



Recycling@Home



LIFE11 ENV/GR/000950

IMPLEMENTATION OF INNOVATIVE ECOLOGICAL PORTABLE
WASTE COMPRESSORS FOR IN-HOUSE RECYCLING OF
PAPER, PLASTIC AND METAL PACKAGING WASTE IN THE
MUNICIPALITIES OF AMAROUSSION AND MANDRA-EIDYLLIA





Introduction: Waste & natural resources

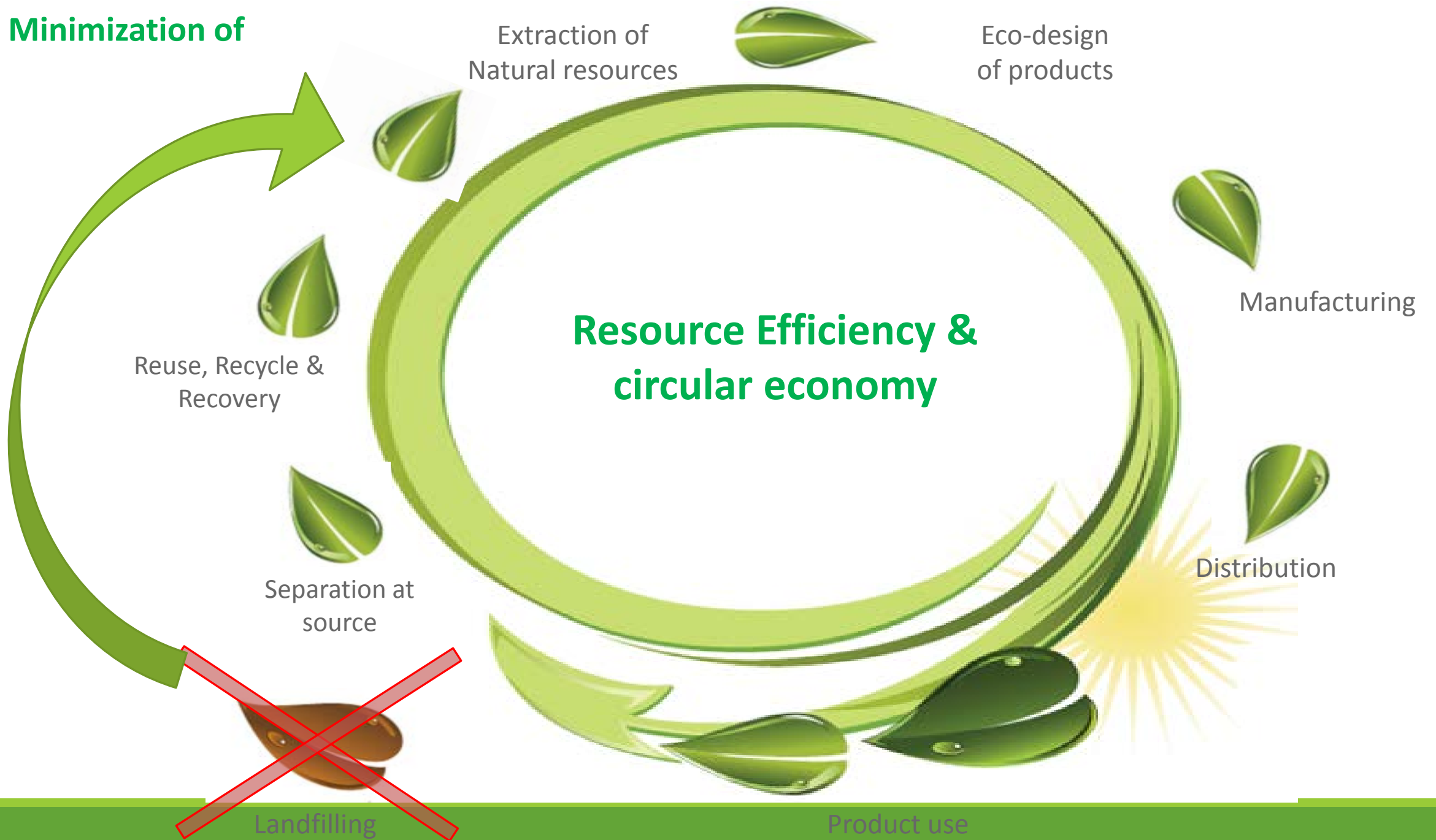
- ❖ Each year in the European Union:
 - we consume around **7.3 billion** tonnes of resources and
 - we throw away around **3 billion** tonnes of waste,
 - of which only 40% is being re-used or recycled, the rest going to landfill or incineration.



Introduction: Waste & natural resources

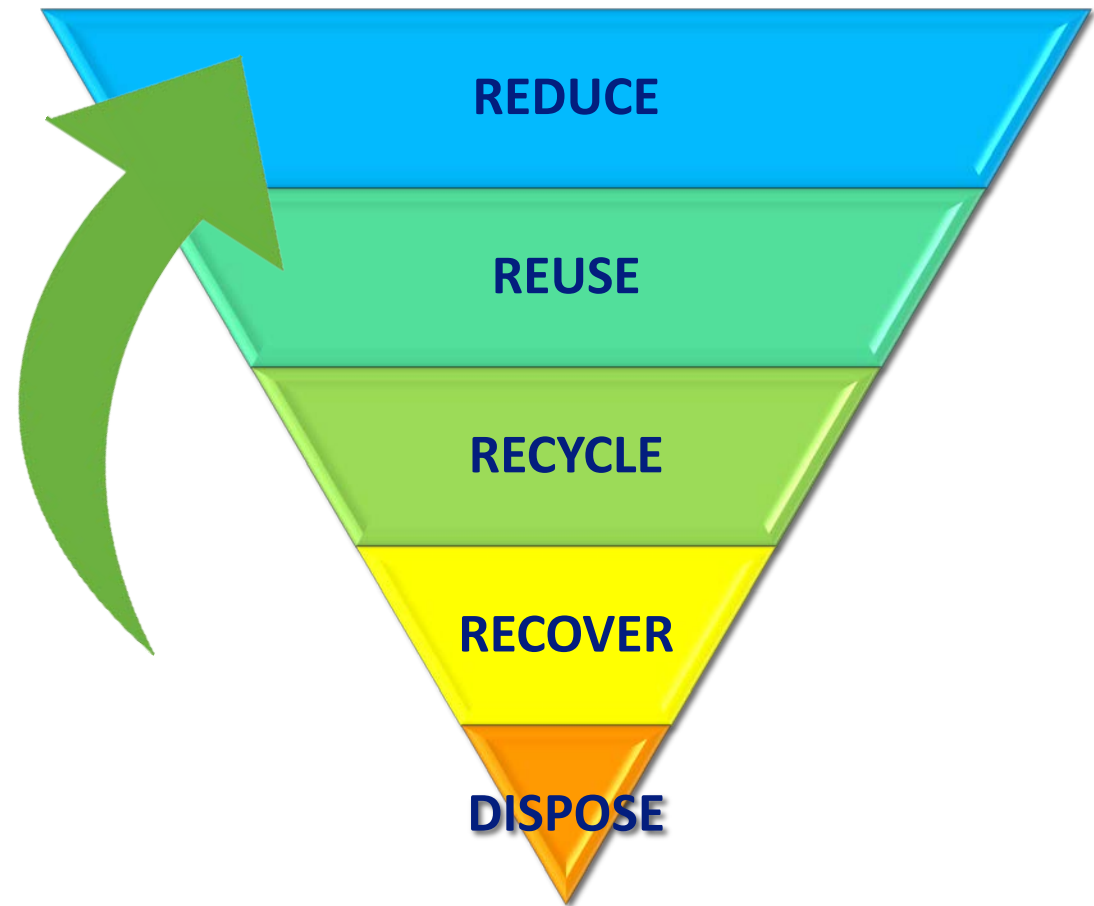
- ❖ If this quantity of waste was recycled then:
 - the equivalent of **148 million** tonnes of CO₂ emissions could be avoided annually;
 - Around **5.25 billion** euro would be saved from the recovery of recyclables such as paper, glass, plastics, aluminium and steel per year.
 - **500,000 new jobs** at least would be created.

Minimization of





Waste Hierarchy





EU Recycling Targets

Recycling and preparing for re-use of municipal waste to be increased to 70 % by 2030.

Recycling and preparing for re-use of packaging waste to be increased to 80 % by 2030, with material-specific targets set to gradually increase between 2020 and 2030 (to reach 90 % for paper by 2025 and 60% for plastics, 80% for wood, 90% of ferrous metal, aluminium and glass by the end of 2030).

Phasing out landfilling by 2025 for recyclable (including plastics, paper, metals, glass and bio-waste) waste in non hazardous waste landfills – corresponding to a maximum landfilling rate of 25%.

Promoting the dissemination of best practices in all Member States, such as better use of economic instruments (e.g. landfill/incineration taxes, pay-as-you-throw schemes, incentives for municipalities) and improved separate collection.

Increasing the cost-effectiveness of Extended Producer Responsibility schemes by defining minimum conditions for their operation.

Simplifying reporting obligations and alleviating burdens faced by SMEs.

Recycling@Home project partners



Municipality of Amaroussion

Municipality of Amaroussion



National Technical University of Athens



Municipality of Mandra-Eidyllia



ENVIRECO Consulting



LIFE11 ENV/GR/000950



The Recycling@Home recyclables management plan





Recyclable household waste simulated and tested





The Recycling@Home e source separation system





The Recycling@Home in-house compressor (a)

Collection
chamber



Compression piston

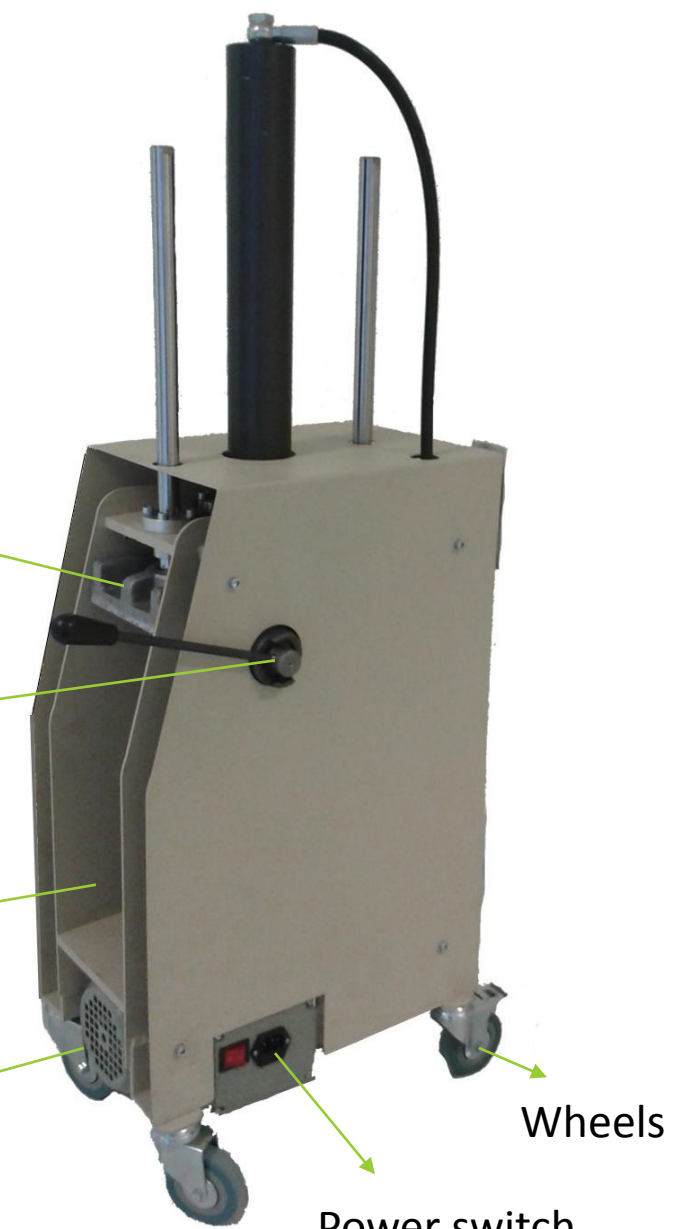
Engine control
lever

Compression
chamber

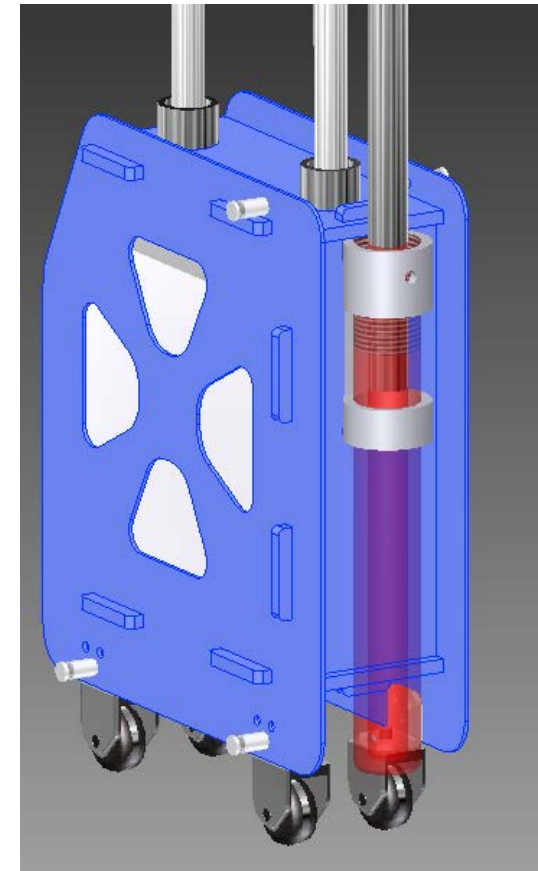
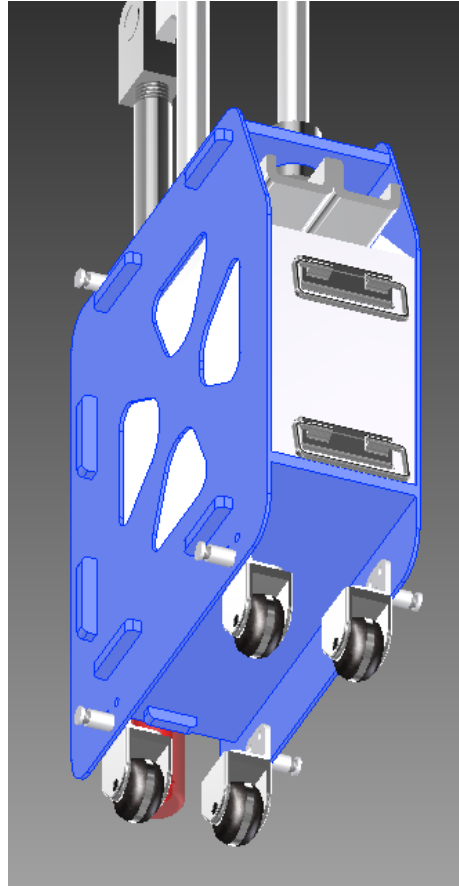
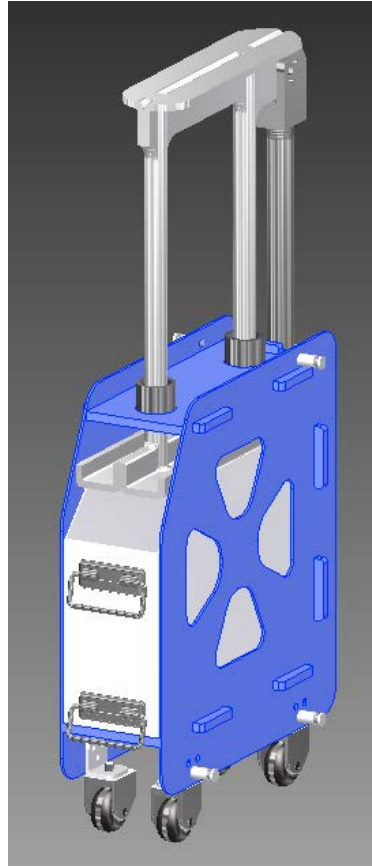
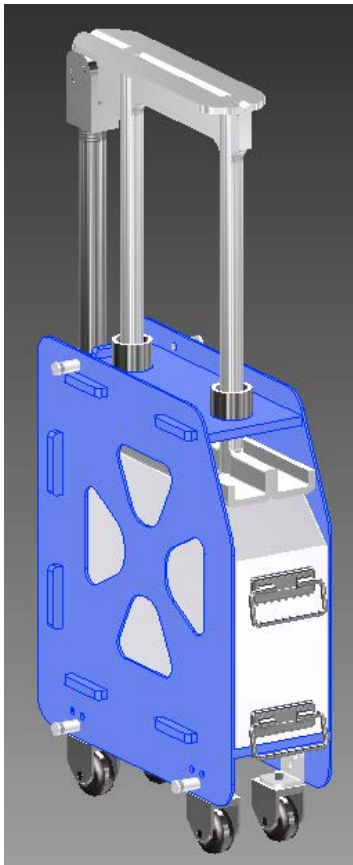
Engine

Wheels

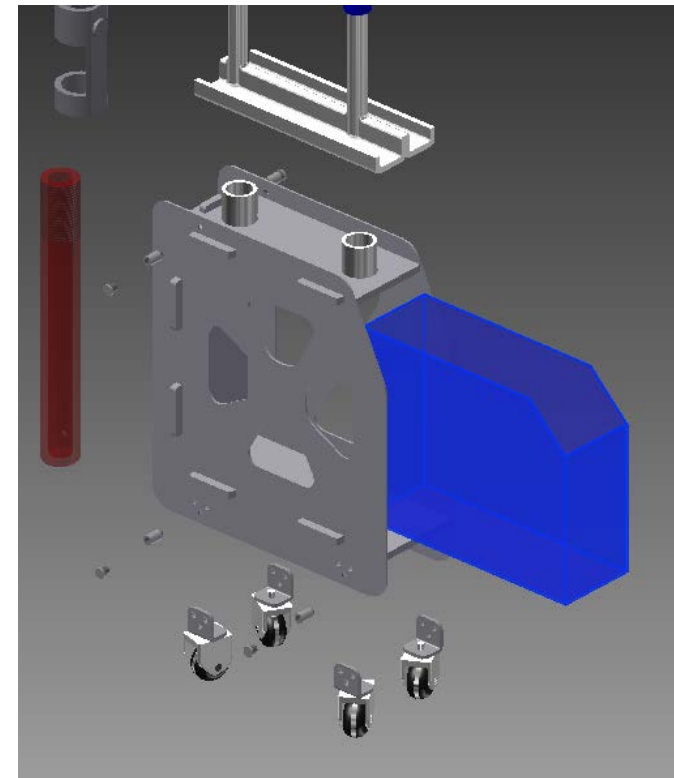
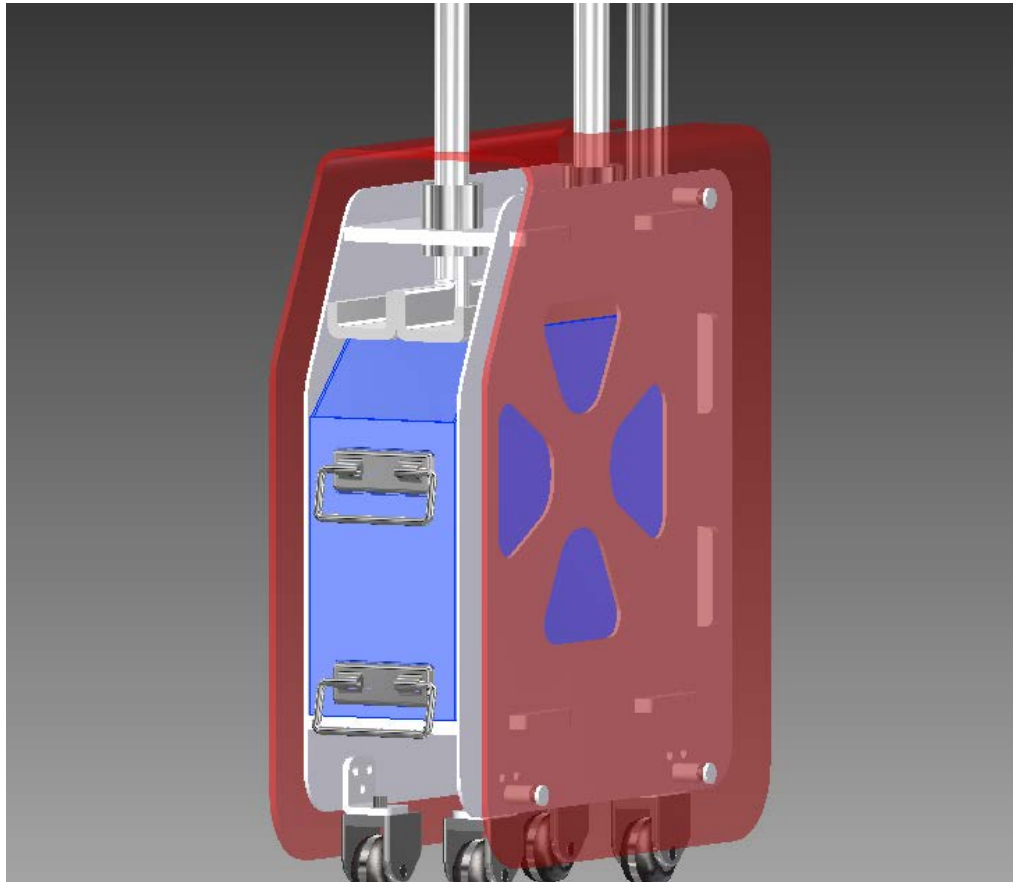
Power switch



Looking inside the recycler...



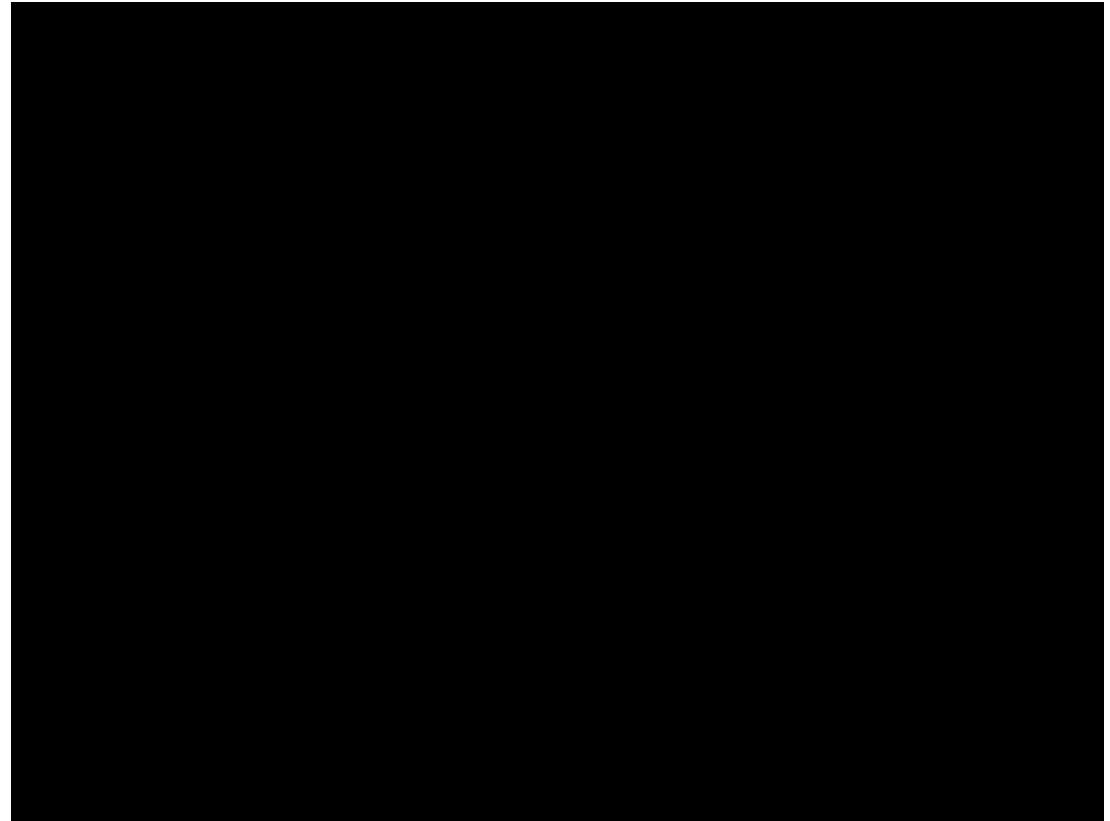
The design of the collection chamber





**Recycling@H
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in-house
compressor
(b)**

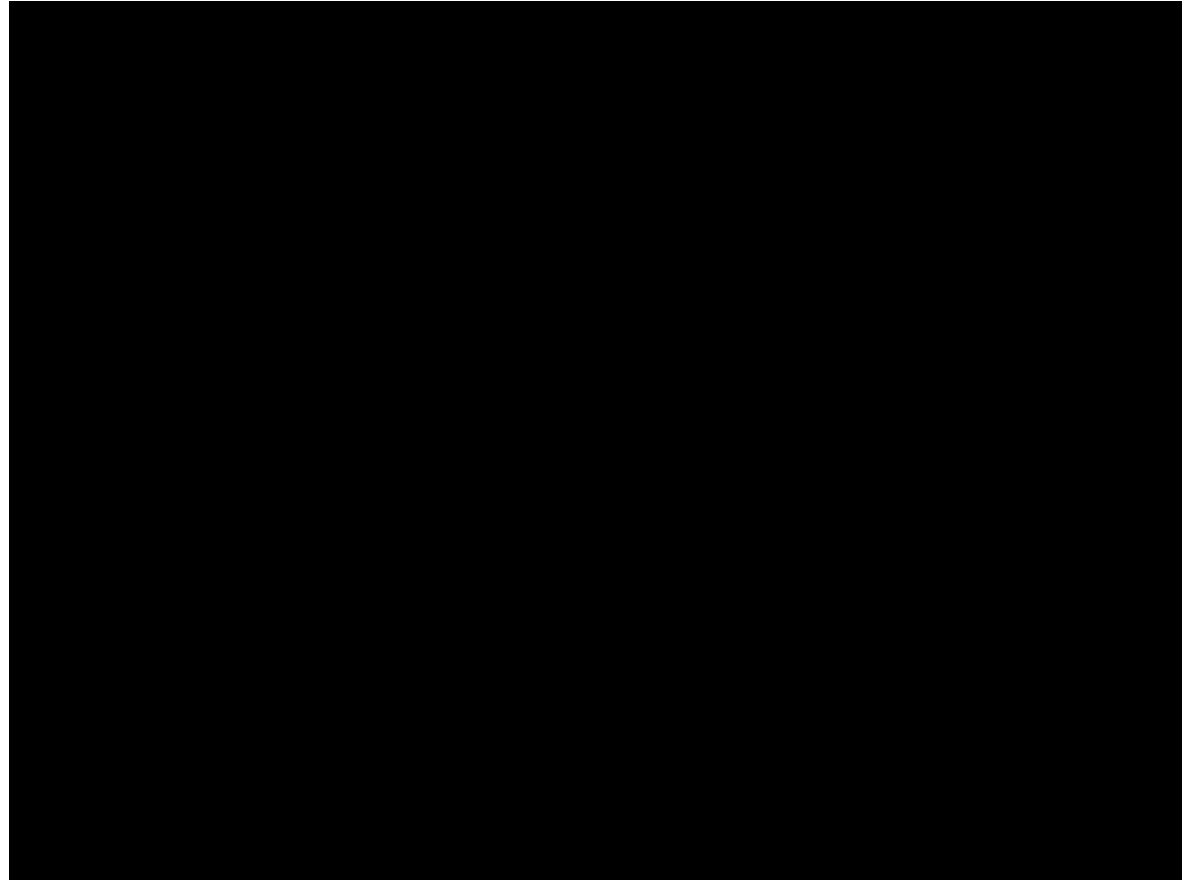
Compressing a tin can...





The Recycling@Home e in-house compressor (b)

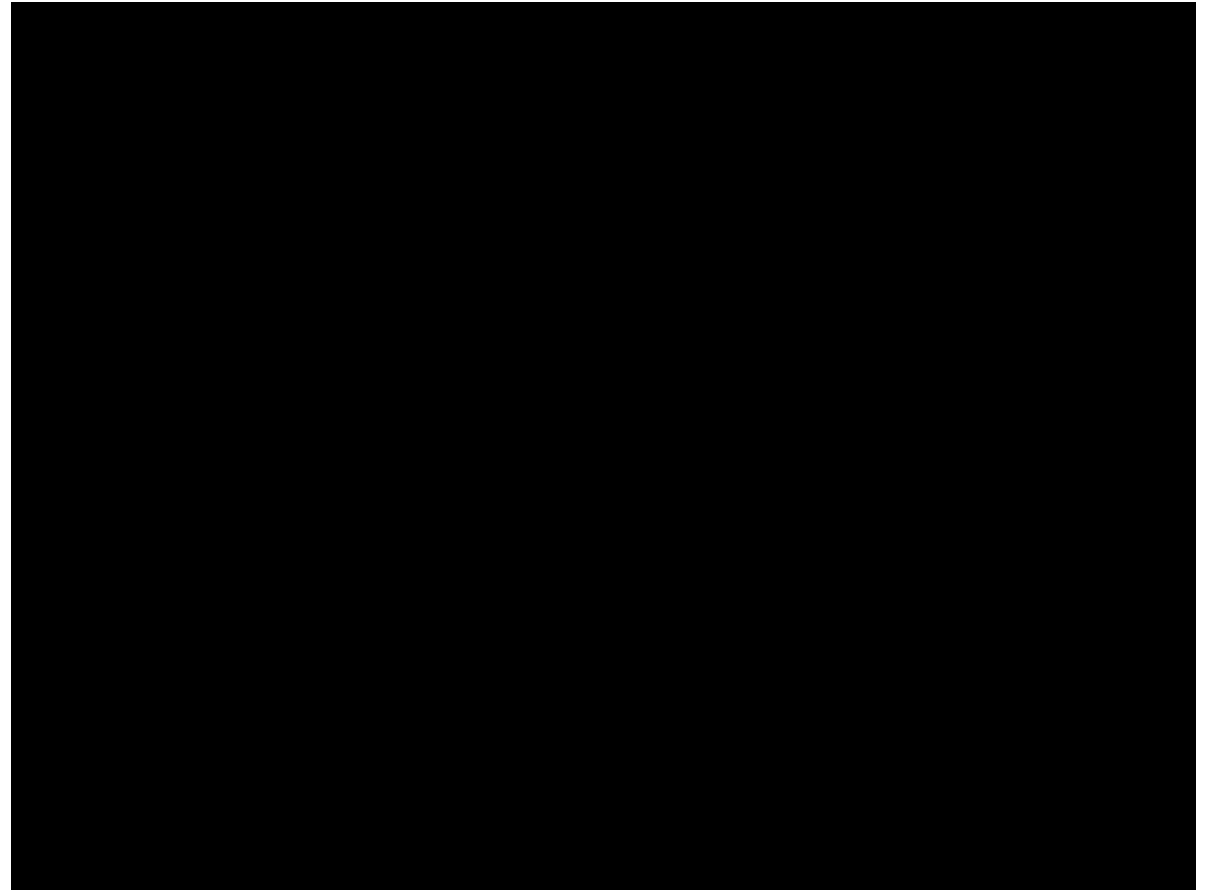
Compressing a PET bottle...





The Recycling@Home e in-house compressor (b)

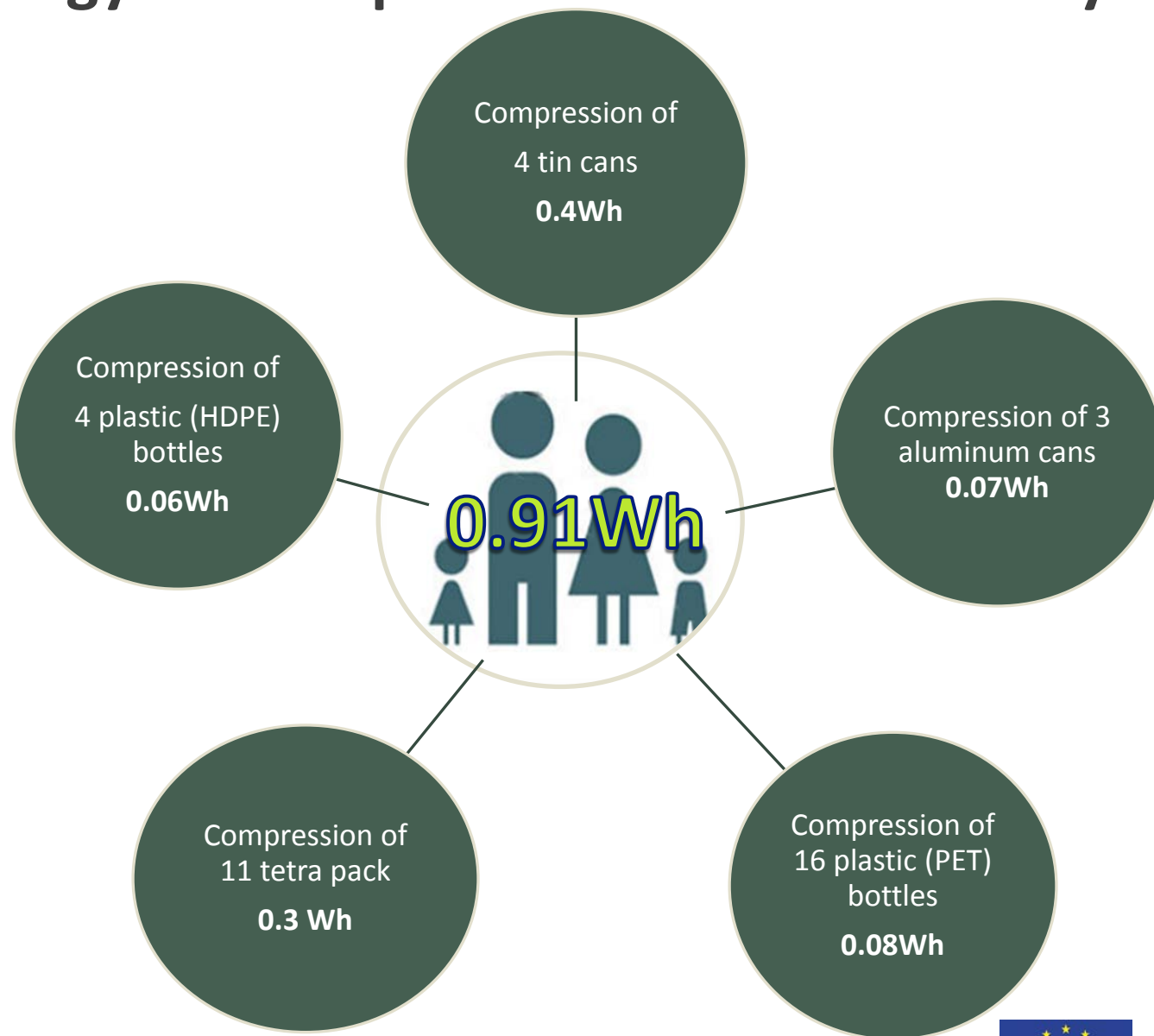
Compressing a Drink Cardboard Box...



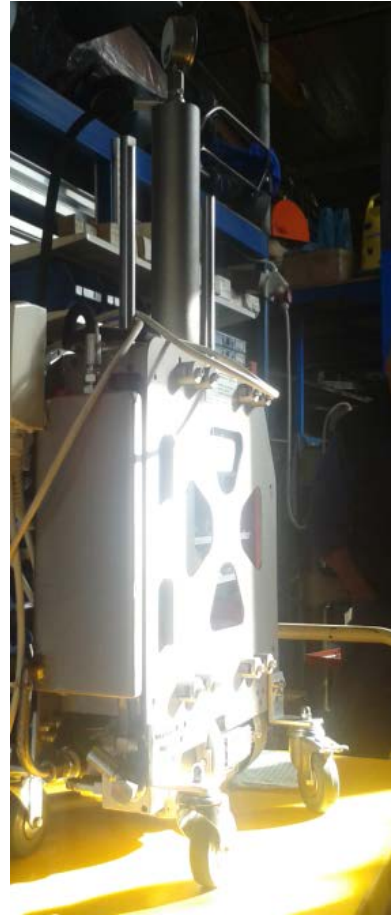


The Recycling@Home in-house compressor (c)

Energy consumption of the in-house recycler



Constructing the in-house recycler (a)...



Constructing the in-house recycler (b)...



Implementation of the Recycling@Home project

Municipality of Amaroussion



Population: 72.333 residents

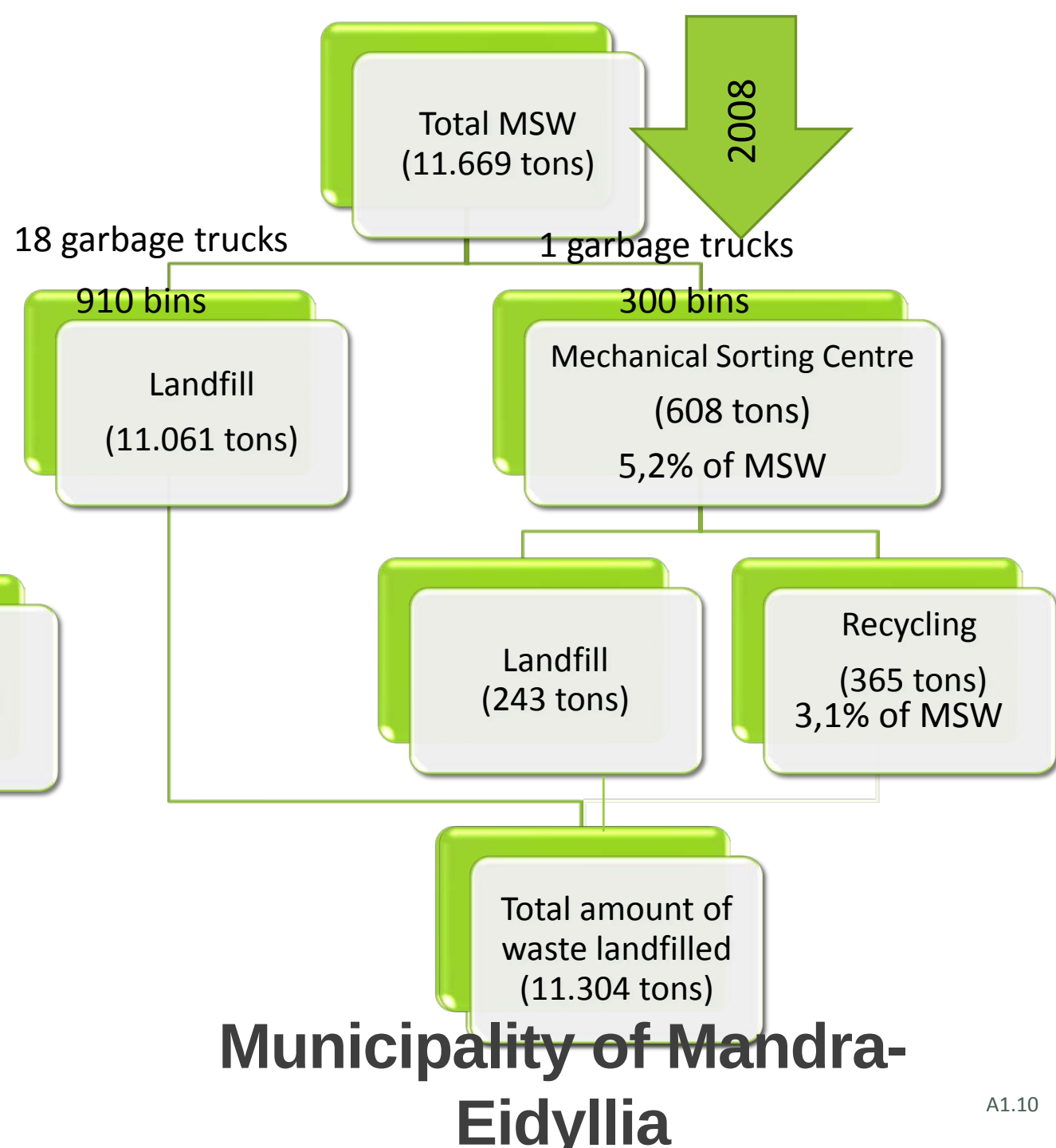
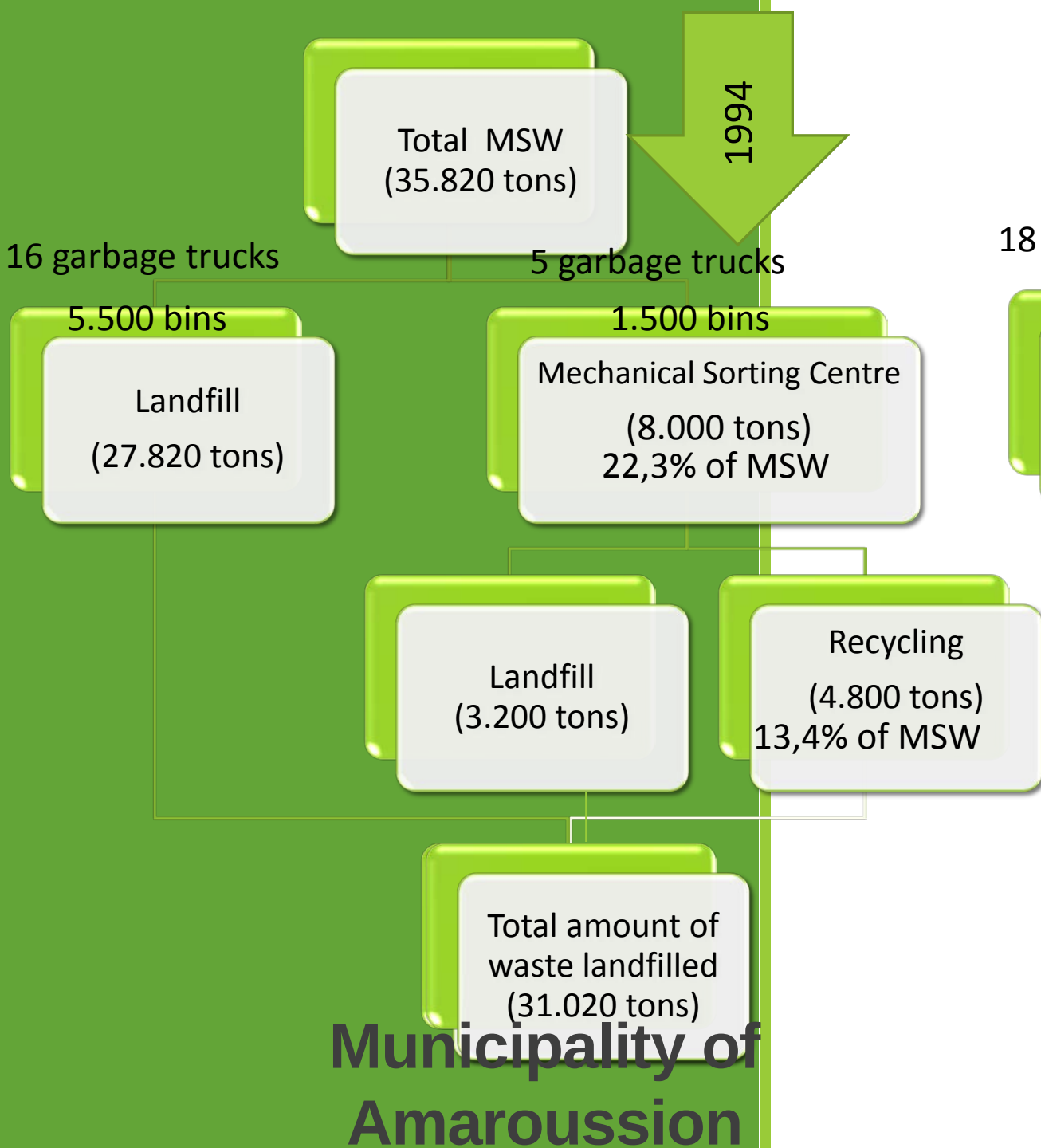
Population density: 5.590,74 p/km₂

Municipality of Mandra-Eidyllia

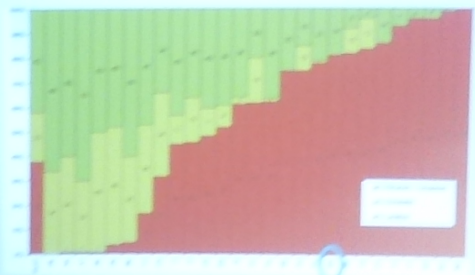


Population: 17.885 residents

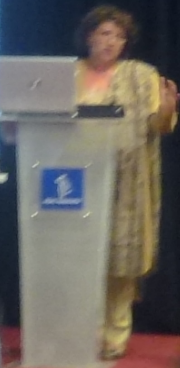
Population density: 41,96 p/km₂



Διαχείριση Αστικών Στερεών Αποβλήτων (ΑΣΑ) στην ΕΕ (201)

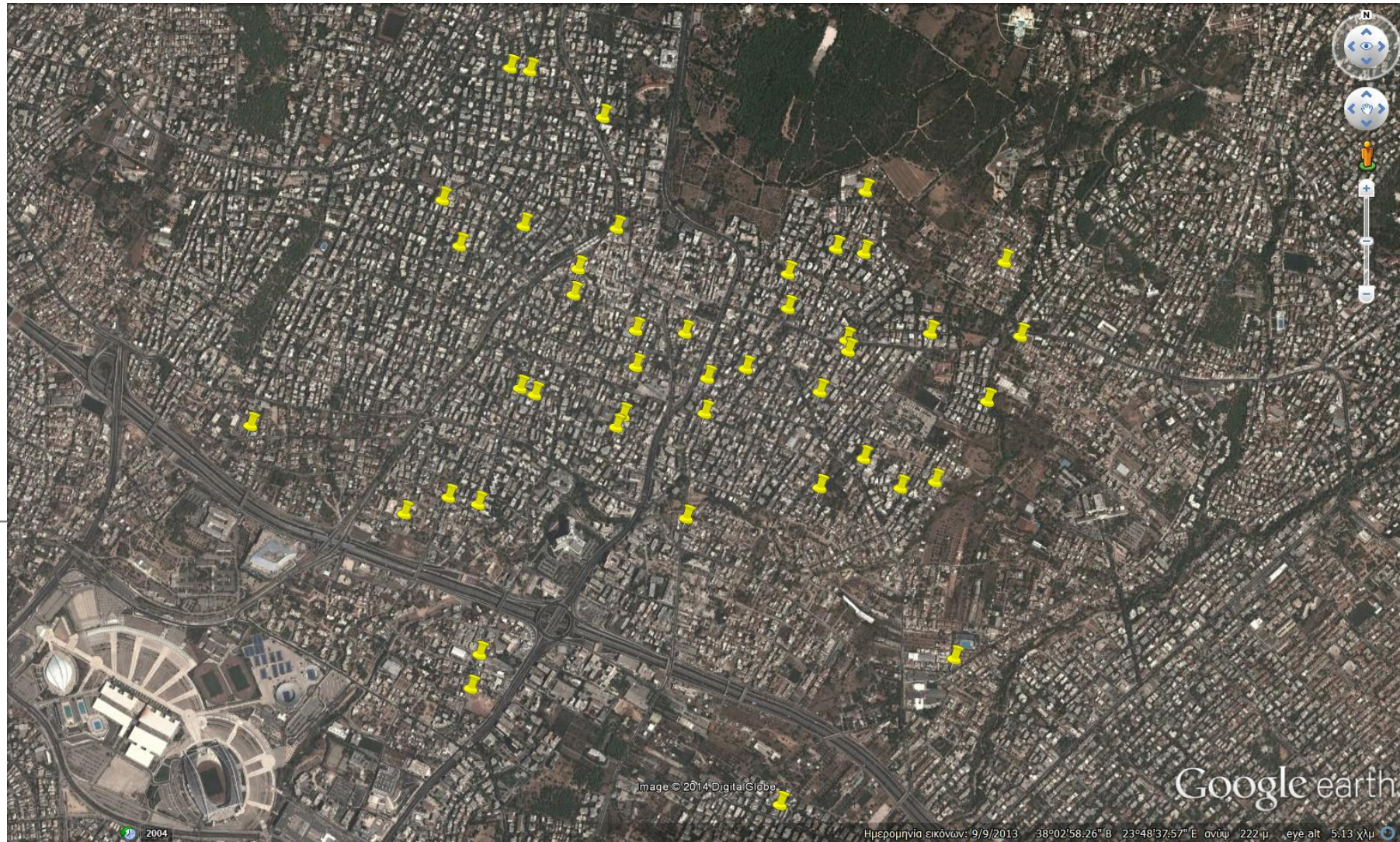


Κατανομή των μεθόδων διαχείρισης ΑΣΑ στην ΕΕ, 2000-2010 (%)





Selected households in the Municipality of Amaroussion





Recycling@Home e targets

High compression factor (more than 3:1)

Minimum frequency of discarding of the recycler content

Storage of the materials compressed for a significant period of time (2-3 weeks)

Minimum discharge requirements

Minimization of waste transportation needs

Minimization of the carbon footprint of the overall waste management scheme

Minimum energy requirements (Eco-design)





Benefits

Increase of the recycling rate

Reduction of the amount of waste disposed in landfills

Increase in the quantity of recyclables recovered

Cleaner materials to market and high re-use rates

Reduction of waste transportation

Savings in fossil fuels

Reduction of GHG emissions from transportation, landfilling and manufacturing of products from raw materials

Reinforced environmental awareness and participation of residents

Environmentally friendly neighborhoods

Compliance with the targets set by the EC Waste Framework Directive (2008/98) and the Packaging and Packaging Waste Directives





Savings (a)

Based on the project demonstration phase...

Separate collection of household recyclable waste at source by 85%

Volume reduction of recyclable waste to one third

Increase in the recycling rate by 42% of household recyclable waste generated

Decrease in the quantity of recyclable waste disposed in landfills by 42% of household recyclable waste generated

Reduction in transportation needs to one third (33%)

Reduction in fossil fuel consumption for the transportation of recyclable waste by 33%





Savings (b)

Based on the project demonstration phase...

Decrease of approximately 27% in the GHG emissions from landfilling of recyclable waste

Savings in GHG emissions by 42% from the substitution of raw materials due to the production of recycled products

The use of the Recycling@home system at full-scale is expected to result in the reduction of the collection frequency to 1-2 times per week

The cost of one unit if produced in a mass production line is estimated to be reduced by 60%

Improving waste management costs-Savings for the municipalities from the reduced amount of mixed MSW going for treatment and disposal, as the gate fee for treating and subsequently disposing waste increases



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