



MINISTRY OF PLANNING AND INTERNATIONAL COOPERATION

5/3/1/6806

Ref.No

27/09/2020

Date

Ms. Sara Ferrer Olivella  
Country Director  
United Nations Development Program (UNDP)  
Amman, Jordan

Dear Ms. Olivella,

In reference to your letter no. PROG/2020/43 dated 1 June 2020, concerning the project document "Cooperative Action in Recycling and Reuse of Olive Mill Waste for Food and Agriculture Production". In this context, kindly find attached one original copy of the said document duly signed by all parties.

Please accept my high esteem and consideration.

Sincerely,

Dr. Wissam A. Rabadi  
Minister of Planning and  
International Cooperation

Eng. Mohammad Al-Adaileh  
Acting Secretary General

28/09/2020  
12 2:30 PM

UNDP - JORDAN		
STAFF/UNIT	ACTION	INFO
RR		
PROG		
OPS		
MEDIA		
RC Unit		
UNV		
DSS		

## PROJECT PROPOSAL MODEL FORMAT

**PEREZ-GUERRERO TRUST FUND FOR SOUTH-SOUTH COOPERATION,  
MEMBERS OF THE GROUP OF 77  
GOVERNMENT OF JORDAN, EGYPT, TUNISIA**

Type of project:	Interregional
Title:	INT/20/K18 Cooperative Action in Recycling and Reuse of Olive Mill Waste for Food and Agriculture Production
Sector:	Environment
Beneficiaries:	Estimated number and description [about 2100 olive mills will be involved]
Duration of project:	[18 months].
Estimated starting Date:	1 <sup>st</sup> October 2019
PGTF inputs:	25,000 USD
Other inputs:	32,000 USD
Total cost of project:	57,000 USD

**Signed on behalf of:**

UNDP

  
Sara Ferrer Olivella  
Resident Representative

Date: 19/8/2020

Government

  
H.E Dr. Wissam A. Rabadi  
Minister of Planning and International Cooperation

Date: 7/9/2020

Implementing Institution

  
Prof. Abdulla Al-Zubi  
President, Balqa Applied University – Jordan

Date: 10/9/2020

## **Part Ia. Situation Analysis**

What is the problem or issue that will be addressed by the project (no more than 1 page)?

With 95% of world olive trees, the Mediterranean region produces 98% of olive oil in the world, generating huge solid and wastewater quantities which pose heavy environmental and economic loads. The slurry mass contains pulp residues of the fruit, including a large amount of organic materials of about 4% oil. About 0.35- 0.45 kg of solid olive cake can generate from milling of a kg of olive fruit. The waste discharge from this industry has significant impact on the ecosystem and causes contamination of soil and water resources, and air pollution. This material, if stored for a long time under natural conditions, it begins to decompose quickly and generates undesirable odor. In addition to the health and the environmental impacts, the owners of the mills pay high cost for waste transfer and disposal. Also, the mills owners are subjected to high penalties in case of any violation of the environmental regulations in this field. For these reasons, management of olive mill waste appears the main challenge of the mill owners and the environmentalists, especially in the southern countries. Due to the high environmental impact of this waste, many researches have been conducted to treat and reuse it without achieving comprehensive solutions. Water and food are the most important needs for life survival. So providing of both products to the consumers has the highest priority and is the main challenge for global economy. Dramatic increase in the world population accompanied by industrialization and urbanization resulted in sharp increase in water and food demand, while the available sources are decreased year by year. Agricultural sector consumes high quantity of water reaching more than 70% in some countries.

This proposal aims to interchange experiences, and technologies between the three parties in order to achieve better management of this waste through comprehensive process depends on reuse and recycling approach for food production. Liquid and solid waste from the olive mill will be reused and recycled to improve soil fertility, enhance food production, and to reduce the cost of food production.

Liquid wastes from olive mills will be sampled and characterized, then treated by simple low cost natural materials. The treated wastewater will be used for olive trees and other crops irrigation within the farm vicinity. Solid materials will be subjected to anaerobic digestion process to produce fertilizer as soil amendment and nutrients for crops, while the produced biogas will be reused for heating within the plant.

By following this approach, it is possible to reduce the impact of this industry on the environment, conserve the natural resources, save the ecosystem, and self-sustain of the olive industry. This will help the industry in reducing the cost of waste management, recycling and reuse of waste for food production. From the economic point of view, this approach eliminates the waste disposal cost, produces new water source, gives new products, reduces the energy bill, prevents environmental penalties, and increases food production. Our proposal lies in the core of PGTF call which covers: Food and Agriculture Production, Research and Development, Transfer of Technology in Food and Agriculture, Development and Exploitation of New and Renewable Sources of Energy and Exchange of information and experiences in the field of technology.

## Part Ib. Strategy

What is the country or institutional strategy to deal with the problem or situation above? Include point on who the project will benefit, i.e. target beneficiaries. (No more than 1 page).

The project consists of the following parts:

### A. Experience and technology transfer:

Each partner will prepare a country report about the problem, current situation and the applied technologies for control of olive mill waste. The countries reports will be used to prepare a comprehensive management plan based on the best available technology and experience.

### B. Householders involvement

One workshop (50 participants) will be conducted in each country aims to involve the owners of the olive mills in the proposed comprehensive plan. The participants will interchange their knowledge about the problem, cost, obstacles, the applicable solutions, and their roles. Sheets, materials and publications about the project, the problem, will be distributed for all partners. The project will build a coordinators group include the householders and the project's parties.

### C. Liquid waste reuse.

Liquid wastewater from olive mills will be subjected to simple treatments by natural local materials (sand, Volcanic tuff, ..) to remove solids and other undesirable materials. Then the treated water will be used for irrigation of crops (wheat, maize). The treated water contains significant level of organics and nutrients that could improve soil fertility and enhance the plant productivity. Reuse of wastewater instead of potable water will conserve natural water resources and reduce the cost of food production. The impact of wastewater reuse on plant (height, number of branches, trunk diameter, shoots length, shoot diameter, number of leaves plant weight, weight of fruit, and chemical constituents of fruit), and soil (N, P, k, Organics, permeability, phenol content) will be determined.

### D. Bio energy production

Solid content in olive mill waste (pomace) will be used for production of biogas through anaerobic digestion. The best environmental conditions (temp, pH) for gas production will be controlled based on our experience in this field. During lab-scale pilot plant, many parameters to be monitored include: temperature, pH and alkalinity, gas production rate, biogas quality and methane yield.

### E. Fertilizer production

The produced biomass from the digester "after biogas production", contains valuable materials especially the nutrients and the organic matters. It will be applied with different rate for soil used for planting of crops (bean and maize). The applied biomass will act as soil amendment and as bio-fertilizers. It is expected that reuse of biosolids will improve the soil characteristics, soil fertility and increase the plant yield.

### F. Results and public awareness

The results of the project will be published and distributed to become available for all mill

owners. The coordinators will be provided with detail of the project results as well as booklets and films. In addition, the results will be distributed through social media to reach all beneficiaries.

## Part II. Results Framework

### PROJECT RESULTS AND RESOURCES FRAMEWORK

<p>Intended Outcome:</p> <ul style="list-style-type: none"> <li>• Experience and technologies exchange</li> <li>• Enhance public awareness for better waste management and reducing cost of production.</li> <li>• Increase food production, wastewater reuse, Improve soil fertility</li> <li>• Zero solid waste, gas production, reuse of solid for food production.</li> <li>• Publications, reuse guidelines,</li> <li>• Reduce the impact of waste on the environment and human health.</li> <li>• Enhance public awareness for reuse and recycling of bio-waste for food production.</li> </ul>				
<p>Outcome indicator: Measures of progress towards the outcome.</p> <ul style="list-style-type: none"> <li>• increase (%) in plant yield indicators,</li> <li>• Reduction in cost production (%).</li> <li>• Percentage of wastewater reused.</li> <li>• Amount of biogas generated.</li> <li>• Improvement in soil nutrients as %.</li> <li>• Reduction (%) in the amount of waste disposal.</li> <li>• Percentage of owners apply the proposed approach.</li> </ul>				
<p>Project title and number: [Cooperative Action in Recycling and Reuse of Olive Mill Waste for Food and Agriculture Production].</p>				
Intended Outputs	Activities	Inputs	Budget Line	Budget (Year)
1. Countries reports.	<ul style="list-style-type: none"> <li>• Data collection,</li> <li>• Reporting</li> <li>• selection of technologies</li> <li>• meeting</li> </ul>	<ul style="list-style-type: none"> <li>• each partner will work at least two months to prepare the report from the available data.</li> <li>• meeting</li> </ul>	72100	9000\$US
2. Enhancement the public awareness&build a partnership with the industrial sector.	<ul style="list-style-type: none"> <li>• workshops</li> <li>• publications brochures</li> </ul>	<ul style="list-style-type: none"> <li>• Conducting workshops, for 150 participants</li> <li>• Building coordinators group.</li> <li>• Publications</li> </ul>	75700	18,000 \$US
3. Increase food production. Improve soil fertility.	<ul style="list-style-type: none"> <li>• wastewater reuse</li> <li>• Production of fertilizers.</li> <li>• application to</li> </ul>	<ul style="list-style-type: none"> <li>• Lab tests.</li> <li>• Pots,</li> <li>• Treatment materials</li> </ul>	72100	14,000 \$US

	plants			
4. Biogas production	<ul style="list-style-type: none"> <li>• Digestion of solid pomace</li> </ul>	<ul style="list-style-type: none"> <li>• Building digester system (pilot plant)</li> <li>• Methane detector</li> </ul>		12,000 \$US
5. Publication of stakeholders' guidelines for better management of waste for food production	<ul style="list-style-type: none"> <li>• Report</li> <li>• Guidelines</li> <li>• Brochures</li> </ul>	<ul style="list-style-type: none"> <li>• Results of field experiments</li> <li>• Workshops outcomes.</li> <li>• Stakeholder feedback</li> </ul>	74100	4,000 \$US
		Execution Fee 1%	75100	
		<b>Total</b>		<b>57,000 \$US</b>

### Part III. Management Arrangements

#### Management arrangements.

The project will be implemented by [institutional-Huson college – Balqa Applied University – Jordan, prof. Kamel Alzboon will be the representative of the Jordanian institution. . The team of the project is as following:

1. Jordan's partner: prof. Kamel Alzboon, the leader of the consortium.  
Prof. Rebhi Damsah, mechanical engineer, renewable energy.
2. Egypt's Partner: Professor Yasser Gaber Dessouky, Arab Academy for Science and Technology and Maritime Transport
1. Tunis's Partner: Sheima Fersi , National institute of research and physioco-chemical analyses.

All project staff will be appointed by the implementing institution and will not hold UNDP contracts. The UNDP Country Office will, on request by SU-TCDC, release an advance equivalent to 90 % of budget resources after project approval. The implementing institution will produce a report to be submitted to the UNDP Country Office and forwarded to SU-TCDC. SU-TCDC will recommend release of the remaining 10% of the budget by the Country Office. The role of the Country Office will be to facilitate signature of project document, disbursement of 90 % of resources, forwarding the report to SU-TCDC and disbursing the final 10 % of project funds.

**Execution Arrangements.** The project will be executed under the National Execution modality (NEX) with the Government of Host Country as Executing Agent and Implementing Institution as the Designated or implementing institution (This can be a government department or NGO, University etc).

#### Project Work Plans.

A work plan prepared by the implementing institution will be attached as Annex 1 to the Project Document. It will be revised when the first allocation is made.

#### Monitoring and evaluation; lessons learned.

Progress monitoring will be done by the Executing Agent (Government of Host Country). However, any staff from the UNDP or Perez-Guerrero Trust Fund may undertake monitoring activities in line with

managerial roles above.

The project may be audited by the Perez-Guerrero Trust Fund.

#### **Part IV. Legal Context**

Standard legal context if a country has signed standard agreement with UNDP. (Country office will provide).

## Project Budget

INT/20/K18/95/99 – [cooperative Action in Recycling and Reuse of Olive Mill Waste for Food and Agriculture Production]

Budget "A"

Main Source of Funds: Perez-Guerrero Trust Fund.

Please note that the budget should reflect Perez-Guerrero Trust Fund Resources only. There is a standard format to the UNDP budget which should be followed. Please note that descriptions are for demonstration only. Budget lines and nomenclature to be inserted by UNDP.

Bud. Line	Description	Exe. Agy	Total	Year 1	Year 2
<b>010</b>	<b>PERSONNEL</b>				
<i>11.01</i>	<i>International Consultants</i>				
<i>15.01</i>	<i>Official Travel</i>				
16.01	Missions (international travel)		5,000	3,000	2,000
17.01	National Consultant		1,000	1,000	0
17.02	National Consultant				
<b>020</b>	<b>Subcontracts</b>				
021.01	Subcontract A, design of guidelines		1,000	00	1,000
021.02	Subcontract B, publications		1,000	0	1,000
	Subcontract C, workshops organizers		3,000	0	3,000
<b>030</b>	<b>TRAINING</b>				
<i>32.01</i>	<i>Other Training for stockholders</i>		3000	2,000	1,000
<b>039</b>	<b>TRAINING COMPONENT TOTAL</b>				
40	Equipment				
45.01	Expendable equipment, materials		1,000	1,000	0
45.02	Non-expendable equipment		3,000	3,000	0
<b>050</b>	<b>MISCELLANEOUS</b>				
<i>52.01</i>	<i>Reporting Costs</i>		4,000	2,000	2,000
	Lab tests		3,000	2,000	1,000
<b>059</b>	<b>MISCELLANEOUS COMPONENT TOTAL</b>		7,000	4,000	3,000
<b>090</b>	<b>EXECUTION FEE</b>				
<i>96.01</i>	<i>Execution Fee (1%) [Leave blank when submitting. To be inserted by UNDP]</i>				
096.99	Line Total				
<b>099</b>	<b>BUDGET TOTAL</b>		25,000	14,000	11,000



## Annex 1 Work plan.

### Work plan for the next [x] months

INT/20/K18/95/99 [to be inserted by Revision: A  
UNDP]

### Outcome Output Activities and Management Actions

Outcome	Output	Activities and Management Actions	1-3M	4-6	7-9	10-12	13-15	16-18
T01 Experience and technologies exchange	01	Activity 1 (countries reports)	1-3M	4-6	7-9	10-12	13-15	16-18
		Action 1: collection data	x					
		Responsibility: all partners						
		Action 2: review and outputs	x					
			Responsibility: all partners					
	02	Activity 2 (selection of technologies)						
		Action 1: outputs of countries reports	x					
		Responsibility: all partners						
		Action 2: meeting	x					
		Responsibility: Egyptian team (the organizer).						
		Action 3: Action plan	x					
		Responsibility: all						
T02 Enhance public awareness	01	Activity 1 (reaching stockholders)		X				
		Action 1: workshops						
		Responsibility: all partners						
		Action 2: publications						
		Responsibility: All partners						
T03 Increase food production	01	Activity 1 (wastewater reuse)						
		Action 1: waste characterization			x			
	Responsibility: Tunisian team							
	Action 2: application of wastewater for plants			x	x			
		Responsibility: Tunisian team						
	02	Activity 2 (Production of fertilizers)						
		Action 1: solid characterization					x	
		Responsibility: Jordanian team						
		Action 2: biosolid application to plants					x	
T04	01	Activity 1 (gas production)						

Zero solid waste		Action 1: waste characterization Responsibility: Jordanian team Action 2: digestion of sludge Responsibility: Jordanian team Action 3: gas characterization Responsibility: Jordanian team		X  X  X				
T05 Publications	01	activity 1 (reporting) Action 1: collection results Responsibility: all Action 2: final report Responsibility: Jordanian team Action 3: review Responsibility: Egyptian team Activity 2 (stakeholders guidelines ations) Action 1: collection results Responsibility: all Action 2: design Responsibility: Tunisian team Action 3: review and distribution Responsibility: all				X  X  X  X	X  X	X  X