



**United Nations Development Programme**

**Country:** occupied Palestinian territory – Gaza Strip

**Donor:** The Italian Cooperation

**Project:** PAL10-73819  
Solid waste management and composting in Beit Lahia – Gaza Strip

**Final Report**

**Date:** April 2012

## Report Summary

- Title of the Project:** Solid waste management and composting in Beit Lahia  
PAL10-00073819
- (1) **Donor:** Italian Cooperation
- (2) **Date of the approval:** June 2010
- (3) **Project start date:** December 2010
- (4) **Project completion date:** March 2012
- (5) **Project budget:** 239,450 Euro equivalent to US\$ 322,411
- (6) **Scheme of the Project:** Emergency Grant
- (7) **Executing Agency:** UNDP/PAPP
- (8) **Implementing Agency:** CRIC
- (9) **Period covered by the report :** completion report
- (10) **UNDP Officer in charge:**
- Husam Tubail, Programme Analyst, Environment and Natural Resources, Tel: 02-2428040 (ext. 40), Mobile: 059-9606876;
  - Mohammad Mezyad, Project Manager, UNDP/PAPP Gaza, Tel: 08-2863364 (ext. 134), Mobile: 059-9712332
- (11) **CRIC Officer in Charge:**
- Zambrano Pasquale, Project Manager, CRIC, mobile: 0599-620316, E-mail: cricgaza.office@gmail.com
- (12) **Name of PA counterpart:**
- Beit Lahia Municipality, North of Gaza Solid Waste Joint Services Council - NSWMC

### 1. Summary of the project:

#### Brief Description:

Weak and fragmented solid waste management is considered one of the main environmental problems in the Gaza Strip. The Beit Lahia Municipality, located in the northern governorate, lacks the capacity to effectively manage the generated quantities in the amount of 80 tons/day due to lack of an environmentally-sound management system for reduction and recycling of generated waste; needed equipments, and lack of financial resources. As a result, solid waste has become a real threat to public health, and the environment, as well. It is estimated that 60% of the domestic solid waste is organic, which can be utilized as organic fertilizers in the cultivated areas in Beit Lahia.

The project focuses on the reuse of organic materials resulting from agricultural and domestic waste, in line with the solid waste strategy in the occupied Palestinian territory (oPt). Composting activity undertaken by this project which will contribute towards preserving the Ecosystem in Gaza Strip by reducing the use of chemical fertilizers that contribute to groundwater contamination. The project will also include support for the primary collection of solid waste in Beit Lahia by utilizing donkey carts, separating organic material, composting and training programme, and launching a public awareness campaign targeting the residents and municipal staff.

#### Expected Outcome:

- Improved Capacity of Northern Joint Solid Waste Council (NSWMC) and the Beit Lahia Municipality to manage the generated municipal and agricultural waste

### **Expected Outputs:**

- 1 Composting facility rehabilitated and equipped to maintain compost production
- 2 Increased rate of primary solid waste collection
- 3 Improved waste recovery through the production of compost
- 4 Improved Beit Lahia municipality staff operation and management skills to sustain production of compost

### **Project execution modality:**

On 22 December 2010, UNDP entered into a Cooperation Agreement with CRIC as the implementing partner of the project and is accountable for delivering project results where it will implement the project activities in close cooperation with the main beneficiaries/ counterparts; NSWMC, Municipality of Beit Lahia.

### **Project Key Activities:**

The project's results will be achieved through implementing the following key activities:

- Output 1: Composting Facility is rehabilitated and equipped
  - Prepare the site and construct of all civil works including fence protection, steel shed and reinforcement concrete pavement. The activity will support constructing civil works needed for fully operating the 4,000 m2 site to be ready to host compost activities and administration premises. The scope of works includes finishing works for existing administrative building and the weighing balance, in addition to the works of leveling, new concrete platform, shed roads, electricity & water networks and fence.
- Output 2: Primary Waste Collection is improved
  - Daily collection of 5 tons of Solid Waste (SW) from agricultural areas (farmers markets) and rural areas, through the use of 10 carts pulled by donkeys for a period of 7.5 months.
- Output 3: Waste Recovery promoted
  - Separate the organic components of the transferred SW and processing them through shredding machines for the preparation of compost. Ten operators will be hired for the production of compost. Three tons of compost is expected to be produced daily.
- Output 4: Improved Capacity of the Beit Lahia municipal staff to effectively operate the composting facility
  - the activity will support preparation of training curricula, manuals for compost production and undertaking training programme for Beit Lahia Municipality and NSWMC to enhance SW operation and management, and preparing investment plan.

The following schedule summarizes the progress achieved, in relation to the desired outputs:

## 2. Project Timeframe, Schedule Status and Progress of Activities:

Indicated output	Activities	Schedule Status					Activities status	achievements
		2011				2012		
		1Q	2Q	3Q	4Q	1Q		
	Prepare site assessment, design and tender document	X	X				Completed	Site assessment, design and preparation of tender document completed. contractors bids received in 05/05/2011
	Bidding and awarding civil works contract	X	X				Completed	Contract awarded and signed with the company Al Karama in 17/05/2011
	Preparing site /work space/ civil works	X	X				Completed	The civil works on the site started on 22/05/2011 and completed on 30 June 2011
	Electricity external connection		X				Completed	Preliminary meeting with GEDCO on April 2011. GEDCO carried out a technical study to the site. BOQ discussed and finalized with GEDCO on May 2011. Final Contract agreed between CRIC and GEDCO on 16 <sup>th</sup> of June 2011 and power supply was connected by GEDCO
	Bidding and awarding tools purchasing contract		X				Completed	In 16/06/2011 the contract for supply of tools was awarded to Pal Ferti Co.
	Bidding and awarding equipment restoring and purchasing contract		X				Completed	in 15/06/2011 the contract for supply of equipments was awarded to White Cup Co
	Provision of the equipment restored and purchased		X				Completed	The equipment has been allocated on the site.
	Provision of the working tools to the location		X				Completed	The provider Pal Ferti company delivered the tools.
	Provision of tools and equipment to the administration office			X			Completed	The administration office has been painted on the external walls. The administration office needed

								equipment and tools to be in working order. The assessment has been done. Fridge, stove, telephone, fans, and were provided.
	Provision of furniture to the administration office			X			Completed	The administration office needed furniture and tools to be in working order. The assessment has been done. 3 new doors, desks, tables, closet for workers, cabinets, chairs, shelf, and new glass windows were installed.
	Build a ramp for the weighbridge			X			Completed	A ramp was built to make the weighbridge functional
	Installation of shed			X			Completed	The shed was installed
	Warehouse building					X	Completed	a warehouse to store compost sacs and tools was built
	To provide movement and loads equipment					X	Completed	Hydraulic transplant, trolley, loaders bobcat, weighing scale. 1 trans-pallet, 1 trolley and 1 weighing scale were supplied
	To install sunshade at the entrance of the office					X	Completed	A small sunshade was installed at the entrance of the office
	Landscaping					X	Completed	
	New shed for compost area					X	Completed	a new shed to cover compost area was built
Output 2: Increased rate of solid waste primary collection	Collecting and transporting # of tons of solid waste to the composting site			X	X	X	Completed	The workers have been contracted and are been trained. The activity started on the second half of September 2011.
Output 3: Improved waste recovery though production of compost	Separate, shred and pile organic fraction			X	X	X	Completed	about 780 MT of waste were collected by March 2012
	Monitor process of compost until maturation			X	X	X	Completed	130 MT of compost was produced after 3 months of maturation.
	Conduct laboratory testing / Packaging and storing				X	X	Completed	4 laboratory tests were conducted to examine the quality of compost. The results were good, more details is

								provided in the recommendation section.
	Financial plan					X	Completed	Prepared and submitted to the NSMC
Output 4: improved Beit Lahlia municipality and SWMNC staff operation and management skills to sustain production of compost	Training: Recruitment of workers Training them before			X	X		Completed	6 as site operators and 10 as collectors have been contracted and trained
	Awareness: Prepare awareness campaign. Implement awareness campaign.			X	X	X	Completed	Caps with logos provided to the workers. A manual for operating the facility was prepared.
	Held meeting conference and workshops including documentations			X	X	X	Completed	The inauguration of project was held on the 6 and 7 February 2012
	Audit and final reports					X	Completed	UNDP received independent auditor's report and financial statement, in which the auditor explained that all materials respect, the cash receipts and disbursements are fairly.

### 3. Financial Report

Budget Main Items (According to Proposal)	A. Original budget According to PD US\$ A	B. Revised budget US\$ *	C. Disbursement US\$	D. Balance (B-C) US\$	E. Rate of Disbursement (%) (C/B*100)
1.1 Solid waste management and composting in Beit Lahia – Gaza Strip, CRIC.	292,318.7	295,565	295,565	0.00	100%
1.2 GMS (7%)	20,462.3	20,689.6	20,689.6	0.00	100%
<b>Sub-total</b>	<b>312,781</b>	<b>316,255</b>	<b>316,255</b>	<b>0.00</b>	<b>100%</b>
2.0 UNDP Programme operation costs & project monitoring support	9,000	5,753.6	5470.22	283.38	95%
2.2 GMS (7%)	630	402.8	382.87	19.93	95%
<b>Sub-total</b>	<b>9,630</b>	<b>6,156.4</b>	<b>5853.09</b>	<b>303.31</b>	<b>95%</b>
<b>Grand Total</b>	<b>322,411</b>	<b>322,411.4</b>	<b>322,108.09</b>	<b>303.31</b>	<b>100%</b>

Not: The GMS for Q1 and Q2 are not withdraw.

#### 4. Recommendation and Follow up points

- **Maintain facility operation:** The NSWMC signed an agreement with Red Cross to fund the project for the next six month. However in order to ensure the sustainability of the investment made by the project the facility operational cost shall be covered from the stream of revenues. Towards this end, CRIC has carried a cost recovery and quality analysis of the product and recommended that the facility operator shall consider the following in order to ensure good quality of compost producing:
  - Keep the records and weigh of every single kg of material going in and out of the facility
  - Control the incoming material to be sure that is suitable for compost production, for instance avoid manure too much mixed with sand or impurities.
  - Material coming from MSW, LMW and Agricultural Waste should be carefully sorted in the sorting line and shredded.
  - Agricultural waste such as branches, or stubble or other carbon source material should be shredded properly in order to reduce the size up to around 4/5 cm of Ø.
  - The organic material coming from MSW should be kept separated from the clean material (Agricultural waste and manure and LMW) and treated a side in a different pile. As soon as the compost is ready should be analyzed and in according with the result it can be mixed with the compost produced from clean material.
  - Keep the daily records of the piles
  - Turning the pile following to the records
  - Piles should be 3 meter high to save space and increase the compost production up to 1000/1500 ton/year which is the optimum quantity required for sustainability of the facility.
  - Compost should not be sold before 90 day process.
  - Pile should be labeled
  - Piles composed with mixed waste (MSW, LMW, Agricultural Waste and Manure) should be refined using the refining trommel screen available to avoid man made impurities above the EU standards.
  - Compost analysis should be done every 3/6 months.
  - Laboratory analysis of the produced compost indicates low organic content. Waste collected from the market area in Beit Lahia can be an important source of organic matter that can balance the sand present in the actual compost.
  - Heavy metals are the main pollutant that can be found in the compost, they are so dangerous that very small quantities can cause problems to livestock and to human beings. In Gaza those type of analysis were not available due to lack of equipments. Monitoring of heavy metals is very essential in order to produce a good quality of compost.
  - The compost process reaching the temperature of 50 to 60 °C kills all kind of pathogens. A compost where the temperature get higher than 55°C for a period of around 7 days should have no pathogens in its composition. In the compost produced the temperature was monitored every day and piles were turned every 2 days in the first phase and the results of the analysis show that the product is totally free of pathogens.



5. Photos of project indicating before the project and progress of the project.





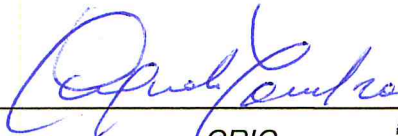


## CERTIFICATE OF COMPLETION OF WORKS


This certificate is issued upon the successful completion of works as per under the Agreement that was signed with United Nations Development Programme / Programme of Assistance to the Palestinian People (UNDP/PAPP) and CRIC – Centro regionale d'intervento per la cooperazione on January 3, 2011, for Solid waste management and composting in Beit Lahiathe under the project "ATLAS PAL10 – 00073819 has been completed

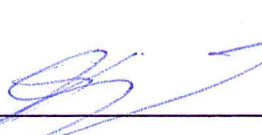
Those funds Allocated as per the signed agreement with a value of **Dollar 295,565** have been utilized and disbursed for the implementation of the project activities as agreed upon;

Reference is also made here after approval of the handing over Certificate whose members include North Solid Waste Management Council -NSWMC, Municipality of Beith Lahia, CRIC and UNDP. According to the handing over committee all work is done according to the signed agreement between UNDP and CRIC.

  
CRIC  
Mr. Zambrano Pasquale



  
UNDP  
Mr. Mohammad Mezyad

  
UNDP  
Mss. iman husseini

Date: Feb, 2012



### Tracking Sheet

**PROJECT ATLAS NAME: SOLID WASTE MANAGEMENT AND COMPOSTING IN BEIT LAHIA**

**PROPOSAL #:** PAL10-00059095 **AWARD #:** PAL10-00059090 **PROJECT #:** PAL-10-73819 **DONOR DONOR (NAME):**  
 ITALIAN COOPERATION

AGREEMENTS  CONTRACTS  LETTERS/MEMO's  AWP  PROJECT DOC.  OTHERS: COMPLETION REPORT

**SUBJECT: COMPLETION REPORT TO BE SIGNED FROM SM**

TITLE	NAME	DATE IN	ACTION	DATE OUT	SIGNATURE
PROJECT MANAGER	MOHAMMAD MEZYAD	15/8/2012	PREPARATION	15/8/2012	<i>[Signature]</i>
PROGRAMME ANALYST	HUSAM TUBAIL	15.8.12	REVIEWED	15.8.12	<i>[Signature]</i>
TEAM LEADER	RIMA ABU MEDIAN				
PROGRAMME SUPPORT (INCLUDING PA/TRAVEL/ ENGINEERING/PROCUREMENT / HR/ FINANCE/OPERATIONS)					
COMMUNICATIONS					
SECURITY					
PROGRAMME MANAGEMENT SUPPORT UNIT (PMSU)					
DSR (O)					
DSR					
SR					

**Comments:**

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## Report Authorization by UNDP/PAPP

Reporting person, his/her title and belongings : Mohammad Mezyad , Project Manager
Reviewed by: Husam Tubail, Programme Analyst, environment and natural resources unit-UNDP/PAPP
Date of submission: 15 August 2012
Supervisor's name and his/her signature: Rima Abu Middain , Natural Capital Team Leader