المشروع - در اسة بدلال المشروع	ين ميسروع - دراسة بدائل المشروع المحتملة لمهية المياه - لعنت ذي ذاك.	الله لك الله الك الله الله الله الله الل	المعاجة الدورين الدورين		Thursday March 1995	- خطة الإدارة السنة		وصف المشروع والميث التالية خلال أصاد تراسة تهيد الالرك الميث الميثر أصاد تراسة تهيد الالرك الميثر الألف المتروع الميث الميثر ال	المقترح وقع المشروع نسبة الى river المقتر على المشروع نسبة الى river المقتر على المشروع نسبة الى المشروع المشروع المشروع المشروع على المشروع المشروع على المشروع	Charal Hayar Hazarda   Charal Hayar Character Chara	- وصف اللبينة المحيطة - تقصيل وصف اللبينة المحيطة - تقصيل وصف اللبينة المحيطة			وصف اللينة المحيطة - تصبل وصف اللينة المحيطة - تصبل وصف اللينة المحيطة ا	- تعديد كلة كالعباد في الذران وتأسيله - وصعت اللينة المحيطة - وصعت اللينة المحيطة - تصبي الإساق المحيطة بالمشروع - تمينا التجمعات السكروع عن التجمعات السكروع عن التجمعات السكروع - تعليل الدائل اللينة المحيطة المشروع - دراسة بطال المتاريخ	- وصعف اللبنة المحينة - وصعف اللبنة المحينة - تقديد كافة اعتمال وحكولات المشروع في المحينة - تقصيل وصف اللبنة المحينة - تقصيل وصف اللبنة المحينة والمشروع عن التجمعات السكنية المحتملة - المتلاز اللبنية المحتملة - حديد المعاد المشروع - حدالمة بطال الاشتراع - حدالمة بطال المشروع - حدالمة	- تصديد كلة تقديد لوجود كلة المسلول وحكولات الشروع في المرابعة المحيطة والمسلولة المحيطة بالمسروع المحيدة المحيطة بالمسروع على التجديد المحد المشروع عن التجمعات السكنية المحيطة بالمسروع عن التجمعات السكنية المحيطة المسروع عن التجمعات السكنية المحيطة المسروع عن التجمعات السكنية المحيطة المسروع عن التجمعات السكنية المسروع عن التجمعات السكنية المسروع عن التجمعات السكنية المسروع عن التجمعات السكنية المسروع عن التحيية المسروع عن التجمعات السكنية المسروع عن التجمعات السكنية المسروع عن التحيية التحيية المسروع عن التحيية المسروع عن التحيية المسروع عن التحيية التحيية المسروع عن التحيية التحيي	- المستقد عادما المستقدم عادما المستقد		burfer zone and Hoodphan     "حراسية تلاله للقراء لو تفاصيله     "حراسية تلك تعلصان وموكدات الشاد وعاميه     "حراسة تقييم الأثر للبيني     "سهال المنظرة المحتبطة المحتب	- تحديد كالمتعلقة المعيطة على الوران و كالمتعلقة على الوران و كالمتعلقة المعيطة على المتعلقة المعيطة
لمشروع - در اسة بدائل المشروع المحتملة لجهة العباد - لم يتم ذكر ذلك المشروع المحتملة لجهة العباد - لم يتم ذكر ذلك المشروع المحتملة المجهدة عن المشروع المحتملة المجهدة المجهدة المشروع المحتملة المجهدة المساور على المشروع المحتملة المجهدة المجهدة المجهدة المشروع المحتملة المجهدة المجهدة المجهدة المجهدة المجهدة المجهدة المساور على المساور على المشروع المحتملة المجهدة المجهدة المجهدة المجهدة المساور على المحتملة المجهدة ا	المعاقبة، الرجوات التنجية عن المهادة المادية التنجية عن المهادة المادية الم	- تحليل البدائل للمشروع - دراسة بدائل المشروع المحتملة الجهة العيام - لم يتم ذكر ذلك المستدادة ، المحتملة الجهة العيام - لم يتم ذكر ذلك المستدادة ، المحتملة المتعادة ، من المستدادة ، المحتملة المتعادة ، من المتع	المعلقية الوحول» والنبتك الذاتية عن	المعلقية الوحول» واللبتك التلتية عن			- Eds Well & Illuin &			وصف المشروع البيخ المترا إعلان المتروع لستروع لستروع لستروع المتروع المتروع لستروع لستروع لستروع لستروع لستروع المتروع لمتروع المتروع المتروع المتروع من المتراكز اللينة المحيطة المتراكز اللينة المحيطة المتراكز اللينة المحيطة المتراكز اللينة المحيطة المتروع من المتحيطة المتراكز اللينة المحيطة المتراكز على المتراكز اللينة المحيطة المتراكز على المتراكز اللينة المحيطة المتراكز اللينة المتراكز اللينة المحيطة المتراكز اللينة المتراكز اللينة المتراكز المت	- تعديد موقع المشروع نسبة الله المناوع نسبة الله المناوع نسبة الله المناوع نسبة الله المناوع				- وصف البيئة المحيطة - تقسيل وصف البيئة المحيطة البيئة المحيطة		- تعديد كافة اعتدال وحكونات النشروع في والدول وقاسيله وحكونات النشروع في والدول وقاسيله وحكونات النشروع في المستردة على النبية المحتملة المستردع عم التجمعات السكاية المستردع عم التجمعات السكاية النشروع عم التجمعات المسكوع المستردع عمل المسكوع ال	- تحديد كافة اعتبال وحكونات التشروع في الحراب المحيطة المستورع على المحيطة المح	- تحديد كافة اعتبال وحكونات التشروع في الحراب المحيطة المستورع على المحيطة المح	- أوسية المحيدة المحيدة المساورة والمساورة المساورة عن التجمعات السكتية المحتودة المساورة عن التجمعات المساورة عن التحديدة المساورة عن التحديدة المساورة عن المساورة عن المساورة عن المساورة عن المساورة عن التحديدة المساورة عن المساو		burfer zone and Hoodphan     "جوسعي تشاد للقرناء لر و كناسية     "جوسعي تشاد وعدة بالمتروع في     "جوسعي المراكز اللينية المحتوجة     "تمسرا وصعف البيئة المحتوجة بالمتروع م     "تمسرا وصعف البيئة المحتوجة بالمتروع عن التجمعات المكتروع عن التجمعات المكتروع المتحدة المتروع المتحدة المتحددة المتروع المتحدة المتروع المتحددة المتحدددة المتحددة المتحددة المتحدددة المتحددة المتحددة المتحددة المتحدددة المتحددة المتحددة الم	- تحديد كالمتعلقة المعيطة على المتعلقة المعيطة على المتعلقة المعيطة على المتعلقة المعيطة المعيدة المعروع عن التحميل وحديدة المعيدة المعروع عن التحمية المعيدة المعروع عن التحمية المعيدة المعروع عن التحمية المعيدة المعروع عن التحمية المعيدة المعيد
- 0 cm		بالمسروع - لم يتم ذكر ذلك - الم يتم ذلك - الم ي	المسروع والمسروع	للمشروع	- تعلیل الدائل المشروع - در اسة بدان الدشر ما الدائل المشروع - در اسة بدان الدشر ما الدائل المشروع - در اسة بدان الدشر ما الدائل المشروع - در اسة بدان الدائل المشروع - در است بدان الدائل الدائل الدائل المشروع - در است بدان الدائل المشروع - در است بدان الدائل	- تعلیل البدائل المشروع - در اسة بدانا البث ما المدائل المدائل البث ما المدائل المدائل المدائل البث ما المدائل المدائ	للمشروع - دراسة بدائل المشروع المحتملة لهمة المياه - لم يتم ذكر ذلك المشروع المحتملة لهمة المياه - لم يتم ذكر ذلك المستروع المحتملة الموجل والنبتات الناتية عن المحتملة المحالم المستروع المحتملة عن المحتملة المحالم المستروع المحتملة المحالم المحتملة المحتملة المحالم المحتملة المحتم	- دراسة بدائل المشروع - دراسة بدائل المشروع المحتملة لجهة المياه - لم يتم ذكر ذلك المدائل المشروع المحتملة المجهة المياه - لم يتم ذكر ذلك المدائد المتابعة عن المعابدة عن الم	المستروع بسائل و المستروع بشد الاست المستروع بشد الله الله الله الله الله الله الله الل	العالمة الثانية علال إعلان العالمة التاتية علال إعلان العالمة الثانية علال إعلان العالمة الثانية علال إعلان ا البيئر العالمة علال إعلان العالمة العا	النجا المقروع حكور		محديد خالف تفاصيا ، ممكنات ال	م دُهاد کان بر الله الله الله الله الله الله الله الل	ومسيح تساط تعبثة مباه نهر الدخارات	- توضيح شاط زين قي ان الله	- توضيح نشاط درد .	buffer zone and		an Si Si de river du			
تحديد لبياد بال مراج المعدودة بالمسروع مع - لم يتم ذكر ذلك	<ul> <li>الأول المؤافية المحتملة</li> <li>المحتملة السكافية</li> </ul>				- تحليل البدائل المشروع - د اسة بدانا المثروع - د اسة بدانا المثروع - المستودين المثارة المثار	- تحليل البدائل المشروع - د اسة بدانا المثروع - د اسة بدانا المثروع - المستودين المثارة المثار	- تعليل البدائل المشروع - دراسة بدائل المشروع المحتملة ليجهة المياه - لم يتم ذكر ذلك المعالمة المعالمة المعالمة المعالمة عن ا	- تعليل البدائل للمشروع المحتملة لجهة المياه - لم يتم ذكر ذلك المشروع المحتملة لجهة المياه - لم يتم ذكر ذلك المتحمد عن المعتمدة عن المتحمد عن			المتترح ودع المستودع نسبة الى river من المستودع نسبة الى river من المستودع نسبة الى river من المستود	وصف البيئة المحيظة - تقصيل وصف البيئة المحيظة -	- وصف البيئة المحيطة - تتميل الإنتازية المحيطة دائية الحجيطة دائية الحجيطة دائية الحجيطة دائية الحجيطة دائية الحجيطة دائية الحجيلة ال	- وصف البيئة المعيطة - تصيل وصف البيئة المحيطة بالمشروع في المشروع المسابل وصف البيئة المحيطة بالمشروع في المشروع في الم	- وصف البيئة المحيطة - تصيل ومسا البيئة المحيطة بالمشروع في الأسلام البيئة المحيطة بالمشروع في المساوية المساو	وصف البيئة المحيطة - تفصيل وصف البيئة المحيطة الشارع على المثار ع المثار ع على الم	- تصديد كلة قاعدس و مجاود في الأراب و قامديله - تصديد كلة قاعدس و مجاود الشروع فامديل - وصدت اللبينة المحيطة - وصدت اللبينة المحيطة الشروع على المحيطة	- وصف اللبنة المحيطة و تقوي الأراض و تفاسيله - وصف اللبنة المحيطة و تقوي الأراض و تفاسيله - وصف اللبنة المحيطة و تقوي الأراض و	- تحديد كلة تأسيسات ديما يماية دير الكزران وتفاسيله - تحديد كلة تأسيسات ديما يماية دير الكزران وتفاسيله - وصغت اللينة المدروع في المدروع في المدروع في المدروع في المدروع في المدروع في المدروع والمدروع المدروع والمدروع	* huffer zone and Hoodpain*  - "وضيية السلط لمتع غيار بنا و للغزيال و للغزيال و تفاصيله  - وصيف البيئة المحيطة " تتويم الأثر البيئة المحيطة المتعلقة المحيطة المتعلقة المحيطة الشناء عدم المتعلقة المحيطة المتعلقة المتعلق	buffer zone and floodphant " ما يبع بكر دلك " وصف اللها المنا المنا المنا الله الما إلى أو تقاصيله موكولت المناروع في - تصول الله تقاصيل ومكولت المناروع في - وصف اللهابة المحيطة المنا اللهابة المحيطة اللهابة الهابة الهابة الهابة الهابة الهابة الهابة اله	hurfer zone and Hoodpant و توصيع نشاط تعلق مها به مها يكو كنك - وصيف الله تعلق المعالم المعال	- مديد كالمها مواد مرا الغزاق الغزاق و br>- وصعف البيئة المحيطة - تعصيل الأرسمة المها المحيطة الشدوع في - تعصيل المصديدة المحيطة الشدوع في - المصديدة المحيطة المحيطة المحيطة المحيطة الشدوع في المصديدة المحيطة
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			ول سيدان للمنظر و ع   - د ار قريانا ال خ	روح - فراسته بدائل المشر وع المحكم أنا الله الله الله الله الله الله الله ال	المعالجة الله عالم المعالجة العالم المعالجة العالم المعالجة العالم المعالجة العالم المعالجة العالم المعالجة العالم				سمشروع		المقتر - وقع المشروع نسبة الى river من المفتر - تعديد موقع المشروع نسبة الى river من المفتر المفتر المفتر المفتر المؤتر عالم المؤتر المؤتر المؤتر عالم المؤتر المؤ	- تعميل وصف البيئة المحيطة المشروع م - لم يتم ذك لك المشروع - لم يتم ذك ذلك المشروع عن التجمعات السكلية - لم يتم ذك ذلك المشروع المسكلية المحتملة المسكلية المستروع المسكلية - الم يتم ذك ذلك المشروع المسكلية ال	- وصعف البيئة المحيطة - خصول وسعف البيئة المحيطة المحيطة - خصول وصعف البيئة المحيطة المح			وصف الليفة المحيطة - تتصبل وصف الليفة المحيطة بالأثر الليفة المحيطة بالشروع من المستورع المستورع المستورع - لم يتم ذكر ذلك - المؤلفة المحيطة بالشروع عن التجمعات السكانية المحتلة - الأثرار اللوائية المحتلة - الأثرار اللوائية المحتلة - المستورع عن التجمعات السكانية - لم يتم ذكر ذلك - المؤلفة المحتلة - الأثرار اللوائية المحتلة - المؤلفة المختلة - المؤلفة المختلة - المؤلفة المحتلة - المؤلفة المختلة - المؤلفة المؤلفة المختلة - المؤلفة المؤلفة المختلة - المؤلفة المختلة - المختلة - المؤلفة المختلة - المؤلفة المختلة - المؤلفة - المؤلفة المختلة - المؤلفة - المؤلفة - المختلة - المؤلفة -	- Comár Migrá Marcada	- تحديد كالة كالسباب وحديد المدينة الشروع على المرافق المدينة	- وصف البينة المحيطة - تضيد كانة كالمبرات و كوكرات المشروع م	- المستقد د المستقد ا	- توضيق اللبنية المحيطة المحي	- وصف البيئة المحيمة - تفصيل وصف البيئة المحيمة المستروع مي - لم يتم تكر ذلك المشروع مي - الم يتم تكر المشروع المشروع المشروع الم يتم تكر المشروع المشروع الم يتم تكر المشروع الم يتم تكر المشروع المشروع الم يتم تكر ال	حصف البيغة المحيطة     حصف البيغة المحيطة المستروع في المشتروع في المستروع في المستروع في المستروع في المستروع في المستروع في المستروع مع المستروع من المستر
	المعالجة، الدحولي الثانية المعالجة، الدحولي الثانية المعالجة، الدحولية الثانية المعالجة، الدحولية الثانية المعالجة المعا	- تحليل البدائل للمشروع - دراسة بدائل المشروع المحتملة لجهة السياد - لم يتم ذكر ذلك المحلمة المواد المحتملة المجهة المحاد المحادث الم	المعالجة، الوجوان والنباتات الرات - م يتم نكر دلك	المعالجة، الوجوان والله الله المعالجة، الوجوان والله المعالجة، الوجوان والله المعالجة،			: 11 الا من المسلم الاسلم للله	- حطه الإدارة البشة			المتترح وعلى الفروع نسبة الى river من المتروع نسبة الى river من المتروع نسبة الى river من المتروع في المتروع في المتروع في المتروع عن التجمعات المتروع المتروع المتروع عن التجمعات المتروع ال	- المستوع ومسلما البيئة المحيطة بالمشروع م المستوع المست		- وصف البيئة المحيطة الم	- وصف البيغة المحينة      - وصف البيغة المحينة      - المشروع من التحميل وصف البيئة المحينة بالشروع من التحمية المحينة      - الأراد البيئة المحينة      - در المنه بدال المشروع - در المنه بدال المشروع التحمية المدينة المحينة		- تصديد كاقة تفسط وحكودت الشروع و تفاصيله - وصف اللينة المحيطة - راسة تغيير الأر اللينة المحيطة المشروع - المشروع - الأثار اللينية المحيطة المشروع من التجمعات الشكلية المشروع من التجمعات الشكروع - تحليل الليدائل المشروع - تحليل الليدائل الليدائل الليدائل الليدائل الليدائل الليدائل المشروع - تحليل الليدائل الليدائل الليدائل الليدائل الليدائل المشروع - تحليل الليدائل المشروع - تحليل الليدائل الليد	- وصف البينة المحوطة - تحديد كافة كامليل وحكولات الشارع على العزب وتفاصيله - وصف البينة المحوطة - تصبيل وصف البينة المحوطة - تصبيل وصف البينة المحوطة البينة المحوطة البينة المحوطة بالمائل البينة المحتملة - الإثار البينية المحتملة المحتملة المحتملة المحتملة - تحديد البينة المحتملة ا	- تحديد كالله تفاصل المشروع من البيئة المحيطة من المشروع المسروع من البيئة المحيطة من المشروع من البيئة المحيطة المتصوب المشروع من المشروع من المشروع عن التجمعات السكنية المحيطة المشروع عن التجمعات السكنية المحيطة المسكنية المس	- المستودع المستودة المستودع المستودع المستودع المستودع المستودع المستودع المستودع المستودع المستودع المستودة المستودع المستودة المستودع المستودع المستودة المستودع المستودع المستودع المستودع المستودة المستودع المستودة المستودع المستودة المستودع المستودع المستودع المستودع المستودة المستودع المستودع المستودي المستودع المستودي	- وصف البيئة المحيطة - تواسي المنظاء المناب المشروع المناب	- في المستقدم المستقد المستقد المستقدم	- وصف البيئة المحيطة - تحديد الما تشخيل والمراقي و المادران البيئة المحيطة - المادران و
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المقترح وفي المستوح لله river المقترح الم ينم ذكر ذلك الم ينم ذكر الم ينم الم	المقتر حوق المستوح نسبة الى river - المستوح نسبة الى river - الم يتم نكر نلك - buffer zone and floodplain - أوضيع تشاطع المينة مها أنه لم الغز إلى تعاميله المينة مها المينة الم	المقتر عود المشروع نسبة أن river أن river أن river أن huffer zone and floodplain أو الم يتم ذكر ذلك المؤدن المؤدن المؤدن المؤدن المؤدن المؤدن المؤدن المؤدن المؤدن المشروع على المشروع عل	المقتر ح روح المه المستور وع المه الله المستور وع المه الله الله المستور وع الله المستور وع الله الله الله الله الله الله الله الل	المقترح - وقع المهتروع المعترات المقترع - المهتروع المهتروع المعتروع المعتروع المعتروع المعتروع المعتروع المعتروع عن التجمعات المعتروع عن التجمعات المعتروع عن التجمعات المعتروع المعتروع عن التجمعات المعتروع المعتروع المعتروع المعتروع المعتروع المعتروع التجمعات المعتروع ال	المقتر ح و المقتر المق	المقتر ح و المقتر المق	المقتر ح و المنتود موقع السفروع نسبة الى river من المستودع نسبة الى river من المستودع نسبة الى المستودع المستودي المستودع المستودع المستودع المستودع المستودع المستودع المستودي المستودع المستو	- المقترح - المقتردة المقتردة المقتردة المقتردة المقتردة - المقتردة المقتردة المقتردة - المقتردة - المقتردة - المقتردة المقتردة - المقتردة المقتردة - المقتردة - المقتردة - المقتردة - المقتردة - المقتردة - المقتردة المقتردة -	وصف المثن و البيني	العامة الدورة والمتاركة	اللها اللها الإلها الإلها	المقترح حروع المستوح شدية الله river المقترح المواقع المشتروع شبية الله river المواقع دلك المواقع الم	المقترح وفي المشروع نسبة الله river - تعديد موقع المشروع نسبة الله river - لم يقم ذكر ذلك - تعوضه buffer zone and floodplain	المعترح وفي المشروع نسبة الله river للمعترح وفي المشروع نسبة الله river للهيئة ذكر ذلك buffer zone and floodplain	المقتر - فحديد موقى المشروع نسبة الي river - فعديد موقى المشروع نسبة الي river - لعريد ذك ذلك	المقتر حرف - تعديد موقع المشروع لمنهة الى river - المديد وي المثرات المعارب - المديد وي المثرات المعارب - المديد وي المثرات المتارب - المديد وي المثرات المتارب - المديد وي المثرات المتارب المتارب - المديد وي المثرات المتارب - المتارب - المديد وي المثرات - المثرات - المديد وي المثرات - الم	المقتر وفي 1 river المقتر وفي المشروع نسبة الى river - لعرفد ذك ذلك.	المقتر و 2 - تعديد موقع المشروع نسبة الى river . لع نقد 3 الله.	المقدّ ب تحديد موقع المقدّ ب تحديد موقع المقدّ ب	المقت و حوج - تحديد موقع المثر من تبديد	المقة - تحديد موقع - تحديد موقع الم	المقت	المقتر و حديد موقع المثر من عن المقتر و المقتر من المقتر
المقترح حروع المستروع نسبة الله river من المستروع نسبة الله river ما المستروع نسبة الله river ما المستروع نسبة الله buffer zone and floodplain - لم يتم ذكر ذلك - تضديد أنشأة شبئة مينة مهاد نهر الغزيا، وتناصيته - تخديد كانه تناصيل من كذات بالمستراب المستراب المستر	المقتر حوث الله المشروع نسبة الله river من المشروع نسبة الله ويقم ذكر ذلك buffer zone and floodplain من وتصدير تشاطعة بهاد تهر الغيز بالغيز بالغيز المؤلم وتصديد والمساح المؤلم وتصديد المشاطعة والمساح المشاطعة المساحة المس	المقتز ع روع المسلام	المقتر ح روع السيدة الى river المعتد موقع الشعروع نسية الى river المعتد	النفتر ع روع عليه الله river المستورة عليه الله المستورة عليه الله المستورة عليه الله المستورة الله المستورة الله المستورة على المستورة المستورة على المستورة على المستورة المس	المقترح - روع المستروع نسية الى river المقترع - لويتم نكر ذلك المستروع المستروع المستروع المستروع المستروع المستروع المستروع - لم يتم نكر ذلك المستروع - لم يتم نكر ذلك المستروع - لم يتم نكر ذلك المستروع - لم يتم نكر الله المستروع - لم يتم نكر ذلك المستروع - دل المستمدات	المقترح - روع المستروع نسية الى river المقترع - لويتم نكر ذلك المستروع المستروع المستروع المستروع المستروع المستروع المستروع - لم يتم نكر ذلك المستروع - لم يتم نكر ذلك المستروع - لم يتم نكر ذلك المستروع - لم يتم نكر الله المستروع - لم يتم نكر ذلك المستروع - دل المستمدات	المقترح - روع السية الى river الله buffer zone and floodplain - لم ينم ذكر ذلك - وصف اللبيئة المحيطة - تقصيل ومكرنت السند وع هي المحكمة - تقصيل ومكرنت السند وع هي المحكمة ال	المقترح روع السيدة الدوع شدية الى river المعترف المقتروع شدية الى river المعترف المعترفة معترفة المعترفة المعترفة معترفة المعترفة معترفة المعترفة معترفة المعترفة ال	e come living a living	العامة الدائدة عاملاً المساركة		المقترح و المقتر المنتزع المن	المقترح وفي المشروع نسبة الله river - تعديد موقع المشروع نسبة الله river - لم يقم ذكر ذلك - تعوضه buffer zone and floodplain	المعترح وفي المشروع نسبة الله river للمعترح وفي المشروع نسبة الله river للهيئة ذكر ذلك buffer zone and floodplain	المقتر - فحديد موقى المشروع نسبة الي river - فعديد موقى المشروع نسبة الي river - لعريد ذك ذلك	المقتر حرف - تعديد موقع المشروع لمنهة الى river - المديد وي المثرات المعارب - المديد وي المثرات المعارب - المديد وي المثرات المتارب - المديد وي المثرات المتارب - المديد وي المثرات المتارب المتارب - المديد وي المثرات المتارب - المتارب - المديد وي المثرات المتارب - المديد وي المثرات المتارب - المديد وي المثرات - المثرات	المقتر وفي المتروع نسبة الى river - الموقد موقع المشروع نسبة الى river - الموقد ذك ذلك.	المقتر و 2 - تعديد موقع المشروع نسبة الى river . لونقد نكى الله. ما river . لونقد نكى الله.	المقت و تحديد موقع المرابع عن تا	المقت و حوج - تحديد موقع المثر من تبديد	المؤتد و تحديد مدة ال	المقت ب روع - تحديد مه قو ال. ﴿	المقتر و حديد موقع المثر من عن المقتر و المقتر من المقتر
المعتر حق الشروع نسبة الى river	المقتر ح المستدر من المستدر من المستدر على المستدر على المستدر ع	المعترب المعت	المعتر على السنوة الموقع السنوة الله المعترف السنوة الله المعترف الله المعترف الله المعترف الله المعترف الله المعترف الله الله المعترف الله الله الله الله الله الله الله الل	المعترى الله المعارض الله المعارض الله المعارض الله المعارض الله الله الله الله الله الله الله الل	المعتر على السندو المستور المعتر الله المعتر الله المعتر الله المعتر الله الله الله الله الله الله الله الل	المعتر على السندو المستور المعتر الله المعتر الله المعتر الله المعتر الله الله الله الله الله الله الله الل	المعترك السعود المساورة المسا	المسترح المسترح المسترح الله المسترح الله المسترح الله المسترح الله الله الله الله الله الله الله الل	locate limited	العامة الثان تربيت المشاركة		المعترك - فيديد موقع التضاورع المنبية الله river منبية الله river منبية الله المناورة الله المعترك الله المناورة الله الله المناورة الله الله الله الله الله الله الله الل	المعتر ع نسبة الى river المعتر ا	المعتتر عند المستروع نسبة الله river . لم يتم ذكر ذلك buffer zone and floodplain	المقترح تعديد موقع المنزوع نسبة التي rive و المنتد ذي ذلك المنتروع المنتروع المنتد ذي ذلك المنتد ذي ذلك المنتد ال	المفترح - خلايه موقع الشمروع تسبة الى river - لونتو ذى ذلك.	المعترب - تحديد موقع المتكروع نسبة أني river - أم تقد ذك ذلك أم تقد ذك ذلك الم تقد ذك ذلك.	المعتزع - تحديد موقع المشروع نسبة أنه river - لم تقد ذك ذلك.	المقت - تحديد موقع المثار عن المقت -	المقت - تخليد موقع المراب المقت -	المؤت - تحليد مدف ال	المقتر بي المقتر بي المقتر من المقتر	المفتد - تحديد موقع المثار المفتد - الم
المفتر حادث معلاً معلم أما معلم	المعتر ح السروع نسبة الله river المعتر ح السروع نسبة الله السروع نسبة الله river المعتر ذكل الله المواقع المواقع المواقع الله المواقع	المقتري المستوري المستوري المستوري و المستوري مسية الله river من المستوري على المستوري ال	المعترب المعت	المعترب المعترب المعترب المسترك المست	المعتر ا	المعتر ا	المعترب المعت	المعترب المعترب السلام المعترب المعتر	Court Hardes	العلمة الثانية خلال أعطاء الشائية خلال أعطاء الثانية خلال أعلا الأن		المعتر على الشاروع الشاروع الشاروع الشاروع التواقع التأويز الله river لله المعترب المعادمة المعتربة ا	المعتر ع نسبة الى river المعتر ا	المعتتر عند المستروع نسبة الله river . لم يتم ذكر ذلك buffer zone and floodplain	المقترح تعديد موقع المنزوع نسبة التي rive و المنتد ذي ذلك المنتروع المنتروع المنتد ذي ذلك المنتد ذي ذلك المنتد ال	المفترح - خلاية موقع الشمروع تسبة الى river - لديثه ذك ذلك.	المعترب خلاف موقع الشكروع نسبة أني river - أم تقد ذك ذلك. ما Occidinain - أم تقد ذك ذلك.	المعتزر ع المعت	المعتب والمعتب	المقل -	المقت - تحليل مدة وال	المكان ب	المفتد - تحديد موقع المثار المفتد - الم
المقتر حادث المقتر حادث التراك المتراك المقتر عادث التراك	المعتر ح السروع نسبة الله river المعتر ح السروع نسبة الله السروع نسبة الله river المعتر ذكل الله المواقع المواقع المواقع الله المواقع	المقتري المستوري المستوري المستوري و المستوري مسية الله river من المستوري على المستوري ال	المعترب المعت	المعترب المعترب المعترب المنظر المنظرة المنظر	المعترب المعت	المعترب المعت	المعترب المعت	المعترب المعترب السلام المعترب المعتر	السندوع أيند	العقدة الثانية خلال إسلام المستديدة		المعتر على الشاروع الشاروع الشاروع الشاروع التواقع التأويز الله river لله المعترب المعادمة المعتربة ا	المعتر ع نسبة الى river المعتر ا	المعتتر عند المستروع نسبة الله river . لم يتم ذكر ذلك buffer zone and floodplain	المقترح تعديد موقع المنزوع نسبة التي rive و المنتد ذي ذلك المنتروع المنتروع المنتد ذي ذلك المنتد ذي ذلك المنتد ال	المفتر عند من الله الله river عليه موقع المشروع لسبة الى river - لدينه ذي ذلك.	المعترب تحديد موقع المشروع نسبة أني river - أمرتم ذي ذلك	المعترب - تحديد موقع المشروع نسبة أنه river - لم تقد ذك ذلك.	المفت على المفت على المفت على المفت على المثاب عن المفت على المفت عن المفت عن المفت عن المفت عن المفت عن المفت المفت عن المفت عن المفت المفت عن المفت المفت عن المفت الم	المفت - تخليد موقع المراب عالم	المقت - تحليل معقد ال	المقان ب	المفتد - تحديد موقع المثار المفتد - الم
river بروع استدروع استدروع استدرو عليه الله river الله بين الله الله الله بين الله الله من ذكر ذلك الله الله الله الله الله الله الله ال	الم يتم ذكر ذلك river من المستروع المناورة المن	المنظوع المنظوم المنظ	- لم يتم ذكر ذلك birfer zone and floodplain buffer zone and floodplain a fair	للمستورع المستورع ال				- الم يتم ذكر ذلك birer zone and floodplain hefrer zone and floodplain hefrer zone and floodplain hefrer zone and floodplain her zeruz bir stand, and the stand her zeruz bir stand her z	المن المن المن المن المن المن المن المن	العقدة الثانية خلال عاد درسة بسند العدار له	وصف المثين وصف المثين	river منسر عبد الس river منسر الله المناس الله الله الله الله الله الله الله ال	river المستورع نسبة الى river المستورع نسبة الى river الم يتم ذكر ذلك - لم يتم ذكر ذلك - توضيع المادة الله الم	river المستورع المستورع للمستورع للمستورع للمستورع للمستورع المستورع المست	ب موقع المشروع نسبة الى river - لعربته ذى الله.	river المستروع نسبة الى river المستروع نسبة الى river - لع بقد ذكه ذلك	المستورع الله river المرتبة التي river المرتبة التي river المرتبة ذك ذلك	المستورع الله river المستورع نسبة الى river - لم يتم ذك ذلك.					
ا م به م حقر دنت - توضيح اشاه کتبیة به به به الرائز بای تقاصیله - تحدید کانه تقاصیل حک تی این ا	سام به مدر دند.  - توضیح نشاه buffer zone and floodpian  - توضیح نشاه الحقيق به بازه برا الغزیان و تفاصیله  - توضیح نشاه الحقیق به بازه برا الغزیان و تفاصیله  - توضیح نشاه الغزیان تفاصیل و مکورت استرو و هم	لل wifer zone and Hoodprain وضميع تشاه لل wifer zone and hoodprain وضميع تشاه لل خود الله الله الله الله الله الله الله الل	- " المنافرة المحيطة الم	- تقسيل ومدينة المحيطة المستورة على التناسلة المحيطة المستورة على التناسلة المحيطة المستورة على التناسلة المحيطة المستورة على التناسلة المحيطة المستورة على التناسلورة على	- المستقبة المحيطة المحتملة المحتملة المحتملة المحتملة المستقبة الألا البيان المحتملة المستقبة المحتملة المستقبة المحتملة المحتم	- المستقبة المحيطة المحتملة المحتملة المحتملة المحتملة المستقبة الألا البيان المحتملة المستقبة المحتملة المستقبة المحتملة المحتم	- تعديد كانة تقاسيل ومضا الغزيال وتقاسيله ومضا الغزيال وتقاسيله ومضا الغزيال وتقاسيله ومضا الغزيال وتقاسيله وليست تقديد كانة تقاسيل ومضا الغزية المحيطة المستوع عن تتعديل ومضا الغينة المحيطة بالمشروع عن تتعديل الغينة المحيطة بالمشروع عن التجمعات الدكتية المحيطة المستوع عن التجمعات الدكتية المحيطة الغينة المحيطة الغينة المحيطة الغينة المحيطة الغينة المحيطة الغينة المحيطة ا	- تعديد كانة تقاسيل وعكونت الشروع من الفريل وتقاسيله الفريل وتقاسيله الفريل وتقاسيله الفريل وتقاسيله الفريل وتقاسيله الفريل وتقاسيله وسكونت الشروع من التصديل المنافر وصف البيئة المحيطة بالمشروع عن التجمعات السكلية المحيطة بالمسروع عن التجمعات السكلية المحيطة المسروع عن التجمعات السكلية المحيطة الملاوع عن التجمعات السكلية المحيطة عن المحيطة المحيطة عن المحيطة المحيطة المحيطة المحيطة المحيطة المحيطة عن المحيطة المحيطة المحيطة عن المحيطة	المفتر - تحديد موقع المثر عن تا	العقدة الثانية خلال عسده العدار له	E COME MANUE 2	buffer zone and Iloodpiani م يهم حكر كنده - موسيد المسلم - موسيد	buffer zone and floodpram	buffer zone and illoodplan					niver ما المراجع للمبد التي المراجع ا				river in river in river in the
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	- ومسف البيئة المحيطة - تصما في البيئة المحيطة المتصارة البيني	وصف البيئة المحيطة - تفصيل وصدائية المحيطة بالمشروع مع - لم يقم ذكر ذلك المشروع عن التجمدات المسكروع عن التجمدات المسكروع عن التجمدات المسكرية المشروع عن التجمدات المسكرية ا		وضعة البيقة المحيطة - المسيئة المحيطة المسروع مي البيقة المحيطة المسروع مي							المقتر ع كوفع - تعديد موقع المشروع نسية الى river - الم يتم ذكر ذلك buffer zone and foodplain - توضيع نشاء مها ديد الزائر و قاسطيا -			معتبد خافه تقاصرا بمرى دائه	- تحديد كافة تفاصيات كالم تفاصيله	- تعديد كاله تفاصل عديد المراب وتفاصيله	ا تحدد كانتها مياه نهر الغزيل وتفاصيله	م تحدد كالتي المغزيل وتفاصيله	- تحدد كان تعلق عليه مياه نهر الغزيل وتفاصيله	buffer zone and Hoodpain.  - توضيح شاط نعينة مياه نهر الغزيل و تفاصيله  - توضيح شاط نعينة مياه نهر الغزيل و تفاصيله	buffer zone and Iloodynam المنظمة الم	buffer zone and floodpain  - توضيح شاط کبينة مياه نهر الغزياء و تفاصيله	الم أحدد كان من الفراد الغزيل وتفاصيله
	و وصف للبيئة المحريطة بتعمل الاور البيني	وصف البينة المعيطة - تقصيل وصف البينة المحروبة بالمشروع من المسكن البينة المحروبة السكنية المخروع عن التجمعات المخروع عن التحروع عن التجمعات المخروع عن التجمعات التحروع عن التحر	وسعف البونة         المحمول وصف البونة           - المستروح         - المستروع           - المستروع         - الأثار البنية           المشروع         - المستروع           المشروع         - المستروع           المشروع         - المستروع           المشروع         - المستروع           - المستروع         - المستروع				تصنف البيغة المحيية - تصنيل وسف البيئة المحيفة بالشروع مي - له يتم ذكر ذلك المحيد المشروع عن التجمعات المحيدة المحتملة - المشروع - المحيدة المحتملة المحتملة - در اسة بدائل المشروع - المحتمدة لجية المياه - لم يتم ذكر ذلك المشروع المحتملة المحيدة المحيدة المحيدة عن المحيدة المحيدة عن المحيدة المحيدة عن المحيدة المحيدة عن المحيدة	تصنف البيغة المحيية - تصنيل وسف البيئة المحيفة بالشروع مي - له يتم ذكر ذلك المحيد المشروع عن التجمعات المحيدة المحتملة - المشروع - المحيدة المحتملة المحتملة - در اسة بدائل المشروع - المحتمدة لجية المياه - لم يتم ذكر ذلك المشروع المحتملة المحيدة المحيدة المحيدة عن المحيدة المحيدة عن المحيدة المحيدة عن المحيدة المحيدة عن المحيدة		العمدة الثانية خلال أجعلة الدائمة خلال أجعلة درائمة المتارة خلال أجعلة درائمة المتارة خلال أجعلة درائمة المتارة المتا	المقتر ع كوفع - تعديد موقع المشروع نسية الى river - الم يتم ذكر ذلك buffer zone and foodplain - توضيع نشاء مها ديد الزائر و قاسطيا -			المستعدد الله تقاصيل و مكه زات الله على الله الله الله الله الله الله الله ال	- تحديد كافة كتاصيل و مكالت ال	- تحديد ثالة تقاصيل مى داده	المردد كالأكاري وتفاصيله	ا تحدد كالتي المنظم الم	" كردن كان مناه تعليه مياه نهر الغزيل وتفاصيله	buffer zone and fioodpain  - توضيح شاط تعينة مياه نهر الغزيار و تفاصيله  - توضيح شاط تعينة مياه نهر الغزيار و تفاصيله	buffer zone and Iloodphain  - توضيح شاماد تبريد الغزياء وتناصيله  - ترك الارتجاع شاماد نبود الغزياء وتناصيله	buffer zone and floodpram - م يتم حكر كنت - توضيح شناط كبينة مياه الغزياء الغزياء الغزياء الغزياء و تفاصيله	الم أحدد كان من الفراد الغزيل وتفاصيله
	وصف البيئة المحيطة - نقصياً ومن اللبذي ا	وصفت البيئة المحيطة - تتصبل وصف التأل المندئة المحيدة المشروع - لم يتم ذكر ذلك المستروع - الألل المندئة المحيدات المشروع عن التجمعات السكلية المحيدات المشروع عن التجمعات السكلية المحيدات المشروع عن التجمعات السكلية المحيدات المستروع المس	و المسلوع و المسلوع ا	جست البيئة المحتفلة - تعديد البعاد المشروع عن التجمعات السكانية - لم يتم ذكر ذلك المشروع عن التجمعات السكانية المحتفلة المشروع عن التجمعات السكانية	ولصف البيئة المعيدة - تعميل وصف النا المتعاد المشروع من المتعاد المشروع من التجمعات المتكنية - لم يتم نكر ذلك المشروع المتعاد المشروع من التجمعات المتكنية - للمشروع - كما المتعاد المشروع - در اسة بدلاً المتعاد الم	ولصف البيئة المعيدة - تعميل وصف النا المتعاد المشروع من المتعاد المشروع من التجمعات المتكنية - لم يتم نكر ذلك المشروع المتعاد المشروع من التجمعات المتكنية - للمشروع - كما المتعاد المشروع - در اسة بدلاً المتعاد الم	و مسك البيئة المحيطة - تتصبل وصف النائد المشروع من التجمعات الدكتية - لم يتم ذكل ذلك المشروع من التجمعات الدكتية - لم يتم ذكر ذلك المشروع من التجمعات الدكتية - لم يتم ذكر ذلك - تطلق الدائل المشروع المحتملة لهمة العياد المشروع المحتملة لهمة العياد - لم يتم ذكر ذلك المحتملة المحتملة المحتمدة	عبد المستورة المحيدة - تقصيل وصف النائد المشروع من التجمعات السكترية - لم يتم ذكل ذلك المستورة المحكمة المشروع من التجمعات السكترية - لم يتم ذكر ذلك المشروع - تطلب الدائل المشروع - دراسة بدائل المشروع المحكمة المهة الميان المشروع المحكمة المهة الميان المشروع المحكمة المهة الميان المشروع المحكمة المهة عن المحكمة الميان المستورة عن المحكمة الميان المستورة عن المحكمة الميان المستورة عن المحكمة الميان المستورة عن المحكمة الميان المشروع المحكمة الميان المستورة عن المحكمة الميان	در اسهٔ تقده الله الله		- تحديد موقع المشروع نسبة آلى river أن المشتر - لوع المشروع نسبة آلى river أن الله المشتر - لم يتم ذكر ذلك - الم يتم ذكر ذلك - وتوضيح الشاط تعاد مهاد فير الذيل وتاسيله - تحديد كلاة تقاسيل من هذات الراب الناس وتاسيله - المناس من هذات الراب الناس وتاسيله - المناس من هذات الراب الناس وتاسيله - المناس من هذات الراب الناس وتاسيله المناس ويم ذلك الراب الناس ويتاسيله المناس ويم ذلك الراب الناس ويتاسيله المناس ويتاس المناس ويتاس الناس الناس ويتاس الناس الناس ويتاس الناس						ا من مستعد معهد عود الغزيل و تقاصيله - - تحديد الله تقاسيل - عديد الغزيل و تقاصيله	ا مستعد بعديد مواد نور الغزيل و تقاصيله - تحديد كاد تقاصيل - و كذات الله - و كذات الله - و كذات الله - و	ع مستعد عبده میده نیز الغزیل و تقاصیله - تخلید کالگذ گذاشیانی که کن کال الد	buffer zone and Hoodpanii المواقعة الم	buffer zone and floodphan:  - توضيح تشاط تمينة مراه لهزيل و تفاصيله - تحديد كافة تقاصيل م عكن التاريخ	buffer zone and floodpann  - توضيح نشلط تعبد فيد ليز الغزيل وتفاصيله  - تحديد كافة تعسل محك ندي ال	- تحديد كاله تصادي مي الله الله الله الله الله الله الله الل
	وصعف البيئة المحريطة - تقصيل من الليكي	وصف البينة المعيطة - تقصيل وصف البينة المحروبة بالمشروع من المسكن البينة المحروبة السكنية المخروع عن التجمعات المخروع عن التحروع عن التجمعات المخروع عن التجمعات التحروع عن التحر	النوية المحيطة - المرابع	- تقسيل وسف البيئة المجنولة - المسلو وسف البيئة المجنولة المسلو عبد الم				تصنف البيغة المحيية - تصنيل وسف البيئة المحيفة بالشروع مي - له يتم ذكر ذلك المحيد المشروع عن التجمعات المحيدة المحتملة - المشروع - المحيدة المحتملة المحتملة - در اسة بدائل المشروع - المحتمدة لجية المياه - لم يتم ذكر ذلك المشروع المحتملة المحيدة المحيدة المحيدة عن المحيدة المحيدة عن المحيدة المحيدة عن المحيدة المحيدة عن المحيدة	در اسم تقدر الله ال	- وصف المشروع السني بسنه المساركة الليني بسنه المساركة الليني الإلار الليني الليني الليني الليني الليني الليني الليني المسترع أسبة الى river المسترع أسبة الى buffer zone and floodplain - لم ينم ذكر ذلك - توضيح المسلم للمنا لانيانية المسلم المسلم المسلم اللينيانية اللينيانية المسلم اللينيانية اللي	- تحديد موقع المشروع نسبة آلى river أن المشتر - لوع المشروع نسبة آلى river أن الله المشتر - لم يتم ذكر ذلك - الم يتم ذكر ذلك - وتوضيح الشاط تعاد مهاد فير الذيل وتاسيله - تحديد كلاة تقاسيل من هذات الراب الناس وتاسيله - المناس من هذات الراب الناس وتاسيله - المناس من هذات الراب الناس وتاسيله - المناس من هذات الراب الناس وتاسيله المناس ويم ذلك الراب الناس ويتاسيله المناس ويم ذلك الراب الناس ويتاسيله المناس ويتاس المناس ويتاس الناس الناس ويتاس الناس ويتاس الناس الناس ويتاس الناس						ا من مستعد معهد عود مواد الغزيل و تقاصيله - - تحديد الله تقاسل - و الغزيل المتعارض الغزيل و تقاصيله -	ا من سعد معادد قور الغزيل و تقاصيله - - تخديد خاله تقاصيل - و كذات الله - و كذات الله - و كذات الله - و	ع مستعد عبله ميود تير الغزيل وتقاصيله - تحديد الله تقاصيله عد التاريخ عد التاريخ العرب ا	buffer zone and Hoodpain:  - توضيح نشاط تعبيد نهاد نهر الغزيل وتفاصيله  - تحديد گانه تعليم الغزيل وتفاصيله  - تحديد گانه تعليم الغزيل وتفاصيله مك تعادي	buffer zone and floodphan:  - توضيح تشاط تبينة مراه لوز الغزيان و تفاصيله - تحديد كافة تفاصيل م عكن التاريخ ا	buffer zone and floodpann  - توضيح تنطق ميدادير الغزيل وتفاصيله  - تحديد كانة تصلي حك لك تن الغزيل وتفاصيله  - تحديد كانة تصليل حك لك تن الشراع المناسب على المنا	- تحديد كاله تصادي مي الله الله الله الله الله الله الله الل
buffer zone and flootpham = " " " مريم يم ي	به مه مدر دند: - موضوع نشار کمیتر اماره بازی کمیتر اماره کمیتر اماره بازی ماره الغاز آن و تفاصیله - کمیدر کافهٔ تفاصیل و مکورنت استرو و غیر - دارسهٔ تقدر بازی الغاز آن و غیر الغاز آن و تفاصیله	ن buffer zone and flootpulm الموقعة ا	buffer zone and flootyping	توضيع تشاط تعبد على الغزيان وتغاسيله     توضيع تشاط تعبد على الغزيان وتغاسيله     تعدد كافة تغلسيان ومكونات المشروع في     تقصيل اللبنية المحيطة     تقصيل وصف اللبنية المحيطة بالمشروع من الشجمات الشكروع مع المشروع عن الشجمات الشكروع عن الش	ل buffer zone and flootyping من المستواطة المحيطة الم	ل buffer zone and flootyping من المستواطة المحيطة الم			river and the color of the color	وصف المشروع تعدد السنة تقديم الألو السنة تقديم الألو المشروع تحديد من المشروع المشروع المشتروع تحديد من المشروع المشتروع تحديد من المشتروع الم	المقت - تحديد موقع المقت - تحديد موقع المقت عن تنا	buffer zone and floodplant  - قوضيح شاطه تعبية مياه نو الغزيل و تفاصيله - توضيح شاطه تعبية مياه نو الغزيل و تفاصيله	buffer zone and floodplant	buffer zone and illoognam						Tiver on the control of the control	TIVE OF THE PROPERTY OF THE PR	river and river and the contract of the contra	
- توضيح شاها تدبيه مياه اس الازبل و تفاسيله - تحديد كاله تناسب من لذن الرزيل و تفاسيله	butter zone and six توضيح شاط تعقد بهذا قبر الغزيان وتناصيله - تحديد كانة تناصيله الغزيان وتناصيله الغزيان وتناصيله الغزيان كانتاروع في الديا كانة تناصيل ومكونات المشروع في الديا كانة الكان المالية الكان الكان الكان الكان المالية الكان الكان الكان الكان الكان المالية الكان ال	- وصف الليبنة المحيطة - وصف الليبنة المحيطة بالموسوع مع - الموسوع على - الموسوع على - المستوع على - وصف الليبنة المحيطة المستوع على - المستوع	- وصف البيئة المحيطة - كتعبد المدادة المدروع في المحكمة - كم يتم نكر ذلك المستروع من المحكمة المحكمة المحكمة المستروع من المحكمة	توصف البلغة المحيطة - توصف البلغة المحيطة المحيط	- وصف البيئة المحيطة - كتمبيل وصف البيئة المحيطة بالمشروع مي المحكمة - المشروع مي المحكمة المسلم المحكمة المحك	- وصف البيئة المحيطة - كتمبيل وصف البيئة المحيطة بالمشروع مي المحكمة - المشروع مي المحكمة المسلم المحكمة المحك	- وصيف اللينة المحيطة - تصبيل ومطيق ما الاسترائي والتسابل والسابل والسابل والسابل والسابل والسابل والسابل المشروع مي المجمولة المشروع مي المجمولة المشروع مي المحمولة المشروع مي المشروع المستروع ا	وصف البينة المحيطة - تصبيل ومضا الإن ناتسالم المختوب المساورة على المساورة على المساورة على المساورة على المساورة على المساورة على المساورة المساورة المساورة المساورة المساورة على المساورة على المساورة على المساورة على المساورة على المساورة		العبلة خلال و مسلم المسارعة - وصف المشروع - تحديد موقد المشروع - تحديد - ت	المقت - تحديد موقع المثن من تنا	butter zone and in in a particular and in a pa	buffer zone and the first buffer zone and th	buffer zone and new grant that grant	buffer zone and Hooping	buffer zone and Hoody	buffer zone and Hoodpan			all Cian de liver de la control de la contro			
- توضيح شاها تشاه مياه الغزيل و تناصيله - توضيح شاها تشاه كياه كياه الغزيل و تناصيله - تحديد كاله تناصيل م مي لذن ال الحري :	- توسيع شاه Table الطزيل و تفاصيله - تعديد كانه تفاصيله و كون الطزيل و تفاصيله - المديد كانه تفاصيل و كونت الشروع في	- وصف البينة المحيطة - وصف البينة المحيطة به الولم الغزياء وتفاصيله المراح على المراح على المراح على المراح على المراح على المراح البينة المحيطة المراح عن	- وصف البيئة المحيطة - وصف البيئة المحيطة بالمشروع مي - لم يتم تكر ذلك المحتملة والمستكمة - الم يتم تكر ذلك المستكمة - الأثار البيئية المحيطة بالمستكمة - الم يتم تكر ذلك المستكمة - المستكمة المستكمة - المستكمة المستكمة - المستكمة	توضيع تشاطة المسلم المسل	- وصف البيئة المحيطة - فتصل وصف اللبئة المحيطة بالمشروع مي التكار البيئة المحيطة بالمشروع مي التمين المحيطة بالمشروع مي التمين المستروع التمين المستروع التمين المستروع التمين المستروع التمين المستروع التمين التمين المستروع التمين المستروع التمين المستروع التمين المستروع التمين التمين المستروع التمين المستروع التمين المستروع التمين الت	- وصف البيئة المحيطة - فتصل وصف اللبئة المحيطة بالمشروع مي التكار البيئة المحيطة بالمشروع مي التمين المحيطة بالمشروع مي التمين المستروع التمين المستروع التمين المستروع التمين المستروع التمين المستروع التمين التمين المستروع التمين المستروع التمين المستروع التمين المستروع التمين التمين المستروع التمين المستروع التمين المستروع التمين الت	- وصغف اللبنة المحيطة - تصبيل وصغب المسلام المرتوع في المحيطة	- وصف البينة المحيطة - تصبيل ومضا البينة المحيطة المختوبة المحتولة المحتول		العبلة خلال المشاروع وصف المشروع وصف المشروع - تحديد موقع الشروع - تحديد - تح	المقت - تحديد موقع المثن من تنا	butter zone and a size of the	buffer zone and the first buffer zone and th	buffer zone and new grant that grant	burier Zone and the speed -	hiller zone and	buffer Zone and A						
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Principle 2: Access and Equity.
Screening result: no potential risk

Explanation: All project beneficiaries (i.e. population; groups) have been mapped (see overview table 6) for each project activity / output. Community consultations and focus groups discussions have been conducted per beneficiary group to identify possible rivals, disputants and concerns related to equal access of project benefits. In that way, equal allocation and distribution of project / programme benefits will be ensured during project execution. Moreover, there will be neither discrimination nor favouritism in accessing project/programme benefits. Project benefits will be allocated and distributed equally through a

participatory process and through joint decision-making using water user and agriculture associations. Component 2 has been designed to facilitate this process, including awareness raising and capacity building of communities and vulnerable groups to operate, maintain and replicate proposed activities under component 3. Under component 1, various groups will be equally involved, in assessment and planning processes (if needed through quotas).

#### Principle 3: Marginalized and Vulnerable Groups.

#### Screening result: no potential risk

Explanation: all project beneficiaries (i.e. population; groups), including marginalised and vulnerable groups have been mapped for each project activity / output (see overview table 6). Desk research, expert consultations and community consultations and focus group discussions have been used (see Part II.I and Annex 3) to identify possible risks / adverse impacts of project activities on marginalized and vulnerable beneficiary groups (i.e. specific needs, limitations, constraints and requirements of groups). Disaggregated data at the district and municipal and activity beneficiary level has been used to identify and quantify marginalized and vulnerable groups. Also, UNHCR has been consulted to to specifically identify potential risks and needs of marginalised and vulnerable groups.

#### Principle 4: Human Rights.

#### Screening result: no potential risk

Explanation: during project preparation and execution, international human rights are respected and where applicable, promoted. During project preparation, possible human rights issues have been identified by assessing whether Jordan and Lebanon are cited in any Human Rights Council Special Procedures, and to confirm and understand possible issues through consultations with 'experts.' Communities have also been consulted about possible human rights issues with the purpose of design activities appropriately.

OHCHR has been consulted and 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 contractors ensuring all beneficiary groups will have equal access and opportunities. Moreover, awareness about this will be raised through poster, explaining rights and grievance options.

#### Principle 5: Gender Equality and Women's Empowerment.

#### Screening result: no potential risk

Explanation: the project ensures that gender equality and women's and youth empowerment is ensured for all project activities. During project preparation, this has been done through detailed stakeholder mapping (see also principle 3) including identification of specific needs, limitations, constraints and requirements of women and youth. UN Women and UNICEF have also been consulted to specifically identify potential risks and needs of women. A specific 'gender' approach and baseline section has been developed based on a gender assessment. See annex 5. In this section, the legal and regulatory context with respect to gender equality and women's empowerment in which the project takes place has been analysed, as well as cultural, traditional and religious context. Arrangements that ensure equal participation in project activities and consultations and equal access to benefits have also been identified in the gender assessment (approach and baseline).

# Principle 6: Core Labour Rights. Screening result: no potential risk

Explanation: the project ensures that all project activities meet the core labour rights and that possible risks have been identified and if existing, prevented or mitigated. During project preparation, this was done by identifying possible compliance issues by analysing if Jordan and Lebanon ratified the conventions, to confirm and understand these possible issues through consultations with ILO and by describing how the project will address possible compliance issues. Communities have also been consulted about possible labour issues that could arise while executing project activities with the purpose of design activities appropriately.

#### 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

#### Potential issue / risks:

- 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.

#### Principle 7: Indigenous Peoples.

#### Screening result: no potential risk

Explanation: the project ensures that project activities are consistent with the rights and responsibilities set forth in the UN Declaration on the Rights of Indigenous Peoples by ensuring that possible issues are identified and mitigated / prevented. During project preparation, the project determined that no indigenous people are present in the project / programme target areas. This has been determined through stakeholder mapping (through desk research and expert and community consultations. Although Some Bedouins are now official Lebanese and Jordanians, no indigenous groups have been identified in target areas. Besides that, it has been analyzed if Jordan and Lebanon ratified the ILO Convention 169 and other applicable international instruments relating to indigenous peoples.

#### Principle 8: Involuntary Resettlement.

#### Screening result: no potential risk

Explanation: the project determined that no physical or economic displacement will take place due to the project/programme. This has been determined by mapping project target sites land ownership (private, public) and land use, also informally, and through consulting communities / users on the possible risk of resettlement and to get agreement on proposed interventions (i.e. no interventions will take place without the consent of inhabitants in the targeted areas). Land owners, private or public, have agreed with using their land for project activities. Regarding the construction of irrigation channels, these will also take place on public land and or in consent with the land owners, especially farmers, through the water use and agriculture associations. The other proposed project activities all take place in buildings or on the treatment plants premises. Public hearings and consultation in the target areas did not identify any concerns related to resettlement.

#### Principle 9: Protection of Natural Habitats.

#### Screening result: no potential risk

Explanation: the project ensures that no unjustified conversion or degradation of critical natural habitats will take place because of project activities. During project preparation, it has been checked if any critical natural habitats exist in the target location, including their location, characteristics and critical value (i.e. legal protection status, common knowledge or traditional knowledge), as well as possible negative impacts on these due to project activities. This has been done by checking IUCN Red list and by consulting IUCN (regional office)

#### Principle 10: Conservation of Biological Diversity.

Screening result: no potential risk

Explanation: the project ensures that any significant or unjustified reduction or loss of biological diversity because of project activities will be avoided. During project preparation, it has been checked if any important biodiversity exist in the target location, including their protection status and other recognised inventories as well as possible negative impacts on these due to 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 was confirmed through consultations with IUCN (regional office).

# Principle 11: *Climate Change.*Screening result: no potential risk

*Explanation:* the project will ensure that project activities will not result in any significant or unjustified increase in greenhouse gas emissions or other drivers of climate change.

Table 38: Identification of possible increase of greenhouse gases per project activity

Output /	Activity that may increase	Possible increase in greenhouse gases
activity	greenhouse gases	1 cooldic moreace in greenmouse gases
3.5. Efficient treatment and reuse of wastewater in Jordan	Energy use for some pumping	Although very limited, energy use could be increased because of pumping of water from WWTP to farm lands. To compensate for this, PV will be installed at the plants

#### Principle 12: Pollution Prevention and Resource Efficiency.

#### Screening result: there may be pollution risks due to treatment practices at WWTPs

Explanation: the project aims to maximize energy efficiency and minimizing material resource and prevents waste and pollution due to project activities through analysis of possible risks of inefficiencies in energy and material resource use and waste and pollution risks of each activity – which has been done during project preparation. Irrigation of waste water from the Zahle WWTP for instance has been designed to serve farmers through a gravity system. However, these may be some risks of on-plant accidental spills, overflows, seepages and discharges of wastewater treated, which may contaminate soil, groundwater or surface water from WWTP.

Table 39: Identification of possible pollution risks per project activity

Output / activity	Possible pollution risks	Description possible health risks / impacts
3.4. Efficient treatment and reuse of wastewater in Lebanon      3.5. Efficient treatment and reuse of wastewater in Jordan	Pollution. Contamination of soil, groundwater or surface water	On-plant accidental spills, overflows, seepages and discharges of wastewater treatment may contaminate soil, groundwater or surface water from WWTP

#### Principle 13: Public Health.

#### Screening result: there may be potential health risks due to used water

Explanation: the project will ensure that potentially significant negative impacts on public health are avoided. To avoid potential negative health impacts for project activities and other activities safety signs and equipment will be provided in line with core labour rights (155 and 187). Although the project intends to improve the quality already used for irrigation, water quality monitoring will take place. The same accounts for the rainwater harvesting and greywater treatment and reuse interventions.

Table 40: Identification of possible health risks per project activity

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Output / activity	Possible health risks	Description possible health risks / impacts
3.1. Rooftop rainwater harvesting in Lebanon	Safe water	Water quality from RWH and GWTR systems may not comply to standards
3.2. Rooftop rainwater harvesting in Jordan		
3.3. Greywater treatment and reuse in Jordan		
3.4. Efficient treatment and reuse of wastewater in Lebanon	Improved water (safe	Treated waste water used for irrigation may not comply to quality standards / unmonitored
3.5. Efficient treatment and reuse of wastewater in Jordan	water)	irrigation water may reduce quality of crops.

	Also covid-19 may be detected in water
	entering the treatment facility

#### Principle 14: Physical and Cultural Heritage.

#### Screening result: no risk

Explanation: the project ensures that the alteration, damage, or removal of any physical cultural resources, cultural sites, and sites with unique natural values recognized as such at the community, national or international level due to project activities will be avoided. During project preparation, It has been checked if physical or cultural heritage sites are present or near project sites, as well as possible risks of impacts on these due to project activities. UNESCO listed Heritage sites in target area: 121 Anjar has been identified as a heritage site in Lebanon (in the district of Zahle). However, this is not in the target areas.

### Principle 15: Lands and Soil Conservation.

#### Screening result: no risks

*Explanation:* 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 .

#### 1.3. Environmental and social impact assessment

For an overview of project activities' potential risks and impact assessment result against the 15 AF principles, see table below.

**Table 41:** Overview of project activities' screening and assessment results against the 15 AF risk areas / principles

principles		
Output / activities	Potential risk / impact	Impact assessment
3.1. Rooftop rainwater harvesting in Lebanon 3.2. Rooftop rainwater harvesting in Jordan 3.3. Greywater treatment and reuse in Jordan 3.4. Efficient treatment and reuse of wastewater in Lebanon	Safe water: Water quality from RWH and GWTR systems does not comply to standards  Improved water (safe water): Water used for irrigation does not comply to quality	20 RWH systems with following direct beneficiaries: 8,753 (visitors, students) 86 RWH systems with following direct beneficiaries: 52,855 40 GWRT with following direct beneficiaries: 39,582 (same as under output 3.1.) Output 3.4. The Zahle WWTP treats 18,000m3 and irrigate 110-116 hectares of farmland
3.5. Efficient treatment and reuse of wastewater in Jordan	standards / unmonitored irrigation water may reduce quality of crops. Also covid-19 may be detected in water entering the treatment facility  Pollution. On-plant	Output 3.5.1. Maerad WWTP will store 3000m3 of water and irrigate 60 dunum of farmland Output 3.5.2. Al Kaider WWTP will store 2000m3 of water and irrigate 60 dunum of farmland Output 3.5.3. Mafraq WWTP will irrigate 100 dunum of farmland
	accidental spills, overflows, seepages and discharges of wastewater treatment may contaminate soil, groundwater or surface water from WWTP	Spills, overflows and seepages are at plant level and can be contained there

Detailed country specific ESIA and ESMP for the proposed project activities in Jordan and Lebanon can be found on the ROAS website

#### 1.4. Environmental and social management plan

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□ Allocated roles and responsibilities environmental and social risk management / implement of the ESMP □ Opportunities for adaptive management

□ Arrangements to supervise executing entities for implementation of ESMP

<sup>121</sup> https://whc.unesco.org/en/list/&order=country#alphaG

Budget provision to manage environmental and social risks / implement of the ESMP
Measures to avoid, minimize, or mitigate potential risks
Risks monitoring system / indicators
Grievance mechanism
Allocated roles and responsibilities for environmental and social risk management / implementation of the ESMP
The Regional Project Supervision Unit will be responsible for environmental and social risks management, including implementation of the Project ESMP. An AF and UN-H policies and reporting compliance expert will be part of the RPSU. This expert will also supervise Project Execution Entities on the implementation of the Project ESMP. Guidelines showing how to comply to the AF ESP and GP will be shared with all execution entities and they will be guided on process, including monitoring. Also, a detailed action plan to comply to ESP and GP will be developed during the project inception phase.  A Safeguarding system compliance expert will also be part of the RPSU. Monitoring staff part of the RPSU will require having expertise in social risk management and be familiar with the AF safeguarding system. The RPSU will be backstopped by UN-Habitat HQ, with experts on climate change, human rights, environmental and social risks managements and gender policies.
In both Lebanon and Jordan government stakeholders responsible for compliance to national environmental and social policies and standards will be part of the Regional- and National-level Steering Committees, as well as government gender focal points.
This ESMP will allow country-specific management of the potential risks and impacts identified under in country-specific ESIA and ESMP reports (see link at beginning of this document). It is worth noting that an MoU is needed with Litani River Authority (LRA) for the success of the wastewater activities (output 3.2.4).
All project-related ToR's and contracts will include clauses stating contractors will need to comply to the AF ESP, especially principle 1 (law), 4 (human rights), 5 (gender) and 6 and 13 (labour and safety) and the AF GP. This includes:
Principle 1: References to standards and laws to which the activity will need to comply will be included in all legal agreements with all sub-contractors, including steps and responsibilities for compliance.
Principle 4: References to relevant Humans rights declarations will be included in all legal agreements with all sub-contractors.
Principle 5: Reference to relevant gender policies
Principe 6: Employment and working conditions following ILO standards will be included in legal agreements with all sub-contractors.
Principle 13: Ensure that ICSC international health and safety standards are clearly accessible and understood. e.g. by putting clearly visible signs detailing health and safety standards to be located at projects sites and by supplying protective equipment.

### Opportunities for adaptive management

When changes in project activities or additional activities are required, these will need to go through a new risks screening and impact assessment process in compliance with AF, UN-habitat and national policies and standards. When this is required, this will be led by the RPSU and the Regional-level Project Steering Committee would need to approve the changes. As for opportunities, when allocated budgets for e.g. installing RWH systems allow targeted additional buildings for installing RWH systems, this would be possible following above process. Possible additional target buildings have already been identified.

#### Arrangements to supervise executing entities for implementation of ESMP

Table 42: Capacity of potential executing entities to carry-out gender responsive activities

Potential executing entity	Skills and expertise to provide gender mainstreaming inputs	Specific requirements execution entities for compliance	Capacity building needs
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UNICEF (Lebanon and Jordan)  UN-ESCWA (Lebanon)	Yes (UN core value) Yes (UN core value)	Appoint ESP a compliance and gender focal point Capacity to comply to the AF ESP and implementation of the ESMP guided by UN-Habitat Capacity to comply to the AF GP (see annex 5).	Awareness on requirements Share guidelines for execution entities to comply and to ensure 'opportunities' are identified and exploited
Litany River Authorities (Lebanon) Bekaa Water Establishment (Lebanon) Lebanese Agriculture Research Institute (Lebanon) WAJ / Yarmouk (Jordan) BADIA FUND (Jordan)	Limited (as government entity)	Appoint ESP a compliance and gender focal point Capacity to comply to the AF ESP and implementation of the ESMP guided by UN-Habitat Capacity to comply to the AF GP (see annex 5).	Awareness on requirements Share guidelines for execution entities to comply and to ensure 'opportunities' are identified and exploited Support development baseline and approach before project start + reporting requirements
Companies / consultancy firms JOHUD (Jordan)  Permaculture Research Institute (Jordan)	Limited (as company) Some (as NGO / institute)	Appoint ESP a compliance and gender focal point Capacity to comply to the AF ESP and implementation of the ESMP guided by UN-Habitat Capacity to comply to the AF GP (see annex 5).	

#### Budget provision to manage environmental and social risks / implement of the ESMP

Dedicated safeguard compliance staff time is allocated under project execution fees for USD 42,000. Also, dedicated AF ESP and GP compliance staff time is allocated under MIE management fee for ROAS of USD 114,000. These persons will ensure compliance and develop ESP and GP compliance guidelines and action plans for execution entities and guide these execution entities through the process, including baselines and reporting requirements. Besides that measures are budgeted, through the execution entities, to supervise and monitoring proposed project activities, including e.g. water sampling, remote monitoring system of RWH and GWTR systems, etc. Costs for risks mitigation measures are integrated in the budget, including e.g. PV installation and water quality monitoring.

## Measures to avoid, minimize, or mitigate potential risks

**Table 43**: Overview of project activities' screening and assessment results against the 15 AF risk areas / principles, including measures to avoid or mitigate risks / impacts

including measures to avoid or mitigate risks / impacts									
Project	Potential risk /	Impact assessment	Measures to avoid or	M & E arra					
outputs / activities	impact		mitigate risks / impacts	Indicator and method	Responsibility and frequency				
3.1. Rooftop rainwater harvesting in Lebanon 3.2. Rooftop rainwater harvesting in Jordan 3.3. Greywater treatment and reuse in Jordan	Principle 13: Safe water: Water quality from RWH and GWTR systems does not comply to standards	20 RWH systems with following direct beneficiaries: 8,753 (visitors, students) 86 RWH systems with following direct beneficiaries: 52,855 (visitors, students) 40 GWRT with following direct beneficiaries: 39,582 (same as under output 3.1.)	Rainwater collected will be treated using sand and carbon filter, a micro filter, and chlorine. This will ensure water quality compliance. Note that tap water is not used for drinking or cooking. Water and roofs will be regularly monitored, especially at the start of the rainy season; Filter will be changed annually, as per supplier recommendation. The chlorine tank should not be empty so there will be no pumping of air that impacts water quality; Students and building staff will be made aware (through curriculum) of requirements of using water + involved in operation and maintenance; Remote monitoring systems will be installed	Water quality monitoring; Awareness raising campaign; O & M (training) reports with attendance lists and photos; checking of filters and chlorine tank Water quality monitoring; Awareness raising campaign; O & M (training) reports with attendance lists and photos; checking of filters and chlorine tank; Remote monitoring systems will be installed	UN-H in cooperation with execution entities / government entities and building management  Check (compliance to tap water quality standards) – at least every 3 months  Check filters and chlorine tank - annually				
3.4. Efficient treatment and reuse of wastewater in Lebanon  3.5. Efficient treatment and reuse of wastewater in Jordan	Principle 13: Improved water (safe water): Water used for irrigation does not comply to quality standards / unmonitored irrigation water may reduce quality of crops. also covid- 19 may be detected in water entering the treatment facility  Principle 12: Pollution. On-plant accidental spills, overflows, seepages and discharges of wastewater treatment may contaminate soil, groundwater or surface water from WWTP	Output 3.4 . The Zahle WWTP treats 18,000m3 and irrigate 150 hectares of farmland  Output 3.5.1. Maerad WWTP will store 3000 m3 of water and irrigate 60 dunum of farmland Output 3.5.2. Al Kaider WWTP will store 2000m3 of water and irrigate 60 dunum of farmland Output 3.5.3. Mafraq WWTP will irrigate 100 dunum of farmland  Spills overflows and	Although the project intervention aims to increase the quality of water for irrigation, regular testing of water quality is required, also for covid-19 and irrigation will only begin after testing; Farmers will be made aware of requirements for use + involved in operation and maintenance;  Carry out regular inspections and routine tests to avoid spills, overflows, seepages and discharge of low-quality water (see also water quality testing below); include detailed risks mitigation measures identified in country-specific ESIA-ESMP reports in construction, operation and maintenance plans;	Water quality monitoring of the effluent from the WWTP. The level of treatment is tertiary. This needs to be checked on a regular basis.  Monitoring of wastewater handling and possible spills, overflows and seepages. Construction and O & M report addressing above	UN-H in cooperation with execution entities / government entities  Quality check (compliance with FAO guidelines for irrigation) – monthly  Check standards for water quality, treatment and construction - monthly				
		Spills, overflows and seepages are at plant level and can be contained there							

<sup>\*</sup> For more details see country-specific ESIA reports

#### Risks monitoring system / indicators

The environmental and social risks management approach includes monitoring of potential risks and implementation of risks mitigation measures. This monitoring program commensurate with project activities and will report on the monitoring results to the Fund in the mid-term, annual, and terminal performance reports. Monitoring will be done to ensure that actions are taken in a timely manner and to determine if actions are appropriately mitigating the risk / impact or if they need to be modified in order to achieve the intended outcome. Annual reporting will include information about the status of implementation of this ESMP, including those measures required to avoid, minimize, or mitigate environmental and social risks. The reports shall also include, if necessary, a description of any corrective actions that are deemed necessary.

The Regional Project Supervision Unit will be responsibility for environmental and social risks management, including monitoring of the implementation of the Project ESMP. An AF and UN-H policies and reporting compliance expert will be part of the RPSU. A Safeguarding system compliance expert will also be part of the RPSU. Monitoring staff part of the RPSU will require having expertise in social risk management and be familiar with the AF safeguarding system. Gender specific indicators and targets have been developed as shown in the results framework and annex 4. Specific budgets for for risks monitoring are covered by M & E staff time under the execution fee (USD 63.000 total).

Table 44: monitoring arrangements for general risks management

Action	Indicator and method	Responsibility and frequency
Monitoring of capacity execution entities to comply	Guidelines and action plans shared Monitoring reports comply to requirements	RPSU; within half a year from inception RPSU; when reports are required
Implementation of grievance mechanism	Grievance mechanism information is at target locations (buildings, etc.) Grievance mechanism information is shown on UN-Habitat project website	RPSU in coordination with execution entities; within half a year from inception RPSU in coordination with execution entities; within half a year from inception
Monitoring of measures to avoid or mitigate risks / impacts per output	See table 42 above	RPSU in coordination with execution entities; when reports are required

#### Grievance mechanism

UN-Habitat in coordination with the execution entities will implement a grievance mechanism in the target areas, which will allow an accessible, transparent, fair and effective means of communicating if there are any concerns regarding project design and implementation. Project employees, and people benefitting / affected by the project will be made aware of the grievance mechanism for any criticism or complaint of an activity.

This mechanism considers the special needs of different groups as well as gender considerations and potential environmental and social risks, especially human rights (as shown on posters). A combination of mailboxes (at community / building level) and telephoning options offer an immediate way for employees and people affected by the project to safely express their concerns. The options will allow local languages and offer the opportunity for and people affected by the project to complain or provide suggestions on how to improve project design and implementation, which will be reviewed and taken up by the project implementation team.

Project staff and execution entities will be made aware of the procedures for receiving messages and on the reporting of any grievances. In addition, monitoring activities allow project participants to voice their opinions or complaints as they may see fit.

The address and e-mail address of the Adaptation Fund will also be made public (i.e. project website, Facebook and mailbox) for anyone to raise concerns regarding the project. For country-specifics recommendations regarding the grievance mechanisms, see country specific ESIA-ESMPs.

## **ANNEX 5: Gender and youth assessment (approach and baseline)**

#### **Purpose**

The purpose of this specific 'gender assessment' is to demonstrate (in an overview) how this project will comply to the AF GP. A gender approach and data baseline has been established, which is necessary at the project start against which implementation progress and results can be measured.

In line with UN-Habitat's ESSP, the approach includes the identification and of promotion of economic, social and environmental benefits and opportunities for women and youth for each project activity (which can be seen as an additional safeguard area).

During project preparation a 'gender assessment' has been conducted to identify potential project gender equality and women's and youth empowerment issues, but also opportunities. The outcomes are summarized below, as well as arrangements that will be taken during project implementation to comply to the AF GP, including to show how the project contributes to improving gender equality, the empowerment of women and youth and the project interventions' suitability to meet the adaptation needs of targeted women and men and youth.

#### Methodology

During the project preparation phase, potential gender equality and women's and youth empowerment challenges and opportunities have been identified through initial data analysis / desk research, surveys and focus group discussions with women, youth and other groups. Through these methods, specific women and youth needs and perceptions were identified, as well as potential gender-related risks and impacts, including possible concerns regarding proposed project activities.

#### **Specific considerations and phases**

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

**Table 45**: Stakeholders consulted to develop gender approach

Type of stakeholder	Specific stakeholder
National government	Lebanon: Ministry of Social Affairs (MoSa) – to be invited to the SC
	Jordan: Ministry of Social Development (MoSD) - to be invited to the SC
UN agencies	UN Women UNICEF
Community level	Community consultations and focus group discussions with women and youth

<sup>\*</sup>See also part II.I

#### 2. Initial Gender Assessment

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

Table 46: Data baseline – women and vouth

Project outputs	Lebanon				Jordan			
	Di	rect	Ind	irect	D	irect	Indi	rect
	Women	Youth	Women	Youth	Women	Youth	Women	Youth
1.1.	192	72	217,475	23,733				
1.2.	96	36	84,815	9,256				
1.3.					180	67	415,44	259,107
2.1.	27,689	2,950	154,582	16,548				
2.2.					26,420	19,385	415,44	259,107
2.3					21,940	15,646		
2.4.	416	85	94,705	10,140				
2.5					5	2	5,342	2,972
2.6.	864	93	94,705	10,140				
2.7.1					200	150	4528	2474
2.7.2.					180	120	814	498
2.8.					150	45	11,500	60
2.9	205	182	700	500				

3.1.	27,689	2,950	154,582	16,548				
3.2.					26,420	19,385	415,44	259,107
3.3.					21,940	15,646		
3.4.	2,013	216	94,705	10,140				
2.4.	1,184	127	35,514	3,802				
2.5.1					31	20	3,789	1,980
2.5.2					31	20	739	494
2.5.3					35	20	814	498
3.6.	2,293	540	: 130,219	13,941				
3.7.1					62	40	4,528	2,474
3.7.2					35	20	814	498
3.8.					150	45	11,500	60
3.9	205	182	700	500				
4.1.	80	30	Whole Me	Whole Mena region				
4.2.	80	30		-				
4.3.	80	30						
Total	80	30						

#### b. Context:

Table 47: analysis of gender-specific legal and cultural / religious context

	Jordan	Lebanon
Analysis of legal status of women	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. 122	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. <sup>123</sup>
Analysis of cultural/religi ous status of women	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). 124	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) <sup>125</sup> and scores 'high' on level of discrimination of women on the OECD gender index (with especially access to resources being an issue). <sup>126</sup>

c. 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 48: Differentiated climate change impacts on men and women

Country	Sector /	Climate	Gender and youth equality and	Capacity to adapt and
	Livelihood	change	empowerment issues, incl.	opportunities for promoting a
	relevant to the	impact	specific Vulnerabilities / barriers to	'women' and 'youth' as agents of
	project		adapt	change

https://www.genderindex.org/country/jordan/https://www.genderindex.org/country/lebanon/

<sup>124</sup> https://www.genderindex.org/country/jordan/

<sup>125</sup> http://hdr.undp.org/en/composite/GDI

<sup>126</sup> https://www.genderindex.org/country/lebanon/

Lebanon	Agriculture	Drought / less work	High dependency on agriculture sector for income; cultural and traditional 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	Involve women and youth in water harvesting activities
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 psychological stress to do house work (cleaning, laundry, etc.) once a week and mostly at night.	Collect water at home (through water harvesting)

## d. Capacity gaps affecting GP compliance

**Table 49**: Capacity of potential executing entities to carry-out gender responsive activities.

Potential executing entity	Skills and expertise to provide gender mainstreaming inputs	Specific requirements execution entities for compliance	Capacity building needs
UNICEF (Lebanon and Jordan) UN-ESCWA (Lebanon)	Yes (UN core value) Yes (UN core value)	Appoint gender focal point Target women and youth for awareness and capacity building activities Identity specific women and youth needs in roll-out project activities Where realistic, use quota targets for women and	Awareness on requirements Share guidelines for execution entities to comply
(Lebanon)	(ON core value)	youth participation in project activities Highlight specific gender and youth considerations in knowledge management Have a participatory (women and youth monitoring system)	
Litany River Authorities (Lebanon) Bekaa Water Establishment (Lebanon) Lebanese Agriculture Research Institute (Lebanon) WAJ / Yarmouk (Jordan) BADIA FUND (Jordan)	Limited (as government entity)	Appoint gender focal point Target women and youth for awareness and capacity building activities Identity specific women and youth needs in roll-out project activities Where realistic, use quota targets for women and youth participation in project activities Have a participatory (women and youth monitoring system)	Awareness on requirements Share guidelines for execution entities to comply and to ensure 'opportunities' are identified and exploited Develop baseline and approach before project start + report
Companies / consultancy firms JOHUD (Jordan)  Permaculture Research Institute (Jordan)	Limited (as company) Some (as NGO / institute)	Appoint gender focal point Target women and youth for awareness and capacity building activities Identity specific women and youth needs in roll-out project activities Where realistic, use quota targets for women and youth participation in project activities Highlight specific gender and youth considerations in knowledge management Have a participatory (women and youth monitoring system)	

e.	Opportunities 1	for promoting a	'women' and '	youth' as	agents of	change

Through community-level consultations, it was found that women in Jordan and Lebanon (from both host communities and DPs) have knowledge regarding the water use and (urban) farming. The project aims to 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 treatment and reuse will help address their vulnerabilities to water scarcity. In Jordan, permaculture training would secure a source of livelihoods for women. Opportunities include:

Have women, youth and Syrians participate in assessment and planning processes + monitoring
Include women and youth considerations / roles in strategies and plans
Target and strengthen women organizations
Women to be involved with O & M RWH in buildings
Youth to work with women on O & M RWH in buildings, esp. schools
Women and Youth to be involved with GWTR in mosques and schools
Women to be involved in permaculture activities as consultations have shown that they see it as a source
of income and can develop business cases.
Youth to be target and if possible, lead awareness raising campaigns on adaptation to water scarcity.

## 3. Project planning and design.

**Table 50**: Gender baseline, goals and activities. A detailed action plan will be developed at inception phase

			nd activities. A					
Projec t output s	Disaggregat ed beneficiaries , gender specific issues and needs / baseline	Key gender goals (to improve equality)	Entry points (to integrate gender consideratio ns / empower women / youth)	Suitable interventions to meet specific needs and built on women and youth skills and knowledge	Additional activities needed to ensure gender perspective, incl. potential risk mitigation measures	Specific 'gender' output Indicator	Specific 'gender' targets	Budget required and allocated
1.1.	Limited participation women and youth and roles are not specified in plans	Women and youth to be involved in assessme nt and planning	Women and youth groups	Involve women and youth groups and have specific gender consideratio ns in plans	Use quota if needed Check women and youth consideratio ns in plans	% women and youth participation in assessment and planning Women and youth considerations in plans	Women: 40 % Youth: 15 % Specific mentionin g	A dedicated safeguard compliance staff time is allocated under project execution fees for
2.1. 2.2. 2.3	Women and youth should get a chance to be involved with RWH and GWTR activities	Involve women and youth in O & M and replication options; Youth to be involved in awarenes s	Women and / or youth focus point / lead in buildings		Follow-up on selected focal point	Focal point identified % youth participating in awareness campaigns	1 per building Youth: 30 %	USD 42,000  Dedicated AF ESP and GP compliance staff time is allocated under MIE manageme
2.6. 2.7.	Farmers and workers, incl. Syrians and youth are targeted	Ensure Syrians and Lebanese are equally involved	Workers participate in water associations	Youth to be targeted for modern irrigation technique use capacity building	Use quota if needed	% Syrians and youth participation	Syrian: 15 % Youth: 30 %	nt fee for ROAS of USD 114,000 These persons will
2.8.	Students are targeted of which most female	Females to participate in activities and curriculum	Female consideratio ns in knowledge managemen t	Female students to work with Syrian women	Follow-up on cooperation	% female students	Female: 60 %	ensure compliance and develop ESP and GP compliance guidelines for execution entities (with support from UN-H HQ)
2.9	Students are targeted of which most female	Females to participate in activities and curriculum	Female consideratio ns in knowledge managemen t	Female students to work with Syrian women	Follow-up on cooperation	% female students	Female: 51 %	
3.1. 3.2. 3.3.	Women and youth need to be involved with	Involve women and youth in O & M of systems	Women and / or youth focus point / lead in buildings		Follow-up on selected focal point	Focal point identified	1 per building	

	RWH and GWTR							
3.6. 3.7.	Farmers and workers, incl. Syrians and youth are targeted	Ensure Syrians and Lebanese are equally involved	Workers participate, if possible, in project works	Youth to be targeted for modern irrigation technique establishme nt	Use quota if needed	% Syrians and youth participation	Syrian: 15 % Youth: 30 %	
3.8.	Employees could be female	Select (partially) female workers	Selection process		Follow-up on selection process	% female employees	50 %	
3.9	Employees 50% of which are to be females	Select (partially) female workers	Selection process	Youth to be targeted for rain water harvesting and permacultur e techniques establishme nt	Follow-up on selection process	% female employees	50 %	
4.1. 4.2.	Limited involvement women	Women to participate in meetings	Quota / Steering committee	Have specific gender consideratio ns in knowledge managemen t	Use quota if needed	Women and youth consideratio ns in KM	Specific mentionin g	
4.3.	Women roles and youth are not specified in plans and knowledge management	Women and youth roles to be identified	Consider gender and youth issues and needs	Have specific gender consideratio ns in knowledge managemen t	Check women and youth consideratio ns in plans	Women and youth consideratio ns in plans / KM	Specific mentionin g	

#### 4. Project implementation

UN-Habitat aims to have a gender responsive and adaptable management approach in place which, when needed, allows adjustment based on learning from earlier decisions and interventions and received feedback. This is done through having gender expertise and focal points in place, whom should identify challenges, barriers or restrictions that arise during project/programme implementation, which might hinder the equal participation of men and women in activities.

Capacities of execution entities will be built so they are able to provide gender mainstreaming inputs and identify any challenges that arise during project/programme implementation, which might hinder the equal participation of men and women in activities. This requires appointing a gender focal point and having quota targets for women and youth participation in project activities. Gender focal points from the government will be part of the steering committees.

The project Grievance mechanism established will be capable to accept grievances and complaints specifically related to gender equality and women's empowerment

#### 5. Performance Monitoring and Evaluation

The gender responsive management approach includes gender responsive monitoring and evaluation, which is participatory and where 'gender disaggregated data' will be collected and analysed. Where possible, women and youth will be encouraged to participate in monitoring activities.

#### 6. Knowledge Management, Information Sharing and Reporting

UN-Habitat aims to have a gender responsive knowledge management approach in place, where specific gender considerations are highlighted through reporting on the project/programme's commitment to gender equality and women's empowerment in all outreach, communication and information sharing efforts.

## **ANNEX 6: Budget notes**

Table 51: Budget notes

Outputs	Activities		Notes / Staff	TOTAL	Year	Year 2	Year	Year	No	Salar y Base	Rate	Year	Year	Year	Year	
					1		3	4				1	2	3	4	Т
										Rate		12	12	12	12	48
Project components																
Output 1.1 Territorial planning and development	Phase 1: assessment	Launching and discussing assessment approach and outcomes	Workshop	4,000	4,000	-	-	-	1		2,000	2				2
strategy / guidelines at district level with		General methodology and framework	Spatial / urban planner	28,000	28,000	-	-	-	2		3,500	4				4
climate change and gender mainstreamed		Climate change dynamics and mapping and analysis	Climate change expert	7,000	7,000	-	-	-	1		3,500	2				2
(Lebanon)		Urbanization dynamics mapping and analysis	Climate change expert + GIS expert	7,000	7,000	-	-	-	1		3,500	2				2
		Agricultural dynamics mapping and analysis	Agriculture expert	7,000	7,000	-	-	-	1		3,500	2				2
		Water issues mapping and analysis	Water expert	7,000	7,000	-	-	-	1		3,500	2				2
		Soil issues mapping and analysis	Hydrology expert	7,000	7,000	-	-	-	1		3,500	2				2
		Complementary field investigations	Field expert	7,000	7,000	-	-	-	1		3,500	2				2
		Transversal analysis	Spatial / urban planner	14,000	14,000	-	-	-	2		3,500	2				2
		Drafting phase 1 report: Assessment outcomes	Spatial / urban planner	2,500	2,500	-	-	-	1		2,500	1				1
	Phase 2: planning	Identifying and projecting possible scenarios	Spatial / urban planner + GIS expert	7,000	7,000	-	-	-	1		3,500	2				2
	scenarios	Discussing and adopting most probable scenario	Spatial / urban planner + Workshop	9,000	9,000	-	-	-	2		3,500	1				1
		Defining main needed adaptation responses to this scenario	Spatial / urban planner - CC, Agri, Wa exp	14,000	14,000	-	-	-	2		3,500	2				2
		Setting a monitoring framework (follow up indicators, etc.)	Spatial / urban planner	3,500	3,500	-	-	-	1		3,500	1				1
		Contingency roadmap for sudden changes in adopted scenario	Spatial / urban planner - CC, Agri, Wa exp	7,000	7,000	-	-	-	2		3,500	1				1
		Drating Phase 2 report: Planning / development scenarios	Spatial / urban planner	3,500	3,500	-	-	-	1		3,500	1				1
	Phase 3: implement	Strategy / guidelines for BWE	Spatial / urban planner	14,000	14,000	-	-	-	2		3,500	2				2
	strategy / guidelines	Strategy / guidelines for DGU	Spatial / urban planner	14,000	14,000	-	-	-	2		3,500	2				2
		Strategy / guidelines MoA	Spatial / urban planner	14,000	14,000	-	-	-	2		3,500	2				2
		Training BWE, DGU, MoA on use of guidelines	Spatial / urban planner	14,000	14,000	-	-	-	2		3,500	2				2
		Drafting Phase 3 report: Strategy / guidelines	Spatial / urban planner	3,500	3,500	-	-	-	1		3,500	1				1

		Presenting and discussing outcomes	Workshop	2,000	2,000	-	-	-	1	2,000	1				1
		Communication / publication	Printing, etc.	5,000	5,000	-	-	-	1	5,000	1				1
		Sub Project Coordination	Technical support to execute output 1.1 activities	48,000	48,000	1	1	ı	1	4,000	12				12
Sub-total				249,000	249,000	•	•	•							
Output 1.2. Urban master plans	Phase 1: assessment	Launching, participatory and assessment session	Workshop	64,000	64,000	-	-	-	8	2,000	4				4
at municipal level with climate change and gender mainstreamed		Assessing and mapping dynamics in 8 municipalities	Spatial / urban planner / GIS expert	56,000	49,000	7,000	-	•	2	3,500	7	1			8
(Lebanon)		Analyses CC / Water/ Agri / Soil risks and opportunities	CC, Wa, Agri, Hydro exp	72,000	60,000	12,000	-	-	4	3,000	5	1			6
		Drafting Phase 1 assessment reports for the 8 municipalities	Spatial / urban planner	21,000	-	21,000	1	1	3	3,500		2			2
	Phase 2: plan	Development orientations and land use strategies	Spatial / urban planner	28,000	-	28,000		-	2	3,500		4			4
			Workshop	16,000	-	16,000	1	•	8	2,000		1			1
		Drafting Phase 2 proposition strategies for the 8 municipalities	Spatial / urban planner	21,000	-	21,000	-	-	3	3,500		2			2
	Phase 3 Complement	Planning complementarity at the level of the Central Bekaa	Spatial / urban planner	21,000	-	21,000	ı	•	3	3,500		2			2
			Workshop	4,000	-	4,000	ı	1	2	2,000		1			1
		Drafting Phase 3 report: complementary	Spatial / urban planner	3,500	-	3,500	ı	•	1	3,500		1			1
	Phase 4 Implement	Localized action plans and conceiving potential urban design interventions	Spatial / urban planner	10,500	-	10,500	-	-	1	3,500		3			3
			Urban Designer	10,500		10,500	-	•	1	3,500		3			3
			Water Expert	3,500		3,500	-	-	1	3,500		1			1
			Agricultural Expert	3,500		3,500	-	-	1	3,500		1			1
			CC and DRR Expert	3,500	-	3,500	-		1	3,500		1			1
			Field investigators	9,000		9,000	-	-	2	1,500		3			3
		Drafting Phase 4 report: action plans and feasibility assessments	Spatial / urban planner	7,000	-	7,000	-	-	1	3,500		2			2
		Sub Project Coordination	Technical support to execute output 1.2 activities	72,000	36,000	36,000			2	4,000	9	9			
		Communication / publication	Printing, etc.	6,000	4,000	2,000	-		1	2,000	2	1			3
	Phase 5: Operate and sustain	ate and urban observatory (1) to collect and analyse climate	Capacity building and training on GIS, Oracle, SPSS, localization of SDGs, climate data, etc.	20,000	7,500	7,500	2,500	2,500	1	2,500	3	3	1	1	8
		change data, and plan and revise plans with climate change data	Personnel	18,000	4,500	4,500	4,500	4,500	1	1,500	3	3	3	3	12
			Equipment, software and office supply	20,000	20,000	-	-	-	1	20,000	1				1

			Satellite imagery and maps	15,000	5,000	5,000	5,000	-	1	5,000	1	1	1		3
			Portal and smart application	25,000	10,000	5,000	5,000	5,000	1	5,000	2	1	1	1	5
Sub-total				530,000	260,000	241,000	17,000	12,000							
Output 1.3. Urban master plans	Phase 1: assessment	Launching, participatory and assessment session	Workshop	64,000	64,000	-	-	-	8	2,000	4				4
at municipal level with climate change and gender mainstreamed		Assessing and mapping dynamics in 2 municipalities (Mafraq; Irbid)	Spatial / urban planner / GIS expert	56,000	49,000	7,000	-	-	2	3,500	7	1			8
(Jordan)		Analyses CC / Water/ Agri / Soil risks and opportunities	CC, Wa, Agri, Hydro exp	72,000	60,000	12,000	-	-	4	3,000	5	1			6
		Drafting Phase 1 assessment reports for the 2 municipalities	Spatial / urban planner	21,000	-	21,000	-	-	3	3,500		2			2
	Phase 2: plan	Development orientations and land use strategies	Spatial / urban planner	28,000	-	28,000	-	-	2	3,500		4			4
			Workshop	16,000	-	16,000	-	-	8	2,000		1			1
		Drafting Phase 2 proposition strategies for the 2 municipalities	Spatial / urban planner	21,000	-	21,000	-	-	3	3,500		2			2
	Phase 3: Complement	Planning complementarity at the water authorities level	Spatial / urban planner	21,000	-	21,000	-	-	3	3,500		2			2
			Workshop	4,000	-	4,000	-	-	2	2,000		1			1
		Drafting Phase 3 report: complementary	Spatial / urban planner	3,500	-	3,500	-	-	1	3,500		1			1
	Phase 4: Implement	Llocalized action plans and conceiving potential urban design interventions	Spatial / urban planner	10,500	-	10,500	-	-	1	3,500		3			3
			Urban Designer	10,500		10,500	-	-	1	3,500		3			3
			Water Expert	3,500		3,500	-	-	1	3,500		1			1
			Agricultural Expert	3,500		3,500	-	-	1	3,500		1			1
			CC and DRR Expert	3,500	-	3,500	-	-	1	3,500		1			1
		Dueffing Dhase Assessed	Field investigators	9,000		9,000	-	-	2	1,500		3			3
		Drafting Phase 4 report: action plans and feasibility assessments	Spatial / urban planner	7,000	-	7,000	-	-	'	3,500		2			2
		Communication / publication	Printing, etc.	12,000	-	12,000	-	-	8	2,000		1			1
	Phase 5: Operate and sustain	Support the running of urban observatories (2) to collect and analyse climate	Capacity building and training on GIS, Oracle, SPSS, localization of SDGs, climate data, etc.	40,000	15,000	15,000	5,000	5,000	2	2,500	3	3	1	1	8
		change data, and plan and revise plans with climate change data	Personnel	36,000	9,000	9,000	9,000	9,000	2	1,500	3	3	3	3	12
			Equipment, software and office supply	40,000	40,000	-	-	-	2	20,000	1				1
			Satellite imagery and maps	30,000	10,000	10,000	10,000	-	2	5,000	1	1	1		3
			Portal and smart application	50,000	20,000	10,000	10,000	10,000	2	5,000	2	1	1	1	5

Sub-total				562.000	267,000	237,000	34.000	24,000							
TOTAL Component				1,341,000	776,000	478,000	51,000	36,000							
Output 2.1 Community	Phase 1: assessment	Detailed technical assessment of target	Site assessments	2,000	2,000	-	-	-	1	100	20				20
organization, awareness and		buildings (UNICEF)	RWH specialist / field engineer	3,000	3,000	-	-	-	1	3,000	1				1
capacity building + operation,	Phase 2: plan	Detailed technical design of systems (UNICEF)	RWH specialist	12,000	12,000	-	-	-	1	3,000	4				4
maintenance and replication / upscaling plans for concrete adaptation output 3.1: Rooftop Rain Water Harvesting (RWH) in Lebanon	Phase 4: O & M	Awareness raising and capacity building focused on water scarcity challenges in target buildings (LARI/ Private Sector)	Awareness raising campaign in target buildings about climate change-related water scarcity challenges and adaptation options, incl. RWH through religious & governmental buildings, and educational & health facilities	12,500	2,500	5,000	5,000	-	1	2,500	1	2	2		5
		Awareness raising and capacity building to operate and maintain project activities (LARI/ Private Sector)	Training sessions / workshops on O&M for the target building staff, and municipalities' staff + Operation & Maintenance manuals for target Municipalities	30,000	-	10,000	10,000	10,000	1	1,000		10	10	10	30
			Evaluating water use for urban usages study	15,000	-	-	-	15,000	1	15,000				1	1
			Operation & maintenance plans for target buildings	12,600	-	6,300	6,300	-	1	150		42	42		84
			Operation & maintenance plan at municipal / ministerial level	3,000	-	-	3,000	-	1	3,000			1		1
			Central and remote sensor and control unit for each site (for monitoring)	20,000	-	10,000	10,000	-	1	1,000		10	10		20
		Sub Project Coordination	Technical support to execute output 2.1 activities	32,500	6,500	9,750	9,750	6,500	1	3,250	2	3	3	2	
	Phase 5: Replicate + Scale-up	Awareness raising and capacity building to replicate and scale-up project activities	Replication / upscaling plan and guidelines to operate, maintain, sustain and replicate the RWH systems beyond the project	10,000	-	-	-	10,000	1	10,000				1	1
	Technical support and	Sub-project Coordination and technical support	Sub-project coordination / communication (50 %)	24,800	6,200	6,200	6,200	6,200	0.5	3,100	4	4	4	4	16
	coordination	(UNICEF)	Technical support to execute above activities (50 %)	15,000	3,750	3,750	3,750	3,750	0.5	2,500	3	3	3	3	12
			Logistics, admin and accountancy (50 %)	3,000	750	750	750	750	0.5	1,500	1	1	1	1	4
Sub-total				195,400	36,700	51,750	54,750	52,200							
Output 2.2. Community	Phase 1: assessment	Detailed technical assessment of target	Site assessments (coordinate with output 2.3)	4,200	4,200	-	-	-	1	50	84				84
organization, awareness and capacity building +		buildings (84, of which 18 rehabilitation)	RWH specialist / field engineer (coordinate with output 2.3)	6,000	6,000	-	-	-	1	1,500	4				4
operation, maintenance and replication / upscaling plans for concrete	Phase 2: plan	Detailed technical design of systems (84, of which 18 rehabilitation)	RWH specialist / field engineer (coordinate with output 2.3)	9,000	9,000	-	-	-	1	1,500	6				6
adaptation output 3.1: Rooftop Rain Water Harvesting (RWH) in Jordan	Phase 4: O & M	Awareness raising and capacity building to operatate and maintain systems (84, of which 40 both RWH and GWTR) in target buildings	Training sessions / workshops on O&M for the target building staff, official departments and directorates, ministries' and municipalities' staff (coordinate with output 2.3)	56,400	-	25,200	25,200	6,000	1	600		42	42	10	94

			Operation & maintenance plans for target buildings (coordinate with output 2.3)	12,600	-	6,300	6,300	-	1	150		42	42		84
			Operation & maintenance plan at municipal / ministerial level (coordinate with output 2.3)	3,000	-	-	3,000	-	1	3,000			1		1
	Phase 5: Replicate + Scale-up	Awareness raising and capacity building to repicate and scale-up project activities	Under output 2.3.	-	-	-	-	•							0
	Technical support and	Sub-project Coordination and technical support	Sub-project coordination (50 %)	30,000	7,500	7,500	7,500	7,500	0.5	2,500	6	6	6	6	24
	coordination	(Johud)	Technical support to execute activities (50 %)	15,000	3,750	3,750	3,750	3,750	0.5	2,500	3	3	3	3	12
			Logistics, admin and accountancy (50 %)	3,000	750	750	750	750	0.5	1,500	1	1	1	1	4
Sub-total				139,200	31,200	43,500	46,500	18,000							
Output 2.3. Community	Phase 1: assessment	Detailed technical assessment of target	Site assessments (coordinate with output 2.2)	2,000	2,000	-	-	•	1	50	40				40
organization, awareness and		buildings (40)	GWTR specialist / field engineer (coordinate with output 2.2)	6,000	6,000	-	-	-	1	1,500	4				4
capacity building + operation,	Phase 2: plan	Detailed technical design of systems (40)	GWTR specialist / field engineer (coordinate with output 2.2)	9,000	9,000	-	-	-	1	1,500	6				6
maintenance and replication / upscaling plans for concrete adaptation output 3.3: Grey Water Treatment and Reuse	Phase 4: O & M	Awareness raising and capacity building to operatate and maintain system (84, of which 40 both RWH and GWTR) in target buildings	Awareness raising campaign in target municipalities and target buildings about climate changerelated water scarcity challenges and adaptation options, incl. RWH and GWR through Imams and	42,000	-	21,000	21,000	-	1	500		42	42		84
(GWTR) in Jordan			curriculum in schools (coordinate with output 2.2) Under output 2.2.					_							0
			Under output 2.2.	-	_	_	_								0
			,	-	-	-	-	-							
			Under output 2.2.	-	-	-	-	-							0
			Central and remote sensor and control unit for each site (for monitoring) (coordinate with output 2.2)	84,000	-	42,000	42,000	1	1	1,000		42	42		84
	Phase 5: Replicate + Scale-up	Awareness raising and capacity building to repicate and scale-up project activities	Replication / upscaling plan and guidelines to operate, maintain, sustain and replicate the GWTR systems beyond the project, incl school curriculum (coordinate with output 2.2)	15,000	-	-	-	15,000	1	15,000				1	1
	Technical support and	Sub-project coordination and technical support	Sub-project coordination (100 %)	40,000	10,000	10,000	10,000	10,000	1	2,500	4	4	4	4	16
	coordination	(UNICEF Jordan)	Technical support to execute above activities (100 %)	30,000	7,500	7,500	7,500	7,500	1	2,500	3	3	3	3	12
			Logistics, admin and accountancy (100 %)	6,000	1,500	1,500	1,500	1,500	1	1,500	1	1	1	1	4
Sub-total				234,000	36,000	82,000	82,000	34,000							
Output 2.4. Community organisation, awareness and	Phase 1: assessment	Detailed technical assessment of the irrigation canal and surrounding agricultural areas (RTO)	Site assessments + Surveying public opinion of farmers in accepting reused wastewater	9,000	9,000	-	-	1	1	1,500	6				6
capacity building +		(1110)	Civil/ Agricultural Engineer	13,200	13,200	-	-	-	1	2,200	6				6

operation, maintenance and	Phase 2: plan	Detailed technical design of the open canal	Civil/ Agricultural Engineer	13,200	13,200	-	-	-	1	2,200	6				6
replication and upscaling plans for concrete adaptation output 3.4: Efficient treatment and reuse	Phase 4: O & M	Surveys and studies developed for understanding adaptation measures in Zahle (BWE/ Private Sector)	Development of public awareness to encourage acceptance of treated waste water and to focus on water scarcity issues in Zahle for 1,000 farmers	12,500	2,500	5,000	5,000	-	1	2,500	1	2	2		5
of wastewater,from Zahle WWTP, in Lebanon		Awareness raising and capacity building to operate and maintain project	Training sessions / workshops / Manuals and Tools on O&M for the BWE and the Municipality of Zahle	4,500	-	1,500	1,500	1,500	1	1,500		1	1	1	3
		activities ( <b>BWE</b> / Private Sector)	Provision of chemical supplies to BWE laboratory to conduct required water and wastewater sampling	50,400	14,400	14,400	14,400	7,200	1	1,200	12	12	12	6	42
			Operation & maintenance plans for target farmers	3,900	-	-	1,950	1,950	1	1,950			1	1	2
	Phase 5: Replicate + Scale-up	Awareness raising and capacity building to replicate and scale-up project activities	Replication / upscaling plan and guidelines to operate, maintain, sustain and replicate wastewater reuse and to ensure proper tariffs through a socio-economic study (Private Sector)	25,000	-	-	25,000	•	1	25,000			1		1
	Technical support and coordination	Supervision of the awareness campaigns implementation and development	Sub-project Coordination/community mobilization	31,500	9,000	9,000	9,000	4,500	1	2,250	4	4	4	2	14
Sub-total				163,200	61,300	29,900	56,850	15,150							
Output 2.5. Community	Phase 3: Implement	Concrete intervention see output 3.5		_	-	-	-	-	1						0
organisation, awareness and capacity building + operation, maintenance and	Phase 4: O & M	Operatate and maintain project activities.	Operation & maintenance plans for proposed interventions. Some spare parts are provided under ouput 3.5	6,000	-	-	6,000	-	1	6,000			1		1
replication and upscaling plans for concrete adaptation output 3.5: Efficient	Phase 5: Replicate + Scale-up	Capacity building to repiicate and scale-up sub-project activities	Replication / upscaling plan and guidelines to operate, maintain, sustain and replicate cc resilient WWTPs beyond the project	10,000	-	-	-	10,000	1	10,000				1	1
treatment and reuse of wastewater in Jordan	Technical support and coordination	In kind		-	-	-	-	-	1						0
Sub-total				16,000	-	-	6,000	10,000							
Output 2.6. Community organisation,	Phase 1: assessment	Detailed technical assessment of agricultural fruit lands and irrigation	Site assessments and visits to farmers	6,000	6,000	-	-	-	1	100	60				60
awareness and capacity building +		systems (RTO)	Civil/ Agricultural engineer	4,000	4,000	-	-	-	1	2,000	2				2
operation, maintenance and replication and	Phase 2: plan	Detailed technical design of the drip irrigation systems	Irrigation specialist	5,000	5,000	-	-	-	1	5,000	1				1
upscaling plans for concrete adaptation output 3.6.1 Water- use-efficient irrigation	Phase 4: O & M	Awareness raising and capacity building trainings (LARI)	Workshop on installing and operating drip irrigation systems with practical field demonstration	15,000	7,500	7,500	-	-	1	7,500	1	1			2
of treated wastewater for fruit trees in Lebanon from Zahle WWTP, Lebanon		Awareness raising and capacity building to operate and maintain project	Awareness raising campaign in Zahle about climate change-related water scarcity challenges and adaptation options, incl. Fertigation	8,000	-	4,000	4,000	-	1	4,000		1	1		2

		activities (LARI/ Private Sector)	awareness for fuit trees through workshops												
			Development of existing agricultural cooperatives, technical assistance in selecting crops, irrigation methods (LARI)	15,000	-	-	15,000	-	1	15,000			1		1
			Training sessions / workshops / Tools on O&M for the target farmers	2,500	-	-	2,500	-	1	2,500			1		1
	Phase 5: Replicate + Scale-up	Awareness raising and capacity building to replicate and scale-up project activities (LARI/ Private Sector)	Replication / upscaling plan and guidelines to operate, maintain, sustain and replicate smart and efficient drip irrigation techniques and to investigate permaculture guidelines and testing in the Central Bekaa area	20,000	-	-	20,000	-	1	20,000			1		1
	Technical support and	Sub-project Coordination and technical support	Sub Project coordindination and supervision	43,200	10,800	10,800	10,800	10.800	0.3	3,000	12	12	12	12	48
	coordination	Supervision of the awareness campaigns implementation and development	Community Mobilization	23,400	5,850	5,850	5,850	5,850	0.3	1,950	12	12	12	12	48
Sub-total				142,100	39,150	28,150	58,150	16,650							
Output 2.7.1	Phase 1: assessment	Formulate a rehabilitation study for individual farm	Preparation visits	4,000	4,000	-	-	-	1	100	40				40
Community organisation, awareness and	assessment	(40) end-user/Groups based on agreed-upon	Stakeholder sessions / workshops	2,800	2,800	-	-	-	1	700	4				4
capacity building + operation, maintenance and		climate change resilient/irrigation water need/use, cropping patterns													
replication and upscaling plans for concrete adaptation	Phase 2: plan	Water user associations established (Al-Akaidr and Al Maerad)	Preparation visits	1,200	1,200	-	-	-	1	100	12				12
output 3.7:Water-use Efficient irrigation of		,	Stakeholder sessions / workshops	2,800	2,800	-	-	-	1	700	4				4
treated wastewater from Maerad and Al Kaider WWTPs in	Phase 4: O & M	Awareness raising and capacity building to operatate and maintain	Capacity building of 58-60 water association members to run the association	30,000	30,000	-	-	-	1	1,000	30				30
Jordan		project activities	Capacty building of 100 farmworkers on handling reclaimed water	30,000	-	30,000	-	-	1	1,000		30			30
			Operation & maintenance plans for target irrigation systems at 40 farms	8,000	-	8,000	-	ı	1	200		40			40
			Monitoring	8,000	-	-	4,000	4,000	1	100			40	40	80
	Phase 5: Replicate + Scale-up	Awareness raising and capacity building to repicate and scale-up project activities	Replication / upscaling plan and guidelines to operate, maintain, sustain and replicate the planning approach and irrigation interventions	10,000	-	-	-	10,000	1	10,000				1	1
	Technical support and	Sub-project Coordination and technical support	Sub-project coordination (50 %)	30,000	7,500	7,500	7,500	7,500	0.5	2,500	6	6	6	6	24
	coordination	(Johud)	Technical support to execute activities (50 %)	15,000	3,750	3,750	3,750	3,750	0.5	2,500	3	3	3	3	12
			Logistics, admin and accountancy (50 %)	3,000	750	750	750	750	0.5	 1,500	1	1	1	1	4
		Sub-total Maerad and Al Kaider		144,800	52,800	50,000	16,000	26,000							

Output 2.7.2 Community	Phase 1: assessment	Formulate a rehabilitation study for individual farm	Preparation visits	2,400	2,400	-	-	-	1	100	24				24
organisation, awareness and capacity building + operation, maintenance and		(24) end-user/Groups based on agreed-upon climate change resilient/irrigation water need/use, cropping patterns	Stakeholder sessions / workshops	2,800	2,800	-	-	-	1	700	4				4
replication and upscaling plans for	Phase 2: plan	Water user associations established (Mafraq)	Preparation visits	600	600	-	-	-	1	100	6				6
concrete adaptation output 3.7:Water-use Efficient irrigation of			Stakeholder sessions / workshops	2,800	2,800	-	-	-	1	700	4				4
treated wastewater from Mafraq WWTP in Jordan	Phase 4: O & M	Awareness raising and capacity building to operatate and maintain project activities	Capacity building of 24 water association members to run the association	15,000	15,000	-	-	-	1	1,000	15				15
		project activities	Capacty building of 50 farmworkers on handling reclaimed water	15,000	-	15,000	-	-	1	1,000		15			15
			Operation & maintenance plans for target irrigation systems at 40 farms  Monitoring	4,800	-	4,800	-	-	1	200		24	24	24	24
	Phase 5:	A.u.a.a.a.a.a.a.iaia.a.a.a.d	Ğ	4,800	-	-	2,400	2,400	1	100			24	1	1
	Replicate + Scale-up	Awareness raising and capacity building to repicate and scale-up project activities	Replication / upscaling plan and guidelines to operate, maintain, sustain and replicate the planning approach and irrigation interventions	10,000	-	-	-	10,000	'	10,000				-	
	Technical support and	Sub-project Coordination (Badia)	Sub-project coordination (100 %)	30,000	7,500	7,500	7,500	7,500	1	2,500	3	3	3	3	12
	coordination		Technical support to execute activities (100 %)	20,000	5,000	5,000	5,000	5,000	1	2,500	2	2	2	2	8
			Logistics, admin and accountancy (100 %)	6,000	1,500	1,500	1,500	1,500	1	1,500	1	1	1	1	4
		Sub-total Mafraq		114,200	37,600	33,800	16,400	26,400							
Sub-total				259,000	90,400	83,800	32,400	52,400							
Output 2.8. Community organisation, awareness and capacity building +	Phase 1: assessment	Detailed technical studies for systems integration (plant, animal, water, energy, soil and human) (PRI)	Permaculture systems advisor (international)	24,400	24,400	-	-	-	1	6,100	4				4
operation, maintenance and replication and upscaling plans for concrete adaptation	Phase 2: plan	Detailed technical design for systems integration (plant, animal, water, energy, soil and human) (PRI)	Permaculture systems advisor (international)	24,400	24,400	-	-	-	1	6,100	4				4
output 3.8; permaculture demonstration	Phase 4: O & M	Awareness raising and capacity building to operatate and maintain project activities (PRI)	Workshops to involve surrounding communities (site visits and deisgn and operation training)	10,000	3,000	3,000	2,000	2,000	1	1,000	3	3	2	2	10
		project activities (FTM)	Operation & maintenance plan	2,000	-	2,000	-	-	1	2,000		1			1
			Online Permaculture Design Certificate Course (28 modules, released weekly + final design exercise at JUST land or land owned by local community members. Cost per student	170,000	42,500	42,500	42,500	42,500	50	850	1	1	1	1	4
	Phase 5: Replicate + Scale-up	Awareness raising and capacity building to repicate	Workshops to involve surrounding communities (site visits and replication training)	4,000	-	-	2,000	2,000	1	1,000			2	2	4

		and scale-up project activities (PRI)	Replication / upscaling plan and guidelines, incl. permaculture landscape design plan for surrounding communities	5,000	-	-	-	5,000	1	5,000				1	1
	Technical support and	Sub-project Coordination (PRI)	Sub-project coordination / strategic advisor (internat) (100 %)	48,800	12,200	12,200	12,200	12,200	1	6,100	2	2	2	2	8
	coordination		Technical support to execute activities (100 %)	20,000	5,000	5,000	5,000	5,000	1	2,500	2	2	2	2	8
			Logistics, admin and accountancy (100 %)	6,000	1,500	1,500	1,500	1,500	1	1,500	1	1	1	1	4
Sub-total				314,600	113,000	66,200	65,200	70,200							
Output 2.9. Community	Phase 1: assessment	Identification of agriculture practices, lands, farmers	Regional Technical Office	7,700	7,700	-	-	-	1	1,925	4				4
organisation, awareness and capacity building + operation,	Phase 2: plan	Detailed technical guidelines for agriculture waste management and sustainable crop production	Printing, etc.	10,000	-	-	-	10,000	1	10,000				1	1
maintenance and replication and	Phase 3: Implement	Concrete intervention see output 3.8													0
upscaling plans for concrete adaptation output 3.9; permaculture demonstration	Phase 4: O & M	Awareness raising and capacity building to operate and maintain project activities	Operation & maintenance plan and upgrade of LARI's mobile application to include:  '- All tested crops varieties affected and suitable for climate change  - A list of farmers in the area ( connecting farmers together)  - Broadcasting all technical guidelines and best practices that pertain to the project and beyond it	10,000	-	10,000	-	-	1	10,000		1			1
			Training/Workshop for farmers on Permaculture practices +LARI to give out certificates and books/study materials to farmers that attend training on Permaculture (3 per year (30 participants per workshop = 270 participants in total) over 3 year span) (participants to receive all material)	241,071	80,357	80,357	80,357	-	1	893	90	90	90		270
	Phase 5: Replicate + Scale-up	Awareness raising and capacity building to replicate and scale-up	Workshops to involve surrounding communities (site visits and replication training)	4,000	-	-	2,000	2,000	1	1,000			2	2	4
		project activities	Replication / upscaling plan and guidelines, incl. permaculture landscape design plan for surrounding communities	5,000	-	-	-	5,000	1	5,000				1	1
	Technical support	Sub-project Coordination (LARI)	Permaculture expert (International) (20%)	28,800	7,200	7,200	7,200	7,200	0.2	3,000	12	12	12	12	48
	The second		Project Management Assistant (National) (20%)	14,400	3,600	3,600	3,600	3,600	0.2	1,500	12	12	12	12	48
			Senior strategic project management systems expert & permaculture systems advisor (National) (20%)	43,200	10,800	10,800	10,800	10,800	0.2	4,500	12	12	12	12	48
			LARI operation costs (20%)	24,000	6,000	6,000	6,000	6,000	0.2	2,500	12	12	12	12	48
			Logistics, admin and accountancy (100 %)	6,000	1,500	1,500	1,500	1,500	1	1,500	1	1	1	1	4
		Sub Project Coordination	Sub Project coordination and supervision (20%)	24,000	6,000	6,000	6,000	6,000	0.2	2,500	12	12	12	12	48
Sub-total				418,171	123,157	125,457	117,457	52,100							

TOTAL Component 2				1,881,671	530,907	510,757	519,307	320,700								
Output 3.1 Rooftop Rain Water Harvesting RWH) in	Phase 3: Implement (concrete	Install and connect 20 large RWH systems (11 educational facilities, 7	Collection System (Gutters, Drains, Pumps, Accessories)	54,800	-	27,400	27,400	-	1		2,740		10	10		20
Lebanon + show room	measures)	religious buildings, 1 health facility, and 1 governmental building) with the water	Water Treatment systems (Media filter, Micro Filter, Chlorination tanks and dosage pumps)	111,682	-	55,841	55,841	-	1		5,584		10	10		20
		supply network, including the digging of rain- harvesting cisterns and	Reinforced concrete water tanks (with excavations, waterproofing, ladders, valves, reinstatement, etc.)	263,656	-	131,828	131,828	-	1		13,183		10	10		20
		mounting rectangular tanks 1,410 m3. (UNICEF)	Plastic Water tanks (inlcuding Excavation, subgrade, fencing and ladders)	303,212	-	151,606	151,606	-	1		15,161		10	10		20
		Show room (1) with rainwater harvesting system and Water Savind Devices (WSD) (UNICEF)	Installation of 1 complete system in Bekaa Water Establishment to enhance monitoring of RWH installed systems	43,000	-	-	43,000	-	1		43,000			1		1
	Technical support	Supervision RWH system installation and maintenance (UNICEF Lebanon)	RWH engineer specialist / WASH officer (50 %)	90,912	11,364	34,092	34,092	11,364	0.6	5	5,682	4	12	12	4	32
Sub-total				867,262	11,364	400,767	443,767	11,364								
Output 3.2. Rooftop Rain Water Harvesting (RWH) in Jordan + show room	Phase 3: Implement (concrete	Install and connect 86 small RWH systems (of which 18 rehabilitation - 2 municipal, 49 schools, 15 mosques,	Per system including tank, pumps, pipes and surface rehabilitation	688,000	-	352,000	336,000	-	1		8,000		44	42		86
Jordan + Show room	measures)	49 schools, 15 mosques, 20 residential) with the water supply network, including the digging of rain-harvesting cisterns and mounting rectangular tanks 30-60 m3.	Transportation	8,820	-	4,410	4,410	-	1		105		42	42		84
		Show room (2) with RWH system, GWTR system and Water Saving Devices (WSD)	Installation of 2 complete systems in municipal government buildings to enhance awareness raising while	100,000	-	100,000	-	-	1		50,000		2			2
	Technical support	Supervision RWH system installation and maintenance (Johud)	RWH enigneer specialist / WASH officer (50 %)	40,000	5,000	15,000	15,000	5,000	0.5	;	2,500	4	12	12	4	32
Sub-total				836,820	5,000	471,410	355,410	5,000								
Output 3.3. Grey Water Treatment and Reuse (GWTR) in Jordan	Phase 3: Implement (concrete	Install / construct and connect 40 GWTR systems with toilets and gardening water supply (35 schools, 5	Per system including tank, pumps, pipes and surface rehabilitation	320,000	-	160,000	160,000	-	1		8,000		20	20		40
(GWTR) in Jordan	measures)	mosques)	Transportation	4,200	-	2,100	2,100	-	1		105		20	20		40
		Rehabilitation and modification of WASH blocks for greywater reuse in toilet flushing and for greeing purposes	Per block	428,000	-	214,000	214,000	-	1		10,700		20	20		40
	Technical support	Supervision GWTR system and blocks installation and maintenance (UNICEF Jordan)	RWH engineer specialist / WASH officer (50 %)	90,912	11,364	34,092	34,092	11,364	0.5		5,682	4	12	12	4	32
Sub-total				843,112	11,364	410,192	410,192	11,364								

Output 3.4. Efficient treatment and reuse of wastewater from Zahle WWTP, in Lebanon	Phase 3: Implement (concrete measures)	Reuse of the Zahle WWTP effluent for irrigation through diverting the plant's treated effluent to agricultural fields and treating sludge for fertilizers usage - 116 Hectares of Agricultural lands	Construction of a 3000 m open channel (1x1 meters with 0.25m thick walls)	795,000	-	795,000	-	-	1	265		3000		
	Technical support	Supervision of the irrigation system installation and maintenance	Civil works and Agricultural Engineering	21,120	4,224	16,896	-	-	1	2,112	2	8		10
		Surveying the alignment of the installed channel along the Litany River	Surveying works	30,000	12,000	18,000	1	-	1	1,500	8	12		20
Sub-total				846,120	16,224	829,896	-	-						
Output 3.5. Efficient treatment and reuse of wastewater in Jordan	Phase 3: Implement (concrete measures)	Maerad WWTP upgrading for increased water quality and water storage capacity for irrigation purposes	Install Storage tank (3000) m3 and flow meters distribution collector and reuse pipeline to control the pumping of treated water to farmers and to increase the no. of farmers and areas which reuse treated water	282,500	-	282,500	-	-	1	282,50 0		1		1
			Spare parts for equipment	28,250	-	28,250	-	-	1	28,250		1		1
			Air Blower for aeration tank	35,300	-	35,300	-	-	1	35,300		1		1
			Wheels for setting tanks	2,850	-	2,850	-	-	1	2,850		1		1
			Excess sludge pump + repair kit	5,600	-	5,600	-	-	1	5,600		1		1
			Polymer pump positive displacement	2,800	-	2,800	-	-	1	2,800		1		1
			Two platforms around dewatering units	1,400	-	1,400	-	-	1	1,400		1		1
			Replace inlet pipes to dewatering units from plastic to stainless steal	1,400	-	1,400	-	-	1	1,400		1		1
			Supply and install Y strainer for feed line to dewatering machines	707	-	707	-	-	1	707		1		1
			Supply new sludge screw to dewatering unit	9,900	-	9,900	-	-	1	9,900		1		1
			Supply conveyer belt with motor and gearbox for dewatering	5,650	-	5,650	ı	-	1	5,650		1		1
			4 VFD fans for dewatering unit	9,900	-	9,900	-	-	1	1,150		1		1
			Supply Level meter for drainage tank	2,100	-	2,100	-	-	1	2,100		1		1
			Supply one drainage pump 18.5 kw 8-25 m H and 20-125 l/s	14,000	-	14,000	-	-	1	14,000		1		1
			Supply 2 flow meter for RAS, WAS pumps	14,000	-	14,000	-	-	1	14,000		1		1
			Install PV to compensate for energy use	10,000	-	10,000	-	-	1	10,000		1		1
		Sub-total Maerad		426,357	-	426,357	•	-						

		Al Akaider WWTP upgrading for increased	Install Sand trap and screen unit for inlet	67,800	-	67,800	-	-	1	67,800	1		1
		water quality and water storage capacity for irrigation purposes	Install 2 new pumps with control panel with level control with soft start with electrical crane + pipe network installing and fabrication	113,000	-	113,000	-	-	1	113,00 0	1		1
			Install basket screen on inlet of storage tank to protect the pumps and ensure continues pumping for farmers	1,400	,	1,400	-	-	1	1,400	1		1
			Chlorine unit for disinfection treated water	14,100	-	14,100	-	-	1	14,100	1		1
			Maintain all gates and bridges for ponds	7,000	-	7,000	-	-	1	7,000	1		1
			Install Storage tank (2000 ) m3 and flow meters distribution collector and reuse pipeline to control the pumping of treated water to farmers and to increase the no. of farmers and areas which reuse treated water	198,000	-	198,000	-	-	1	198,00 0	1		1
			Clean anaerobic pond	71,000	•	71,000	-	-	1	71,000	1		1
			Install new pipe line from inlet to anaerobic pond	14,100	•	14,100	-	-	1	14,100	1		1
		Out to talk All All sides	Install PV to compensate for energy use	10,000	-	10,000	-	-	1	10,000	1		1
		Sub-total Al Akaider		496,400	-	496,400	-	-					
		Mafraq WWTP upgrading for increased water quality for irrigation purposes	Spare parts for equipment	28,250	-	28,250	-	-	1	28,250	1		1
		ioi iirigation purposes	two Soft starter for pumps of lift station	8,400	-	8,400	-	-	1	8,400	1		1
			Two aerator units for ponds	12,125	-	12,125	-	-	1	12,125	1		1
			One irrigation pump (higher head for far area ) to increase the area which reuses treated water	35,300	•	35,300	-	-	1	35,300	1		1
			One lifting pump, one primary sludge pump	28,000	-	28,000	-	-	1	28,000	1		1
			Modify conveyor belt of screen by install new mechanical belt conveyor	8,500	-	8,500	-	-	1	8,500	1		1
			Install PV to compensate for energy use	10,000	-	10,000	-	-	1	10,000	1		1
		Sub-total Mafraq		130,575	-	130,575	-	-					
	Technical support	Supervisision WWTPs ugradings measures installation and maintenance (WAJ / Yarmouk)	In-kind										
Sub-total				1,053,332		1,053,33	-	-					
Output 3.6. Water-use-efficient	Phase 3: Implement	Installation of drip irrigation systems (150 ha) for fruit	Drip Irrigation (including pumps and filters)	939,000	-	469,500	469,500	-	1	6,260	75	75	150

	(concrete	trees, vineyards and potato	Sensors, automated tools (includes		-	4.075	4.075	-	1	0.5		75	75		150
wastewater for fruit trees in Lebanon from Zahle WWTP.	measures) Technical	plantation Supervision of the irrigation	valves, regulators, fittings)  Civil works and Agricultural	3,750	0.000	1,875	1,875	-	1	25	3	12	6		21
Lebanon	support	system installation and maintenance	Engineering	46,200	6,600	26,400	13,200			2,200					
Sub-total				988,950	6,600	497,775	484,575								
Output 3.7.1 Water-use Efficient	Phase 3: Implement	Connect WWTPs stored water with farm lands	4 KMs conveyor pipeline 6' size	120,000	-	120,000		-	1	30		4000			4000
irrigation of treated wastewater from Maerad and Alkaider	(concrete measures)		Installation 4000 m	20,000	-	20,000		-	1	5		4000			4000
WWTPs in Jordan		Establish a new modern water irrigation system connecting main water irrigation pipe with farm lands (120 dunums)	For 120 dunum	240,000	-	240,000	,	-	1	2,000		120			120
	Technical support	Supervisision irrigation system installation and maintenance (Johud)	Irrigation specialist / field engineer (50 %)	26,400	4,800	14,400	3,600	3,600	0.4	3,000	4	12	3	3	22
		Sub-total irrigation from Mearad and Al Akaider		406,400	4,800	394,400	3,600	3,600							
Output 3.7.2 Water-use Efficient irrigation of treated	Phase 3: Implement (concrete	Establish a new modern water irrigation system connecting water ponds	For 100 dunums	200,000	-	200,000	-	-	1	2,000		100			100
wastewater from Mafraq WWTP in Jordan	measures)	with farm lands (100 dunum) (Badia)	Establish new water ponds (15) with surface pumps and filters at farm lands	150,000	-	150,000	-	-	1	10,000		15			15
Jordan	Technical support	Supervision irrigation system installation and maintenance (Badia)	Irrigation specialist / field engineer (100 %)	48,000	6,000	36,000	3,000	3,000	1	3,000	2	12	1	1	16
		Sub-total irrigation from Mafraq		398,000	6,000	386,000	3,000	3,000							
Sub-total				804,400	10,800	780,400	6,600	6,600							
Output 3.8. Permaculture	Phase 3: Implement	Bio-Fertilizer production	Compost turner	30,000	30,000	-	-	-	1	30.000	1				1
demonstration - closed loop water system in Jordan	(concrete measures)		Tractor Massey Ferguson							,					
system in Jordan			, ,	30,000	30,000	-	-	-	1	30,000	1				1
•			Woodchipper	30,000 4,000	30,000 4,000	-	-	-	1	30,000	1				1
-			Woodchipper  Compost tea brewer 20 litres		·	-	-		1	,	1				1
•			Woodchipper  Compost tea brewer 20 litres  Microscope with display scree	4,000	4,000		-	-	1 1	4,000	1 1				1 1
•			Woodchipper  Compost tea brewer 20 litres  Microscope with display scree  Mulch bales	4,000	4,000 2,000	2,400	2,400	-	1 1 50	4,000	1 1 1 8	12	12	12	1 1 1 44
•			Woodchipper  Compost tea brewer 20 litres  Microscope with display scree  Mulch bales  Manure (truck load)	4,000 2,000 3,000	4,000 2,000 3,000	-	2,400	-	1 1 50 4	4,000 2,000 3,000	1 1 8 8	12	12	12	1 1 1 44 44
			Woodchipper  Compost tea brewer 20 litres  Microscope with display scree  Mulch bales  Manure (truck load)  Diesel average per litre	4,000 2,000 3,000 8,800	4,000 2,000 3,000 1,600	2,400	,	2,400	1 1 1 50 4	4,000 2,000 3,000 4	1 1 8 8 8 8				1 1 1 44 44 44
		Crop Garden and Compost Egg laying Chickens	Woodchipper  Compost tea brewer 20 litres  Microscope with display scree  Mulch bales  Manure (truck load)  Diesel average per litre  Poly tunnels	4,000 2,000 3,000 8,800 13,200	4,000 2,000 3,000 1,600 2,400	- - 2,400 3,600	3,600	2,400	1 1 50 4	4,000 2,000 3,000 4 75	1 1 8 8	12	12	12	1 1 1 44 44
			Woodchipper  Compost tea brewer 20 litres  Microscope with display scree  Mulch bales  Manure (truck load)  Diesel average per litre  Poly tunnels  Irrigation	4,000 2,000 3,000 8,800 13,200	4,000 2,000 3,000 1,600 2,400	- - 2,400 3,600	3,600	- - 2,400 3,600 240	1 1 1 50 4	4,000 2,000 3,000 4 75 2	1 1 8 8 8 8	12	12	12	1 1 1 44 44 44 1
			Woodchipper  Compost tea brewer 20 litres  Microscope with display scree  Mulch bales  Manure (truck load)  Diesel average per litre  Poly tunnels	4,000 2,000 3,000 8,800 13,200 880 9,450	4,000 2,000 3,000 1,600 2,400 160 9,450	2,400 3,600 240	3,600	2,400 3,600 240	1 1 1 50 4 10	4,000 2,000 3,000 4 75 2 3,150	1 1 1 8 8 8 1 1	12	12	12	1 1 1 44 44 44 11

			Hand tools, 2 wheelbarrows, 2 rakes, 2 shovels, 2 hoes, 2 pruners, 2 loppers, 2 pruning saws, 2 pitch forks	300	300	-	-	-	1	300	1				1
			Seeds and Seedslings	720	180	180	180	180	1	180	1	1	1	1	4
		Bees: Apiculture	3 flow hives; 3 colonies; 3 hives full of bees; stainless steel spinner extractor; smoker; seperator; 3 top boxes; brush; suit; gloves; wax capping knife	4,200	4,200	-	-	-	1	4,200	1				1
		Compost worms: vermicompost	5 sub-od works farms	1,000	1,000	-	-	-	1	1,000	1				1
		Olive Orchard Monoculture Conversion to Food Forest	Irrigation	550	550	-	-	ı	1	550	1				1
		(1,000m2)	Chicken caraven 30, 2 electric net fence, solar electric energiser	4,400	4,400	-	-	-	1	4,400	1				1
			Feed for 30 chickens	1,288	322	322	322	322	1	322	1	1	1	1	4
			Trees	720	180	180	180	180	1	180	1	1	1	1	4
			Seeds	300	75	75	75	75	1	75	1	1	1	1	4
	Technical support	Supervisision Permeculture demonstration site	Permaculture expert (National)	120,000	48,000	24,000	24,000	24,000	1	2,000	24	12	12	12	60
		installation and maintenance	Agriculture labourers (National)	57,600	14,400	14,400	14,400	14,400	2	600	12	12	12	12	48
			Strategic advise / expert (International)	42,700	24,400	6,100	6,100	6,100	1	6,100	4	1	1	1	7
			Permaculture systems advisor (international)	42,700	24,400	6,100	6,100	6,100	1	6,100	4	1	1	1	7
Sub-total				384,046	210,289	57,919	57,919	57,919							
Output 3.9. Permaculture	Phase 3: Implement	Agricultural Waste Management for Sustainable Crop	Tractors Massey Ferguson (3)	90,000	90,000	-	-	-	3	30,000	1				1
demonstration - closed loop water system in Lebanon	(concrete measures)	Production	Medium sized Compost Turners (6)	30,000	30,000	-	-	-	6	5,000	1				1
oyotom in Education			Woodchippers (3)	12,000	12,000	-	-	-	3	4,000	1				1
			Pruning Tools for Farmers (16)	3,200	3,200	-	-	-	16	200	1				1
			Mulch, 25 bales per month (\$3.6/bale)	4,320	1,080	1,080	1,080	1,080	25	3.6	12	12	12	12	48
			Manure truck load, 2 per month	7,200	1,800	1,800	1,800	1,800	2	75	12	12	12	12	48
			Diesel average (\$1.5/L; 960L/year)	11,520	2,880	2,880	2,880	2,880	3	80	12	12	12	12	48
			Compost tea brewers 20 litres (3)	6,000	6,000	-	-	-	3	2,000	1				
		Sc	Scoop Shovels (16)	480	480	-	-	-	16	30	1				
			Pitchforks (16)	480	480	-	-	-	16	30	1				
			Lab materials and kits for in-lab analysis/testing (1 set)	5,000	5,000	-	-	-	1	5,000	1				
			Woodbeds for biofertilizer fermentation (16)	960	960	-	-	-	16	60	1				

]		Subpod worm farms (10)	2,000	2,000	-	-	-	10	200	1				
	Urban, Peri-Urban and Rural Agriculture and Water Harvesting as Adaptation	11 Mobile Coop Systems, electric fences, solar electric energiser	33,000	-	16,500	16,500	-	11	3,000		0.5	0.5		1
	Measures	Installation of RW harvesting System + Irrigation Systems (10)	13,500	-	6,750	6,750	-	10	1,350		0.5	0.5		1
		Feed for 55 chickens per year, \$300/ 5 chickens/ year (11)	3,300	-	1,650	1,650	-	11	300		0.5	0.5		1
		Hand tools, wheelbarrows, rakes, shovels, hoes, pruners, loppers, pruning saws, pitch forks (11 each)	2,750	-	2,750	-	-	11	250		1			1
		Seeds and Seedlings per year, \$1,800/year (4 years, 10 farmers)	7,200	-	3,600	3,600	-	2	1,800		1	1		2
		Vertical farming tools (30 systems distributed between urban and periurban contexts)	4,500	-	2,250	2,250	-	30	150		0.5	0.5		1
	Apiculture and the reduction of chemical	Flow Hives (5)	3,500	-	3,500	-	-	5	700		1			1
	substance use at farm level	Colonies (5)	850	-	850	-	-	5	170		1			1
		Hives full of Bees (5)	1,800	-	1,800	-	-	5	360		1			1
		Stainless Steel Spinner Extractors (5)	1,800	-	1,800	-	-	5	360		1			1
		Smokers (5)	110	-	110	-	-	5	22		1			1
		Separators (5)	23	-	23	-	-	5	4.5		1			1
		Top boxes (5)	240	-	240	-	-	5	48		1			1
		Brush (5)	30	-	30	-	-	5	6		1			1
		Suit (5)	180	-	180	-	-	5	36		1			1
		Gloves (5)		-	58	-	-	5	12		1			1
		Wax capping knife (5)	58 125	-	125	-	-	5	25		1			1
		Construcing greenhouse/ecological charact. (4)	32,000	-	32,000	-	-	4	8,000		1			1
		Maintenance to LARI's existing	-	-		-	-	1			1			1
	Introducing adapted crop	greenhouse (1) Irrigation Systems (5)	3,000	-	3,000	-	-	5	3,000		1			1
	varieties and diversifying farm production	Manure Systems (5)	1,750	-	1,750	-	-	5	350		1			1
		Intercropping Systems (different	750		750			5	150	1	1	1		3
		types of fruit trees/legumes plantations) + New fruit trees adapted varieties for 5000 sqm (5; three seasons)	9,000	3,000	3,000	3,000		3	600	1	<u>'</u>	1		<u> </u>
		Fodder plant seeds, legumes seeds, other plant seeds (5)	300	-	300	-	-	5	 60		1			_
Technical support	Supervisision Permaculture demonstration site	Permaculture expert (International) (80%)	115,200	28,800	28,800	28,800	28,800	8.0	3,000	12	12	12	12	48

		stallation and aintenance	Agriculture labourers (National)	55,200	13,800	13,800	13,800	13,800	2	575	12	12	12	12	48
			Project Management Assistant (National) (80%)	57,600	14,400	14,400	14,400	14,400	0.8	1,500	12	12	12	12	48
			Senior strategic project management systems expert & permaculture systems advisor (National) (80%)	172,800	43,200	43,200	43,200	43,200	0.8	4,500	12	12	12	12	48
			LARI operation costs (80%)	96,000	24,000	24,000	24,000	24,000	8.0	2,500	12	12	12	12	48
	Su	b Project Coordination	Sub Project coordination and supervision (80%)	96,000	24,000	24,000	24,000	24,000	8.0	2,500	12	12	12	12	48
Sub-total				885,725	307,080	236,975	187,710	153,960							
TOTAL Component 3				7,509,767	578,721	4,738,66 6	1,946,17 3	246,207							
Output 4.1. Regional / international KM with focus on project lessons sharing and replication (incl. international seminars and	kni Joi tar coi (na go pa	N- ESCWA seminars and owledge sharing in rdan or Lebanon: geting regional steering mmittee members attonal and city overnment officials) to rticipate	See output 4.2 (SC members travel)	-	-	-	-	-							0
regional platforms & policy dialogue)	Int even on urt ref (AI sid HL 11 tar col (na go) oft	egional workshops and ternational seminars / ents focused specifically climate change and ban development, incl. fugee crisis implications MFHUD; WUF, COP de events (2x); AFSD; PF 2022 reviewing SDG and 6 and HLPD 2023); rgeting regional steering mmittee members ational and city vernment officials) + her key stakeholders to rticipate	Regional workshops and International seminars / events focused on climate change, urban development and refugee crisis implications (incl. travel and daily allowance for accommodation, etc.)	200,000	25,000	25,000	75,000	75,000	10	2,500	1	1	3	3	8
	Th Cli set pre ch: im (wi go re; vid up kn:	rough Arab Centre for imate Change Policies; t-up community of actices on climate ange in urban areas with plications refugee crisis ith documentation of od practices and lessons; plication package; project leo; knowledge products loaded) linked to ACCCP owledge platform	Communication outputs (publications, digital platform, video: project baseline and results, incl. human interest story)	80,000	20,000	10,000	20,000	30,000	1	10,000	2	1	2	3	8
	Fo	or all above:	see output 4.2 (communication officer)	-	-	-	-	-							0
Sub-total				280,000	45,000	35,000	95,000	105,000							
Output 4.2. Jordan and Lebanon KM with focus on project progress, best practices and lessons	Prome Me	rdan and Lebanon oject Steering committee setings in Lebanon or rdan (to align with SCWA relevant events - e 4.1.)	SC workshop organisation	64,000	16,000	16,000	16,000	16,000	1	8,000	2	2	2	2	8

learned shared + capacity building	Platform / working space (electronic) used for project communication and sharing lessons (research; project best practice and lessonse learned, incl. field visits)	SC travel and daily allowance for accommodation, etc. (also covering exchange visits and ESCWA events as side events - see 4.1., where possible)	184,400	55,320	36,880	36,880	55,320	20	922	3	2	2	3	10
		Project field visits	18,000	2,000	4,000	6,000	6,000	1	2,000	1	2	3	3	9
	For all above:	Communication officer (see above)	155,400	33,300	44,400	33,300	44,400	1	3,700	9	12	9	12	42
	For all above:	Admin / travel support	16,000	4,000	4,000	4,000	4,000	1	2,000	2	2	2	2	8
Sub-total			437,800	110,620	105,280	96,180	125,720							
Output 4.3. Sub-national KM and	Institutional set-up territorial observatories (in	Spatial / urban planner	28,000	-	28,000	-	-	2	3,500		4			4
Regional' urban risks and vulnerabilities	universities) in target areas	IT expert	20,000	-	20,000	-	-	2	2.500		4			4
assessment, planning and management approach model for type 2 cities	Geo-referenced database and an online platform to share data produced and linked with ESCWA database	Database	60,000	-	20,000	20,000	20,000	2	10,000		1	1	1	3
	Regional' urban risks and vulnerabilities assessment, planning and management approach model for type 2	Climate Change Expert	21,000				21,000	1	3,500				6	6
	cities (including replication guidelines and online	Spatial / urban planner	21,000	-	-	-	21,000	1	3,500				6	6
	module)	Communication / publication	15,000	-	-	-	15,000	1	15,000				1	1
Sub-total			165,000	-	68,000	20,000	77,000							
Output 4.4. Incentive mechanism (financial) and regulatory framework to replicate and upscale rainwater harvesting activities	Identification of effective incentive mechanism (financial) and regulatory framework to repliacte and upscale (i.e. national programme) rainwater harvesting activities, esp. in Jordan	Consultant	36,000	-	-	36,000	-	1	6,000			6		6
	Travel	2 missions	4,362	-	-	-	4,362	2	2,181				1	1
Sub-total			40,362	-	-	36,000	4,362							
TOTAL Component			923,162	155,620	208,280	247,180	312,082							
TOTAL Components			11,655,60 0	2,041,24 8	5,935,70 3	2,763,66 0	914,989							
Project execution costs														
Project execution	Jordan	Regional Project coordination (regional - international)	264,000	66,000	66,000	66,000	66,000	1	11,000	6	6	6	6	24
		Admin / financial procurement (regional - national) M & E and communication (regional	63,000	15,750	15,750	15,750	15,750	1	1,750	9	9	9	9	36 24
		- national)	36,000	9,000	9,000	9,000	9,000		1,500	Ŭ		Ĭ		

Ī	I	I	Safeguarding system (AF)		I	I	Ì	1	l 1	ı	1	6	l 6	l 6	6	24
			compliance (regional - national)	36,000	9,000	9,000	9,000	9,000	,		1,500		-	-		
			Engineer water / cc focused (regional - national)	99,000	36,000	27,000	18,000	18,000	1		3,000	12	9	6	6	33
			National Project coordination/Urban Planner (national)	180,000	45,000	45,000	45,000	45,000	1		5,000	9	9	9	9	36
			Driver (national)	16,800	4,200	4,200	4,200	4,200	1		1,400	3	3	3	3	12
		Travel	Related to Jordan staff travel	21,810	6,543	4,362	4,362	6,543	1		2,181	3	2	2	3	10
		Lebanon	National Project coordination/Urban Planner (national)	180,000	45,000	45,000	45,000	45,000	1		5,000	9	9	9	9	36
			Water Engineer (regional - national)	108,000	36,000	36,000	18,000	18,000	1		3,000	12	12	6	6	36
			Admin / procurement (regional - national)	63,000	15,750	15,750	15,750	15,750	1		1,750	9	9	9	9	36
			Communication (national)	28,800	7,200	7,200	7,200	7,200	1		2,400	3	3	3	3	12
			Driver (national)	16,800	4,200	4,200	4,200	4,200	1		1,400	3	3	3	3	12
		Travel	Related to Lebanon travel	16,000	4,000	4,000	4,000	4,000	1		500	8	8	8	8	32
		Operations	Vehicle Operations & Maintenance	12,000	3,000	3,000	3,000	3,000	2		250	6	6	6	6	24
			Office Rent	32,000	8,000	8,000	8,000	8,000	2		2,000	2	2	2	2	8
			Communication	13,000	1,000	1,000	1,000	10,000	1		1,000	1	1	1	10	13
			Office Supplies and Stationery	12,000	3,000	3,000	3,000	3,000	2		250	6	6	6	6	24
		Final evaluation	Independent (lump sum)	25,000	-	-	-	25,000	1		25,000				1	1
TOTAL Execution costs				1,223,210	318,643	307,462	280,462	316,643								
TOTAL Project costs				12,878,81 0	2,359,89	6,243,16 5	3,044,12	1,231,63								
Project cycle manager	ment fee costs				1	5										
Project cycle management		1.25%	UN-H ROAS overall project supervision, incl. AF and UN-H policies (esp ESP and GP) and regulations compliance and regional admin, coordination and travel	160,985	29,499	78,040	38,051	15,395								
		0.25%	UN-H ROAS M & E, incl. Travel	32.197	5.900	15,608	7.610	3.079								
		7%	UN-H HQ Overall project supervision, incl .compliance to UN- H policies (gender, human rights, climate change, etc.)	901,517	165,192	437,022	213,089	86,214								
TOTAL management fee		8.50%	<b>y</b> , ,	1,094,699	200,591	530,670	258,750	104,688								
TOTAL amount of financing requested				13,973,50	2,560,48	6,773,83	3,302,87	1,336,32								
				9	2	5	2	0								

## **ANNEX 7: Milestones**

Output	Outputs	Activities; Notes	Techan Unit			Year	r1	ĬĬ		T	T	Year	2	Y Y		T I		Year	3	i i		·······································	T T	Yes	ar 4				
			• •	 • •		 				· ·		. '			. '			. '			. '						 _		
1.1	Phase 1: Assessment	t strategy/guidelines at district level with climate change and Penpantion and participation set-up (over stateholders and correction; launching and powerting session); Content (mapping and analysis of dynamics and impacts of urbanization; agriculture; blue natural and artificial infin and waterbodies; set	gender mainstreamed Consultancy																										
		Identification and adoption of scenarios and susponse needs looking at impacts of climate change (business as usual; solum of Syrian DFs; implementation of pojected large projects; etc.); setting M & E framework; defining contingency maximum.	Consultancy		•																								
	guidelines	Guidelines (arranding the powert Waster Establishment's Mastespian, in order to integrate or militere and gender concerns and approaches; Disectants General of Urban Flanning in target area to be able to better integrate or and gender and water and approximan-estated concerns when overlooking building permits and validation of municipal mastesplans; Ministry of Agriculture in target area, to better grasp implications of or and urbanization and water dynamics in setting their agriculture development strategies)	Consultancy																										
1.2/3.	Urban master plans at municipal leve	el with climate change and gender mainstreamed		 	I	 å <u>1</u> .			. š <b>.</b>			ل						لل							L	·····	-		àà
		Proparation and participation set-up (say stateshiders and committee; launching sension); Content (logal framework and cotating plans; desk nesench; mapping of present urbanization, agricultural and water dynamics; investigation sail permeability in order to better undentand risks of flooding, of destabilization of natural drainage, underground water pollution and land sliding.	Consultancy																										
		Analysis and diagnistic (data; analysis; challenges); vision and strategies definition; structure base (outstallily may; urban parameters; densification and extensions; mound and serve treatively public spaces; basic services; public facilities; environment; climate change; water supply and needs; bussing and mobility; informal settlement upgrading DPs; bestage; land use strategies	Consultancy																										
	Phase 3: Comlementary	Planning complementary with higher level authorities	Consultancy			 I I			Ĭ I			ΪI			ΪĪ			ΪĪ											
		Action plans and feasibility studies (prioritization of actions; strategygic payints; catalytic projects; capital investment plan; water - agit (sectoral) plant; lassitutional Enablem (capacity building participation platform; Logal enablem (planting regulations and construction code to address water scarcity); Financial enablem (Exemb funds; internal funds) M&E.	Consultancy																										
	Phase 5: Operate and sustain		Municipality; RTO																										
	Reports / final outputs	Reports		 ***						ini.	m	· · · · · ·	"				******	········					••••	····		•••••		111	†*** <b>†</b> ***

2.1	C		- (1i1 f		4															
2.1	<u>}</u>	and capacity building + operation, maintenance and replicati		output 3.				<b></b>		, <b>y</b> y	 · <b></b>	······································		······································	·····	· · · · · · · · · · · · · · · · · · ·	,yyy	<b></b>		····
	Phase 1: Assessment	Detailed technical assessment of target buildings	UNICEF								 ļļļ				ļļļ					
	Phase 2: Plan	Detailed technical design of systems	UNICEF								 <u> </u>									
	Phase 4: Operation and maintenence		LARI		111													.1		
	Phase 5: Replication and upscaling	Replication guidelines	LARI																	
	Technical support and coordination	Sub-project Coordination and technical support	UNICEF																	
	Final outputs / reports	Reports		il				<u> </u>												
2.2	Community organization, awareness a	Reports  and capacity building + operation, maintenance and replication /	pscaling plans for outpo	t 3.2																
	Phase 1: Assessment	Detailed technical assessment of target buildings	JOHUD								T									
	Phase 2: Plan	Detailed technical design of systems	JOHUD			····					<b>T</b>					1 1 1		1 1 1 1		
	Phase 4: Operation and maintenence	Awareness raising and capacity building	JOHUD																	
						<b></b>		: T												
	Technical support and coordination	Sub-project Coordination and technical support	JOHUD																	
	Final outputs / reports	Reports		1				: T			T i i									
2.3.	Community organization, awareness	Reports and capacity building + operation, maintenance and replicati	n / upscaling plans for	output 3.	3													***************************************		
	Phase 1: Assessment	Detailed technical assessment of target buildings	UNICEF		TTT	T	**********	**** <b>*</b>			 T		7 7 7	T T		T T T		T		Y
	Phase 2: Plan	Detailed technical design of systems	UNICEF		111						 					<del></del>				
											 									$\cdots$
	Phase 4: Operation and maintenence		UNICEF																	
	Phase 5: Replication and upscaling	Replication guidelines	UNICEF								 <u> </u>									
	Technical support and coordination	Sub-project Coordination and technical support	UNICEF																	
	Final outputs / reports	Reports																		
2.4.	Community organization, awareness	and capacity building + operation, maintenance and replicati	n / upscaling plans for	output 3.	4.1						 			<b></b>						<u> </u>
	Phase 1: Assessment	Detailed technical assessment of the intigation canal and agricultural areas	RTO		T T T						 T					T				
	Phase 2: Plan	Detailed technical design of the open canal	RTO		╬┉╬┉╣						 									$\cdots$
	<u> </u>	Surveys and studies developed for understanding adaptation measures	RTO				ļļļ	ļļ												
	Phase 4: Operation and maintenence										 									
		Awareness raising and capacity building to operatate and maintain	RTO																	
	Phase 5: Replication and upscaling	Replication guidelines	RTO					<u> </u>			 <u> </u>									
	Technical support and coordination	Sub-project Coordination and technical support	RTO																	
	Final outputs / reports	Reports			للللل	] j		<u></u>												
2.5	Community organization, awareness	and capacity building + operation, maintenance and replicati	n / upscaling plans for	output 3.	5															
	Phase 4: Operation and maintenence	Operation & maintenance plans for proposed interventions	WAJ /YARMOUK																	
	Phase 5: Replication and upscaling	Replication guidelines	WAJ /YARMOUK																	
	Final outputs / reports	Reports																		
2.6	Community organization, awareness	and capacity building + operation, maintenance and replicati	m / upscaling plans for	output 3.	6						_									
	Phase 1: Assessment	Detailed technical assessment of agricultural lands and irrigation systems	RTO								T : : : : : : : : : : : : : : : : : : :									
	Phase 2: Plan	Detailed technical design of the drip imigation systems	RTO		****		••	••••••••••	••		 +	:: <del></del>		<del></del>	<u> </u>	†** <b>†</b> ***				
	Phase 4: Operation and maintenence		RTO																	
	Phase 5: Replication and upscaling	Replication guidelines	RTO		***		•	****	• • • • • • • • • • • • • • • • • • • •		 •		******		• • • • • • • • • • • • • • • • • • • •				****	
	Technical support and coordination	Sub-project Coordination and technical support	RTO																	
	Final outputs / reports	Reports			1													1 1 1 1		
2.7	Community organization, awareness	and capacity building + operation, maintenance and replicati	n / upscaling plans for	output 3.	7			·	iiii		 	ii			iiii					
	Phase 1: Assessment	Formulate a rehabilitation study for individual farm end-user/Group	IOHUD / BADIA	····•	Y	T	***********	· •											111	
	Phase 2: Plan	Water user associations established	TOHUD / BADIA																	
	Phase 4: Operation and maintenence		JOHUD / BADIA		1		•	•			 •			•	• • • • • • • • • • • • • • • • • • • •					
	Phase 5: Replication and upscaling	Replication guidelines	JOHUD / BADIA								1									
	Technical support and coordination	Sub-project Coordination and technical support	JOHUD / BADIA	****	1	····	• • • • • • • • • • • • • • • • • • • •									*** <b>T</b>		<b>~</b>		
	Final outputs / reports	Reports																		
2.8.	Permaculture demonstration: efficien	nt water use system									 			·····				**************		
	Phase 1: Assessment	Detailed technical studies for systems integration	Permaculture Res	arch Ins	itute						T :: :: :									
	Phase 2: Plan / design	Detailed technical design for systems integration	Permaculture Res													+				
		Awareness and capacity building, maintenance plans	Permaculture Res								-									
	Phase 5: Replication and upscaling	Replication guidelines	Permaculture Res				•••••	·••••••	••••••	•	 ••••••	······································			•			<b></b>		
	Technical support and coordination	Sub-project Coordination and technical support									 									
		<u> </u>	Permaculture Res	arch Ins	titute			- L.			 				ļ					$\cdots$
	Final outputs / reports	Reports									 									
2.9	Permaculture demonstration: efficier																			
	Phase 1: Assessment	Detailed technical studies for systems integration	Permaculture Res																	
	Phase 2: Plan / design	Detailed technical design for systems integration	Permaculture Res																	
		Awareness and capacity building, maintenance plans	Permaculture Res																	
	Phase 5: Replication and upscaling	Replication guidelines	Permaculture Res								 <b></b>									
	Technical support and coordination		Permaculture Res		titute															
	Final outputs / reports	Reports																		

2.1	Rooftop Rain Water Harvesting (RW	OD in I shares taken some																_		_			
3.1	Phase 3: Implementation	Install and connect 20 large RWH systems	UNICEF	Y****Y****	,yy	· T · · · · · · · ·					T	······	<b>,</b>		T		T	· · · · · · · · · · · · · · · · · · ·		<b>T</b>	·y····y····y·	<b></b>	
	Phase 3: Implementation		<u></u>	ļļ							ļļļ	ļļļ	ļ										
		Show morn (1) with minwater harvesting system and Water Savind Devices	UNICEF	ļļ								ļļļ											
	Technical support	Engineering /tchnical supervisision installation and maintenance	UNICEF	ļļ								ļļļ											
	Final outputs / reports	Reports		<u> </u>		<u></u>		Ll			L	<u> </u>	L		Lii	<u></u>	L						
3.2	Rooftop Rain Water Harvesting (RW		,,										,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						
	Phase 3: Implementation	Install and connect 84 small RWH systems	JOHUD	<u> </u>		ļ					<b>.</b>						<b>.</b>						
		Show room (2) with RWH system, GWTR system and Water Saving Devices	JOHUD																				
	Technical support	Engineering /tchnical supervisision installation and maintenance	JOHUD																				
	Final outputs / reports	Reports				1		i I															
3.3.	Grey Water Treatment and Reuse (G	GWTR) in Jordan																					
	Phase 3: Implementation	Inetall / construct and connect 40 GWTR systems	UNICEF	*****			***********	· · ·			1		• • • • • • • • • • • • • • • • • • • •				•				***************************************		
		Rehabilitation and modification of WASH blocks for greywater reuse in toilet	UNICEF			1																	
	Technical support	Engineering /tchnical supervisision installation and maintenance	UNICEF	††		+	••••••		••••••		-	<u> </u>				•	····	•			+++		
	Final outputs / reports	Reports		1			1											-					
3.4.	<u> </u>	stewater from Zahle WWTP, in Lebanon	ii					l	.ii		Iii		lii		lii		liii			l			,
3.4.		Reuse of the Zahle WWTP effluent for intigation - 3000 m charmel	<b>*</b> p		,yy	· T · · · · · · · ·					T	·····	<b>,</b>		ryy		T			······································		<b></b>	yyyy
	Phase 3: Implementation	Engineering /chrical supervision installation and maintenance	Private sector (Lebas	on)																			
	Technical support	Engineeting (scheical supervision installation and maintenance  Ouput seport	RTO	ļļ		·			<b></b>		····•	·····	·····		····•		ļ					-	
3.5	Final outputs / reports  Efficient treatment and reuse of was										Iii		Iii.		lii		Iii			l			
3.3	Phase 3: Implementation	Maerad WWTP upgrading for increased water quality and water storage	WAJ / YARMOUK	Y***Y****		T	· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·	····	T	*******	T TO THE STATE OF		TYY	T T T	T	T T		T	TTTTT		
	The confidence of the confiden	Al Akaider WWTP upgrading for increased water quality and water storage	WAJ / YARMOUK								1					1-1-1-							
		Mafraq WWTP upgrading for increased water quality for imigation purposes	WAJ / YARMOUK	****		1	••••••	***	••••••		<b></b>	• • • • • • • • • • • • • • • • • • • •	<b></b>			****	† * * * * * * * * * * * * * * * * * * *	*****					
	Technical support	Engineering /tchnical supervisision installation and maintenance	WAJ / YARMOUK																				
	Final outputs / reports	Reports																					
3.6.		ated wastewater for fruit trees in Lebanon from Zahle WWTP, Le									******		•				************						
	Phase 3: Implementation	Installation of drip intigation systems (110 out of possible 116 ha) for fruit trees	Private sector (Lebar	on)																			
	Technical support	Engineering /tchnical supervisision installation and maintenance	RTO	ļļ									ļ				ļ						
	Final outputs / reports	Reports									lii	JJJ	lii		lii	.lll	li			l			
3.7.1	Phase 3: Implementation	ated wastewater from Maerad and Alkaider WWTPs in Jordan Cornect WWTPs stood water with farm lands - 4 km pipeline	IOHUD	·····	·····y····y··	т		·····•			T	·····	T		ryy	· Y····Y····Y···	T			<b>T</b>	· Y····Y····Y·	<b>y</b> y	
	Phase 3: Implementation	Establish a new modern water intigation system for 120 dunum	IOHUD	<del></del>					111			-		-	<del>  </del>	<del></del>					╬╬		
	Technical support	Engineering /tchnical supervisision installation and maintenance	JOHUD	†		+	••••••		••••••			••				· • • • • • • • • • • • • • • • • • • •							
	Final outputs / reports	Reports	IOHUD	: :		+	••••••		•		••	·····	•			••••••••	••	•			•••••••••••		
3.7.2		ated wastewater from Mafraq WWTP in Jordan	, p	i	·	.L		L	āL		<b>.</b>	ååå	Ii		L		I			kk		i	
	Phase 3: Implementation	Establish a new modern water irrigation system for 100 dunum	BADIA	Y****	/*********	T					T		T		T'''''	Y'''Y'''	T''''''''''	T	···Y···Y···Y		'Y'''Y'''Y''		777777
		Establish new water ponds (15)	BADIA	1		+	••••••		•••••••		••••••••	••				†		*****			****		
	Technical support	Engineering /tchnical supervisision installation and maintenance	BADIA	•		†***	••••••		•••••••		•••••	• • • • • • • • • • • • • • • • • • • •	•			•							
	Final outputs / reports	Reports		1		+	••••••		••••••		•••••	·····	••			·••••••••	•				•••••••••••		
3.8.	Permaculture: Permaculture demon-	stration in Tordan		111111		1	******		******		1	1-1-1-1-				111111							
	Phase 3: Implementation	Bio-Fertilizer production	Permaculture Resear	ch Insti	tute	***************************************	************				<b></b>	• • • • • • • • • • • • • • • • • • • •											
		Crop Garden and Compost Egg laying Chickens	Permaculture Resear	ch Insti	tute																		
		Bees: Apiculture	Permaculture Resear	ch Insti	tute	1	************	****	***********			:::::				· · · · · · · · · · · · · · · · · · ·	<b>.</b>						
		Compost woms: wemicompost	Permaculture Resear	ch Insti	tute			1															
		Olive Orchard Monoculture Conversion to Food Forest (1,000m2)	Permaculture Resear	ch Insti	tute																		
	Technical support	Engineering /tchnical supervisision installation and maintenance	Permaculture Resear			1	************				•	•	<b>!</b>				<b>.</b>						
	Final outputs / reports	Reports		1 1 1 1		1																	
3.9	Permaculture: Permaculture demons		<u> </u>	1		<b>-</b>	···········		•		-	h			-	••••		•			••••		
55		Bio-Vetilizer production																					
	Phase 3: Implementation		LARI	ļļ																			
		Crop Garden and Compost Egg laying Chickens	LARI	ļļ																			
		Bees: Apiculture	LARI	ļļ		ļ						ļļļ	<b></b>		<b></b>	ļļļ	<b></b>	l		<b>.</b>	<u> </u>		
		Compost woms: wemicompost	LARI									<u>   </u>											
		Olive Orchard Monoculture Convention to Food Forest (1,000m2)	LARI																				
	Technical support	Engineering /tchnical supervisision installation and maintenance	LARI																				
	Final outputs / reports	Reports	<u> </u>	<u> </u>	<u> </u>																		
			• • • • • • • • • • • • • • • • • • • •			_												_		_		$\overline{}$	

4.1.	Regional / international KM		_	_					_	_	_	_	_	_	_						_													
	-																																	
	With focus on sharing project lessons	UN-ESCWA seminars and knowledge sharing in Jordan or Lebanon: targeting	UN	N-ESCWA		TT	777	****						777	Ω	Ш	Ш		2		Q			50.	T		ſ	Ω	ТТ	100	TT	TT	тт	TT
	replication (incl. international	International seminars / events focused specifically on climate change and urban	UN	N-ESCWA	1	****	***	******		*			****	******									1			7		m	1				****	
	seminars and regional platforms &	Through Arab Centre for Climate Change Policies; creation of community of				1			- i - i - i -		mininininininininininininininininininin	"i"i"			mini									m									****	
	policy dialogue)	practices on climate change in urban areas with implications refugee crisis	UN	N-ESCWA																														
		(with documentation of good practices and lessons; replication package; project video; knowledge products uploaded																																
	Final outputs / reports	Reports				++-	111												-					m									·· ·- ·	
4.2.		i			سلسلم	ببليبيا	بالأساد	بنسا		المسائد	للنظيا			للنالد	للبلب	للمشم	السلسا	نسا		لننك				٠	للسلا	شبيا	لنبلد		خبياب		النش	بغيبا	فنطم	ببلبلب
4.2.					,																												,,	
	With focus on project progress, best	Joedan and Lebanon Project Steering committee meetings in Lebanon or Joedan (to align with ESCWA relevant events - see 4.1.)	UN	N-ESCWA																														
	practices and lessons learned shared + capacity building of government	Platform/working space (electronic) set-up and used for communication and				†"†"	•	•		******				•				•					† <u>†</u>	++-	•						***	+++		
	stakeholders	sharing lessons regarding the project (research; project best practice and lessonse	UN	N-ESCWA																														
		learned, incl. field visits);				4										-							ļļ	ļļ										
	Final outputs / reports	Reports										LL.											L.i	l.l.										
4.3.	Sub-national KM																																	
	With focus on Regional' urban risks	Institutional set-up territorial observatories (in universities) in target areas	Con	nsultancy		TT		T															l	TT	T	TT			***T		П	$\Box$	П	
	and vulnerabilities assessment,	Geo-referenced database and an online platform to share data produced	C-	nsultancy		++-	· † · · † · ·	••••••		··••••••†											••••		· · · · · ·	•	i i	m i						<b>-</b>		
	planning and management approach	Regional' urban risks and vulnerabilities assessment, planning and management	Con	пэшнансу																														
	model for type 2 cities	approach model for type 2 cities - the model to take into account climate change																																
		and DP crisis related urban water scarcity challenges.	Con	nsultancy																														
						ļļ																	ļļ	ļļ										
	Report, model and guidelines	Report and model, including replication guidelines				l l															İ		li											
4.4.	Incentive mechanism (financial) and	l regulatory framework to replicate and upscale rainwater harve	esting act	tivities						_			_																_					
		Identification effective incentive mechanism (financial) and negulatory framework				TTT		TT																					"				т	
		to replicate and upscale (i.e. National programme) rainwater harvesting	Con	nsultancy																														
	En al cutacità / accorta	activities, esp. in Jordan  Report, incl. of incentive mechanism applicatible in Jordan and the negton				. <del> </del>	- <del></del>			∳∤					┉┼┉┼						∳	<del>-</del>		·•••••	••••••	······································						<b></b>		
	Final outputs / reports	sopes, net te mentre metassin appressive in justan and the region				<u> </u>	-	44	44	44		44									_			<u> </u>		4			-		4	44		
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	UN-Habitat																									$\Box$								
	Consultancy / private sector (Lebanon	)							$\rightarrow$	$\top$		+														+				$\top$			+	+
***************************************	Consultancy / private sector (Jordan)							+	+	+	+	+	+	$\forall$		$\Box$	$\dashv$								+	+		$\dashv$	+	+	+	+	+	
	Municipality								+			+		+											+	+				+	+	+	+	
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	WAJ / YARMOUK Jordan					$\Box$		$\forall$	+	$\forall$	$\dashv$	+	$\top$	$\forall$	$\dashv \dashv$	$\dashv$								$\Box$	$\forall$	$\forall$		$\dashv$	$\top$	$\forall$	$\forall \uparrow$	+	+	+
	Permaculture Research Institute Jorda	n						$\forall$	$\top$	$\forall$		$\forall$	$\top$	$\top$										$\Box$	$\forall$	$\forall$	$\top$	$\top$		$\top$	$\top$	$\top$	+	
	UNESCWA Lebanon							$\dagger \dagger$	$\top$	$\top$	$\top$	$\top$	$\top$	$\forall$											$\forall$	$\forall$		$\top$	$\top$	$\top$	$\top$	$\top$	+	
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