

**- THE LIFE PROGRAMME -**  
**OVER 20 YEARS OF IMPROVING WASTE MANAGEMENT IN THE EU**

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The [LIFE programme](#) was established in 1992 and is the EU's funding instrument for the environment. The general objective of LIFE is to contribute to the implementation, updating and development of EU environmental policy and legislation by co-financing pilot or demonstration projects with added value.

With regards to waste management, LIFE has continuously co-funded innovative projects that upgrade waste recycling technologies and processes in a wide range of industrial sectors all over Europe. Out of the [4 171 initiatives](#) supported by LIFE to date, 617 have been exclusively on waste, with almost €433 million allocated. In fact, waste management is the theme most widely tackled by the programme.

In particular, LIFE has focused on demonstrating innovative technologies for recycling specific materials from waste streams, such as hazardous, agricultural or municipal waste. Linking waste management to other environmental topics, such as climate change or the protection of water resources has been another issue much covered by the programme. Finally, LIFE has also actively contributed to waste prevention by raising public awareness, promoting the exchange of knowledge and developing information tools for better waste management.

Below you can find some examples of LIFE projects on specific waste-related themes:

**Decision support tools for better waste management:** [BALKWASTE](#) fosters the implementation of the EU waste legislation in the Balkans via a new, free-of-charge waste Decision Support System (DSS) for decision-makers and the establishment of a waste network. The DSS provides technical support and tailor-made solutions when developing integrated and efficient waste management plans. The tool consists of three elements to aid waste management: an automated process tool (identifying and suggesting the most suitable technologies); an analytical tool (evaluating available waste management options through Material Flow Analysis); and a decision support system (assisting the appropriate authorities to select an optimal waste management strategy). The waste network, which involves more than 880 stakeholders, includes a monitoring platform that enables comparison of the performance and evolution of waste management in the participating nations (Bulgaria, Greece, Romania and Slovenia).

**Waste Prevention:** [EWWR](#) (European Week for Waste Reduction) aims to reduce the amount of municipal waste generated in Europe through the involvement of citizens, authorities, businesses and other stakeholders in awareness-raising programmes. Since 2009 the project has organised over 38 000 initiatives such as training sessions, information campaigns, recycling workshops and clean-up days, in the EU and beyond. The initiative, running until 2017, is open to any individual or organization, public or private.

**Energy from waste:** [BIOAGRO](#) developed an innovative on-site closed loop system that adds value to agricultural waste by converting it into pellets, energy and fertilisers. Firstly, the project produced a number of environmentally-friendly and combustion-efficient pellet mixtures from grain, grain waste, seeds and grass. The mixtures are specially designed to minimise ash melting and can adapt to the availability of different raw materials during the year. Secondly, it designed and constructed a furnace that, together with the seed drying and heating systems, also generates energy for use on the farm. This results in both energy savings and reduced greenhouse gas emissions. Ash from the furnace is reused as fertiliser, closing the cycle. The system can process over 3 tonnes/hr of waste and is continuously generating heat for the farm buildings and operations.

**Management of municipal solid waste:** [OIL-PRODIESEL](#) developed and implemented an integrated system for the collection of domestic used frying oil to produce biodiesel and to solve the problem of uncontrolled disposal of this kind of waste. The project constructed a biodiesel processor prototype and installed 20 collection containers, evaluating the opportunities for the use of the biodiesel produced. The fuel was used to good effect in six vehicles belonging to the transport fleet of Oeiras municipality in Portugal. The project managed over 11 tonnes of used frying oil during a nine-month period. In addition to reducing CO<sub>2</sub> and sulphur dioxide emissions from the switch to biodiesel, the significant decreases in oils and fats (e.g. 52.0 mg/l versus 103.2 mg/l) and hydrocarbon concentrations (e.g. 3.3 mg/l, compared with 11.1 mg/l) in the wastewater allowed the municipality to save around €4 000 in the maintenance costs of the urban sewage system and sewage treatment plants, during the project lifespan alone.

#### **Management of specific waste streams:**

. **Plastic:** [RECIPLAS](#) introduced a new plastic waste mixing process that produces a high-quality plastic material - 100% recyclable, recoverable and reusable - that is used to produce packaging and pallets. The proposed technology consists of mixing, setting up and thermally agglomerating plastic wastes, generating high-density granules. The granules are then injected into a moulding unit for low-pressure transfer, where the final shape is given to plastic products. The process does not result in any structural damage to the material, allowing it to be continuously recycled. It estimated that each plastic pallet that is produced saves one tree - as wood is no longer used to make the pallets - as well as reducing the amount of plastic to be dumped by around 3 000 tonnes/yr.

. **Bitumen:** The [From Roof to Road](#) project developed an economical and environmentally-friendly methodology for reusing the bitumen from waste roofing felt in road construction. The recycling process developed by the project consists of three stages: collection of waste roofing material through the establishment of a network of collection sites with 150 waste producers; sorting, grinding and mixing the material using an innovative mobile recycling machine; delivery of the new recycled bitumen for asphalt production. The project collected a total of 1 000 tonnes of roof felt waste during its lifetime, of which approximately 60% was extracted as reusable bitumen aggregate. The product was both tested in laboratories and applied in 10 on-site test mixes with good results. This work demonstrated that the recycled bitumen can be successfully used for most grades of asphalt and passed all necessary certifications except for use on airport runways. Apart from providing a profitable and environmentally-friendly economic activity, the project has produced environmental benefits derived from savings in CO<sub>2</sub> emissions from incineration, estimated at 1.677 kg CO<sub>2</sub> per kg of roofing waste.

. **Glass:** [MEIGLASS](#) successfully demonstrated an energy-efficient and environmentally-friendly process for recovering dirty cullet rejected by primary cullet treatment plants. This glass, which currently accounts for 23-25% of the total glass recovered, is rejected by the industry because of the impurities present in the material, mainly plastics, ceramics and organic matter. The project has demonstrated an innovative technology that enables this waste glass to be recovered through a water-efficient cullet washing system that separates the impurities from the cullet. After the separation of the materials, the recovered glass is ground and sorted by size, producing a “glassy sand” that can be reused by the glass industry. The methodology employed by MEIGLASS has enabled the treatment of a total of 200 000 tonnes/yr of dirty cullet, resulting in: 99% reduction of cullet rejects; in the glass container industry: Reduction of primary material use by 20%, saving at least 5% of the energy consumed in the whole process; in the ceramic and brick industries: replacement of the raw alkali-feldspar used in these industries (some 40%) by the recycled glass. The recovered glass is now used by the glass container industry (around 70%), by the ceramic industry (20%) and by the bricks industry (5%). Only 1% of material, mainly organic residues from the cleaning and cracking systems, still goes to landfill.

. **End-of-life vehicles (ELVs):** [ELVES](#) developed a system for high-quality separation of metal alloys from end-of-life-vehicle engines and their reuse in new engines and components for the automotive sector. The technology developed integrates different processes in one pilot plant: acoustic insulation, water-based dust particle extraction, granulometric classification, and bi-density flotation separation. The result is a methodology that allows different metal alloys (mainly iron, aluminium and heavy metals) to be separated from an ELV’s engine with 99% efficiency. The plant is able to process 33 000 tonnes/yr of ELV engines, with an estimated recovery rate of 15.6% or 5 148 tonnes/yr of aluminium, saving 79 446 tonnes/yr of CO<sub>2</sub> and 947 million MJ/yr of energy.

Therefore, in the context of the Tinos 2015 - 3<sup>rd</sup> International Conference on Sustainable Solid Waste Management, LIFE proposes:

- A presentation of good practices and technologies on waste methodologies developed by the programme.
- Should an exhibition be held: Posters ([1](#), [2](#), [3](#)) [technical brochures](#) and other publications on the contribution of LIFE to waste management.