CTCN
CLIMATE TECHNOLOGY CENTRE & NETWORK

Technical Assistance Response Plan – Terms of Reference

Country	**Jordan**
Request ID#	**2020000033**
Title	Feasibility Study to Upgrade Existing Dirty MRF in Amman Operated by Tadweer
NDE	Jordan Ministry of Environment Ms. Sara Qais Al Haleeq, Head of Adaptation, Climate Change Directorate Sara_alhaleeg@hotmail.com Address: King Faisal Bin Abd Al Aziz St. 83, Um Uthaina Amman, Jordan 11941
Proponent	Name of organization: Clean Environment Company Contact person; Dina Haddad Position: General Manager Email: dinahaddad@budgetjordan.jo / info@tadweerjo.com Address: P.O. Box 940415 248 Mecca Street, Amman, Jordan 11194 Jordan

Summary of the CTCN technical assistance

Tadweer, the only MRF in Amman has been developed in 2005 with the objective of increasing the recovery of material from waste before its disposal at the landfill. The MRF is currently facing problems due to low recyclables recovery efficiency, high labour intensity of the process, old equipment, high energy costs, and high organic content in the received waste. To increase the recovery efficiency of this MRF, it is envisaged there will be a need for a major upgrade or complete redevelopment of the process. This technical assistant response plan shall investigate two concepts which are converting the dirty MRF into a clear MRF with anaerobic digestion of organic waste or to convert the facility into an RDF plant that can produce fuel to be used in cement plants in Jordan. The time frame of this response plan is a period of 10 months and shall require a team of specialized local and international experts. . The main government partner in this project is Greater Amman municipality and the entity overseeing climate change initiatives is the ministry of environment.

Agreement:

(If possible, please use electronic signatures in Microsoft Word file format)

National Designated Entity to the UNFCCC Technology Mechanism
Name:
Title:
Date:
Signature:

Proponent (signature of the Proponent is optional)
Name:
Title:
Date:
Signature:

UNFCCC Climate Technology Centre and Network (CTCN)

Name: Rose Mwebaza
Title: CTCN Director
Date:
Signature:

1. Background and context

In Jordan, each municipality is legally responsible to manages solid waste generated from their area. The municipality typically manages the waste directly themselves with small role given to the private sector in some cases. Amman city is not different in this aspect as the majority of the waste management is done by directly by Greater Amman Municipality (GAM) themselves with a small role to the private sector. Amman being the largest city in Jordan, is home to around 4 Million people which accounts to approximately 40% of the entire population of Jordan. Waste generation in Amman is around 3500 tons of mixed solid waste per day. The composition of the waste in Amman is generally as presented in the figure 1 and 2 below (GAM study 2011).

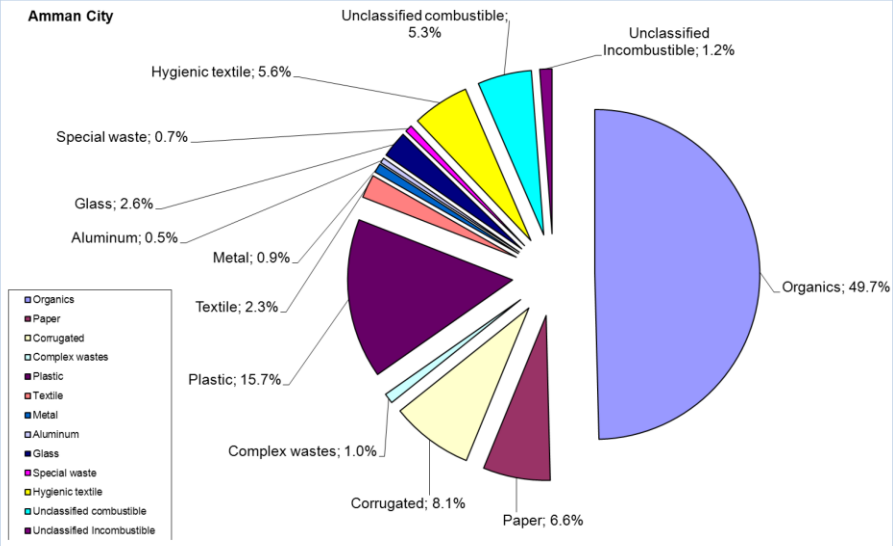

Figure 1 Waste Composition of MSW in Amman

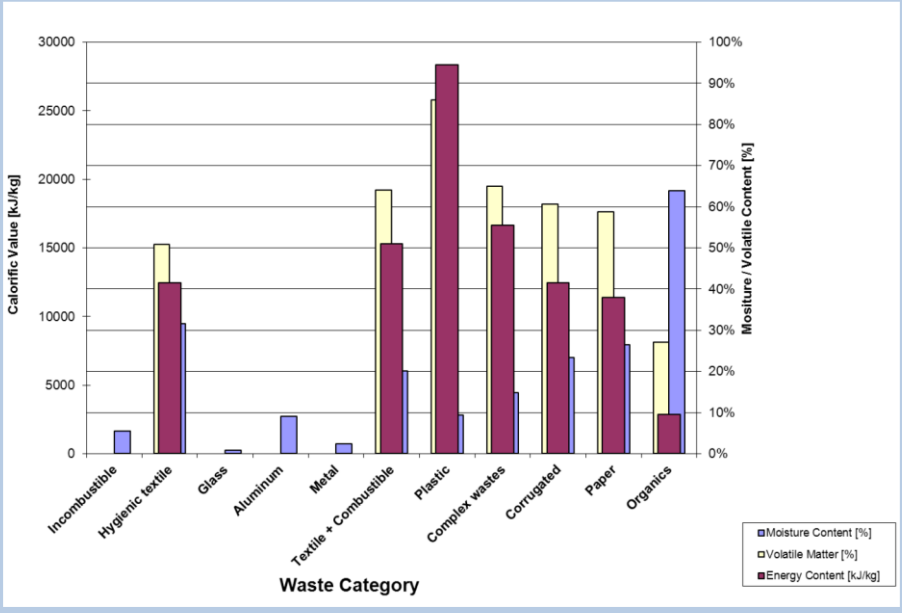

Figure 2 Moisture content and calorific value of MSW in Amman

The vast majority of the waste is collected by GAM and goes to disposal at the landfill with very little recycling except for unofficial waste pickers. Most of the waste is transferred through a transfer station (TS) called Alshaer transfer station which is located east of Amman on the way to the

Ghabawi landfill. At the TS, waste is transferred from collection vehicles to larger transfer trailers with additional compaction introduced through the compactors at the TS facility. There are few loads however that go directly to the landfill which are mainly private collectors who are contracted to collect the waste from big commercial centers. Figure 3 demonstrates the location of the transfer station, the landfill, and the MRF.

It is important to note that waste characterization is heavily dependent on the source of the waste from within the city as the city of Amman has a big economic gap between its West and East. Generally West Amman has the more wealth and the East contains poorer areas which is reflected on the waste produced from these locations. Another important element that impacts waste characterization is the informal waste pickers whom have grown significantly in numbers in the last 5 to 10 years. This group picks recyclables from bins in the city on daily basis which has a significant impact on the waste that is received at the MRF or the landfill.

Figure 3 Map Showing Amman MSW Transfer Station, Landfill, and Tadweer MRF

Before the year 2003, GAM disposed of Amman's waste in a location which was previously an old phosphate mine in Russeifah (a suburb of Amman). The site was a deep excavated pit with no liner or any environmental protection elements. GAM however, has taken important positive steps in waste management efforts since that time as they have transformed waste disposal from this open dumping system to sanitary landfilling. In the year 2003 the first phase of the sanitary landfill at Ghabawi started receiving waste and has been receiving all the waste from Amman since that time till now. Ghabawi site master plan includes 9 cells which are being constructed and filled as needed. As cells get near to full new ones are constructed at a rate of approximately one cell every 3 to 5 years. Cell 1 through 4 were filled between 2003 to 2018 and cells 5 to 9 are expected to last until 2035 by that time that landfill would be completely full and a new site will be required.

In an effort to increase waste recycling and diversion from the landfill, GAM has approved the development of a dirty Material Recovery Facility (MRF) based on the concept of Public Private Partnership (PPP). The name of the facility is Tadwer and is currently operated by Clean Environment company (the proponent in this technical assistance). This is considered to be the only official MRF in

Amman and is located immediately next to the Ghabawi landfill. Close up of the landfill and Tadweer MRF can be seen in Figures 4 and 5 below.

Figure 4 Ghabawi landfill and Tadweer MRF Site Close up

Figure 5 Tadweer MRF

The Clean Environment Company is the first and only registered and licensed private sector Material Recovery Facility in Jordan. It manages and operates Tadweer facility as mentioned earlier. They

have a PPP agreement with GAM to operate the 600-1000 tn/day capacity facility- which is approximately 25% of GAM's waste generation.

2. Problem statement

After the switch from disposal in uncontrolled dumpsites to landfills in 2003, it was time to also start thinking about ways of improving waste recycling and increase diversion from landfills in Amman and so in 2005 the Tadweer dirty MRF was established as a PPP. GAM is the public partner of the project and gets an agreed percentage of the revenue from sales of recovered recyclables. The total operational time was planned to be 15 years after which the facility ownership would be transferred to GAM. The MRF facility was constructed according to the schedule in 2005, However, unfortunately, since that time, several contractual issues had occurred preventing the facility from starring its operations and this continued until the year 2019 when the facility received its first waste load. Between 2005 and 2019 more than half of the Ghabawi landfill capacity was already reached without significant diversion percentages while the second half of the landfill capacity is expected to last less time than the first half due to the rapid population increase in Amman. For this reason, it is for everybody's interest to increase the efficiency of Tadweer in order to save the remaining capacity at the landfill as much as possible.

There are some small scale and limited recycling initiatives in Jordan by community-based organizations (CBOs) and non-governmental organizations (NGOs) but till now there are no efficient, large-scale, municipal-lead solid waste sorting practices or recycling systems in place throughout Jordan. Tadweer is the first and only full scale MRF project developed as a PPP and theoretically it could be used to divert waste away from the landfill which would have significant positive environmental impacts and would increase the life span of the landfill by few more years.

Currently unfortunately, Tadweer is facing several technical, and operational challenges preventing them from achieving good recovery rates. Under the current operating condition, Tadweer facility has recovery percentages of about 5% and their operation is really not feasible. In fact, they are struggling financially and would not be able to operate at this manner for much longer. Several issues contributed to this problem including:

Recovery lines at facility are not optimized for existing MSW properties, it appears that the lines are not well equipped to deal with the type of waste and the quantity of waste. Items like cardboard, unopen bags, heavily contaminated plastics are causing lots of operational issues and makes the recovered items of low selling values. This issue could have occurred because the design of the facility was made in 2004 and the waste situation in Amman has significantly changes from that time to now.

Low recyclable content in the waste, as mentioned earlier waste pickers in Amman are growing in numbers significantly and they pick the waste from the bins before it is transferred to the MRF which really has a significant impact on the value of recoverable found in the waste. For example, most metal is completely gone from the waste before it arrives at the MRF.

Contamination with organic waste, the organic content of waste in Amman is so high (around 50%) that it gets into everything especially that the waste is heavily compacted in the transfer station before it arrived to the MRF. Cardboard and plastics are contaminated to the extent that cardboard may lose its value completely because of this issue. Contaminated plastic waste on the other hand requires

expensive and lengthy cleaning process which increased the cost or its recovery.

Labor intensive operations, the design of Tadweer MRF is heavily dependent on the use of manual labor in several steps which really creates a financial burden and an issue related to training and retaining staff.

Old equipment, Tadweer facility since its establishment in 2005 has had several contractual issues and delays with its public partners (GAM) which caused the equipment to become old before they are even used. Also, the changes in the waste properties from 2005 till 2019 made the equipment and process less suitable and less feasible.

Tough Competition from Imported Raw Material. The recycling sector in Jordan faces tough competition because of the import of raw virgin materials and imported recycled products which are a viable substitute that are readily available and affordable. Jordanian recycled products do not receive any favorable treatment in the market.

High Energy Costs. The MRF has heavy machinery that requires electric consumption during every hour of operation and is completely dependent on electricity. Recently there has been a rise in electricity prices and it appears this may happen again in the future.

Tadweer facility processes are demonstrated in Figure 6 below.

Figure 6 Material Separation Processes at Tadweer MRF

The main problem that CTCN's technical assistance should focus on can be summarized in the following two points:

1) ***The low efficiency of material recovery*** at the MRF of around 5% which does not help much with the National goal of Jordan related to diverting waste from the landfill. Hopefully this recovery percentage can be increased to 25% or more.

2) ***The ongoing economic losses*** of the MRF which cannot be maintained for much longer. The operation hopefully can become profitable so that it is sustainable over the long run.

To achieve the goals of increasing the efficiency and feasibility of the MRF, it is proposed to investigate the following two options as part of the technical assessment.

1) ***Converting the dirty MRF into a clean MRF*** which is expected to improve the efficiency and profitability of the entire operation. However, this option would require receiving waste that is presorted and at least not contaminated with wet waste.
2) ***Converting the facility into an RDF producing plant for use in cement factories in Jordan***. This is a drastic change in the entire operation scheme but should hopefully provide high recovery percentages and on the long run can participate in eliminating the need for future landfills all together.

3. Logical Framework for the CTCN Technical Assistance:

(Guidance: Please note that multiple activities lead to one Output, and multiple Outputs lead to one Outcome. There can be several Outputs, but only one Outcome description capturing the CTCN technical assistance. Deliverables are the products or services to be delivered to the NDE/Proponent/CTCN based on the Activities and the Outputs.)

	Month											
	1	2	3	4	5	6	7	8	9	10	11	12
***Objective**: Increase material recovery percentage and economic feasibility of the waste treatment operations by upgrading or complete redesign of the Tadweer MRF in Amman.*												
Outcome: *Increased waste diversion from landfilling and enhanced recycling and recovery rates of material from waste which supports creating long term sustainable green growth ultimately supporting circular economy in Jordan*												
Output 1: Development of implementation planning and communication documents												
Activity 1: *All implementers must undertake the following activities at the beginning and at the end of the CTCN technical assistance.* i) A detailed work plan of all activities, deliveries, outputs, deadlines and responsible persons/organisations and detailed budget to implement the Response Plan. The detailed work plan and budget must be based directly on this Response Plan; ii) Based on the work plan, a monitoring and evaluation plan with specific, measurable, achievable, relevant, and time-bound indicators used to monitor and evaluate the timeliness and appropriateness of the implementation. The monitoring and evaluation plan should apply selected indicators from the Closure and Data Collection report template and enable the lead implementer to complete the CTCN Closure and Data collection report at the end of the assignment (please refer to item iv below and section 14 in the Response Plan); iii) A two-page CTCN Impact Description formulated in the beginning of the technical assistance and update/revised once the technical assistance is fully delivered (a template will be provided); iv) A Closure and Data Collection report completed at the end of the technical assistance (a template will be provided).												
Deliverable 1: i) Detailed work plan ii) Monitoring and evaluation plan iii) CTCN Impact Description iv) Closure and Data Collection report	X X X											X X

Output 2: Assessment of the current waste management situation												
Activity 2.1: Organization of a kick-off meeting Organize a kick-off meeting with project stakeholders including Tadweer, GAM, MoEnv, CTCN, and other relevant invitees with the objectives of: • Establishing contact with stakeholders and determining contact persons from each entity • Confirming technical assistance scope of work including project outcome, outputs, activities, deliverables, and time schedule												
Activity 2.2: Evaluation of the status quo of waste management The current waste management situation will be evaluated, including the • collection and review of previous reports, applicable regulations, policies, strategies, and plans • assessment of the existing waste management infrastructure in Amman, with a special focus on the machinery and operations of the Tadweer MRF • identification of waste types and sources available in Amman which could be utilized by a clean MRF and RDF producing plant. A particular focus should be set on the waste collected by GAM and other private collectors. • conduct of a gap analysis in terms of waste management infrastructure and processes												
Deliverable 2: 2.1: Kick-off meeting report 2.2: Situation analysis report	X	X										
Output 3: Feasibility assessment of converting the existing dirty MRF into a clean MRF and studying the feasibility of organic waste Anaerobic digestion												
Activity 3.1: Evaluation of the markets for recyclables Evaluate the market demand in terms of quality, quantity, pricing and product types for recyclables of plastics and cardboard in Jordan and internationally.												

Activity 3.2: Identification, quantification, and characterization of available waste for a clean MRF Collect data on the quantities and qualities of waste available from GAM as well as private collectors and entities in Amman that could be suitable for a clean MRF. This includes the identification of sources of waste, the evaluation of annual quantities and the general waste composition.[1]												
Activity 3.3: Feasibility assessment for upgrading the Tadweer Facility to a clean MRF Conduct a feasibility assessment for upgrading the Tadweer Facility from a dirty MRF to a clean MRF with high efficiency and controlled costs. This feasibility assessment should include a technical evaluation (best available technology and operational options, required technology upgrade, required infrastructure improvement, required operational changes, concept design, expected recycling qualities and quantities etc.) and an economic evaluation (capital investments, O&M costs, financing options, market demand estimation, revenue calculations, breakeven point, etc.).												
Activity 3.4: Feasibility study for adding post sorting processes Conduct a feasibility study for developing post recovery cleaning, palatizing and/or processing lines to increase the value of recovered material sales. This feasibility study should be conducted for plastics and cardboard. The study should include a technical evaluation (best available technology options, required technology upgrade, concept design, expected material qualities and quantities, etc.) and an economic evaluation (capital investments, O&M costs, market demand estimation, estimation of material sales, breakeven point, etc.).												
Activity 3.5: Feasibility study for adding an anaerobic digestion plant Conduct a feasibility study for developing an anaerobic digestion plant at the site with the produced power for self-use at the MRF or sold to the neighboring facilities. The study should include a technical evaluation (anaerobic digestion and biogas potential, best available technology options, required technology upgrade, concept design, etc.) and an economic evaluation (capital investments, O&M costs, estimation of savings / electricity sales, breakeven point, etc.).												
Deliverables 3: 3.1: Report on recyclables markets				X								

[1] If a detailed waste composition analysis is necessary, it shall be done with the support of Tadweer and is outside of the responsibility of the contractor.

3.2: Report on available and suitable wastes for clean MRF 3.3 – 3.5: Feasibility studies on clean MRF, post sorting processes and anaerobic digestion plant				X			X					
Output 4: Feasibility assessment for converting the facility into an RDF producing plant for use in cement factories												
Activity 4.1: Evaluation of the RDF quality and quantity required by cement factories in Jordan Assess the required quality and quantity of the RDF that can be used by cement factories as part of their cement mix. This assessment should include, amongst others, the chlorine and ash contents, an evaluation of the calorific value and the quantities that are required.												
Activity 4.2: Investigation of the RDF quality and quantity possible to produce from Amman waste Evaluate the quality and quantity of RDF that can be produced from waste from Amman. This should include a study of the chlorine and ash contents, an evaluation of the calorific value and its balance over time, as well as the potential quantities available.												
Activity 4.3: Feasibility assessment of an RDF facility Conduct a feasibility assessment for the upgrade to an RDF producing plant with an RDF quality and quantity that responds to the requirements of cement factories. This feasibility assessment should include a technical evaluation (best available technology and operational options, required technology upgrade, required infrastructure, required operational changes, concept design, expected RDF qualities and quantities, etc.) and an economic evaluation (capital investments, O&M costs, cost of shipping of the RDF, cost of intake infrastructure, financing options, market demand estimation, revenue calculations, breakeven point, etc.).												
Activity 4.4: Evaluation of the required changes to the waste collection scheme by GAM Evaluate the necessary changes to the existing waste collection scheme by GAM in order to facilitate the successful operations of an RDF producing plant.												
Deliverables 4: 4.1 – 4.3: Feasibility study on RDF producing plant, including evaluation of required and possible RDF qualities and quantities 4.4: Report on the required waste collection scheme changes										X X		

Output 5: Stakeholder workshop												
Activity 5.1: Organization of a stakeholder workshop After the completion of outputs 3 and 4, all the results shall be presented in a workshop to select one of the two options for further development and to determine the source of funding for the selected option. International experts shall participate online from their home countries while local experts can attend physically.												
Deliverables 5: 5.1: Workshop report												X

4. Resources required and itemized budget:

Please provide an indicative overview of the resources required and itemized budget required to implement the CTCN technical assistance, including for M&E-related activities, using the table below. Important to note that minimum 1% of the budget should explicitly target gender specific activities related to the technical assistance (please see section 10 for further information on gender). Once the Response Plan is completed, a Response Implementation partner(s) will be selected by the Climate Technology Centre (CTC). A detailed activity-based budget for the CTCN assistance will be finalized by the CTCN and selected Implementer.

Activities and Outputs	**Input: Human Resources** *(Title, role, estimated number of days)*	**Input: Travel** *(Purpose, national vs. international, number of days)*	**Inputs: Meetings/events** *(Meeting title, number of participants, number of days)*	**Input: Equipment/Material** *(Item, purpose, buy/rent, quantity)*	**Estimated cost** *Please accumulate the costing at Activity and Output level and provide an estimated costing range for each activity and the total Response Plan*	
					Minimum	**Maximum**
Output 1: **Development of implementation planning and communication documents**					***USD 7,000***	***USD 7,700***
Activity 1.1: Formulation of i)	*Project manager, project engineer*	*National 20 days*			*USD 7,000*	*USD 7,700*

Detailed work plan, ii) Monitoring and evaluation plan, iii) CTCN Impact Description, iv) Closure and Data Collection report.						
Output 2: Assessment of the current waste management situation					***USD 21,840***	***USD 24,024***
Activity 2.1: Organization of a kick-off meeting	*Project manager, 2 days* *Project engineer, 2 days*	*National 4 days*	*Kick off Meeting, 8 participants, 1 day*		*USD 11,340*	*USD 12,474*
Activity 2.2: Evaluation of the status quo of waste management	*Project manager, 15 days* *Project engineer, 15 days*	*National 30 days*			*USD 10,500*	*USD 11,550*
Output 3: Feasibility assessment of converting the existing dirty MRF into a clean MRF and studying the feasibility of organic					***USD 80,000***	***USD 88,000***

waste Anaerobic digestion						
Activity 3.1: Evaluation of the markets for recyclables	*Project manager, 5 days* *Project engineer, 10 days* *Recycling market expert 10*	*National 5 days* *International 5 days*			*USD 17,300*	*USD 19,030*
Activity 3.2: Identification, quantification, and characterization of available waste for a clean MRF	*Project manager, 5 days* *Project engineer, 5 days*	*National 10 days*			*USD 7,800*	*USD 8,580*
Activity 3.3: Feasibility assessment for upgrading the Tadweer Facility to a clean MRF	*Project manager, 5 days* *Project engineer, 10 days* *Cost engineer, 5 days* *MRF Expert 10*	*National 10 days* *International 10 days*			*USD 18,300*	*USD 20,130*
Activity 3.4: Feasibility study for adding post sorting processes	*Project manager, 5 days* *Project engineer, 10 days* *Cost engineer, 5 days* *Plastics/Cardboard recycling processes expert 10*	*National 4 days* *International 10 days*			*USD 18,300*	*USD 20,130*

Activity 3.5: Feasibility study for adding an anaerobic digestion plant	*Project manager, 5 days* *Project engineer, 10 days* *Cost engineer, 5 days* *Anaerobic digestion expert 10*	*National 4 days* *International 15 days*			*USD 18,300*	*USD 20,130*
Output 4: Feasibility assessment for converting the facility into an RDF producing plant for use in cement factories					***USD 55,650***	***USD 61,204***
Activity 4.1: Evaluation of the RDF quality and quantity required by cement factories in Jordan	*Project manager, 2 days* *Project engineer, 2 days* *RDF plants expert 5*	*National 2 days* *International 5 days*			*USD 11,220*	*USD 12,342*
Activity 4.2: Investigation of the RDF quality and quantity possible to produce from Amman waste	*Project manager, 5 days* *Project engineer, 5 days* *RDF plants expert 10*	*National 5 days* *International 10 days*			*USD 17,800*	*USD 19,580*
Activity 4.3: Feasibility assessment of an RDF facility	*Project manager, 5 days* *Project engineer, 5 days* *Cost engineer, 5 days*	*National 5 days* *International 10 days*			*USD 18,800*	*USD 20,680*

	RDF plants expert 10					
Activity 4.4: Evaluation of the required changes to the waste collection scheme by GAM	*Project manager, 2 days* *Project engineer, 2 days* *RDF plants expert 2*	*National 2 days* *International 2 days*			*USD 7,820*	*USD 8,602*
Output 5: Stakeholder Workshop					***USD 36,700***	***USD 40,370***
Activity 5.1: Organization of a stakeholder workshop	*Project manager, 3 days* *Project engineer, 3 days* *International experts 12*	*National 6 days* *International 12 days*	*Stakeholder workshop, 20 participants, 1 day*		*USD 36,700*	*USD 40,370*
Estimated range of costing for the entire Response Plan					***USD 201,180***	***USD 221,298***

5. Profile and experience of experts

Based on the required Human Resources identified in section 4 (Resources required and itemized budget) please provide a description of the required profile of all involved experts for the implementation of the CTCN Response Plan.

Experts required	Brief description of required profile
Project Manger	• M.Sc. or higher in environmental engineering • 10 years of professional experience in the waste management sector • Experience working in Jordan is required • Fluent in spoken and written English and Arabic
Project Engineer	• M.Sc. or higher in environmental engineering • 5 years of professional experience in the waste management sector • Experience working in Jordan is required

	• Fluent in spoken and written English and Arabic
MRF expert	• M.Sc. or higher in mechanical/industrial/environmental engineering • 15 years of professional experience with material recycling, MRF design and the operations sector • International work experience is a must • Fluent in spoken and written English
Plastics/Cardboard recycling processes expert	• M.Sc. or higher in mechanical/industrial/environmental engineering • 15 years of professional experience with plastics and cardboard recycling processes • International work experience is a must • Fluent in spoken and written English
RDF plants expert	• M.Sc. or higher in mechanical/industrial/environmental engineering • 15 years of professional experience with RDF producing plant design and the operations sector • International work experience is a must • Fluent in spoken and written English
Anaerobic digestion expert	• M.Sc. or higher in mechanical/industrial/environmental engineering • 15 years of professional experience with organic treatment design and the operations sector • International work experience is a must • Fluent in spoken and written English
Cost engineer	• M.Sc. or higher in engineering • 5 years of professional experience in the waste management sector with cost analyses • Experience working in Jordan is required • Fluent in spoken and written English and Arabic
Recycling market expert	• M.Sc. or higher in engineering or related fields • 7 years of professional experience in the recycling markets sector • International work experience is a must • Fluent in spoken and written English

6. Intended contribution to impact over time

The outcome of the proposed technical assessment has several contributions to impact over time including

Climate change mitigation (Reduction of greenhouse gas (GHG) emissions) Organic waste in landfills produce Landfill gas (LFG) due to natural anaerobic degradation of organic waste. In Jordan the waste sector GHG emissions accounts for about 10.6% of total emissions, 98.6% of which are the result of methane gas from managed landfills. Ghabawi landfill represents approximately half of the waste disposal in the country.

Sustainable Economic Growth. When material is recovered from waste and reused / recycled this causes a reduction of the amount of version raw material and conserves the resources that would have been used for producing the version material.

Less shipping requirements. Most raw material in Jordan are imported from abroad so by reusing the recovered material locally the emissions from international shipping are avoided.

Conservation of land. Under typical conditions, landfills take very long periods to reach stability. Risk of contamination from landfills may remain for 100s of years. Therefore, it is the least favorable option. Any success in increasing the efficiency of recycling or waste treatment would mean less pollution goes into the ground.

Social developmental-reduction of poverty. Creating a profitable waste recycling facility and operation would create long term sustainable green jobs which help support the green growth and circular economy of the country.

7. Relevance to NDCs and other national priorities

The project is in line with the NDCs and other Jordan national priorities including:

The National Municipal Solid Waste Management Strategy and Action Plan 2015-2034. The strategy's primary aim is to mainstream the 3Rs into the management of solid waste (reduce, reuse, and recycle) and align the sector's policies and infrastructure with Jordan's sustainable development and economic growth objectives. The Strategy specifically mentions MRFs and MBT development

Waste sector Green growth National Action Plan 2021-2025. This National plan clearly promotes the increase in recycling and waste diversion from landfilling.

Solid waste Framework law (2020) This law promotes the idea of extended producer responsibility and encourages the concept of waste division form landfilling.

Amman resilience plan, GAM had launched its resilience plan which includes a waste sector and encourages waste recycling and treatment to divert from landfills

8. Linkages to relevant parallel on-going activities:

There are several initiatives currently ongoing in parallel that this technical assistance can build upon:

USAID waste recycling Amman. This project has an over all objective of supporting private sector initiatives in Amman and are already involved in the assessment of the recycling sector in Amman. However, it does not seem they will produce a detailed enough study to allow developing of Tadweer facility.

GIZ project for waste separation. GIZ are running a pilot scale project in several areas in Amman implementing source separation of waste to two lines (Recyclables and wet waste). Tadweer is already working with this project and receiving all of the waste produce. However, this is a pilot small scale and is limited to the duration of the project. It is very probable that the initiative would stop after the project ends.

KFW MBT plant. We have heard that KFW plans to develop an MBT project for GAM next to Tadweer facility. The plans are not clear but CTCN technical assistance team must keep close coordination with this project if it proceeds

9. Anticipated follow up activities after this technical assistance is completed:

After the completion of this outcome, it is expected that Tadweer and their public partners (GAM) shall try to find financing and build the recommended options in order to operate a more efficient system on the long run.

10. Gender and co-benefits:

Imbedded in design of the activities:	The design shall incorporate gender aspects into the design including providing safe accessible workspace for both genders and dedicated toilets and changing room for females.
Gender and co-benefits intended as result of the activities:	**Gender aspects,** the project delivery shall not distinguish between genders and shall ensure that the Jobs created are equally offered to men and women. **Women's equality.** Any job offering shall be available to men and women equality and the pay for both genders shall be the same. **Become a success story for replication**. The topic addressed by this technical assistance is of high visibility in Jordan and once a success story is encountered then it becomes a centre of attraction for replication in other areas of the country

11. Main in-country stakeholders in implementation of the technical assistance activities:

Using the table below, please list and describe the role of in-country stakeholders, participants and beneficiaries who will be involved in or directly consulted during implementation of the assistance.

In country stakeholder	Role in implementation of the technical assistance
GAM	GAM are the ultimate owners of the project. They will receive a portion of the profit and ultimately they will retain ownership f the project. They have a key role to help secure project financing and facilitate waste collection activities as required by the updated project
MoENV	The MoENv are the NDE for Jordan. They are the leading ministry in the waste and environmental regulations. Their role is to give the environmental permit in case there is a new facility to be constructed
Cement factories	If the projects shall be developed as RDF then the cement factories shall be the end users of the RDF
Private waste collection companies	These companies shall participate in collecting separated waste

12. SDG Contributions:

*Instructions: Please complete the grey section below for **a maximum of three SDGs** that will be advanced through this TA. A complete list of SDGs and their targets is available here: https://sustainabledevelopment.un.org/partnership/register/.*

Goal	Sustainable Development Goal	Direct contribution from CTCN TA (1 sentence for top 1-3 SDGs)
1	End poverty in all its forms everywhere	This project shall create long term green jobs for

		poor people
2	End hunger, achieve food security and improved nutrition, and promote sustainable agriculture	
3	Ensure healthy lives and promote well-being for all at all ages	
4	Ensure inclusive and equitable quality education and promote life-long learning opportunities for all	
5	Achieve gender equality and empower all women and girls	
6	Ensure availability and sustainable management of water and sanitation for all	This project shall enhance the waste management sector in Amman and reduce the pollution risk of landfill
7	Ensure access to affordable, reliable, sustainable, and modern energy for all (consider adding targets for 7)	This project could produce green energy from anaerobic digestion or RDF
	7.1 - By 2030, ensure universal access to affordable, reliable and modern energy services	
	7.2 - By 2030, increase substantially the share of renewable energy in the global energy mix	
	7.3 - By 2030, double the global rate of improvement in energy efficiency	
	7.a - By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology	This project contained green energy elements
	7.b - By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support	
8	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	
9	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	
10	Reduce inequality within and among countries	
11	Make cities and human settlements inclusive, safe, resilient and sustainable	
12	Ensure sustainable consumption and production patterns	
13	Take urgent action to combat climate change and its impacts	*All TAs should indicate relevance to Goal 13 and at least one target below (13.1 to 13.b).*
	13.1 - Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries	
	13.2 - Integrate climate change measures into national policies, strategies and planning	
	13.3 - Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning	This project contributes to climate change mitigation and could be used to raise awareness to this topic
	13.a - Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly $100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible	
	13.b - Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities	
14	Conserve and sustainably use the oceans, seas and marine resources for sustainable development	
15	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	
16	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels	
17	Strengthen the means of implementation and revitalize the global partnership for sustainable development	

13. Classification of technical assistance:

Please indicate primary type of technical assistance. Optional: If desired, indicate secondary type of technical assistance.

Please tick off the relevant boxes below	*Primary*	*Secondary*
☐ 1. Decision-making tools and/or information provision	☐	☐
☐ 2. Sectoral roadmaps and strategies	☐	☐
☐ 3. Recommendations for law, policy and regulations	☐	☐
☐ 4. Financing facilitation	☐	☐
☐ 5. Private sector engagement and market creation	☐	X
☐ 6. Research and development of technologies	☐	☐
☐ 7. Feasibility of technology options	X	☐
☐ 8. Piloting and deployment of technologies in local conditions	☐	☐
☐ 9. Technology identification and prioritisation	☐	X

Please note that all CTCN technical assistance contributes to strengthening the capacity of in country actors.

14. Monitoring and Evaluation process

Upon contracting of the implementing partners to implement this Response Plan, the lead implementer will produce a monitoring and evaluation plan for the technical assistance. The monitoring and evaluation plan must include specific, measurable, achievable, relevant, and time-bound indicators that will be used to monitor and evaluate the timeliness and appropriateness of the implementation. The CTCN Technology Manager responsible for the technical assistance will monitor the timeliness and appropriateness of the Response Plan implementation. Upon completion of all activities and outputs, evaluation forms will be completed by the (i) NDE about overall satisfaction level with the technical assistance service provided; (ii) the Lead Implementer about the knowledge and learning gained through delivery of technical assistance; and (iii) the CTCN Director about timeliness and appropriateness of the delivery of the activities and outputs.

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Annex 1. Guidance Note for the Response Plan template