

## Title

**COMPOSTARA – awareness campaign on disposal of biodegradable waste**

## Short description

This practice aims to raise environmental awareness among farmers and the public in the region, change farming methods and management of biodegradable waste, and encourage compost production from food waste. The main objectives of these behavioural changes are environmental protection and health improvements. Agricultural and industry waste has been a major contributor to pollution in the Prespa region for decades; the dumping of rotten or spoiled apples in the region's environmentally vulnerable rivers and lakes is one of the principal factors driving environmental damage. During the worst years, more than 10,000 tons of apples have been dumped in the Golema Reka River and the shores of Lake Prespa.

The key part of this practice is establishing comprehensive and viable management solutions for the treatment of biodegradable waste generated in the area. This aims to create the capacity to absorb up to 2,000 tons of waste per season and to transform this into 1,000 tons of high value compost. All the compost so far produced by the new facility has been subjected to rigorous chemical and microbiological analysis and experts have declared that 80% is of excellent value and quality and therefore highly beneficial for multiple uses in agriculture. The compost from the COMPOSTARA project has already found a market. Selling the compost will fully cover the costs of its production, making it a not just environmentally sustainable – but economically as well.

## Topic

Living – Green spaces, Consuming – food

## Characteristics (type, level)

Local/Regional, National, Intervention, Innovation/Product

## Country/Countries of implementation

Republic of Macedonia

## Aims and Objectives

Main objectives are environment protection and health improvement by raising environmental awareness amongst farmers and the public in the region, changing farming methods and management of biodegradable waste and compost production as end product.

## Target Group

Prespa's first composting station addresses the problem of waste disposal in the region and provides a sustainable alternative to the excessive use of chemical fertilizers. It is part of a larger project aimed at protecting the ecosystem of Prespa Lake and the surrounding region. Little environmental awareness among the public and local farmers, and no organized system for the collection and disposal of biodegradable waste in Municipality of Resen. Farmers and general population were involved.

The main target groups of the project were: farmers-individual agricultural producers, agricultural production societies, small and large size apple retailers and environmental NGOs.

The project involved farmers in identifying and addressing different pressures on the lake region.

The target group was involved since the beginning phase, during the initial stage of feasibility assessment of establishment of biodegradable waste management system in the region and selection of most appropriate, cost effective and environmentally friendly treatment alternative including the composting process and construction of composting plant.

### Status

Ongoing

Other, namely the pilot project-practice was implemented successfully and the established waste management system and main composting facility are fully operational with follow up plans for extension on the larger territory in the Prespa Lake watershed

### Start and Completion dates

Pilot project was implemented in the period 2011-2013. The project was successfully implemented and the composting facility together with the waste collection system are fully operational and sustainably managed by the Proleter communal enterprise with potential for scaling the compost production capacity and hence biodegradable waste processed from the larger territory of the Prespa watershed.

Compost production started in 2014. Public waste management enterprise “Proleter” is managing the station.

### Lifestyle and Behavior Change

The project has raised awareness about environmental concerns, helped farmers to adopt more sustainable farming practices and developed a comprehensive plan for the future management of the watershed.

Agricultural and industry waste has been a major contributor to pollution in the Prespa region for some decades now, especially the dumping of rotten or spoiled apples in the region’s environmentally vulnerable rivers and lakes. In some years, for example, more than 10,000 tons of apples have been dumped in the Golema Reka River and the shores of Lake Prespa.

### Effects on:

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|------------------------------------|---|
| <p><b>Health and Wellbeing</b></p> | <p>Prior to the project intervention, farmers in the Prespa lake region used high levels of fertilizers and pesticides, and regularly dumped apples in the water. These farming practices, in combination with erosion, and an absence of a management system to treat waste and wastewater, polluted the lake and posed a threat to the over 2,000 species of birds, fish and mammals in the region. The project aimed to change these practices and</p> |
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|                               | raise awareness about environmentally friendly agriculture practices through a model orchard, which demonstrated the benefits of reduced fertilizer and pesticide use.  |
| <b>Vulnerable populations</b> | The introduction of new technologies for waste treatment will help reduce the massive quantities of waste which are currently discarded and transform the biodegradable waste into products of intrinsic value, such as natural fertilizers or compost. The use of compost instead of artificial fertilizers will lead to improved quality of soil and waters. Since compost is less expensive than artificial fertilizers, it will also enable farmers to make additional budget savings. This can definitely be described as a win-win situation. |
| <b>Environment</b>            | Impact: Farmers now use 30% less pesticides each season and save money by using more efficient irrigation and pest control practices.<br>The practice has great positive impact talking several environmental issues. Mainly improved waste managements and reduced environmental impact of agriculture biodegradable waste is key achievement. This is related with generating less waste and hence reduced green gasses emission and energy saving.   |

### Initiated and/or implemented by

The UN Development Programme (UNDP), with funding from the Global Environment Facility (GEF), has collaborated with the Municipality of Resen in Macedonia to restore the Prespa lake ecosystem.

### Stakeholders and sectors involved

Project Partners were Municipality of Resen and the Ministry of Environment, Physical Planning, UNDP and Swiss Agency for Development and Cooperation.

The compost station is managed, with UNDP support, by the Municipality of Resen, through its Public waste management enterprise "Proleter".

### Financial support

The construction of the composting station was financed by the Swiss Agency for Development and Cooperation. Project budget was around 1 million euro from Swiss Agency for Development and Cooperation.

The most important costs for this project are infrastructure costs for constructing the composting facility and cost equipment costs including procurement of various machinery for conducting process of compost production.

### Evidence-base

The Project was based on the scientific evidence from other European Projects such as such as Biodegradable Municipal Waste Management in Europe (Part 1 to 3), European Environment Agency as well as the results from the feasibility studies done for the solution of the problem with solid waste management in Resen 2001 and 2010 strategic national documents and action plans listed below:

- ECONOMIC ANALYSIS OF OPTIONS FOR MANAGING BIODEGRADABLE MUNICIPAL WASTE Final Report to the European Commission Eunomia Research & Consulting, Scuola Agraria del Parco di Monza, HDRA Consultants, ZREU and LDK ECO on behalf of ECOTEC Research & Consulting Available at [http://ec.europa.eu/environment/waste/compost/pdf/econanalysis\\_finalreport.pdf](http://ec.europa.eu/environment/waste/compost/pdf/econanalysis_finalreport.pdf)
- Modernizing of the Existing Landfill and Solution of the Problem with Solid Waste Management in Resen, Final Report, Hydroprojekt CZ (2001); Feasibility Study financed by USAID.
- Feasibility Study on Biodegradable waste management in the Prespa Region. PointPro Consulting, Skopje, Macedonia, *in Partnership with* TBU Environmental Engineering Consultants, Austria, Bio Engineering Ltd, Skopje, Macedonia (2010) UNDP Project “Restoration of Golema Reka (Phase 2)”
- National Waste Management Plan 2006 – 2012, Government of Macedonia, Ministry of Environment and Physical Planning (2005).
- National Waste Management Strategy, Government of Macedonia, Ministry of Environment and Physical Planning (2007).
- Second National Environmental Action Plan, Government of Macedonia, Ministry of Environment and Physical Planning (2006).
- National Environmental Investment Strategy 2009 – 2013, Government of Macedonia, Ministry of Environment and Physical Planning (2009).
- Biodegradable Municipal Waste Management in Europe (Part 1 to 3), European Environment Agency (2002)
- Composting Facility Guidance, 2007, Utah Division of Solid and Hazardous Waste, Solid Waste Management Program
- Nacionalna strategija so akcionen plan za organsko zemjodelstvo na Republika Makedonija, Skopje, 2007, Ministerstvo za zemjodelstvo,umarstvo i vodostopanstvo na RM.

- Kratovalieva S, Priracnik za kompostiranje, Bitola 2007, Molika – dvizenje za okolinata.
- William B, Sykes P.E, 2000, Planning, designing and implementing compost facility, Humusoil South California.
- Gillian A, June 2001, Recommendations for large scale composting, UBC Compost Project Committee, University of British Columbia, Vancouver.
- Cornell University web site: <http://www.cfe.cornell.edu/compost/>

### Main activities

Establishing of comprehensive and viable management solution for the treatment of biodegradable waste generated in the area of Resen as a solid platform for implementing a full-size management solution for biodegradable waste in the entire Prespa region. The new composting station has the capacity to absorb up to 2,000 tons of waste per season and to transform this into 1,000 tons of high value compost. Making use of four new locations for the collection of biodegradable waste, the composting station in Prespa has already produced 150 tons of high quality and high value pilot compost.

As a result of an effective awareness-raising initiatives, farmers and the public have been voluntarily bringing waste to the new collection locations. In addition, formal agreements have been reached with the main local producers of organic waste, ensuring that poultry farms, large apple traders and other enterprises bring their biodegradable waste directly to the composting station.

### Evaluation

An Environmental Impact Assessment Study (EIA) was prepared, concluding that the establishment of a biodegradable waste management system would have enormous positive effects on the environment and would lead to significant improvement of the natural resources in the Prespa region.

Process and output indicators were measured i.e. waste collected and compost produced. Participant satisfaction was measured by interviews with farmers and dissemination of questionnaires filling forms. Participants were satisfied.

### Main results

Around 200 participants were involved in the pilot project beginning from the feasibility assessment stage up to the targeted farmers` granting programs on use of pilot compost fertilizer.

All the compost so far produced by the new facility has been subjected to rigorous chemical and microbiological analysis and experts have declared that 80% is of excellent value and quality and therefore highly beneficial for multiple use in agriculture. Already a market has been found for the compost produced, meaning that revenues from the sale of the compost will fully cover the costs of its production.

### Key success factors and barriers

The main key success factors are:

The results already represent a major step forward in restoring the local ecosystem of this beautiful but vulnerable region.

Farming is the main source of employment and income in the region, with over 70% of households in the Municipality of Resen dependent on agricultural activities, especially apple farming. Promoting more sustainable farming practices—above all, persuading farmers to adopt more responsible methods of waste disposal and pesticide use—has thus been a key aspect of efforts to restore the ecosystem of the Prespa Lake Basin.

Farmers now use 30% less pesticides each season and save money by using more efficient irrigation and pest control practices.

The key barriers are:

Additional investments will be needed to fully solve the waste problem in the entire Prespa region and ensure full sustainability, for example by upgrading the system, establishing additional collection points, tightening legal regulations and law enforcement at the local level, purchasing new machinery and hiring additional expert staff.

### INHERIT Perspective

This project has been selected for inclusion as promising practice since there is evidence that it has fully fulfilled the INHERIT objectives. The practice intervention had positive effect on health and well-being, socioeconomically vulnerable groups and sustainable lifestyles and behaviours. More generally, it helps move towards environmental sustainability and reduced health inequalities. The new waste collection and composting facilities can also serve as a model which other regions can use to create their own facilities. It is appropriate mostly in rural areas where farming is the main source of employment and income, promoting sustainable farming practices for waste disposal and pesticide use.

### More information

There are reports and verification projects documents that are in the project files and not available online.

- Feasibility Study on Biodegradable waste management in the Prespa Region. PointPro Consulting, Skopje, Macedonia, *in Partnership with* TBU Environmental Engineering Consultants, Austria, Bio Engineering Ltd, Skopje, Macedonia (2010) UNDP Project “Restoration of Golema Reka (Phase 2)” Final Report
- UNDP Biodegradable waste management in the Prespa Region – Pilot Composting Plant in Rese Final Report. (2011)
- Integrated Ecosystem Management in the Prespa Lakes Basin (Regional) *Albania, FYR Macedonia, Greece*, GEF Agency: United Nations Development Programme Executing Agencies: Ministry of Environment, Forests and Water Management (Albania); Ministry of Environment and Physical Planning (FYR Macedonia); UNDP Macedonia Country Office (Transboundary) Terminal Evaluation 2012

[http://www.mk.undp.org/content/the\\_former\\_yugoslav\\_republic\\_of\\_macedonia/en/home/ourwork/environmentandenergy/projects\\_and\\_initiatives/biodegr](http://www.mk.undp.org/content/the_former_yugoslav_republic_of_macedonia/en/home/ourwork/environmentandenergy/projects_and_initiatives/biodegr)

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## Contact

Main responsible persons:

Mr Ajman Al malla Head of the Sector for Environment, Municipality of Resen,  
[ajman.almalla@resen.gov.mk](mailto:ajman.almalla@resen.gov.mk) 047/551-490

Nikola Zdraveski project specialist UNDP Prespa Lake restoration programme.  
[nikola.zdraveski@undp.org](mailto:nikola.zdraveski@undp.org) 070 362 205