European Network for Rural Development

Pilot Project on Circular Bioeconomy - Spain

EAFRD-funded projects

SPAIN

Resilient futures

Location
Lumbier

Programming period
2014 – 2020

Priority
P5 – Resource efficiency & climate

Measure
M16 - Cooperation

Funding (EUR)
Total budget 197 963.35
EAFRD 101 341.39
National/Regional 54 568.45
Private/own funds 42 053.51

Project duration
2018 – 2019

Project promoter
Josenea/Upna

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The project has enabled the living-lab, Josenea which is focused on organic farming, to collect bio-waste from neighbours and transform it into compost to fertilise their crops, with environmental, economic and social benefits.

Summary

In this project, the non-profit company Josenea acting as a living lab, the Public University of Navarra (UPNA) and two micro-enterprises (Luar Ingurumena and Maestro Compostador) focused on the collection and treatment of bio-waste, collaborated to design and develop a new decentralized waste management system that utilises organic matter in situ through a simple and low-cost process.

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Project activities included research on the optimisation of collection and composting of bio-waste, at local level, the effect of compost on crops, soil and climate, and dissemination and training activities for technicians and operators of bio waste management systems. As the project only requires local low-cost equipment, it is easily replicable elsewhere.

Results

A new low-cost organic waste management system processes more than 300 tonnes a year of bio-waste, transforming it into 100 tonnes a year of organic fertiliser. Fertiliser is used on the same site to grow organic medicinal plants.

The process has diversified the economic activity of Josenea and generated three new jobs. By application of organic fertiliser, the farm's soil is being regenerated and protected and GHG emissions are reduced through carbon sequestration.

Waste management in the area has improved and contributed to the objectives of the European Waste Framework Directive, as well as reducing the cost and environmental impact of transporting waste to remote, centralised facilities.

The project contributed to increase the confidence and involvement of citizens in the management of their organic waste. It has also contributed to improving the perception and confidence of technicians on bio-waste management and policymakers in decentralised waste management systems.

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Context

Several factors influenced setting up the pilot project.

The European Waste Framework Directive requires separate management of bio-waste across the EU by 2023. In Lumbier, the pilot project area, waste management has historically not been much developed. Mixed waste was collected and managed in large centralised facilities that were geographically and remote from the place where it was generated which involved a high transport cost. At the same time citizens did not have trust on these processes and were not motivated to separate waste at home.

There is also a need for the creation of diversified employment in the Lumbier area, especially employment in the green sector for social groups at risk of exclusion.

The low organic matter of agricultural soils in Mediterranean areas is a further factor. Over time, low soil organic matter causes a loss of fertility and the advance of desertification, a process aggravated by climate change. This often results in a greater use of mineral fertilisers and other petroleum-derived inputs in the production process (e.g. fossil-based fuels), increasing GHG emissions. In Mediterranean areas with little livestock farming, organic fertilisers are often expensive and in short supply, which has limited the development of organic agriculture, a system that can enable soil to act as a carbon sink.

In general, amongst both technicians and policy makers, there is a reluctance to encourage waste management through local management systems with low bio-waste technology given the mistrust from the general public.

Objectives

The project aimed to demonstrate that a new low-cost, local and circular bio-waste management system would improve the management of waste.

The project also aimed to generate green jobs and to improve the economic position of Josenea through the provision of self-produced organic fertilisers.

An environmental objective was to improve and protect Josenea´s soil and contribute to climate change mitigation through carbon sequestration and reduced GHG emissions.

From the social aspect the project aimed to generate confidence and increase motivation of the local population to separate their waste and for waste management technicians and policy makers to explore decentralised waste management.

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Activities

The project activities included: collection, treatment, research, training and promotion.

Activity 1. Bio-waste Collection

The waste produced by the larger companies in the area is collected twice a week through a simple system of individual containers up to 100 litres in size. More than 6000 kg of bio-waste (including pruning wastes) is collected per week and transported by an adapted truck to the Josenea facility in Lumbier.

Activity 2. Treatment

Bio-waste collected separately is mixed on a weekly basis in dynamic composting windrows located on concrete floor, using a simple turner machine manufactured by the local industry. The compost reaches maturity in a few weeks and there have been no problems with leachates or odours during the composting process. The compost piles are watered several times throughout the process with their own leachates and water from a water well.

Activity 3. Research (University of Navarra)

The composting process and its effect on long and short-term crops are being studied in experimental plots located in Josenea. The results of the research have led to changes in the composting process. The compost is suitable for organic farming and it has been proved that soil´s organic matter content is increasing as a result of its application.

Activity 4. Training

Technicians working one waste management received training on the management of small-scale composting facilities and Josenea is being used as a 'living laboratory' of a decentralised waste management process. During the project two different training activities were developed: 'Learning by doing' courses for facility operators, and different university courses for technicians and students.

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Activity 5. Promotional activities

At the local level, the project has been presented/promoted through the local media (local newspapers) and in several local and regional radio programmes. An intensive visit programme to Josinea's facility as well as summer courses and meetings have been specifically designed for local citizens and schools. At national and international level, the project has been presented in various scientific and technical meetings (Brussels, Madrid, Bolivia and Costa Rica), while policy makers from different regions and countries have visited the project including from Chile, China, Galicia, Canarias.

Main results

A new low-cost organic waste management system processes more than 300 tonne a year of bio-waste, transforming it into 100 tonne a year of organic fertilisers. This is then used on the same farm on which composting occurred to grow organic medicinal plants.

The process has diversified the economic activity of Josenea and generated three new jobs. In turn, through the application of organic fertilisers the farm's soil is being regenerated and protected. This also contributes to climate change mitigation by reducing GHG emissions through carbon sequestration.

Waste management in the Lumbier area has improved and contributed decisively to meeting the objectives of the European Waste Framework Directive, as well as reducing cost and the environmental impact of transporting waste to remote centralised facilities.

The project has increased the confidence and involvement of citizens in the management of their organic waste. It has also contributed to improving the perception and confidence of technicians and policymakers in decentralised waste management systems.

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Key lessons

The composting process is easily replicable and would allow small municipalities to contribute to the UN Sustainable Development Goals.

In the development of the project, cooperation between multiple stakeholders has been essential. Josenea led the project, the Public University of Navarra (UPNA) led on research and training activities, and two micro-enterprises (Luar Ingurumena and Maestro Compostador) focused on the collection and treatment of bio-waste produced by 17 stakeholders. Navarra Waste Consortium and the Government of Navarra gave authorisation for the collection and treatment of waste.

Josenea is a living-lab in which 250 people have already been trained, and the project has generated interest from far and wide with technicians and policymakers visiting from Galicia, Balearic Islands, Canary Islands, Chile, China and Costa Rica.

Additional sources of information

https://drive.google.com/drive/folders/1XshqldOtUJVaTt63MBVtbhMFuloO8o6j

* This project has been categorised under 'Resilient futures' by the nominating National Rural Network

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