

AIM-WELL: Algeria Integrated Management of Waste Energy at the Local Level

GEF ID
10080

Project Type
FSP

Type of Trust Fund
GET

Project Title
AIM-WELL: Algeria Integrated Management of Waste Energy at the Local Level

Countries
Algeria

Agency(ies)
UNDP

Other Executing Partner(s):
Ministry of Environment and Renewable Energy

Executing Partner Type
Government

GEF Focal Area

Climate Change

Taxonomy

Focal Areas, Climate Change, Climate Change Mitigation, Technology Transfer, Climate Finance (Rio Markers), Climate Change Mitigation 1, Climate Change Adaptation 0, United Nations Framework Convention on Climate Change, Paris Agreement, Influencing models, Sustainable Development Goals, Demonstrate innovative approaches, Transform policy and regulatory environments, Convene multi-stakeholder alliances, Strengthen institutional capacity and decision-making, Stakeholders, Private Sector, Large corporations, SMEs, Type of Engagement, Participation, Information Dissemination, Consultation, Partnership, Communications, Education, Public Campaigns, Behavior change, Awareness Raising, Strategic Communications, Beneficiaries, Local Communities, Gender Equality, Gender results areas, Participation and leadership, Knowledge Generation and Exchange, Capacity Development, Gender Mainstreaming, Capacity, Knowledge and Research, Enabling Activities, Innovation

Duration

5

In Months

Agency Fee(\$)

419,540

Submission Date

10/2/2018

Part I – Project Information

Focal area elements

A. Indicative Focal/Non-Focal Area Elements

Programming Directions	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
CCM-1_P3	GET	4,416,210	47,749,200

Programming Directions	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
	Total Project Cost (\$)	4,416,210	47,749,200

B. Indicative Project description summary

Project Objective

To promote an integrated and comprehensive solid waste management by fostering technology deployment, dissemination, and transfer in collaboration with private sector

Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
3. Promotion of the municipal model of integrated waste management at the regional and national levels	Technical Assistance	Replicability of the municipal waste management model	1.5 Implementation mechanism for project replicability across 48 wilayas (Algerian provinces) designed and implemented.	GET	231,628	1,190,000
2. Value creation through transformation of waste	Investment	Equipment for the production of fertilizer and energy is	2.6 An organic waste transformation plant for the production of fertilizer and renewable energy (approximately	GET	1,085,132	21,200,000

Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
and poultry manure into fertilizer and energy		installed and operational.	<p>2MWe and capacity factor \geq 80%) is equipped and operational.</p> <p>2.7 An analysis, research and development centre for the monitoring and optimization of the quality of outputs from transformation plant is equipped and operational.</p> <p>2.8 Poultry manure collection point in Sétif, providing approximately 100 tons per day.</p>			

1.- Integrated management of household waste (MSW) at source; minimization of ultimate waste; reduced transport distance	Technical Assistance	Progressive upstream sorting by households of fermentable (organic fraction) and dry waste (inorganic fraction) with separate collection, and	<p>1.1 Source sorting of waste at household level supported by education & awareness campaign</p> <p>1.2 The collection process for Constantine and Setif's Municipal Solid Waste (MSW) is designed, planned and implemented.</p> <p>1.3 A supply chain for poultry manure from</p>	GET	795,497	4,245,200
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Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
		communal sorting planned and established in Constantine and Setif municipalities, so as to reduce the volume	neighboring farms is established and operational 1.4 Waste sorting centre is planned and designed.			
1.- Integrated management of household waste (MSW) at source; minimization of ultimate waste; reduced transport distance	Investment	Equipment necessary for the collection, transportation and sorting of waste is installed and operational	1.5 Eight waste collection points are installed and operational. 1.6 Small electric vehicles for waste collection within the each of the cities are acquired. 1.7 Waste sorting facility capable of processing 750 tons of MSW per day is installed, equipped and operational.	GET	985,390	15,260,000
2.- Value creation through transformati	Technical Assistance	The management of value creation	2.1 A waste transformation plant, which will convert the organic fraction of the	GET	1,108,563	3,554,000

Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
on of waste and poultry manure into fertilizer and energy		from transformation of the organic fraction of MSW and poultry manure to fertilizer and renewable energy, and the management of the recycling of the inorganic fraction of MSW is planned and operational	<p>waste (approximately 60% of total waste collected) and poultry manure, into fertilizer and renewable energy is designed.</p> <p>2.2 Capacity building for analysis and monitoring of the quality of outputs from transformation plant is planned and designed.</p> <p>2.3 Legal and regulatory framework for the standardization of organic fertilizers is developed and implemented.</p> <p>2.4 An enabling environment for the recycling companies is established, including the introduction of financial mechanisms and incentives for communities and individual participants involved.</p> <p>2.5 Explore opportunities</p>			

Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
			to develop waste management project for the voluntary carbon market.			
3.- Promotion of the municipal model of integrated waste management at the regional and national levels	Investment	Replicability of the municipal waste management model	1.6 One factory for the production of spare parts is installed and equipped	GET		2,000,000
Sub Total (\$)					4,206,210	47,449,200
Project Management Cost (PMC)				GET	210,000	300,000
Total Project Cost (\$)					4,416,210	47,749,200

For multi-trust fund projects, provide the total amount of PMC in Table B and indicate the list of PMC among the different trust funds here:

C. Indicative sources of Co-financing for the Project by name and by type

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount(\$)
Government	S.P.A. SOPTE - Filiale Groupe Divindus - Ministère de l'Industrie et des Mines (MIM)	Grant	Investment mobilized	2,697,200
Government	Agence Nationale des Déchets - Ministère de l'Environnement et des Energies Renouvelables	In-kind	Recurrent expenditures	5,860,000
Government	EPIC de CET de Wilaya - Ministère de l'Intérieur, des Collectivités Locales et de l'Aménagement du Territoire (MICLAT)	In-kind	Recurrent expenditures	288,000
Government	Ministere de l'Environnement et des Energies Renouvelables	In-kind	Recurrent expenditures	200,000
Private Sector	SOPTE-AND-Foreign Investor	Equity	Investment mobilized	38,504,000
GEF Agency	UNDP	Grant	Investment mobilized	200,000
			Total Project Cost(\$)	47,749,200

Describe how any "Investment Mobilized" was identified

All "investment mobilized" were identified in consultation with the government, the municipalities (wilayas), the CSO and private sector. Related co-financing letters will be provided during the PPG phase.

D. Indicative Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount(\$)	Fee(\$)
UNDP	GET	Algeria	Climate Change		4,416,210	419,540
				Total Project Cost(\$)	4,416,210	419,540

E. Project Preparation Grant (PPG)

PPG Amount (\$)
150,000

PPG Agency Fee (\$)
14,250

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount(\$)	Fee(\$)
				Total Project Costs(\$)	0	0

Core Indicators at Project Identification Form (PIF)

Indicator 6 Greenhouse Gas Emissions Mitigated 🔍

Total Target Benefit	(Expected at PIF)	(Expected at CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO ₂ e (direct)	1888320.00	0.00	0.00	0.00
Expected metric tons of CO ₂ e (indirect)	1132995.00	0.00	0.00	0.00

Indicator 6.1 Carbon Sequestered or Emissions Avoided in the AFOLU (Agriculture, Forestry and Other Land Use) sector 🔍

Total Target Benefit	(Expected at PIF)	(Expected at CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO ₂ e (direct)				
Expected metric tons of CO ₂ e (indirect)				
Anticipated year				

Indicator 6.2 Emissions Avoided Outside AFOLU (Agriculture, Forestry and Other Land Use) Sector 🔍

Total Target Benefit	(Expected at PIF)	(Expected at CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO ₂ e (direct)	1,888,320.00			
Expected metric tons of CO ₂ e (indirect)	1,132,995.00			
Anticipated year				

Indicator 6.3 Energy Saved 🔍

Total Target Benefit	Energy (MJ) (Expected at PIF)	Energy (MJ) (Expected at CEO Endorsement)	Energy (MJ) (Achieved at MTR)	Energy (MJ) (Achieved at TE)
Target Energy Saved (MJ)				

Indicator 6.4 Increase in Installed Renewable Energy Capacity per Technology 🔍

Technology	Capacity (MW) (Expected at PIF)	Capacity (MW) (Expected at CEO Endorsement)	Capacity (MW) (Achieved at MTR)	Capacity (MW) (Achieved at TE)

Core Indicators at Project Identification Form (PIF)

Indicator 11 Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female	250			
Male	250			
Total	500	0	0	0

Part II. Project Justification

1a. Project Description

- a. The global environmental and/or adaptation problems, root causes and barriers that need to be addressed;
- b. The baseline scenario or any associated baseline Programs;
- c. The proposed alternative scenario with a brief description of expected outcomes and components of the Program;
- d. Alignment with GEF Focal Area and/or Impact Program Strategies
- e. Incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, CBIT and co-financing;
- f. Global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF); and
- g. Innovation, sustainability and potential for scaling up.

1. The global environmental and/or adaptation problems, root causes and barriers that need to be addressed

In recent decades, the populations of Algeria's major cities have grown, mostly due to rapid urbanization. It is the largest cities, particularly those on the coastline, that have been the main recipients of rural migrants. Local authorities have struggled to provide satisfactory services, particularly in the context of waste management as per capita waste output has risen to approximately 1kg per urban resident per day.

According to Ferhi (2013), "approximately 45% of waste i.e. 6.1 million tons, is recyclable", comprising:

- 1.8 million tons of paper
- 1.22 million tons of plastics
- 1.6 million tons of textiles
- 0.3 million tons of metals

The market value of recyclable waste has been estimated at 23 billion DA (213 million USD), and yet there are only 247 SMEs that operate in waste recovery, exploiting only 6% of its potential, some of which is exported. This represents a significant loss to the economy, not least because raw materials make up a large proportion of annual imports. The above data, however, does not consider the potential value of organic waste, either as a raw ingredient for the manufacture of fertilizers or as a resource for generating renewable energy.

The current circumstance has led to the oversaturation of existing landfills and the proliferation of illegal dump sites; as such, there are significant areas of concern, such as hygiene and public health issues, as well as the pollution of ground water and GHG emissions engendered by a deficient waste management system. The Second National Communication to the UNFCCC (2010) indicates that the waste sector accounts for 10% of Algeria's greenhouse gas emissions (excluding LUCF), and in the year 2000, landfills, which accounted for 66% of GHG emissions in the waste sector, emitted 7.542 million tCO₂. As part of the development of this PIF, the UNDP led a number of cross-sectoral workshops to help identify the barriers and root causes of the sustainability of waste management in the country.

Technical Weaknesses:

- Significant lack of upstream sorting of waste (at household level).
- Large volumes of unsorted waste have to be carried over long distances to the engineered landfill(s).
- Lack of value associated with recyclable waste, leading to relatively weak participation from SMEs; the rate of landfill cell saturation is estimated to be three times faster than it otherwise could be due to the low level of waste sorting and recycling.
- Insufficient means for municipal waste collection, due to the inadequacy of Municipal Waste Management Plans and reduced resources for their implementation.
- A lack of expertise to lead the optimization of fertilizer production and electricity generation from the transformation of organic waste.

Institutional Weaknesses:

- A lack of cross-sectoral approach to waste management, involving relevant sectors at each level of the value-creation process.

- Lack of inadequate policies that trigger sustainable and integrated waste management.
- Inability of the local authority to manage the municipal solid waste of sustainably.
- A need for greater involvement by the Ministry of National Education and the Ministry of Religious Affairs: the active participation of schools and mosques in raising population awareness of waste issues is considered vital to reducing waste supply and promoting sorting/recycling.
- Lack of sufficient funding.

Social-cultural barriers:

- Lack of adequate information, with poor communication or inappropriate media support.
- The poor communication led to lack of concern for sustainable waste management at house level.

2. The baseline scenario or any associated baseline projects

Through its waste management arm, SOPTE, the Ministry of Industry and Mines' (MIM) parastatal company, Divindus, has identified the neighboring cities of Constantine and Setif (which fall within the Municipality/Wilaya of Constantine, where it is the SOPTE is headquartered) as strong candidates for a waste management project. Together, these two cities produce 500 tons of waste per day, of which the organic fraction is estimated to constitute 60%; based on preliminary studies; SOPTE believes this may suffice for viable production of both organic fertilizer and electricity; it is anticipated that these can be transformed from organic waste through one of either mechanical or conventional methanation processes. The SOPTE aims to ratify its vision through a public private partnership (PPP); an advertisement of request for proposals (RfPs) was effected earlier in 2017 followed by a signed memorandum of understanding (MoU) on April 2018.

The Ministry of Energy, which has targeted a total of 20,000MW of renewable energy to be integrated into the country's power supply by 2030, has lent support to this proposal from the MIM/SOPTE. It has confirmed that this proposal will be eligible to make an unsolicited bid for a Power Purchase Agreement (PPA) with the national grid, the terms of a which remain undefined. SOPTE has, however, placed a stronger emphasis on the production of organic fertilizer, for which it is confident it can leverage an existing, readily accessible and mature market.

Ensuring the steady production of a reliable and competitively priced alternative to synthetic chemical fertilizers is, therefore, of paramount importance to the PPP's waste utilization business model. One of the key facets to help enable this is the introduction of poultry manure into the transformation process, which can be used to modify/improve the N-P-K concentrations therein. As part of its project, the SOPTE plans to develop a network of suppliers to ensure a constant supply of poultry manure, as well as to develop analytical, research and development facilities to optimize its end product.

There are several bilateral and multilateral agencies supporting the country in waste management, including waste to energy (power generation).

GIZ:

Through a regional program for the Maghreb region, GIZ is supporting Algeria for the management of urban solid waste as part of the National Environmental Action Plan and Sustainable Development (PNAE-DD) through the adoption of a National Program for Integrated Management of household and similar waste (PROGDEM). It aims for an integrated, phased and progressive management approach of household waste. This program has defined the main directions for the implementation of this management through:

- The reorganization of the municipal administration responsible for waste management;
- Building capacity for the collection and transportation services of the municipality;
- Opening the public service waste management to private investment;
- The implementation of a program of training and technical assistance;
- The implementation of facilities for the collection.

EU:

The European Union supported Algeria through a regional program for seven countries with a "Regional Solid Waste Management" project. Participating countries are Syria, Jordan, Lebanon, Tunisia, Morocco, Egypt and Algeria. The overall budget is USD 7 million. The project ended (thus not listed as co-financing) but the outcomes of the project are still valid and useful for this newly developed GEF funded. The proposed GEF funded project will build on the results and lessons learned and provide an emphasis on the environmental sustainability angle.

3. The proposed alternative scenario

The proposed GEF funded project is designed to address the weaknesses identified in the baseline. It is targeted at the municipal scale such that it can cover all the components of the waste value-chain, as well as to be easily replicated nationwide under the Programme for the management of household waste (PROGDEM). The project is based on three pillars:

1. Reduction of the volume of waste at source and of transport distances to Engineered Landfills through: upstream waste sorting at the household level; municipal institutional strengthening and technical support; upgrading the status of waste sector employees; development of recycling waste collection networks through the creation of micro-enterprises at the communal level; and the installation and operation of municipal sorting plants.
2. Integration of bio-mechanical waste treatment into the waste management process to separate the organic fraction.
3. Promotion of economic value creation from waste by strengthening recycling activities, and by enabling the production of fertilizer, and energy by transforming the organic fraction of waste.

The approach lays stress on the 3 Rs – reduce, reuse, recycle – and aims to reduce GHG emissions at each stage of the waste management process by upstream sorting of waste, recycling and transformation; only the remaining waste which cannot be utilized, is sent to the landfill. This not only reduces emissions at the landfill, but also significantly reduces the cumulative distance covered to transport waste to the landfill.

The project focuses on the cities of Constantine and Setif, both of which are within the Wilaya of Constantine and are 15 km apart. This will allow for the proposed project to be piloted in two different cities, each with different characteristics; not only will this better inform the replicability process, but the additional volume of waste captured will also yield better economies of scale across the project's components, not least recycling and transformation activities.

The project will also create green jobs at the municipal level for the young and the unemployed through the involvement of the National Agency for the Support of Youth Employment (ANSEJ) and the National Fund for Unemployment Insurance (CNAC), and by harnessing a recent (2012) Presidential Decree (Number 12-23) stipulating that 20% of the value of public procurements must be directed at micro-enterprises.

Since July 2016, The Ministry of Environment and Renewable Energy has promoted this pilot project to potential investors, especially with regards to the waste to energy and fertilizer business model. This has led to a partnership with Divindus, a parastatal company

which serves the Ministry of Industry and Mines (MIM). Divindus, which participates in a number of diverse industrial activities, recently entered the waste management sector through its subsidiary, SOPTE; the latter is already active in the collection and disposal of waste, but also has the mandate to participate in the waste sector at all levels, including transformation.

In December 2016, the MIM announced its commitment to this project, including the GHG emissions reduction targets as well as its components relating to fertilizer production and electricity generation. In April 2017, the MIM followed up with a financial commitment of approximately 9 billion Algerian Dinars (USD 81.77M), whilst the Ministry of Environment and Renewable Energy also pledged 4 billion Algerian Dinars (USD 36.36M). A memorandum of understanding (MoU) was signed on April 18, 2018 between the Divindus, the National Waste Agency (AND) and a consortium of three Canadian companies namely: Global Green Links Inc., Sherbooke OEM Ltd. and Lakson International Development Incorporated.

The MIM will be represented in this project by the SOPTE, whose head office is in Constantine. SOPTE's participation in this project is key, as it not only brings with it its existing network of waste collection, transportation and disposal capabilities, but it can also make forward and backward linkages to Divindus' other areas of expertise, namely manufacturing engineering and construction. This will be especially relevant to the replicability and scaling up of the project.

The overall objective of the Government to tackle solid waste management in Algeria started few years ago. In that regard, the GIZ did a diagnostic of the sector and published a useful report in 2014 "Solid Waste Management in Algeria". That report emphasized the need to carry out four incinerators with a capacity of about 1,000 tons/day for the biggest cities namely: Algiers, Oran, Constantine and Annaba. Business opportunities and incentives were provided by Government. The Ministry of Environment demonstrated that the recycling market is estimated at 23 billion Algerian dinars (about 260 million USD). It should encourage more operators to embark on the promising field of waste management, which is still a virgin area that companies can easily exploit at their scale and in accordance with their technical capabilities. In this vision, policy makers aspire to establish a real industry for recovery and recycling of waste through the development of several sectors such as plastics, paper and cardboard, metals, glass, wood, used tires, batteries, oils, etc. A National Program of Municipal Waste Management (PROGDEM) were put in place to attract the private sector.

Up to date, 6 private industrial groups are in place to investment in the waste management sector in Algeria. Beside Divindus, the others are namely: GICA, IMETAL, AGRODIV, ACS and SNTA. Divendus is the one who is investing in the 2 cities in Constantine and Setif where the GEF funded project will be focused. Therefore, their commitment in co-financing of USD 38.5 million. This investment is only for the waste to energy incineration plant (1,000 tons/day).

According to Waste to Energy International, basing on construction experience and contacts with world top producers, it is considered that price of incineration plant can be estimated with the following empiric formula: $I = 2.3507 \times C^{0.7753}$, where I is the investment cost in million dollars and C is the plant capacity. For 1,000 tons of waste, the investment needed is then around USD 40 million USD.

The Divindus Group (private sector) came with a slightly reduced investment amount at USD 38.5 million, dedicated for the incineration plant. The private sector indicated, through an agreement signed with the Government of Algeria, that it will start with a first phase of 500 tons/day, to be extended further to 750tons/day, then in the future towards the max capacity of 1,000 tons of waste per day.

This shows that the project will have enough cash to start with and to cover the biggest investment need (the incineration pant). The upstream activities (sorting, awareness, etc.), and the other downstream activities (fertilizers, linkage with agriculture) are covered by GEF and other co-financers.

There are other major advantages to Divindus/SOPTE's leading role in this project:

- Its existing network of waste collection, transportation and disposal capabilities are made possible and enhanced by:
 - Over 20 years of service in the municipality of Constantine
 - A recently upgraded fleet of 53 packer trucks
 - 540 staff dedicated to the collection and transportation of waste
 - A volume of household waste which surpasses the critical mass necessary for economic viability. This translates to approximately 257 tons per day, of which 90 tones is inorganic and 167 tones is organic waste. This does not include industrial and commercial waste.
 - IT infrastructure to capture and manage the performance of waste collection at the level of different boroughs within the municipality.
 - The SOPTE is also active in other municipalities, namely Algiers, Biskra, Tebessa, Oued Souf, Ouargla and Laghouat, which will facilitate replicability and scaling up of this project.
 - Its long-established working relationship with the “Communal People’s Assembly” (APC) of Constantine and the Wilaya of Constantine, assuring that these state structures under the Ministry of Interior, Local Government and Territorial Management (MICLAT), can be leveraged to facilitate/enable key activities under this project.
 - Together with the Department for Environment of the Wilaya (DEW), it gained recent experience in the installation and maintenance of 225 open air recycling bins, which facilitate the sorting of organic from inorganic (recyclable) waste.
 - Experience in education and awareness of communities

Project Components

The project is based on three core components:

1. Reduction of the volume of waste at source and of transport distances to Engineered Landfills
2. Putting into value to the organic fraction of waste and reducing the amount of waste sent to Engineered Landfills.
3. Promoting the project at both regional and national levels as a model for GHG emissions reduction.

This type of project is unprecedented in Algeria, and its multi-faceted nature renders it relatively complex, making the GEF's involvement a fundamental condition for its success. It must be noted that each of the three components are split into two sub-components: technical assistance and investments.

Component 1: Integrated management of household waste (MSW) at source; Minimization of ultimate waste; Significantly Reduced transportation distances

Technical Assistance Sub-Component:

This component aims to implement the upstream sorting of MSW by households in the communes of Constantine and Setif, with a selective waste collection mechanism for organic and inorganic waste types, and a highly performant waste sorting facility at communal level. This upstream link will rely on a Cross-sectoral Strategy and a Communication Plan aimed at raising awareness among families, setting up incentives, and integration of waste utilization into the school curriculum to raise awareness among students in the district.

The process of source-sorting will optimize the organic fraction of the waste, ensuring it attains a relatively high level of quality; in doing so, it will also reduce the load on the waste sorting facility, thereby keeping costs down and thus improving economic performance.

A Master Plan for Waste Management will be developed and will cover both communes of Constantine and Setif. This will address the need for waste to be either recycled or transformed at communal level, leaving only a residual amount (estimated at 20% of total waste collected) to be transported over relatively long distances. This process will lead to a major redeployment of the existing fleet of packer trucks, which currently collect and carry 100% of waste to engineered landfills; instead, they will collect waste more

frequently, and carry it over drastically shorter distances to the sorting facility, resulting in significant GHG emissions reductions, as well as improved conditions within the built environment.

One of the key facets of this component is the development of a network for the collection of poultry manure from 12 neighboring communes within the Wilaya, which translates to approximately 260 neighboring farms. In Component 2, poultry manure will be used to modify the N-P-K concentrations of the fertilizer produced from organic waste, bringing it up to par with (if not above) the quality of fertilizers currently being imported. This will normalize the market for manure, and ensure a sustainable, constant and reliable revenue line for farmers.

Investments Sub-Component:

The acquisition of equipment and infrastructure necessary for the collection, transportation and sorting of waste. These include:

- Installation of eight waste collection stations, each for separate disposal and collection of organic and inorganic waste.
- Piloting of two electric trucks for the collection of waste from collection points within the communes of Constantine and Setif.
- Design and construction of a waste sorting facility, capable of processing 750 tons per day, equipped and running optimally.
- A 10-hectare plot of land within the confines of the commune of Constantine, acquired. This will be used to, among other things, accommodate the waste sorting facility.

Component 2: Value creation through transformation of waste and poultry manure into fertilizer and energy

Technical Assistance Sub-Component:

The management of value creation from transformation of the organic fraction of MSW and poultry manure to fertilizer and renewable energy, and the management of the recycling of the inorganic fraction of MSW through:

- A waste transformation plant, which will convert the organic fraction of the waste (approximately 60% of total waste collected) and poultry manure, into fertilizer and renewable energy.
- An analysis, research and development centre, with the principal role of monitoring and optimizing the quality of fertilizer and combustible material produced from the waste sorting and transformation processes. This facility will work in partnership with the Department of Scientific Research and Development (DGRSDT), itself falling under the Ministry of Scientific Research and Advanced Education.
- The effective management of a poultry manure recovery unit installed in the commune of Sétif; this will serve as a central collection point for all poultry manure coming from the NE of Algeria.
- Development of policies and accompanying regulatory framework for the standardization of N-P-K dosed fertilizer and feed-in-tariff for electricity, all of which is produced from the organic fraction of waste and poultry manure.
- The development of long-term contracts with recycling companies to guarantee:
 - The sale of products recovered from the sorting process.
 - The sustained recovery of raw materials from the recycling process

Investments Sub-Component:

This sub-component addresses the equipment and infrastructure necessary to produce fertilizer and energy. Investments made will be for:

- Waste transformation plant to convert the organic waste fraction and poultry manure (supplied at a rate of 100 tons per day) into:
 - N-P-K dosed fertilizer at a rate of 60 tons per day
 - Electricity from an appropriate technology, likely a steam turbine of capacity ~2MWe and operating at a capacity factor $\geq 80\%$.
- A laboratory to enable analysis and research to optimize the waste transformation process is equipped and operational
- Poultry manure collection point in Sétif is equipped and operational.

- Land to accommodate the poultry manure collection point in Sétif is acquired

GEF funds will be utilized to purchase equipment for the research laboratory, which is essential for attaining and maintaining quality, economic viability and consistency of the N-P-K dosed fertilizer.

Component 3: Promotion of the municipal model of integrated waste management at the regional and national levels

Technical Assistance Sub-Component:

This sub-component addresses the replicability of the municipal waste management model, through the design and implementation of a mechanism for the project's replicability across 48 wilayas (Algerian provinces) designed and implemented, including:

- A study on the impact of this project's objectives on the country's SDGs
- Integration of the project's findings into the national environment action plan
- Development of a research programme with the DGRSDT
- A university curriculum in the field of waste management
- Professional training in the field of waste technologies
- Incorporation of integrated waste management and GHG emission reduction into primary and secondary school programmes, selected university degree and professional training courses, and into Ministries' communications with relevant local authorities and stakeholders

Investments Sub-Component:

This sub-component addresses the infrastructure and equipment requirements related to the above objectives. As the project scales, up, there will be a need for spare parts to be readily available for the machinery used in waste sorting, waste transformation to N-P-K dosed fertilizer as well as electricity production. It is thought that it will be essential to have the services of a precision engineering facility that can manufacture machine components with the shortest possible delay. To this end, investments will be made for:

- A single facility to produce spare parts is designed, installed, equipped and operational
- Plot of land to accommodate this facility is made available

This facility will not only create jobs, but by ensuring demand for these services, the country will have the opportunity to build capacity in this area of expertise making it more self-reliant in design and manufacturing engineering. The materials used in the manufacture of spare parts can be sourced (in part) from the recycling facilities established in Component 2, thereby introducing an element of cradle-to-cradle design within the project.

4. Alignment with GEF focal area and/or Impact Program strategies

The proposed UNDP-GEF project will be complementary to the baseline initiatives as it addresses barriers that are specifically related to the investment in new technologies for a sustainable management of solid waste. The waste management in Algeria, especially in the two municipalities targeted by the project, is still basic and primitive. It is essentially dumping/discharging the waste into uncontrolled landfills. In that context, the proposed GEF funded project is highly innovative with new set of technologies for the country. There will be a need to transfer that technology from abroad. Thus, this project is consistent with the GEF-7 strategy to address climate change (CCM- Program 1 Promote innovation and technology transfer for sustainable energy breakthroughs), especially the Cleantech innovation entry point; because its main objective is to promote an integrated and comprehensive solid waste management by fostering technology deployment, dissemination, and transfer in collaboration with private sector in Algeria.

5. The incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, CBIT and co-financing

The incremental cost reasoning of this projects lies mainly on the integration of Waste Management with linkages with agriculture and energy production in such a way that it contributes to sustainable development through the reduction of greenhouse gas emissions from:

- Avoided CH₄ emissions (otherwise occurring through methanation at the landfill)
- Avoided CO₂ emissions (By reducing transportation distances and burning of fossil fuels in generation of electricity)
- Reduced reliance on the importation of raw materials for the synthesis of chemical fertilizer.

- Increased recycling activities will reduce reliance on the importation of raw materials e.g. Metals, plastics.

Through its integrated management of solid waste approach, the project will also create a number of green jobs in the sorting, recycling and transformation of MSW. This process also affects the agricultural industry in a positive manner; a revenue stream will be generated for livestock farmers through the sale of poultry manure to the PPP, whilst crop farmers will have access to competitively priced high quality organic fertilizers. This cycle is made enabled by the introduction of cost-effective transformation of the organic fraction of waste, which is made possible by the technical assistance supported by GEF funds. Based on its success, this de-risking process has the potential to replicate itself throughout other municipalities, thereby allowing both cities and farms to renew themselves along more sustainable lines.

6. Global Environmental Benefits

There are multiple environmental and socio-economic benefits resulting from this project, particularly with respect to GHG emissions reduction, as well as soil and ground water amendment. Also, by avoiding the burial of a significant amount of waste each year, the operational shelf-life of the engineered landfill will be extended; the increased frequency of household waste collection and heightened awareness of waste issues among the population will lead to reduced uncontrolled waste dumping and improved sanitary conditions within the built environment.

The production of approximately 70 tons/day of N-P-K dosed fertilizer from waste will directly contribute to soil and water resource conservation through the improvement of agricultural soil properties and to meeting the fertilizer needs of the types of vegetable crops that occupy large coastal and southern areas of the country. In combination with recycling activities, this will also reduce the importation of raw materials for the manufacture of packing products, fertilizer and other consumer goods.

GHG Emissions Reductions

The table below shows preliminary and conservative estimates for each of the GHG reduction activities under the project.

<i>Outputs</i>	<i>Direct Emissions at end of GEF Project (tCO₂.eq)</i>
Reduced Transport	9,144.84
Reduced Landfill gas	159,379.77
Electricity generated	26,620.31
Displacement of imported fertiliser & sequestration	7,273.89
Recycling	201,866.89
Total	377,665

Direct project without replication: This implies the CO₂ reductions from the project, including reduced transportation of waste, generation of electricity from the organic fraction and sequestration, is equivalent to 377,665 tCO₂, or 91,416 tCO₂/year. The project duration is 5 years, but it is estimated that reductions will start occurring only at the second year of implementation.

Consequential post-project emissions: A bottom up approach has been used; we can make the conservative estimate that there is a knock-on effect in other municipalities, and perhaps the project, or facets thereof, is replicated.

Bottom up = Total direct emissions reductions x Replication Factor (~3) = 377,665 * 3 = 1,132,995 tCO₂

Taking into account the economic lifetime (weighted at 20 years) of technologies giving rise to direct emissions, the total emissions reduced by the project can be calculated as follows:

Total Direct = 91,416 tCO₂ x 20 = 1,888,320 tCO₂

Total Consequential = 1,132,995 tCO₂

Total Emissions (As per Project Targets) = 3,021,315 tCO₂ (rounded to 3 million).

In terms of agriculture and the and the preservation of natural resources, a significant part of this project is its transformation of waste and poultry manure into N-P-K dosed fertilizer, which can be used as a replacement for synthetic fertilizer. It is anticipated that this locally produced alternative will help farmers by offering a more affordable option; unlike conventional fertilizers (especially nitrates) which are highly regulated for security reasons, it will be easily stored, transported and in constant supply. Also, the granular nature of this fertilizer will allow it to be released into the ground more slowly, ensuring a continuous supply of nutrients to crops thereby yielding better-quality produce. As a result of the Agricultural Renewal Policy, demand for fertilizers have increased from 329 KT for the season to 394KT between 2009 and 2013 , however, this trend in consumption remains far below the recommended amounts for optimum specific yields.

7. Innovation, Sustainability and Potential for Scaling Up

Innovative Aspects

The innovativeness of this project rests largely on the notion of truly new option in the context of Algeria: a commercially viable strategy that aims to connect the abundant supply of waste with a strong demand for affordable fertilizers. It is expected that this will be made possible because of an efficient supply chain of organic waste as well as technology that currently does not exist in Algeria.

Sustainability

The introduction of integrated waste management at university level will not only encourage research in this field, but will also provide a fresh pool of technically qualified recruits to facilitate sustainability and replication of similar waste management projects. The inclusion of a research and analysis lab in Component 2, which will be connected to local universities, will contribute towards the refinement of processes in waste management, especially with respect to the transformation process and manufacture of fertilizers; this will help the economic performance of future waste management projects, improving their economic feasibility and catalyzing replicability. An awareness campaign and communications strategy will engage civil society actors so that job opportunities and the benefits associated with the supply and demand sides of waste management can be effectively publicized. Such an approach will reinforce public buy-in and increase participation in integrated waste management opportunities.

With regards financial sustainability, the PPP will rely on two revenue streams:

1. Sale of organic fertilizer
2. Sale of electricity to the grid

In the case of fertilizer sales, the project sets out to establish how the market will respond to organic fertilizers. The project will conduct comparative studies between organic fertilizers and imported fertilizers. It is noted that, due to the numerous co-benefits that arise from the manufacture of organic fertilizer from waste, Government may consider introducing subsidies to help improve the sustainability of this business model. The PPG phase will provide more details on the sustainability of the business model.

Currently, there is no preferential feed-in-tariff put into place to produce electricity from waste. It has been estimated by the SOPTE that a minimum feed-in-tariff of \$10 cents per kWh will be required to ensure an acceptable return on investment for the generation equipment. The nature of the PPP's business model does, however, allow it to reduce its reliance on electricity production by increasing the production of organic fertilizers.

Replicability

Through the Ministry of Industry and Mines and the Ministry of Environment and Renewable Energy, the government has mandated parastatals (including SOPTE) to make investments of approximately \$81.5M to tackle waste related issues. This project is part of the SOPTE's contribution to this mandate, but it must be noted that it is also operational in several other cities, namely El Oued, Biskra and Algiers, each of which was vying for ownership of this project during the PIF stage. If this project is successful, it is highly likely that it will be replicated in these four cities, either in part or entirely. Furthermore, the performance of this project relies on a PPP – if successful, this sets a strong precedence for other potential private sector partners to adopt this business model throughout the country.

Given the similarities between the way in which all municipalities are governed, there is significant scope for replicability. Component 3 focuses itself almost entirely on this, in that it concerns itself with monitoring of the project's objectives and how these will impact the country's SDGs. Moreover, it also ensures the implementation of waste management into universities' curricula. It also helps to close a loop with respect to recycling; a small factory will ensure that spare parts for the sorting facility's machinery is locally manufactured, and possibly with recycled materials where applicable, giving additional impetus to future scaling up exercises.

1b. Project Map and Coordinates

Please provide geo-referenced information and map where the project interventions will take place.

The project targets 2 Wilayas (municipalities) in Algeria: Constantine et Sétif.

Constantine : N 36°21'54" E 6°36'53"

Sétif : N 36°11'28" E 5°24'49"

(Map available in page 21 as Annex A)

2. Stakeholders

Select the stakeholders that have participated in consultations during the project identification phase:

Indigenous Peoples and Local Communities

Civil Society Organizations

Private Sector Entities

If none of the above, please explain why:

Stakeholder	Expected Role
Ministry of Foreign Affairs (MAE)	The MAE is the UNFCCC/GEF political focal point and the leader of the delegation of Algeria with the UNFCCC; it is also the leader of Environment and Sustainable Development (including Climate Change) in Algeria. By virtue of these, as well as being intersectoral coordinator in this project, its participation is essential.
Ministry of Environment and Renewable Energy (MEER)	The MEER will be a partner of the project in being part of the partnership Public-Private Partnership (PPP) involving the National Agency for Waste (AND) under his tutelage. MEER is the entity responsible for the management of household waste (PROGDEM) program which enables the CET, sorting of waste centres, implemented and followed through its directorates of the environment of Wilaya (DEW - decentralized structures). The MEER is also the promoter of the legislation developed in the field since its inception. Its national agency of waste is responsible for the sorting, collection, transportation, treatment, recovery and disposal of waste and provides assistance to local communities in the management of waste. Its involvement in the GEF project will be realized through: The AND, responsible for education and awareness activities for upstream recycling and sorting of household waste, facilitation of procedures of impact and risk studies, creation of partners for recycling of waste collected from open air collection points, and those sorted at the level of the sorting centre, outreach programs to local communities for the reproducibility of the project at the national level and integration of the outcome of the project in the PNAEDD and the assessment of its impact on SDGs; the DEW of Constantine for the construction of the 2nd record of the Boughareb this and support to raise awareness for the selective sorting of waste by households
Ministry of Industry and Mines (MIM) and the SOPTE, which falls under its commercial arm, Divindus	The MIM will be a major partner directly involved in the execution of the project, as the SOPTE will be the public component of the PPP. The MIM can bring support to micro-enterprises and SMEs active in waste collection and recovery, providing benefits at the level of land access, financial support (specifically, VAT exemption). SÖPTE S.P.A. will have a leading role in the 1st part of the project of collection of different waste types for the pilot, and in the development of the collection network of Constantine and Setif poultry manure. The subsidiaries of the industrial group Divindus will contribute to the development of the factory of production of components.
Wilayas of Constantine and Sétif under the Ministry of Interior, Local Municipalities and Planning of the Territory	The Wilaya of Constantine and Setif are decentralized territorial communities with legal personality and financial autonomy. It has a Wilaya Popular Assembly (APW) with competencies on socio-economic development, spatial planning and environmental protection which provides assistance to municipalities. The APW defines the urban planning and development master plan, participates in the procedures for the implementation of land development operations and can initiate the creation of facilities which, by virtue of their dimension, importance or use, exceeds the capabilities of individual municipalities. It implements any action for protection and promotion of

Stakeholder	Expected Role
	agricultural land. The <u>Wali</u> , Chief Executive of the Wilaya, coordinates and controls the activity of the State services responsible for different sectors of activity. He takes orders for the purpose of implementing the deliberations of the APW. The <u>Wali</u> , Chief Executive of the Wilaya, coordinates and controls the activities of the decentralized state services across different sectors, and issues decrees and orders to implement the APW's decisions. These functions and powers, and their cross-sectoral nature, make the Wilaya of Constantine and <u>Sétif</u> an essential actor for ensuring the operationalization of the GEF project and its implementation within the time limits provided.
Ministry of Agriculture, Sustainable Development and Fisheries	The MADRP will be responsible for the normalisation and standardisation of the N-P-K dosed fertiliser manufactured from organic waste and poultry manure. Its Directorate on the Protection of Plants (DPVCT) will also lead the initial phases of testing the performance of the organic fertiliser through appropriate approval and certification procedures. Moreover, it will also play a crucial role in raising awareness among farmers for both, the supply of poultry manure for processing and to generate demand for the N-P-K dosed fertiliser.
Ministry of Energy (ME)	Through its new programme and its executive decree of February 2017, "Renewable Energy and Energy Efficiency, The ME can guarantee a PPA with suitable conditions to ensure that the production of electricity generated through biomass obtained from the transformation of the organic fraction of MSW is economically viable and attractive enough for the PPP.
Ministry of Communication	The active involvement of the Department of Communication is essential to ensure the effectiveness of the GEF project's strategy and communication plan, as well as awareness activities in Component 1. The Department may, among other things, facilitate partnerships with the local radio and free television broadcasting. Following the implementation of the project, it will contribute towards replicability by through media coverage at the national level.
Ministry of National Education	The Ministry of National Education will work with the GEF project to develop educational waste modules for primary and secondary schoolchildren and selected university degree courses, as well as training materials for teachers.
Ministry of Training and Vocational Education	The involvement of the Ministry of Training and Vocational Education is important given that the GEF project will generate considerable vocational training needs (particularly with regards to waste collection, sorting and recycling). Close collaboration with the Ministry will permit, in addition, updating / enriching of existing professional training courses, to ensure the replication and sustainability of the GEF project once it is concluded.
Ministry of Higher Education and Scientific Research (MERS)	MERS will benefit the project through the expertise of its researchers and research centres, such as the Centre for Research in Physical and Chemical Analysis (CRAPSE), the Centre for the Development of Renewable Energies (CDER), and the Centre for Scientific and Technical Research on Arid Regions (CRSTRA). The National Agency for the Valorisation of Research Results (ANVREDET), which is involved in the creation of start-ups in the field of waste management, will have a leading role to play. Moreover, the project will also provide an opportunity for researchers to acquire practical experience in waste recycling and management, as well as an opportunity to enhance the existing university courses in management and waste recovery (Universities of Constantine, Serif, Bab <u>Ezzouar</u> , <u>Boumerdes</u> , <u>Tizi-Ouzou</u> , <u>Annaba</u> , <u>Mostaganem</u> , <u>Oran</u> , <u>Saida</u>) through twinning.
Representatives of civil society in Constantine	Because of the innovative nature of the GEF project and the importance given to the upstream management of waste by households, the participation of civil society

Stakeholder	Expected Role
Representatives of civil society in Constantine	Because of the innovative nature of the GEF project and the importance given to the upstream management of waste by households, the participation of civil society organisations in Constantine (neighbourhood associations, imams, green clubs, sorting ambassadors, etc.) and national environmental NGOs in the education, awareness-raising and coaching of households will be critical.
Recycling firms (private sectors)	Firms involved in recycling of materials (paper/cardboard, plastics, glass, metals, etc.) from households and assimilated waste at the national level will be closely associated with the GEF project to provide outlets for the products sorted. The facilitation of procedures and incentives from key ministries for the modernization of their equipment, the facilitation of the commercialization of recycled products, the creation of new recycling industries and the development of new waste recycling streams, will be decisive.
International partners (EU, GIZ, etc.)	Share of experience and lessons learned from various similar projects.
UNDP	GEF Agency for this project. Will coordinate the PPG in close collaboration with various stakeholders.

In addition, provide indicative information on how stakeholders, including civil society and indigenous peoples, will be engaged in the project preparation, and their respective roles and means of engagement.

Stakeholder	Expected Role
	organisations in Constantine (neighbourhood associations, imams, green clubs, sorting ambassadors, etc.) and national environmental NGOs in the education, awareness-raising and coaching of households will be critical.
Recycling firms (private sectors)	Firms involved in recycling of materials (paper/cardboard, plastics, glass, metals, etc.) from households and assimilated waste at the national level will be closely associated with the GEF project to provide outlets for the products sorted. The facilitation of procedures and incentives from key ministries for the modernization of their equipment, the facilitation of the commercialization of recycled products, the creation of new recycling industries and the development of new waste recycling streams, will be decisive.

3. Gender Equality and Women's Empowerment

Briefly include below any gender dimensions relevant to the project, and any plans to address gender in project design (e.g. gender analysis).

The project will create a number of green jobs, for which roles specific to women will be created. These can be distributed across all levels of waste management. It is expected that a number of micro and small enterprises will also stem from the enabling environment created by this project, specifically in the recycling sector. Through the municipality, the Government will seek the participation of youth and women as the main cohort of the local population to drive the growth of these enterprises. Moreover, with GEF financing, the project will also seek to ensure that women are strongly represented in a variety of technical and non-technical roles at the level of the PPP, such as analysis of organic fertilizer and marketing of fertilizer respectively.

Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment? Yes

Closing gender gaps in access to and control over natural resources;

Improving women's participation and decision-making; and/or

Generating socio-economic benefits or services for women.

Will the project's results framework or logical framework include gender-sensitive indicators?

Yes

4. Private sector engagement

Will there be private sector engagement in the project?

Yes

Please briefly explain the rationale behind your answer.

The project will be fully parenting with private sector. Bulk of the co-financing of this project comes from private sector (80%). A PPP will be put in place between the Government and the private operators of the waste management system.

5. Risks

Indicate risks, including climate change, potential social and environmental risks that might prevent the Project objectives from being achieved, and, if possible, propose measures that address these risks to be further developed during the Project design (table format acceptable)

Risk	Risk Category	Mitigation Approach
Risk of disintegration of PPP or Under-capitalisation of Waste Sorting and Transformation Business Venture	Moderate	This is a risk that can cause the project to fail. In such an event, the MIM must accept full responsibility of ensuring that the company remains operational. To this end, it will bear financial responsibility for initial costs and expenses outstanding until such time that either an alternative private partner is secured or that the GEF project is completed.
Lack of technical expertise for development and implementation of the waste transformation facility	Moderate	A series of detailed techno-economic feasibility studies will be carried out and capacity building exercises will be undertaken. And yet, if local expertise remains inadequate, and that the PPP is lacking in technical expertise, international experts will be recruited by the PPP, with the dual role of capacity development and implementation.
The need for an intersectoral technical committee is not met	Low	The project's steering committee, which will be made up of a similar mix of actors, will be tasked to take charge of the intersectoral committee's role until such time the latter is set up.
Project is not implemented within time constraints.	Moderate	Adaptive measures must be put into place to ensure that the core outcomes of the project are achieved e.g. if the PPP fails to establish itself, Divindus/SOPTE shall continue with 100% ownership of the proposed business venture.
Outlets for the products created from the sorting and value creation of all waste types are not secured	Low	With support from MIM and MEER, SOPTE takes responsibility of purchasing recycled materials at an agreed price such that micro-enterprises participating in recycling activities can remain operational. As for the distribution of the N-P-K dosed fertiliser produced, the MADRP and the Ministry of Commerce will share a similar responsibility. These arrangements remain effective until an alternative solution is identified and implemented.
Sorting and value generation from organic fraction of the waste is not economically viable	Low	In the event that either the production and sale of organic fertilizer or electricity becomes non-viable, The Ministry of Energy or the Ministry responsible for Agriculture agrees to subsidise either the feed-in-tariff for electricity production or the sale of organic fertiliser to farmers respectively.
Vulnerability to Climate Change	Moderate	Algeria's geographical position and climate characteristics leave it highly vulnerable to climate change; recent models predict that rainfall events will be less frequent but more intense, while drought periods will be more prevalent and longer. Also, the spatial and temporal distributions of rainfall are likely to change. Also, the initial impacts of the encroaching desert will likely lead to dwindling water supplies and agricultural yields, all of which will likely have an impact on the viability of scalability. To mitigate this, the project will work closely with the government to assist in finding solutions to the ensuing social and economic challenges.
Not all individuals currently benefitting economically from existing landfill sites are eligible to fulfil new roles or relocate to do so.	Moderate	Measures will be taken to ensure that such individuals are given an opportunity to develop relevant skills and/or are adequately compensated to relocate.

<p>Social and environment risks: The Project may lead to economic displacement (e.g. loss of assets or access to resources due to land acquisition or access restrictions – even in the absence of physical relocation)? Given the nature of this project, there is a strong likelihood that small groups of people (i.g -scavengers) currently relying on landfill waste for their livelihood will face difficulties when waste ending up in the landfill(s) is reduced. The groups will be encouraged to participate in recycling activities, however, this may require displacing individuals from the location of landfills to either Constantine or <u>Setif</u>. This may result in dissatisfaction leading to <u>high costs for their relocation</u></p>	<p>High</p>	<p>The project anticipates this, and a scoping exercise will be undertaken during the PPG phase to establish the number of individuals involved, the income generated from the landfill and the costs associated with retooling, relocating and employing these individuals. Following on from this (and if it is determined to be required), a Livelihood and Resettlement plan will be made for re-settlement of these individuals as well as plans for alternative means for them to earn their livelihoods. The plan is expected to be developed during PPG phase and is expected to be implemented during the project lifetime.</p>
<p>Hazardous risks: The Project poses increased health risks to individuals handling hazardous waste and organic waste. There is a likelihood that workers handling poultry manure are affected. Poultry manure is a vector for diseases and other ailments. Also, the Project may lead to the production of hazardous and non-hazardous waste; the project will consume significant resources (energy). The Waste separation and transformation facility will consume significant amounts of energy. There will be a risk of significant volumes of household hazardous waste that must be handled and disposed. <u>In addition, there is a risk of heavy metal pollution from the use of fertilizer that is to be produced from the waste to power generation plant. It might be difficult to sort out and remove all heavy metals such as</u></p>	<p>Moderate</p>	<p><u>This risk will be covered in the project's Environment and Social Management Framework (ESMF), and subsequent Environment and Social Impact Assessment (ESIA), in accordance with UNDP social and environment procedures in place.</u></p> <p>Activities relating to the handling of poultry manure <u>and hazardous waste such as heavy metal</u> will include mitigation measures to ensure that if such events occur, these will be contained, and individuals affected be given appropriate medical attention and treatment.</p> <p>Training and special equipment will be provided for the safe handling of hazardous substances retrieved during the waste separation process. Also, the PPG phase will require that activities to reduce the consumption of hazardous household waste in both Constantine and <u>Setif</u> be developed.</p> <p><u>During the PPG, an Environmental and Social Management Framework will be prepared to cover this and all other risks, so that an ESIA and ESM Plan can then be carried out and put in place during the first year of project implementation.</u></p>

lead and mercury from solid wastes. These metals may get into the waste of the waste to power generation plant, which will likely contaminate the fertilizer and agricultural land.		
Overall	High	Given the high-risk rating of the project, an "Environment and Social Management Framework" will be prepared during PPG phase.

6. Coordination

Outline the institutional structure of the project including monitoring and evaluation coordination at the project level. Describe possible coordination with other relevant GEF-financed projects and other initiatives.

Although there are no locally based CCM or waste projects under implementation, the project will leverage existing programmes from locally based donors for capacity building exercises:

European Union Cooperation

Through the PAAA (Programme of Support to the Implementation of the Association Agreement) and the 2014-2020 PAPS (budgetary support programme) with:

- i. TAIEX: assistance in support of short-term capacity development courses in Europe (one to a few weeks).
- ii. Twinning between public institutions (6-24 months with obligation of results, on the basis of a competitive process).

Belgian Cooperation

- i. Institutional capacity building: scholarship programme
- ii. Potential partnerships with the Belgian public sector

iii. Replicability of the Mascara pilot project in terms of awareness of upstream sorting, where Belgian Cooperation has financed a waste management project involving waste collection and sorting, as well as the construction and equipment of an engineered landfill.

German Cooperation (GIZ)

- i. Monitoring and tracking system: establishment of performance indicators on waste upstream sorting and collection and surveys of citizen satisfaction.
- ii. Awareness-raising at national level for replicability.

During the PPG phase, the project will also seek to establish partnerships with similar projects in the region and beyond. Currently, the following have been identified.

Promoting production and utilization of biomethane from agro-waste in South-Eastern Botswana (GEF ID 5628)

The project in Botswana has key areas where significant knowledge will have been gained in developing an enabling environment for PPPs in the agro-waste sector; relevant feasibility studies will have also been undertaken for the generation of renewable energy albeit for biogas powered plants.

Ethiopian Urban NAMA: Creating Opportunities for Municipalities to Produce and Operationalize Solid Waste Transformation (COMPOST) (GEF ID 9040)

PIMS 5541 shares strong similarities with this project proposal, and in-depth consultations will be undertaken to establish partnerships, especially as regards the following activities which feature prominently in both projects:

- Financial mechanisms to support micro and small enterprises
- Market outlets for the non-organic recycled waste processed by the sorting plant
- The viable production of compost to displace chemical fertilizers
- The development of a waste transformation plant

Argentina: Sustainable business models for biogas production from organic municipal solid waste. (GEF ID 5739)

PIMS 5345 focusses heavily on biogas, but some of the activities undertaken share strong linkages with this project. Most notable is the design and pre-feasibility studies for MSW-fed biogas energy projects, whilst exploring numerous business models. It is expected that this will be useful for the sustainability and replicability activities under the Algeria project.

7. Consistency with National Priorities

Is the Project consistent with the National Strategies and plans or reports and assessments under relevant conventions

Yes

If yes, which ones and how: NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc

National Action Plan for Adaptation (NAPA) under LDCF/UNFCCC

- National Action Program (NAP) under UNCCD
- ASGM NAP (Artisanal and Small-scale Gold Mining) under Mercury
- Minamata Initial Assessment (MIA) under Minamata Convention
- National Biodiversity Strategies and Action Plan (NBSAP) under UNCBD
- National Communications (NC) under UNFCCC
- Technology Needs Assessment (TNA) under UNFCCC
- National Capacity Self-Assessment (NCSA) under UNCBD, UNFCCC, UNCCD
- National Implementation Plan (NIP) under POPs

- Poverty Reduction Strategy Paper (PRSP)
- National Portfolio Formulation Exercise (NPFE) under GEFSEC
- Biennial Update Report (BUR) under UNFCCC
- Others

The GEF Project is firmly rooted in the country's NDC. As articulated in its 2015 INDC paper, Algeria's mitigation strategy covers mainly energy, forests, housing, transport, industry and waste sectors. The paper also states that, by 2030, the country aspires to deploy biomass powered generators. Moreover, the government clearly states that it intends to give priority to the management of household solid waste.

It is clear, therefore, that, at its core, this project covers a number of these objectives i.e. reduced transportation (including the of piloting, albeit at small scale, electric vehicles), biomass powered generators (from the organic fraction of the waste) and the management of household waste.

The CO₂eq emissions of Algeria has been estimated at 56779 kt. As part of its NDC, Algeria seeks to reduce its emissions by 22% by 2030. Based on these figures, the emissions reductions cited in Table F represents approximately 1-2% of its climate change mitigation NDC.

8. Knowledge Management

Outline the Knowledge management approach for the Project, including, if any, plans for the Project to learn from other relevant Projects and initiatives, to assess and document in a user-friendly form, and share these experiences and expertise with relevant stakeholders.

The project proponents will employ a knowledge management approach that will consist of the conduct of training courses for all stakeholders in the targeted Wilayas. The activities in regard to this knowledge management facility is under Component 3 of the proposed project. As can be noted from Component 3, this project places strong emphasis on lessons learnt. This will include the mainstreaming of waste management into education at all levels, including research at university level. Moreover, partnerships between local universities and the research and analysis laboratory developed under this project are to be a fundamental part of

knowledge management. Knowledge of the GEF project itself will also be actively shared through a dedicated website, which will include not only the objectives and performance of the project, but also a platform for knowledge sharing between stakeholder groups i.e. SMEs involved in recycling activities, farmers etc.

Part III: Approval/Endorsement By GEF Operational Focal Point(S) And Gef Agency(ies)

A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S): (Please attach the Operational Focal Point endorsement letter with this template).

Name	Position	Ministry	Date
Ms. Samira Hamidi	Ministry Inspector General	Ministry of Environment and Renewable Energy	9/16/2018

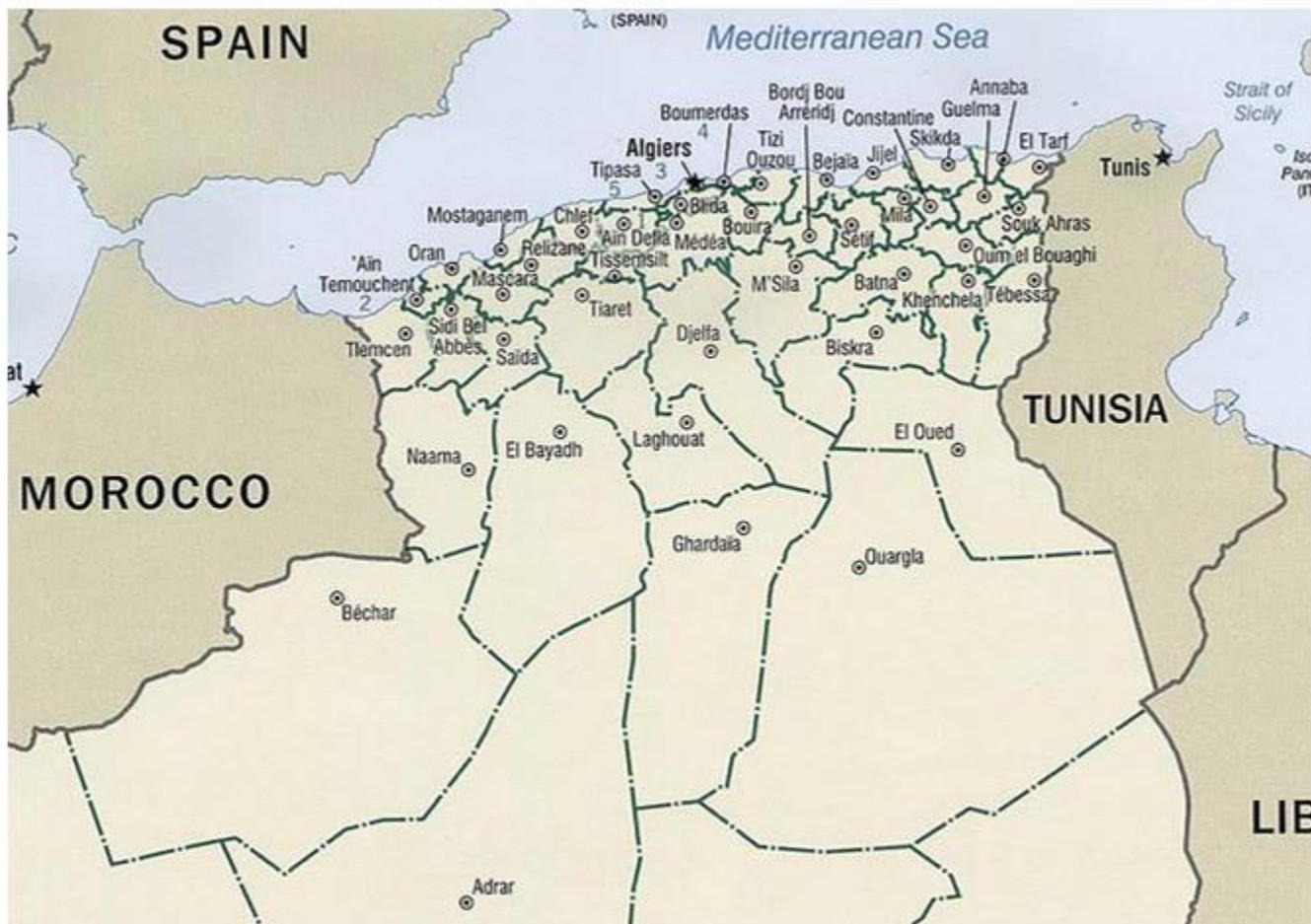
ANNEX A: Project Map and Geographic Coordinates

Please provide geo-referenced information and map where the project intervention takes place

The project targets 2 Wilayas (municipalities) in Algeria: Constantine et Sétif.

Constantine : N 36°21'54" E 6°36'53"

Sétif : N 36°11'28" E 5°24'49"



ANNEX B: GEF 7 Core Indicator Worksheet

Use this Worksheet to compute those indicator values as required in Part I, Table F to the extent applicable to your proposed project. Progress in programming against these targets for the program will be aggregated and reported at any time during the replenishment period. There is no need to complete this table for climate adaptation projects financed solely through LDCF and SCCF.

Core Indicator 6	Greenhouse gas emission mitigated				(Tons)
	Tons (6.1+6.2)				
	Entered		Entered		
	PIF stage	Endorsement	MTR	TE	
	Expected CO2e (direct)	1888320.00			
	Expected CO2e (indirect)	1132995.00			
Indicator 6.1	Carbon sequestered, or emissions avoided in the AFOLU sector				
	Tons				
	Entered		Entered		
	PIF stage	Endorsement	MTR	TE	
	Expected CO2e (direct)				
	Expected CO2e (indirect)				
	Anticipated Year				
Indicator 6.2	Emissions avoided				
	Hectares				
	Expected		Achieved		
	PIF stage	Endorsement	MTR	TE	
	Expected CO2e (direct)	1888320.00			
	Expected CO2e (indirect)	1132995.00			
	Anticipated Year				
Indicator 6.3	Energy saved				
	MJ				
	Expected		Achieved		
	PIF stage	Endorsement	MTR	TE	
Indicator 6.4	Increase in installed renewable energy capacity per technology				
	Capacity (MW)				
	Technology	Expected		Achieved	
		PIF stage	Endorsement	MTR	TE
	Biomass	2 MW			
	(select)				
Core Indicator 11	Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment				(Number)
		Expected		Number Achieved	
		PIF	Endorsement	MTR	TE
	Female	250,000			
	Male	250,000			
	Total	500,000			

ANNEX C: Project Taxonomy Worksheet

Use this Worksheet to list down the taxonomic information required under Part1 by ticking the most relevant keywords/topics//themes that best describes the project