

EUTF WASTEWATER PROJECTS



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SUMMARY

EUTF has supported **15 wastewater projects** or water, sanitation and hygiene (WASH) projects that include wastewater components such as the construction and/or upgrade of sewage pipes, sanitation facilities or wastewater treatment plants.

Eight relevant projects have been selected for this assessment implemented in Lebanon (ACTED: T04.34 and T04.272; CISP: T04.100), Jordan (AFD: T04.27; ACTED: T04.34, and EBRD: T04.92), Türkiye (EIB: T04.155 and UNDP: T04.76), and in Iraq (T04.121). In total, the EUTF contributed more than **EUR 220 million** to support these projects. Based on monitoring-based data sources, this assessment of EUTF wastewater projects aims at contributing to future programming.

Regarding the **design** of wastewater projects, most interventions are broader WASH interventions that articulate **infrastructure improvements, capacity building** to support water authorities and/or municipalities and **training and awareness** activities focused on the communities. It is evident that these projects require **complex designs** with a **wide number of stakeholders**, including water authorities and operators, municipalities, implementing partners -governmental and non-governmental- and international financial institutions. Most of the wastewater projects coordinated the work of various implementing partners in different areas through consortia. **Challenges** faced by these projects during the EUTF lifetime include **increasing costs of materials; cumbersome procurement processes** - sometimes exacerbated by **additional layers of administration** in the case of international financial institutions; **high**



institutional coordination costs; or external shocks, such as COVID-19 pandemic or the earthquake in southwestern Türkiye. In all cases, the project timelines had to be extended.

In terms of wastewater related results, to date, the following aggregated **outputs** can be estimated: More than **378 km of wastewater pipes** have been laid; **25 wastewater facilities** have been upgraded or newly built, and more than **40 WASH facilities in schools, health centres and detention centres** have also been upgraded or newly built. **Capacity building strengthening** activities have benefited more than **5,400 people** (36% women and 73% host communities) at household, community, and municipal level, including water authorities and operators, in Lebanon (59%), Jordan (35%), and Iraq (6%). In total, up to now, these wastewater specific projects and components have reached more than **539,000 people** in Lebanon (46%), in Jordan (6%), and in Türkiye (48%) **with improved wastewater services**. Generally, 70% or more are host community members.

Wastewater related **outcomes** that can be highlighted include the improvement of wastewater services, e.g., through **better WASH maintenance and replacement of pumping systems, leading to more efficiency** in the system (ACTED, T04.34 in Lebanon and Jordan). In schools and households,

some of the improvements undertaken will help new facilities last longer (T04.34 in Lebanon). In terms of maintenance, the **reduction of costs** has been also mentioned (T04.34 in Jordan). It is expected that subscriptions and customers' trust increase in specific communities after water authorities receive infrastructure support and capacity building activities. For example, the **improvement of wastewater services** is shown in the Baabda district, in Lebanon (T04.100). Here the project has also a positive impact on **flood prevention**, after separating the stormwater from wastewater in Ouazaii, benefitting all communities, including Syrians. Another example is that after improvements in Al Ghadir treatment plant, Lebanon (ACTED, T04.272), **flooding risk has been reduced**. In addition, 10 wastewater treatment facilities contributed to **protecting refugee space** where more than 2,300 Syrians live. An unexpected result from investing in rehabilitating in-house WASH facilities, including sanitation, is that the **extended security of (rent) tenure for vulnerable households** could be negotiated (AFD, T04.27). Some of the other actions focused on increasing access to wastewater services with new wastewater networks, such as T04.92 (EBRD) in Jordan, estimate 230,000 people gaining access from 15 towns being connected; T04.155 (EIB), in Türkiye, benefitting more than 23,000 with new connections; and T04.76 (UNDP) in Türkiye, reaching 40,000 people with a





new treatment plant. Regarding affordability of wastewater services, reports from T04.155 (EIB) in Türkiye, highlight **savings at household level** due to no longer needing septic tanks emptying as are now served with the new wastewater plants. The **reduction of contaminated water**, and therefore, **increased health of households and pupils**, are other positive outcomes highlighted in Ninewa, for example, after WASH rehabilitation, sanitised schools, water networks and water stations (ACTED, T04.121). The **use of WASH facilities in a more responsible way** following infrastructure upgrades was also mentioned as a positive outcome. Positive environmental effects, such as **prevention of pollution of land and waterways and reduction of public health hazards** due to untreated wastewater is also included in the report of the UNDP project (T04.76) in Hassa, Türkiye). Furthermore, **strengthened capacity of the municipalities** benefitting from the plant, is also mentioned as a positive impact.

Regarding **lessons learned**, there is evidence that the **institutional arrangements of such large and complex wastewater projects play a crucial role** in their effectiveness. Especially important seems to be the need to assess in detail the capacity of the implementing agencies (EBRD, T04.92 in Jordan) and the importance

of aligning the project to the beneficiaries' institutional objectives and vision (ACTED, T04.34 in Jordan and Lebanon). In the context of CISP's project, the **partnership approach**, i.e., of listening to the local authorities who designed a local solution to harvest rainwater was key to solving an environmental sanitation problem in the southern suburbs of Beirut (CISP, T04.100). The **formation of a consortium** allowed leveraging the strengths and expertise of different actors to achieve better results. The use of a local and **participatory approach** is also mentioned in the report of ACTED, T04.272 in Lebanon, since it helped the municipalities and communities to feel their needs were recognized and that they were able to participate in the solution. The report insists on the **localised planning approach** and in the project being a good example to showcase a **public-public partnership** in the debate around WASH and water governance. The **leadership of municipalities** was also positively highlighted in the report of T04.76 (UNDP) in Türkiye.

Another lesson learned as highlighted in the report of EBRD in Jordan (T04.92) is that by including a component to **engage with communities** within the infrastructure investment project, allows challenges to be addressed during construction and enables





solutions. Here, the **engagement with Water Authority in Jordan** (WAJ) has been fundamental to promote its visibility within the community. As an example of green growth initiative, this type of project allows to **articulate infrastructure components with others on sustainable water usage**. In the context of T04.121 (ACTED, Iraq), apart from the importance of **regular communication with the local authorities and the communities** -e.g., through consultations, the project report also highlights the need of a **holistic rehabilitation approach**. To monitor this type of project, **WASH coping strategy indices** were considered very relevant to measure effectiveness. Regarding **procurement**, since it is a key area of wastewater projects, UNDP project T04.76 in Türkiye underlines that **following national procedures** contributed to efficiency, allowing a smooth cooperation between UNDP, Ilbank and the municipalities. The inclusion of

a **technical assistance component** has been positively underlined by the report of the EIB led project, T04.155, in Türkiye however, more field presence is suggested for any similar intervention in the future. Furthermore, **detailed financial analysis of the infrastructure projects in the feasibility study** at the start is a must in this type of interventions.

Regarding **funding arrangements**, the AFD project (T04.27) in Jordan identified the **high level of EU added value** due to the large share of grants in the project budget. This allowed the project to **incorporate a social component** to address associated needs of Syrian refugees and vulnerable Jordan host communities; to provide outreach and provide technical assistance to facilitate the project implementation.

CONTEXT OF EUTF WASTEWATER PROJECTS

EUTF has strongly supported Water access, Sanitation and Hygiene (WASH) projects in Lebanon, Jordan, Iraq, and Türkiye with EUR 263,9 million, 11% of the EUTF overall budget. In total, 22 projects have contributed to strengthen the sector either solely focussing on WASH objectives, or as part of livelihood, health, or education interventions.

A substantial number of these projects -15- have included a specific component on wastewater either as part of a larger WASH project, such as EBRD in Jordan (T04.92) or EIB in Türkiye (T04.155), or as part of larger actions in education, e.g. UNICEF in Jordan (T04.172 or T04.245), municipal development in Türkiye (UNDP, T04.76), Lebanon (UNDP, T04.132) or Iraq (UN Habitat, T04.247), or livelihoods (ACTED, T04.121 and VNG International, T04.136) in Iraq and Lebanon (see Table below).

Currently, four projects with wastewater related objectives or components are still being implemented in Jordan (T04.27, T04.92), Lebanon (T04.272) and Türkiye (T04.155).

This assessment has selected eight projects contributing to wastewater objectives -highlighted in the table below- which includes the construction and/or upgrade of sewage pipes, sanitation facilities or wastewater treatment plants. Two of the projects within the table, T04.208 (GIZ, in Jordan) and T04.206 (AFD, in Lebanon), have been excluded from the assessment, as the wastewater components have been cancelled. The other five projects included in the table but not in this assessment comprise of small wastewater components only, e.g., the upgrade of sanitation facilities in schools (T04.172, T04.245) or a low number of urban



NO. EUTF LIST	PROJECT PARTNER/ PROJECT CODE	PROJECTS WITH WASTEWATER COMPONENTS	COUNTRY	EUTF CONTRIBUTION (€)	CLOSING DATE
18.	ACTED T04.34	Improving WASH infrastructure and facilities at community, institution, and household level	Jordan and Lebanon	11,877,985	01.01.20
26.	ACTED T04.121	Supporting resilience for host communities, returnees, and internally displaced persons (IDPs) in Iraq	Iraq	7,917,846	01.02.21
48.	UNICEF T04.245	EUTF Support to Equitable and Quality Education for Syrian Refugees in Refugee Camps in Jordan	Jordan	8,264,913	31.12.22
55.	CISP T04.100	Sustainable safe drinking water supply for vulnerable communities living in a more protected environment	Lebanon	7,200,000	11.09.22
56.	UNDP T04.76	Strengthening the economic and social resilience of Syrians, their host communities, and relevant national and local Government institutions	Türkiye	56,000,000	30.06.23
65.	UNDP and UN Habitat T04.132	Strengthening the Long-Term Resilience of Subnational Authorities in countries affected by the Syrian and Iraqi Crises	Lebanon and Iraq	24,971,363	31.03.24
66.	VNG International T04.136	Dealing with Displacement - resilient subnational government in communities in the region affected by the Syrian crisis	Iraq and Lebanon	15,000,000	18.12.22
72.	UNICEF T04.172	Education and Makani ("My Space") Programmes for Vulnerable Syrian and Host Community School-aged Children in Jordan	Jordan	21,600,000	30.12.22
87.	UN Habitat T04.247	Support for Urban Recovery and Peacebuilding in western Ninewa	Iraq	10,000,000	28.02.24
78.	GIZ T04.208	EUTF support for an integrated Solid Waste Management system in Syrian refugee camps and neighbouring communities affected by the Syria Crisis	Jordan	56,000,000	31.05.25
41.	AFD T04.27	Improved access to water, water distribution performance and related sewerage disposal in Irbid Governorate for host communities and Syrian refugees	Jordan	21,420,000	22.05.25
50.	EBRD T04.92	EUTF contribution to the West Irbid Wastewater Network construction project	Jordan	20,200,000	26.04.25
63.	EIB T04.155	EIB-Municipal Resilience Facility I	Türkiye	71,806,941	14.12.25
99.	AFD T04.206	Structuring Water and Wastewater Services in Ersaal and the Valley	Lebanon	23,000,000	01.06.25
98.	ACTED T04.272	WASH assistance to support water governance and public water and wastewater services in Lebanon for host and refugee communities	Lebanon	25,000,000	26.01.25



facilities (T04.247, T04.132, T04.136) with little information on specific wastewater results.¹

This assessment provides an overview of the EUTF projects contributing to improvements in wastewater provision of services, describing their design, results in terms of outputs and outcomes, and lessons learned. It might be useful for future programming of similar actions.

ON DESIGN AND AGGREGATED OUTPUTS OF WASTEWATER PROJECTS

In general, wastewater outputs and components in the assessed projects were part of broader WASH interventions that include works to improve access to water. Only one project in Jordan (EBRD, T04.92) was **designed** to solely focus on wastewater infrastructure. Most of the projects also integrate capacity building of the water authorities and operators, such as the Water Establishments (WE) in Lebanon, the water authority (WAJ) and the Yarmouk Water Company (YWC) in Jordan, the municipality utility companies in Türkiye, or the benefiting communities. Furthermore, awareness activities have been included in most WASH interventions that include wastewater components.

It can be noted that WASH projects in general, and the wastewater ones, in particular, have required complex designs, not only due to the articulation of different components -infrastructure, capacity building and awareness-, but also because there is a multi-level range of stakeholders, including water authorities and operators, the municipalities and different implementing partners, such as large financial institutions (EIB or EBRD), development agencies (AFD), and/or other non-governmental organisations, such as ACTED, ACF, CISP, Intersos. Most WASH projects with wastewater components have implemented works through a consortium of

partners -e.g., WAAD (T04.34), SABIL (T04.100) or ACF-NRC (T04.27), etc.

In addition to the complexity in their designs, wastewater projects have faced various challenges, such as increasing costs of materials, cumbersome procurement processes -sometimes due to international partners with their own procurement rules (T04.155 or T04.92)-, the various levels of stakeholders to coordinate with, or external shocks, such as the COVID-19 pandemic or the earthquake in southwestern Türkiye. Therefore, all assessed projects have had their implementation time extended to respond and adapt to these challenges.

Regarding **aggregated outputs**, EUTF indicators do not specifically report against wastewater indicators. However, based on the available information and considering that not all projects are completed yet, whereby some may improve their results, it is possible to do an estimation.

To date, more than 378 km of wastewater pipes have been built; 25 wastewater facilities have been upgraded or newly built, and more than 40 WASH facilities in schools, health centres and prisons/ detention centres have also been upgraded or newly built. Regarding training, it is not possible to disaggregate if the capacity building was related to wastewater specifically, since, generally, the water authorities manage water and wastewater jointly. Therefore, in total, more than 5,400 people (36% women and 73% host communities) at household, community, and municipal level, including water authorities and operators, in Lebanon (59%), Jordan (35%), and Iraq (6%), have been trained in operation and maintenance of WASH networks and facilities.

Up to now, these eight projects have benefitted more than 539,000 people in Lebanon (46%), in Jordan (6%), and in Türkiye (48%) with improved

→ 1. T04.208 continues its focus on solid waste recycling and livelihoods in Jordan, and T04.206 on access to water in Lebanon. The project T04.208 initially included the construction of a wastewater treatment plant in Azraq camp, but, due to the high costs, this component has been reprogrammed, and the plant will be now funded by the EU support to Green Economy in Jordan, another EU funding source. Although T04.206 was conceived to create a water and sanitation operator and install a wastewater network Arsaal, the lack of agreement with the Bekaa Water Establishment and the difficult country context made the scope of the project unfeasible, and it was reprogrammed to implement a large series of smaller interventions all over the Lebanese territory, focussing on potable water systems only.



wastewater services. Generally, 70% or more are host community members. The data on beneficiaries is not definitive, since the projects T04.92 (EBRD, Jordan) and T04.27 (AFD, Jordan) have not yet concluded implementation. What is known is that the EBRD project (co-funded by EBRD and World Bank) works with a target of 230,000 beneficiaries, while the AFD project (that has mobilised KfW funding explicitly for the wastewater component) works with a target of 58,000 beneficiaries.

In terms of **outcomes**, these will be reported in more detail and on a project-by-project basis. In general, improvement of wastewater connections and services are highlighted, as well as reduction of water pollution (environmental effects), increased affordability of services, reduction of maintenance costs or even improved tenure conditions due to WASH household investments.

LEBANON AND JORDAN

Improving WASH infrastructure and facilities at community, institution, and household level

ACTED, T04.34



DESIGN

In terms of project design, the project led by ACTED was conceived to increase access to effective water and sanitation services and improve health outcomes through better hygienic environments and practices. Two results were envisaged in both Lebanon and Jordan and an additional one in Jordan only:

- Improved water and sanitation infrastructure in targeted communities and institutional strengthening for efficient and sustainable resource management; and
- Improved access to water and sanitation in public institutions contributing to a more hygienic and healthier environment and support for WASH committees/focal point networks for community mobilization and hygiene promotion activities; and
- Improved access to household level WASH facilities in Jordan. The project closed implementation in January 2020.

OUTPUTS

Regarding the expected outputs, the **ROM report (05/19)** noted the positive level of results in both countries. In Lebanon, the project delivered 28 of the 25 planned infrastructure projects (**final report 11/20**). The final **Quarterly Information Note (QIN), 03/20** confirmed that these infrastructure projects -on water transmission network, water reservoirs, chlorination stations and further transmission lines, pumping stations, etc. -, reached more than 339,000 people. Specifically, to improve wastewater services, the project installed 34 building level rainwater catchment systems and separated



waste and storm water in Tripoli (North) and Southern Beirut.

The project undertook rehabilitation works to decrease impacts of mixed wastewater and stormwater flooding in Haret Horeik, Mreijeh Daheyh (Mount Lebanon Governorate), benefitting an estimated 13,945 individuals (10,040 Lebanese, 3,905 Syrian). The wastewater networks that *“the government’s office Council for Development and Reconstruction builds in Lebanon do not separate waste and storm water, which is below the desired standard”*. Therefore, the project has been able to improve wastewater services *“through the separation of waste and storm water networks in one district in Tripoli (North) and three in the Southern suburbs of Beirut (WASH evaluation, 2022).*

It is important to note, as the **ROM monitoring questions report 05/19** confirms that although the Water Establishment had planned *“to direct 80% water to (El Radir plant) and to operate it in full functionality”*, this project *“was not able to cover an obvious need for larger scale”* investment of €160 million, which was the estimated budget for El Radir treatment plant.

In Jordan, 11 projects were finalised, nine on water supply networks, one pumping station and one water borehole. It also included one wastewater pipeline in Ramtha city in Irbid. The last **QIN (03/20)** estimates the total number of beneficiaries as 199,230 individuals. At the end, the wastewater project had been replaced by works in a water network due to objections from the municipality. The **ROM report 05/19** also highlighted that the wastewater networks were not enough covered by the project, although there is a need in the northern governorates. It was also argued that *“perhaps, more balance between water and wastewater sub-projects would bring better impact in certain communities”*; and that *“wastewater sewage networks need improvement, along with the water supply networks”*.

In Lebanon (**final report 11/20**), more than 10,000 people in public institutions, such as 33 schools,

primary health care centres, and detention centres have benefitted from the WASH improvements. In Jordan, the focus was on improving 31 WASH facilities in schools reaching more than 13,000 people (76% Jordanians, 24% Syrians and other nationalities). At household level (Jordan component only), the WASH improvements reached more than 4,700 people (1,224 households, 70% Jordanian and 30% Syrian).

OUTCOMES

Regarding outcomes, the last available **ROM report (05/19)** affirmed that *“the project will, to some extent, improve stability and resilience of Lebanese and Jordanian communities hosting Syrian refugees through improved access to water, sanitation and hygienic health outcomes, but will not achieve this automatically”*. To achieve this, the report highlights the need for larger scale projects. Apart from improved access to WASH services in communities, households and public institutions as mentioned, the project also contributed to improve WASH maintenance and replacement, increasing efficiency. According to the report, the project introduced technical improvements and *“should decrease the cost of supply (e.g., repaired pipelines, more efficient pumping systems)”*. In schools and households, it is expected that promotional activities *“help new facilities last longer”*.

The **ROM report** also highlights capacity strengthening effects, in particular those institutions that *“have a clear vision of their needs and plans for addressing them”*. Two such examples are: The Union of the Municipalities in Beirut and the prison administration (i.e., Internal Security Forces). In Lebanon, the project is directly reinforcing Water Establishments with training, equipment (e.g., chlorination units) or software. The report also makes evident that the intervention could eventually help to increase subscriptions but will not be able to make Water Establishments sustainable due to the lack of overall financial and human resources. In Jordan, the water supply system, despite being better structured, also lacks financial resources. With the works carried out to improve the network under this project, it was envisaged to lead to lower



maintenance costs. The new pumping systems will increase efficiency of the system. Overall, positive effects on customer's trust and the reduction of non-revenue water might materialise, both included in Yarmouk Water Company plan.

LESSONS LEARNED

Some lessons were documented in the **ROM Monitoring Questions (05/19)**. For example, in both countries, a close collaboration with the beneficiary institutions and the alignment to the beneficiaries' institutional objectives and vision have contributed to ownership, effectiveness, and sustainability of the actions. In Lebanon the joint definition of capacity building priorities was also crucial to contribute to the project ownership.

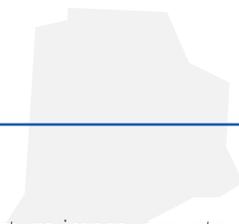
LEBANON

Sustainable safe drinking water supply for vulnerable communities living in a more protected environment -SABIL

CISP, T04.100

DESIGN

The project (also called SABIL project), led by CISP, implemented by the SABIL consortium (of CISP, ACTED, CARE and ACH) and finalised in September 2022, addressed the main challenges in the water sector in Lebanon. These include water scarcity and growing water demand, ageing infrastructure, challenges with operation and maintenance and mismanagement of resources, among others (**ROM report 03/21**). The project design conceived therefore two components, one on enhancing provision of safe drinking water, environmental sanitation and hygiene services to vulnerable population living in the districts of Baabda, Jbeil, Aley and Tyre; and another one on sustainable and efficient management of water and wastewater put in place and supported with



infrastructure improvements, equipment, capacity building and community awareness tools. The main challenge regarding wastewater in Lebanon is that, although the wastewater network coverage is one of the higher in the region (estimated at 60% by the National Water Sector Strategy 2010-2020), low treatment levels limited to primary treatment means that there is a high risk of waste pollution. The project closed implementation in September 2022.

OUTPUTS

Regarding outputs, the project delivered all planned results and even exceeded some of the targets. The project equipped two wells and rehabilitated a wastewater network in Beirut and Mount Lebanon; installed rainwater systems for three schools and a local development centre in Greater Beirut; upgraded the Maaroub water system in the South and supported the South Lebanon and the Beirut Mount Lebanon Water Establishments with capacity building, equipment, and a regional warehouse. In total, the project rehabilitated/built seven water and wastewater facilities. This has benefitted a total of 46,082 individuals -40,672 Lebanese and 5,295 Syrian- (**final narrative report, 03/23**). The Maaroub



water system includes equipment of two wells at the Yanouh Pumping Station, the installation of transmission lines from both wells to the pumping station, and from the pumping station to the regional reservoir, of three booster pumps, three gravity connections and five connections to reservoirs. Specifically on wastewater, the project was able to complete approximately 0.25 km of wastewater and 0.225 km of storm water network. This upgrade of the wastewater network in Ouazaii, Southern Suburbs of Beirut allowed 2,508 households (623 Syrian households and 1,885 Lebanese households) -which equates to 12,540 individuals- to connect to that new wastewater service (**ROM report 03/21**). One of the training workshops in December 2020 “discussed the role of municipalities and civil society in the wastewater sector, and how they could support innovation in the private sector to scale up innovative environmental solutions”. Later, the post-assessment, revealed that 64% of trainees, reported increased knowledge about the training topics.

OUTCOMES

Regarding outcomes, the project contributed to enhanced provision of safe drinking water, environmental sanitation, and hygiene services to vulnerable people in different districts of Baabda, Jbeil, Aley and Tyre (outcome 1). For example, wastewater services were improved only in the Baabda district. Other districts have benefitted from drinking water infrastructure improvements. Regarding support to a sustainable and efficient management of water and wastewater (component 2), the **ROM report (03/21)** underlined that budgets were mostly allocated to component 1. Only some training has been delivered, while the equipment and material provided to the Water Establishments was for speeding repairs and enabling the field staff to better address leakages within the network.

Specifically on outcomes regarding wastewater, the ROM report related monitoring questions (**ROM Monitoring Questions 03/21**) highlight that “the project has also a wider positive

impact through flood prevention of settlements downstream, (having benefitted) from the separation of stormwater and wastewater as well as the Al-Ghadir wastewater treatment plant.” According to the same source, the Union of Municipalities of Southern Beirut was very satisfied “with the infrastructure results achieved by separating the wastewater from the stormwater and by connecting 2,508 households to a newly constructed/rehabilitated wastewater network extension.” This neighbourhood was prone to suffering from regular flooding, due to “dysfunctional wastewater deriving from since illegal house construction and inadequate technical layout of the wastewater networks”. That means that the project also contributed to reducing flood risk in Ouazaii, also benefiting Syrian refugees. Syrian refugees lived in “the most derelict buildings as they have no alternative place to stay”. The **final narrative report 03/23** reported that the beneficiary households of the new wastewater connection were satisfied (83% from 70%- target). Regarding other outcome indicators despite the ROM report highlighting that capacity building effects are less evident, staff from municipalities and WEs reported improved knowledge on the Lebanese water legal framework and integrated water management, as per the planned targets. In addition, the final report made evident that subscribers to the water network increased, slightly beyond the planned target.

LESSONS LEARNED

In terms of lessons derived from this project, the **ROM Monitoring Questions 03/21** positively highlights “the partnership approach in solving environmental sanitation problems in the southern suburbs of Beirut”. It was based on a project designed by the local authorities and complemented and appears to be a good approach to achieve a targeted solution and to bring innovative approaches forward, e.g., rainwater harvesting and the concept of green infrastructure.” The **final narrative report 03/23** also underlined that the SABIL consortium of NGOs working in partnership with government



actors, UN agencies, and other stakeholders enabled the project to leverage the strengths and expertise of different actors to achieve a more significant impact than any one organization could have achieved alone.

WASH assistance to support water governance and public water and wastewater services in Lebanon for host and refugee communities

ACTED, T04.272



DESIGN

This WASH project, implemented by ACTED and other consortium partners (WeWorld-GVC; ACF; Solidarités International -SI- and LebRelief), has three strategic aims:

- Strengthening the capacity of Water Establishments to provide water and wastewater services;
- Increasing participation of civil society and local authorities in sector governance; and
- Improving refugee protection space.

Specifically on wastewater, the first component includes WASH infrastructure improvements, e.g., rehabilitation and construction of originally 15

wastewater facilities, while the third component focuses on the prevention and reduction of domestic wastewater pollution. This third component includes the improvement of management protocols of 30 wastewater treatment facilities; improvements in 30 wastewater systems and advocacy actions and events to support the WASH stakeholders working in the response to the Syrian crisis. The project has continued to implement activities until January 2025.

OUTPUTS

Regarding outputs, 28 (exceeding the 15-target) water and wastewater facilities (output 1.3) have been upgraded (**QIN 09/24**) to improve the level of service. Specifically on wastewater, two facilities were planned to be improved, one stormwater network in Ouzaii and one wastewater treatment plant in Machta, Akkar, that was later cancelled. Additionally, 360 linear meters of stormwater lines, separating stormwater from sewage networks to reduce flooding were installed in Mriejeh (Dahye, South Beirut), benefitting 2,500 residents. Emergency interventions have also been undertaken at the Al Ghadir wastewater treatment plant due to its main pump being clogged (**narrative report 03/24 and QIN 09/24**). Works done were beyond initial scope and benefited 15,000 people in Dahye.

Regarding the wastewater treatment systems installed in Informal Tented Settlements -ITSs- (output 3.1.), eight systems have been installed in ITSs to date and two in Collective Shelters (CSs) in West Bekaa and Akkar, 10 in total (from an original target of 30). There was no further progress due to the government stance on the installation of decentralised wastewater systems. The Ministry of Energy and Water (MoEW) "issued a stance on the installation of decentralised wastewater systems in ITSs, informing all partners that it no longer supports the installation of such systems". The narrative report also informed that despite joint advocacy from the Consortium, UNICEF and the Water Sector, the government did not revert its decision. The already installed systems are still operating in West Bekaa and continue to be monitored to ensure that they



abide by the Environment Limit Values set by the Ministry of Environment for the discharge of treated wastewater.

OUTCOMES

In terms of outcomes, the main project impact (outcome 1) is having reached more than 45,000 people with wastewater projects, and 2,322 Syrian people (1,530 men, 792 women) with decentralised wastewater systems in ITSs. In total, 116,000 people (70% approximately of Lebanese people, 30% Syrian) have benefitted from the installed stormwater network reducing flooding in the area, improvements in Al Ghadir wastewater treatment plant and improvements in the sewage network. Five districts -Zahle, Baabda, Baalbeck, Akkar, and Zaida- have improved water and wastewater services (**narrative report 03/24 and QIN 09/24**). Concerning refugee space protection (outcome 3), 10 wastewater treatment facilities are operating according to the agreed protocol. They benefitted, as mentioned above, 2,322 Syrian refugees.

JORDAN

Improved access to water, water distribution performance and related sewerage disposal in Irbid Governorate for host communities and Syrian refugees

AFD, T04.27

LESSONS LEARNED

The **ROM monitoring questions (11/22)** highlights lessons learned derived from the project, such as the local and participatory approach. The report affirms that it can help to create a new perception among the municipalities and communities that their needs are recognized and that they can participate with their local knowledge to improve the water supply system. The report also underlines the importance of increasing recognition of the role the municipalities can play in water supply. It suggests the project can showcase a new WASH approach and public-public partnerships with good practices in the debate around WASH in Lebanon, as well as pilot water governance initiatives. The use of "localised planning" in the sector and awareness on water use are also mentioned as potential added value topics for the project to disseminate.

DESIGN

This project, led by AFD, addresses the main water challenges the Northern governorates of Jordan are facing, such as the deterioration of water services and high stress on wastewater management facilities in the context of the Syrian crisis. Therefore, the project has aimed at improving access to water and water distribution in Greater Irbid and Ramtha, combining four components:

- Investment in water and wastewater networks in the Irbid Governorate;
- Capacity strengthening of YWC, the operational arm of WAJ, to improve services to the population:



- Improved water supply services to the vulnerable population of Irbid and Ramtha; and
- Filling the financing gap of the Wadi Al Arab II project.

The focus of the project regarding wastewater will be on connecting to sewerage networks the unserved areas of Irbid that will receive the new water resources (component 1.2) and on rehabilitation of in-house WASH facilities in vulnerable households (component 3). The large sanitation component (1.2) is funded by KFW but complements the other MADAD funded activities (component 1.1 and 3). The project will continue to implement activities until May 2025.

OUTPUTS

Regarding outputs that are part of the sanitation component, the project has put the focus on providing wastewater collection networks in unserved communities in the north-eastern part of the Greater Irbid City. Works include the implementation of the required collection networks, pipelines, and facilities (pump stations) to collect and convey the produced wastewater of unserved localities in east of Irbid to Shallalah and Wadi Al Arab wastewater treatment plants (WWTP). This includes the construction of five new pumping stations, one pumping station rehabilitation, around 11 km force mains, 100 km gravity network and 14 km house connections. Two packages of works with a combined value of EUR 14 million were commenced in August 2020, however, due to various challenges only one package has progressed, while the other has been re-tendered in the second quarter of 2024. According to the **narrative report 05/24**, due to the mentioned delays, cumulative progress during the reporting period has encompassed: Gravity sewers (25% of the 44 km-target); force mains (78% of the 9 km-target); house connections (11% of the 1,387-target); and pump stations (38% of works completed). The narrative report informs that 18 km of sewer pipes -22% of the 80-target- were newly installed and/or rehabilitated. Regarding the in-house WASH facilities

(component 3), the ROM report highlights that 95% of the contacted beneficiaries were satisfied with the quality of facilities. Approximately 67% of the 5,500+ households benefitting, were Syrians.

OUTCOMES

In terms of outcomes, the target of people benefitting from improved sanitation services is 23,000, but results measurements have not been undertaken yet due to the mentioned delays. The **narrative report 05/24** also states that the sanitation component, which is funded by the KFW and not part of the EUTF activities focused on water and water services, uses the horizon of the year 2040 considering the target population in Al Mughhaier of 24,800 people and Hakama of 32,900, aiming at generating average sewage flows of 1,743 m³/d in Al Mughhaier and 2,296 m³/d in Hakama. This component, as mentioned, is part of KFW funding, and not from EUTF, which has been more focused on access to water and water services. Therefore, results information will be available beyond EUTF's timeline.

The EUTF related/financed outcomes have shown good progress. For example, the targets for people benefitting access to safely managed water and water services have been exceeded, reaching more than 478,000 compared to the target of 413,300 (**QIN 09/24**). The **ROM report (07/22)** mentions interesting outcomes in relation to the rehabilitated in-house WASH facilities, which include sanitation facilities. The project has also supported vulnerable households (often Syrian refugees) living in rented properties. It used its leverage with Jordanian households to *"negotiate extended security of tenure in exchange for the long-term benefits of the enhanced package of WASH rehabilitations to their premises"*.

LESSONS LEARNED

Regarding lessons, the **ROM monitoring questions (07/22)** highlights that "the hybrid EUTF Syria-Neighbourhood Investment Facility (NIF) funding has allowed the incorporation



of a social component to address associated needs of Syrian refugees and vulnerable Jordan host communities; to provide outreach to a high number of vulnerable population and the articulation of the technical assistance component to help facilitate the project implementation and its sustainability. This has enabled the project to foster a “high EU added value thanks to the large share of grants in the project budget”. It is also interesting to note that the project has been able to include a sanitation component, managed and funded by KFW, to complement in order to “cope with the increase in wastewater due to the foreseen drinking water supply infrastructures”.

EUTF contribution to the West Irbid Wastewater Network construction project

EBRD, T04.92



DESIGN

This project led by EBRD was designed to increase access to wastewater services in 18 towns and create employment opportunities in West Irbid. The EUTF is co-funding- with EBRD and the World Bank- the investment component (component 1) through work contracts for the construction and/ or rehabilitation of the wastewater network. In total, 280 km (**ROM report, 10/23**) of wastewater network (300 in the **QIN 09/24**) and 6,000 house connections were planned as part of packages 3, 4 and 6 (from 8 packages). Although a new

wastewater plant was not originally planned, it has proved to be needed. The second phase will comprise the construction of the plant, the rest of the packages to cover up to 500 km of wastewater lines length and 11,000 connections. The technical assistance component (Component 2) is not funded by EUTF. The project will implement EUTF related activities until April 2025, but it is likely that the other components will go beyond that date.

OUTPUTS

The project implementation has substantial delays. Some of the challenges faced by the project was that WAJ has not had previous experience with EBRD procurement policies and rules. In response, EBRD provided training to WAJ and the general tender department staff working on the project. In addition, higher material prices and changes in the original design, also affected the project implementation. Currently, in terms of outputs, the last **QIN 09/24** reports some progress regarding the construction of sewer pipes. Up to now 190 km of pipes have been installed, reaching 38% of the overall 500-target (or 63% of the 300-target for the three packages under construction), road reinstatement is about 31% completed, and 50% of manholes and house connections were executed. The QIN also reports that “currently the rate of the work progress is very slow due to internal financial issues (cash flow), the winter season, (and the fact that) the remaining works are within crowded, very narrow streets with old houses, the topography, and the type of soil”. From all work packages, the QIN informs that there is one package, number 5, that still needs to be tendered. The creation of work opportunities (55% level of achievement) and the training in WASH operations and maintenance (60% level of achievement) have not increased since last reporting period. Awareness activities have not started yet.

OUTCOMES

Regarding outcomes, access to improved wastewater services is the main one, but until all outputs are delivered no measurement can be



undertaken. Improved wastewater services will contribute to improve the wastewater connection coverage in the North of Jordan. However, last **ROM report (10/23)** highlights that for that outcome to be achieved, some conditions still need to be met:

- The new Wastewater Treatment Plant (WWTP) must be installed;
- The entire wastewater network must be in place (not only the 3 packages under construction now); and
- Users must be connected to the WW network.

Although in December 2023, EBRD secured a EUR 3 million EU grant under the National Indicative Plan (NIP) to complement their loan to construct the wastewater treatment plant (WWTP), there is no update on this in the recent QIN or ROM report. This plant aims at treating wastewater from new sewer networks across 15 surrounding towns, and relieving the existing WWTP in Wadi Al-Arab, which is nearing its capacity. In total the project has a set target of 230,000 beneficiaries of improved water services. There is high expectation of the communities about the new wastewater network, nevertheless, it is confronted with the challenge of affordability. Many residents cannot afford the calculated connection average price of 700 dinars. Therefore, the project will need to find out a solution to also ensure the effectiveness of the new wastewater network.

Some lessons have been highlighted by the **ROM monitoring questions (10/23)** that *“could guide future initiatives”*. The prioritisation of technical solutions that are aligned with effectiveness and sustainability is one of them, e.g., the wastewater pipes are *“set deep to use gravity and avoid pumping systems”*. According to the report, the combination of a soft and hard component needs to be underlined, too. This refers to the articulation of the infrastructure investment with *“a cohesive approach, engaging with beneficiary communities”*, and enables *“WAJ (...) to learn about the assumptions for future connections, tackles obstacles during construction, and (...) to get*

visibility in providing improvements of services in the community”. The involvement of WAJ has been crucial, and the report identifies two campaigns that could be carried out:

- An *“affordability campaign”*, to promote subscriptions; and
- A *“treated wastewater for irrigation”* campaign.

LESSONS LEARNED

Another lesson, as reported, is that the action is contributing to sustainable resources usage, and this might be an example for future investment in cross-sectoral infrastructure. This type of infrastructure investment will be eligible as future green growth initiative. The report underlines the importance of adding components on combating leakage and considering water metering to reduce water losses, as part of any future investments in water infrastructure. In addition, it is considered essential that investments are also aligned with the national water strategy and as part of a multi-donor collaboration with Jordanian institutions. The **WASH evaluation (01/22)** also underlines the importance of understanding the capacity of the water authorities and operators as part of an effective design. EBRD realised they had to support WAJ with a technical assistance component. Weaknesses in the management of YWC led to bring them back under the WAJ. Operation and maintenance tasks are the responsibility of WAJ and the project now expects that YWC operational capacity will be ready once the network is operational.



IRAQ

Supporting resilience for host communities, returnees, and internally displaced persons (IDPs) in Iraq

ACTED, T04.121

DESIGN

In Northern Iraq, this ACTED-led project on supporting resilience of host communities, returnees, and internally displaced persons (IDPs), was designed as a two-component intervention, one on water and sanitation and another one on promotion of livelihood strategies. The aim was to increase the capacity of existing WASH network to meet new needs of increased population. The project differentiated between improving large-scale water and sanitation infrastructure and small-scale public WASH facilities. These activities were accompanied by a behaviour change communications campaign. In parallel, the livelihood-based component encompassed in-depth rural and urban livelihoods assessments, rehabilitation and/or identification of training and employment centres, provision of vocational training and grants, and implementation of five quick impact projects around livelihoods, access to services or community infrastructures. The project implementation ended in February 2021.

OUTPUTS

In terms of outputs regarding WASH infrastructure, the project upgraded 86 infrastructures (84 targeted), which involved 12

large sites, (six in Mosul and six in Sinjar) and 74 small sites. The large-scale projects refer to water and pipe networks, water pumping and boosting pumping stations and one of them was a wastewater treatment plant in Aski, Mosul. According to the **final narrative report (11/21)**, this rehabilitation included improving quantity of water and reliability of the treatment facility through the replacement of electrical transformers.

Regarding small-scale public WASH facilities, improvements were undertaken in nine schools, two health centres and four water networks in Mosul and Telafar; 17 water networks in east and west Mosul, facilities in 10 schools, and three water pump stations in east Mosul. Additionally, water sources were rehabilitated in 11 of the locations -including one on water treatment- water networks rehabilitated in two locations, water filtration systems installed in two locations and water and hygiene facilities rehabilitated in one Sinuni site. In Mosul city, 16 small-case WASH infrastructure sites were improved, including, water and sewage networks and WASH facilities in schools.

OUTCOMES

Regarding outcomes, access to safely managed water was ensured for more than 177,000 people (250,000 targeted). The project also contributed to decrease the coping strategy index for households lowering it to 18% (30%-decrease targeted)². Additionally, 44% of the interviewed target group were able to meet their WASH needs (50% targeted). This measure was, according to the final narrative report, based on the per capita water use of beneficiaries and is "influenced by many other external factors that are outside the project

→ 2. Coping Strategy Index refers to the extent to which households use harmful coping strategies when they do not have enough food or enough money to buy food. It encompasses a series of questions to assess food (in)security.



control". The final report also highlights positive effects from WASH rehabilitations and sanitised schools, water networks and water stations in Ninewa, such as increased health of households and pupils, decreasing cases of contaminated water.

The **EUTF outcome harvesting exercise (03/21)** reports how students and staff from two schools in 2019 in Mosul, Al Risala school, West Mosul, Risala neighbourhood and Al Kuwait school, East Mosul, Sumir neighbourhood, started using WASH facilities in a more responsible way due to the upgrading of facilities and having understood personal hygiene practices.

Capacity strengthening effects are mentioned in the context of the WASH training delivered to the Directorate of Water and community organisations and members, such as Mukhtars. On this, the outcome harvesting exercise also included the case of how members of the community trained by the project, established the WASH committee in Wadi Haja neighbourhood in east Mosul in early 2020 to deal with the Directorate of Water regarding issues with their water network. After organising they were able to raise their concerns with the appropriate units of the relevant institutions and the relevant technical maintenance service was able to repair it.

LESSONS LEARNED

In terms of lessons learned, the **final report (11/21)** underlines the importance of the communication with the public administration, such as the local authorities (Sinuni and Sinjar Sub Mayors etc) and the Directorate of Water, and the capacity building of public employees to promote engagement and ownership in the project implementation. For example, local administration provided administrative support in the rehabilitation of the water networks in areas where DoW is not present. The use of local staff and local trainers, as well as community consultations are mentioned as key enabling factors. Community consultations were also crucial during WASH

rehabilitations, since communities proved to understand the issues and the context better to make decisions about, e.g., the route of water distribution lines. On hygiene promotion activities, the project learned that the materials had to be designed according "to the target audience from the outset" to ensure facilities in schools and clinics are better maintained. Regarding monitoring, two elements have been highlighted:

- The indicator on 'water quality' *"was ultimately not entirely relevant as many areas of the Ninewa governorate do not practice water treatment."* But if future projects need to ensure "safely" managed water, the cost of water treatment needs to be factored in.
- *"WASH coping strategy indices were found to be an effective method in measuring resilience regarding WASH status"*. The WASH coping strategies included in questionnaires *"should be relevant to each community"* as it is significantly different in rural or urban areas. It is important, as the report concludes that although *"it was possible to rehabilitate some WASH infrastructure through this project"*, *"infrastructure rehabilitation needs (go) beyond WASH facilities"*. WASH projects need a holistic rehabilitation approach, for example, in Sinjar many schools needed rehabilitation, and only WASH infrastructure rehabilitation was not sufficient.



TÜRKIYE



Technical Assistance and Investment Support for the Municipal Resilience Facility (MRF)

EIB, T04.155



DESIGN

Regarding the design, the WASH project led by the European Investment Bank (EIB) in Türkiye has been conceived to support the country's efforts to provide urgently needed municipal projects, such as water, wastewater, and solid waste in the municipalities in Southern and Eastern Turkey with the highest rate of Syrian refugees, Hatay, Gaziantep, Saliurfa, Kilis, Adiyaman and Besni. The project has made available to the municipalities and their utility companies the financial resources and the expert support needed to fund investment schemes providing essential water, sanitation, and solid waste management services. A pipeline of 18-20 operational water and waste investment projects was planned as part of the project results. As additional result, improved water, sanitation, and solid waste management services are expected. The project will close its implementation in June 2025.

OUTPUTS

Regarding outputs, the **last available QIN (09/24)** confirms the finalisation of 16 investment projects in Kilis, Hatay, Şanlıurfa, Gaziantep, and Adiyaman, encompassing the construction of sewerage networks (2), storm water network (1), drinking water networks (4) and lines (3), drinking water treatment plants (1), wastewater treatment plants (3), a warehouse and delivery of mechanical equipment (1) and a transmission line project (1). The wastewater treatment plants are based in Gaziantep (Karkamış and Boğaziçi-Yeşilyurt, Yavuzeli). Three other wastewater treatment plants that were planned in Hatay and Besni had to be cancelled due to various factors, such as delays, lack of technical capacities and/or assigned resources and the earthquake. All projects received provisional acceptance, and during the reporting period up to September 2024, four projects including the wastewater treatment plants in Karkamış and Boğaziçi-Yeşilyurt received the final acceptance. Implementation is being finalised on the remaining two investment projects: one on equipment (100%) and the warehouse (60%).

OUTCOMES

Regarding wastewater related outcomes, according to the last **QIN (09/24)**, 23,984 people benefitted from the wastewater treatment plants, mostly host communities (97%), while 193,905 people from host communities (65%) and refugees (35%) benefitted from wastewater collection. There is still no information available about the reliability and quality of the water (from the water networks). It is evident that water authorities are using the new wastewater infrastructure and that they express their satisfaction with the improvements after the new infrastructure had been built. The **ROM report (06/24)** highlights "the availability of water and sanitation services



in news areas or improved services accessible at reasonable cost”, especially since residents no longer have to pay for emptying their septic tanks. Therefore, the project has contributed to improved living conditions. As a longer-term potential impact, the report also mentions the possibility of halving the operating costs using solar panels. As an indirect, not planned positive effect, the report also highlights the increased implementation capacity of Ilbank, especially in procurement and social and environmental responsibility. Furthermore, the report highlights that *“Turkish work contractors were also motivated to complete complex and extensive works” despite not “being big companies”*.

LESSONS LEARNED

In terms of lessons learned, the last available **ROM monitoring questions** highlights the importance of the technical assistance as *“game changer”*. The engagement of Ilbank’s team as reliable partner gaining experience in the area is also underlined as crucial capacity to implement all investment projects. However, for future similar interventions, the ROM report also identifies the need for EIB to increase its field presence in the country or delegate some of the related power to its local promoter. If not, there might be a risk of inefficiencies in the implementation due to *“protracted decision-making and changes processes divorced from the implementation ground”*).

The **WASH EUTF sector evaluation (01/22)** highlights the importance and crucial need to include detailed financial analysis of the infrastructure projects in the feasibility study at the start of the intervention, something that in this case was dealt with at a later stage, causing delays. It stresses the role of the technical assistance for project preparation, tendering and monitoring from the start due to the lengthy contracting procedure, and not at later stage as it was done here. The implementation mechanism was *“burdened by cumbersome procedures of the various partners”*. On the one hand, EIB had

limited resources and team availability in the field, while Ilbank had some weaknesses in terms of procurement capacities. This was overcome by the technical assistance. Most of the lessons learned highlighted in the sector evaluation refer to efficiency: the need of more involvement of the partner country and the implementing partner in the field near the project sites to follow up the contracts, the inclusion of the measurement of outputs of the operational handover period; the need of informing the public about health, safety and environment issues about the works; the importance of project risk management measures at an early stage of such infrastructure projects and the need for close EU oversight during project implementation. Additionally, the evaluation also concluded that it is highly relevant to consider the availability of electricity supply for this type of projects, through complementary interventions and/or the involvement of electricity suppliers.

UNDP Turkey Resilience Project in response to the Syria Crisis (TRP)

UNDP, T04.76



DESIGN

The project led by UNDP in Türkiye was designed to:

- Enhance the economic and social empowerment of Syrian under Temporary Protection (SuTP) to become an asset for the



local economy and contribute to the economic growth potential; and

- To improve the living conditions of SuTP and the population in host communities in Turkey and to promote social cohesion.

Three components on job creation, municipal services and adult language learning were included. The municipal services component included the construction of a wastewater treatment facility in Hatay (Hassa), and the establishment and operationalization of four Waste Transfer Stations (WTS) - 1 in Şanlıurfa, 2 in Hatay and 1 conveyor belt WTS in Hatay- with required vehicles and equipment. In addition, the component had foreseen the establishment of one Mechanical Biological Treatment (MBT) Facility in Gaziantep, one Greenhouse Solar Dryer, one Leachate Management Facility in Kilis and capacity strengthening activities at municipal level, technical support to the municipalities of Gaziantep, Kilis and Şanlıurfa, as well as technical assistance and support to improve the COVID-19 response. The project closed in January 2019.

OUTPUTS

Regarding outputs, the last **QIN (06/23)** confirmed that in the municipal service delivery component, all planned activities and results had been delivered, except for some parts of the Solid Waste Mechanical Biological Treatment Facility (MBT) in Gaziantep due to delays during COVID, however, final acceptance was being administratively processed at that time. The construction of the wastewater treatment plant in addition to the odour reduction system in Hatay was completed in December 2019 and the Final Acceptance Certificate was issued in December 2020 (22.12.2020).

OUTCOMES

In terms of **outcomes (QIN 06/23)**, the wastewater facility, owned by the Hatay municipality, has been successfully operated and serves approximately

40,000 people in Hassa. Although the EUTF only covered the construction of the first stage with a capacity of 4,000 m³/d to cover loads until 2025, it is expected that the plant serves up to 60,000 in the second stage until 2035 (**SUMAF monitoring report, 11/19**). The **WASH EUTF sector evaluation (01/22)** highlights the environmental contribution of the plant since it will contribute to preventing pollution of land and waterways and public health hazards due to untreated wastewater. It also stresses that the four municipalities of Hatay, Gaziantep, Kilis and Şanlıurfa have strengthened technical and infrastructure capacity after receiving technical support, equipment, and infrastructure through the various WASH sub-projects, including the wastewater plant.

LESSONS LEARNED

Regarding lessons learned, the **WASH sector evaluation (01/22)** highlights the importance of the partnership with the governmental bodies for the interventions, which in this project included Ilbank and the target municipality, to ensure effective implementation. In this case, the procurement procedures to be followed were the national ones, so that it was more efficient compared to the case of T04.155 where international procedure had to be applied. The collaboration between UNDP, Ilbank and the municipalities has worked well due to a longstanding relation and the availability of a UNDP project office in Gaziantep. The identification of priorities *“by municipalities and direct coordination by implementing partners with the municipalities for proposing solutions following strategic plans”* was highly relevant to *“strengthen the waste management capacities of the municipalities for waste management investments and activities until 2050”*. *“UNDP, in cooperation with municipalities, prepared the Integrated Waste Management Plans of Gaziantep, Şanlıurfa and Hatay Metropolitan Municipalities.*