



## New Resource Efficient and Cleaner Production (RECP) Service Package for Micro-Scale Food Enterprises

Resource Efficient and Cleaner Production (RECP) Self-Assessment Checklists for Micro-Scale Food Enterprises were developed by the Water, Environment & Climate Change Centre (WEC) / Cleaner Production Unit (CPU) and National Energy Research Centre (NERC) at Royal Scientific Society (RSS) – Jordan in cooperation with STENUM and national food experts. This initiative was supported by the “Employment-oriented MSME Promotion” project implemented by the Gesellschaft für Internationale Zusammenarbeit (GIZ) on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ), under the “Resource Efficient and Cleaner Production Service Package - Design and Development of Tools for MSEs in the Food Processing Sector” activity to support Jordanian micro-scale enterprises to increase their productivity and competitiveness by implementing RECP.

The RECP self-assessment checklists were designed to be used by the business owners of micro-scale dairy and fruit & vegetables processing enterprises including home-based businesses in Jordan (4 employees or less) to help them to identify simple and practical RECP measures that can be undertaken to reduce the cost of production and enhance the enterprise’s overall productivity. This tool was demonstrated at 5 micro-scale dairy enterprises and 5 micro-scale fruit & vegetables processing enterprises in different areas of Jordan, most owned and/or operated by women.

The demonstration of this tool provided the enterprises with recommendations and measures for improvement in resource (materials, water and energy) consumption, good housekeeping practices, food quality and safety, and management, information, accounting and monitoring systems.

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# Actions taken to design and develop the new RECP Service Package for Micro-Scale Food Enterprises in Jordan

## 1. Collection of data

- Preparation and distribution of a questionnaire to collect information about the target enterprises.

## 3. Signing agreements

- Agreement was signed with each pilot enterprise to ensure the commitment for the demonstration of this new RECP tool.

## 5. Walk-through assessment

- Walk-through visit at each pilot enterprise to collect as many observations and information as possible from the work place and identify potential for improvement.

## 7. Discussion of the potentials

- A list of the potentials and the suggested options was prepared according to the walk-through assessment and the filled out RECP Self-Assessment Checklists.
- The feasibility of implementing each option was discussed with the business owner.

## 9. Know-how and experience exchange

- One day workshop for demonstration enterprises to share the demonstration results and to learn from each other.

## 2. Screening and selection of the pilot enterprises

- Criteria to screen and select the pilot demonstration enterprises.
- The criteria was prepared by RSS with consultation with the relevant stakeholders.

## 4. Training on the RECP methodology

- Training on the RECP methodology, know-how in food processing and conditions for food quality and safety.
- Individual consultations on filling out the RECP Self-Assessment Checklist.

## 6. Fill out the RECP Self-Assessment Checklists at the pilot enterprises

- The RECP Self-Assessment Checklists were filled out by the business owner in collaboration with RSS experts.
- The Checklists covered the general personal hygiene & food safety, good housekeeping practices, knowledge and know-how, information system, efficient use of resources (water, materials and energy).

## 8. Preparation of the final report

- A final technical report to include the production processes of the main products, general information about the pilot enterprise, the filled out RECP Self-Assessment Checklists and the suggested RECP options and measures.

**“Through the demonstration of the new RECP Service Package at our business, the efficiency in the use of resources has been developed and accordingly generated waste and the cost of production have been reduced. I recommend implementing this new service in all national micro-scale enterprises”**

Majida Abu-Qadoura  
Project Manager – Deputy of the Director, Al-Aqsa Society

<b>Improvement Option</b>	<b>Resource Savings and Environmental Impacts</b>	<b>Subsector</b>
Replace high electricity-consuming equipment (i.e. air conditions and refrigerator) by energy star certified equipment	Electricity saving up to 25% of the old Refrigerator consumption and a saving up to 50% of the old Air Conditioner (AC) consumption when replaced by energy efficient ones. Reduction in CO <sub>2</sub> emissions	<b>Dairy</b> <b>Fruit and vegetables</b>
Use solar cooker instead of gas cooker to cook the jam	Saving up to 20% in gas consumption Reduction in CO <sub>2</sub> emissions	<b>Fruit and vegetables</b>
Use solar dryer instead of electrical dryer to dry fruits and vegetables	Saving up to 40% in electricity consumption Reduction in CO <sub>2</sub> emissions	<b>Fruit and vegetables</b>
Use solar heater to supply hot water	Saving 10-30% in electricity consumption and 10-20% in gas consumption Reduction in CO <sub>2</sub> emissions	<b>Dairy</b> <b>Fruit and vegetables</b>
Cook large quantities instead of small quantities	Saving up to 20% in gas consumption and increase production by 4 times Reduction in CO <sub>2</sub> emissions	<b>Fruit and vegetables</b>
Reset the temperature of the freezer to the appropriate degree and isolate it from the cooking place and heat sources	Saving up to 20% in electricity consumption Reduction in CO <sub>2</sub> emissions	<b>Dairy</b> <b>Fruit and vegetables</b>
Use of mechanical drying equipment (such as a centrifuge) for fruit, vegetables and herbs before being introduced to the thermal drying process	Saving up to 40% in electricity consumption Reduction in CO <sub>2</sub> emissions	<b>Fruit and vegetables</b>
Reduce the gas flame when you notice the evaporation and boiling of the cheese boiling water	Saving up to 15% in gas consumption Reduction in CO <sub>2</sub> emissions	<b>Dairy</b>
Cover the vessels used for milk pasteurization	Saving up to 5% in gas consumption Reduction in CO <sub>2</sub> emissions	<b>Dairy</b>
Replace the existing pot used for milk pasteurization with an insulated one that works on electricity with temperature control	Saving 25-50% energy consumption Reduction in CO <sub>2</sub> emissions	<b>Dairy</b>

<b>Improvement Option</b>	<b>Resource Savings and Environmental Impacts</b>	<b>Subsector</b>
Insulate the milk pasteurization container	Saving up to 5% in gas consumption Reduction in CO <sub>2</sub> emissions	<b>Dairy</b>
Replace all lighting units with LED type	Electricity saving up to 60% of the Lighting consumption Reduction in CO <sub>2</sub> emissions	<b>Dairy</b> <b>Fruit and vegetables</b>
Insulate the walls and ceiling of the vegetable cold storage room	Electricity saving up to 40% of the AC consumption Reduction in CO <sub>2</sub> emissions	<b>Fruit and vegetables</b>
Use of water efficiency tools and techniques where possible	Reduce water used in cleaning and the produced wastewater	<b>Dairy</b> <b>Fruit and vegetables</b>
Good housekeeping practices	Reduce solid waste produced from poor storage of some products by 35%	<b>Fruit and vegetables</b>
Incubate milk in a double jacket incubator to reduce the incubation period from 6-12 hours to 2 hours a day	Improve productivity by 2 times Reduce losses in the final product by 5% during winter	<b>Dairy</b>
Use jacketed cooling mixing tank to separate butter from skimmed milk  Maintain the jacketed cooling mixing tank used to separate butter from skimmed milk	Improve the quality of the final product Reduce consumption of water and energy and auxiliary materials by 5% Increase productivity	<b>Dairy</b>
Collect and sell the by-product "whey" to small or medium dairy processing companies to be used as raw materials for the production of cottage cheese. Or reuse whey as cattle feed, whey drinks, etc.	Reduce waste water discharged to the sewage network  Financial return on the company as a result of producing new products	<b>Dairy</b>
Improve productivity of dried tomatoes and produce new dried fruits by using electrical or solar dryer instead of outdoor sun drying	Improve productivity of dried tomatoes by 10 times and produce new products of dried fruits	<b>Fruit and vegetables</b>
Use kneader machinery to knead Jameed instead of manual kneading	Improve productivity	<b>Dairy</b>

## Other Achievements

Micro-scale enterprises often overlook the importance of having an effective information system, hence the business owner does not have an accurate and precise knowledge about the consumption of resources and the generated of non-product outputs. Therefore, most of the pilot enterprises need help and training on how to establish an information system for micro-scale enterprises.

In addition to all financial and environmental benefits, the implementation of this service has brought improvements in know-how, working practices, and food quality and safety. The implementation of this service could be a great chance for the pilot enterprises to market themselves as responsible enterprises toward environment and society.

The service has helped each pilot enterprise to link with other enterprises doing the same business in Jordan, hence, this could help establish a national benchmarking to investigate practical potential of improvement.

**“Through the project, I learned to calculate consumption values and costs, so I had better information about the actual revenue of my work, which has encouraged me and invigorated me to continue my work and feel the value of what I do”**

Safa Al-Rabee  
Owner, Olea