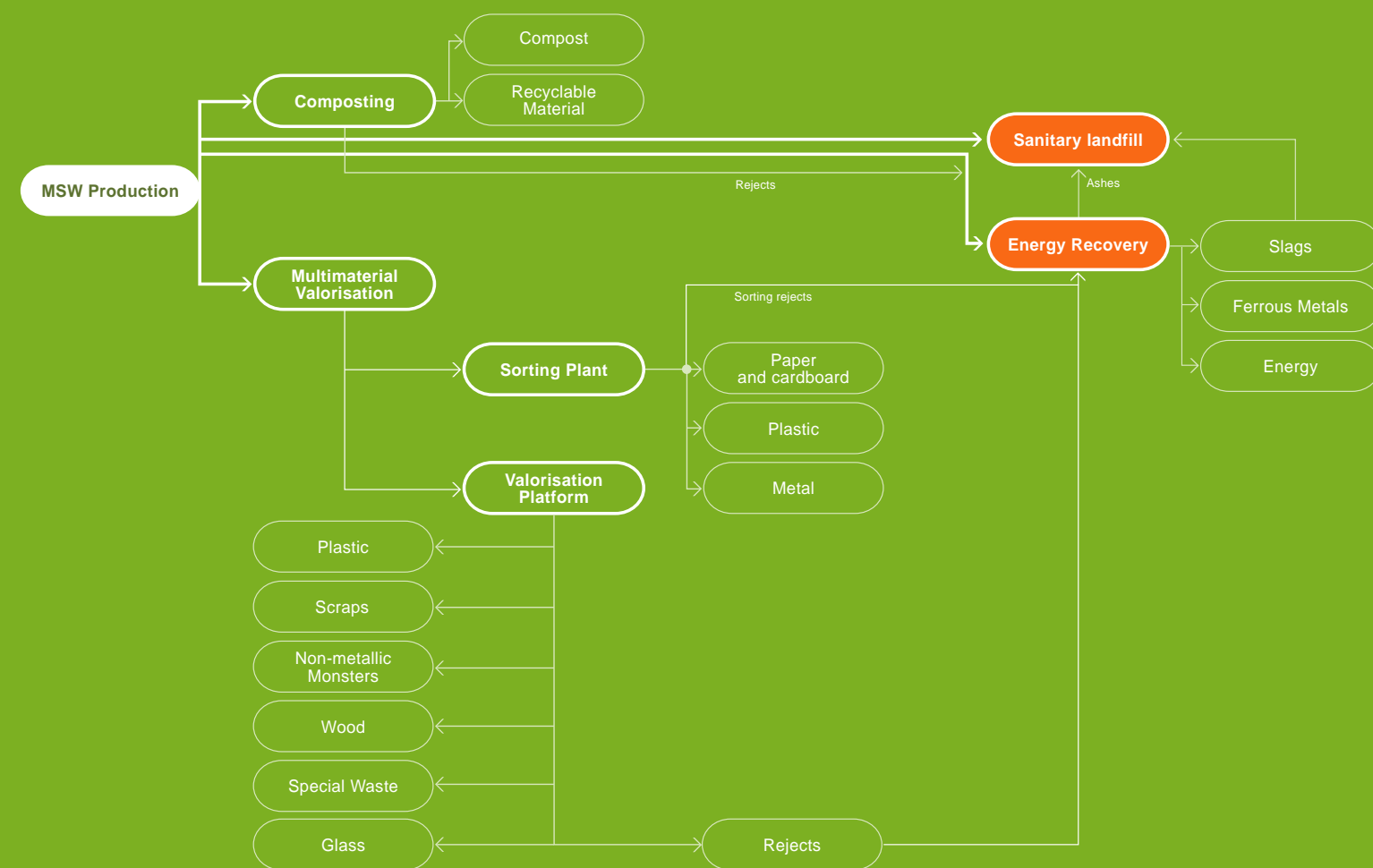
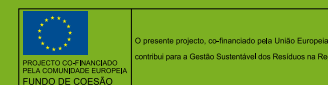


Change your attitude,
Give your family more quality of life,
Give your planet a better tomorrow.

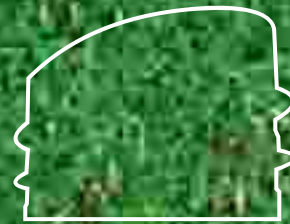
- Reuse what you still can
- Recycle what can be transformed
- Rethink what can be changed
- Value what is apparently useless
- Avoid discardable products
- Place recyclable packages in Ecopontos



LIPOR - Serviço Intermunicipalizado de Gestão de Resíduos do Grande Porto
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Para Um Mundo Mais Verde



New Projects

DYNAMICS FOR THE FUTURE

Lipor develops a dynamic activity by implementing new projects in different areas of its concern. The involvement this Association has with the citizens calls for a proactive strategy towards a sustained waste management, making it increasingly more multidisciplinary and comprising areas ranging from the social and economical components to the active participation in discussion platforms.

A | Multimaterial Valorisation

“Fairs” Project

This Selective Waste Collection project is implemented in some fairs of Lipor’s municipalities.

These spaces produce vast amounts of recyclable waste, such as paper, cardboard and plastic, which are now collected for recycling. Collection takes place at the closing of the fairs, making sure all recyclable material is sent to Lipor’s Sorting Plant, increasing overall recycling rates.

Zero Waste Project

Creation of a broad discussion platform for the implementing of strategies aimed at the reduction of waste.

Ecofone Project

Ecofone is a free selective waste collection service (paper/cardboard, glass, plastic and metal packages) available through a free hotline – 800 200 345 – to all inhabitants of Porto with a particular incidence in the catering, commerce and services sectors. There are currently six active teams carrying out 150 daily collections (around 6 tons of waste per day).

Project for the valorisation and recycling of plastic in Industries and construction and demolition sites

This is a specific oriented service for the collection of recyclable waste in the industrial zones of the associated municipalities.

As part of the APPRICOD European project, Lipor has also implemented selective plastic waste collection circuits for the construction and demolition sites.

Project for Selective Collection in Football Stadiums

Aiming to broaden and diversify its actions, Lipor has been developing a Selective Collection project in some football stadiums.

This initiative aims to promote the separation of package waste generated from the several bars and restaurants in these stadiums, ensuring that it is properly conducted to recycling facilities.

The blue, yellow and green bags provided allow the separation of plastic, metal and glass packages respectively.



Implementing of Selective Collection Circuits for Biowaste – the Lipor Strategy.

The concept of biowaste valorisation through composting is based on the implementing of selective collection circuits both for households and restaurants and other big producers as markets, following European policies in this matter, which aim the protection of public health as well as the environment. The current Biowaste Selective Collection projects for restaurants and similar establishments (canteens) have included several specific actions such as sensitising campaigns and equipment distribution.

This project is already implemented in some Lipor’s municipalities.

The implementing of Selective Collection of Biowaste in Markets, Agricultural Cooperatives and Fresh Products Distribution Centres (fruit, vegetables, flowers, etc) is being developed according to the specifications of each producer. The Supplier Market of Porto (Mercado Abastecedor do Porto – MAP) and several other agricultural cooperatives are active collaborators of this project.

The Selective Collection of Biowaste in households comprises – in an early stage – only high-rise buildings equipped with waste compartments. Brown containers (10 litres) have been distributed for the disposal of domestic biowaste.

Regarding the Selective Collection of Green Waste, Lipor’s strategy takes aim at three main channels – the Drop off sites, private gardening companies and cemeteries. Lipor has developed an innovative project which permits the valorisation of flowers collected in cemeteries through a specific sorting process.

B | Landscape Recuperation

Taking the environment as a whole, Lipor has been conducting several environmental restoring operations in several public spaces, namely the recuperation and sealing of former landfills.

C | Investigation and Development Projects

Lipor collaborates with several entities and organisations to deepen shared knowledge in related fields within the activities developed. These collaborations have been developed preferably with Universities as Research Programs.

D | Horta à Porta Project – biological vegetable gardens in the Porto region

Horta à Porta - biological vegetable gardens in the Porto region, is a project, aiming to promote quality of life for the population through good agricultural practices.

This initiative creates dynamic green spaces while promoting the contact with Nature and healthy habits, as well as waste reduction.

E | Biological Vegetable Gardens in Schools

Creation of a network of biological vegetable gardens in schools of the associated Municipalities.

F | Integra Project

A project for social reinsertion of specific groups through their involvement in initiatives related to the environment.

G | Strategic Environment Planning for the Metropolitan Area of Porto

Elaboration and execution of a broad action plan comprising the several environmental vectors.



H | Development of sustainable consumption policies

“One day of sustainable consumption” is a guide intended to work as a diary of a consumer who leads an ecologically correct life.

For a greener world

LIPOR - WASTE MANAGEMENT, VALORISATION AND TREATMENT

Lipor – Intermunicipal Waste Management service of Greater Porto – is the entity responsible for the **management, valorisation and treatment of municipal solid waste** produced by its eight associated municipalities: Espinho, Gondomar, Maia, Matosinhos, Porto, Póvoa de Varzim, Valongo and Vila do Conde.

Having been created as an Association of Municipalities in 1982, Lipor has come to implement an integrated management of waste, extending and building infrastructures complemented with sensitising campaigns for the general public.

Integrated Treatment and Valorisation Strategy of MSW

Lipor treats around **480 thousand tons of municipal solid waste – MSW** – produced by 1 million inhabitants every year.

Sustaining modern MSW management concepts such as the adoption of integrated systems and minimising disposal in landfills, Lipor has developed an **integrated treatment, valorisation and confinement strategy for MSW** based in three main components: **Multimaterial Valorisation, Composting Project and Energetic Valorisation** – complemented by a Sanitary Landfill for the disposal of rejects and previously prepared residues.



Active Ecology in Portugal and the World

Lipor collaborates with several national and international entities, taking an active role in the development of sustainable policies for a greener future with more quality of life. It has also established partnerships with several universities and other public and private institutions. On the international level, it is an active participant in environmental sensitising campaigns organised by the European Union.

Lipor is also a member of the **Business Council for Sustainable Development – BCSD Portugal**, the **Portuguese Association for Basic Sanitation Studies**, the **Institute of Energy**, the **Resource Recovery Forum**, the **international Solid Waste Association – ISWA**, the **Institute for the Sustainability of Resources – ISR-CER** and the **Association of Cities and Regions for Recycling – ACR+**.

Multimaterial Recycling Project

THE 4 R'S IN ACTION: SEPARATE TO VALORISE

The production of vast amounts of municipal solid waste (MSW) – each person produces, on average, 1,3 kg of waste per day – took Lipor to foment the **4 R's policy** – **Reduce, Reuse, Recycle and Recover**, developing the Multimaterial Recycling Project – Separate to Valorise, the success of which greatly depends on the participation and commitment of the population.

22 Drop off sites

Parks for the reception and disposal of recoverable and recyclable waste that, for its dimensions or characteristics cannot be collected by normal means.

What can be deposited in the Drop off sites:

Paper and cardboard, plastic, glass, non-metallic monsters, metallic scraps, wood, green waste, oils, batteries, clothes, fluorescent lamps.

2600 Eco-points

Set of containers for sorted deposition of paper and cardboard, glass, plastic and metal packages, placed by residential areas, schools, restaurants and hotels. The Eco-points network currently comprises one Ecoponto per 377 inhabitants. There is always an Eco-point nearby to help you recycle!

Selective door-to-door collection zones

Selective waste collection system for paper, cardboard and plastic or metallic packages on weekdays at prescheduled times done by easily identifiable appropriate vehicles. There are currently six Selective door-to-door collection zones in the municipalities of Gondomar (Rio Tinto), Maia (Gueifães, Maia and Vermoim), Matosinhos (Leça da Palmeira and Senhora da Hora), Porto (Antas and Costa Cabral) and Valongo (Bela), comprising a total of 65 200 inhabitants about 7% of the population comprised by Lipor.

Lipor Sorting Plant: Separate to Valorise

The Lipor Sorting Plant has the capacity to process 35 000 tons of waste per year; here we proceed with a complementary separation, sorting the materials coming from selective collection, baling and conditioning them for posterior shipment to the recycling industries.

The Lipor Sorting Plant takes up a 4 000 m² closed nave and is equipped with two sorting lines:

- ▶ Plain Products Line (paper and cardboard), with two sliding sorting tables;
- ▶ Voluminous Products Line (plastic packages, metallic packages and packages for alimentary liquids), with two sequential sorting tables.

It is also equipped with a baling line.

The Lipor Sorting Plant is already a reference in quality and environmental development, having gained its Certification in accordance with the NPEN ISO 9001 and NPEN ISO 14001 norms.

Lipor believes that the protection of the environment is its primordial activity. Therefore, it has defined an environmental and quality policy with the highest standards that are the mirror of the organisation's qualitative level.

The OHSAS 18001/NP 4397 safety norm, part of the current Integrated Quality and Environment System is now being implemented. Certification for this norm is due through the end of 2005.

Recycling is worthwhile

- ▶ Every day 14 tons of paper are processed and shipped, the equivalent to 238 trees.
- ▶ Lipor processes over 10 thousand tons of glass yearly, allowing for the fabrication of 30 million glass bottles
- ▶ The 600 tons of plastic bottles recycled in 2004 would take 500 years to be biodegraded if they were deposited in soil.

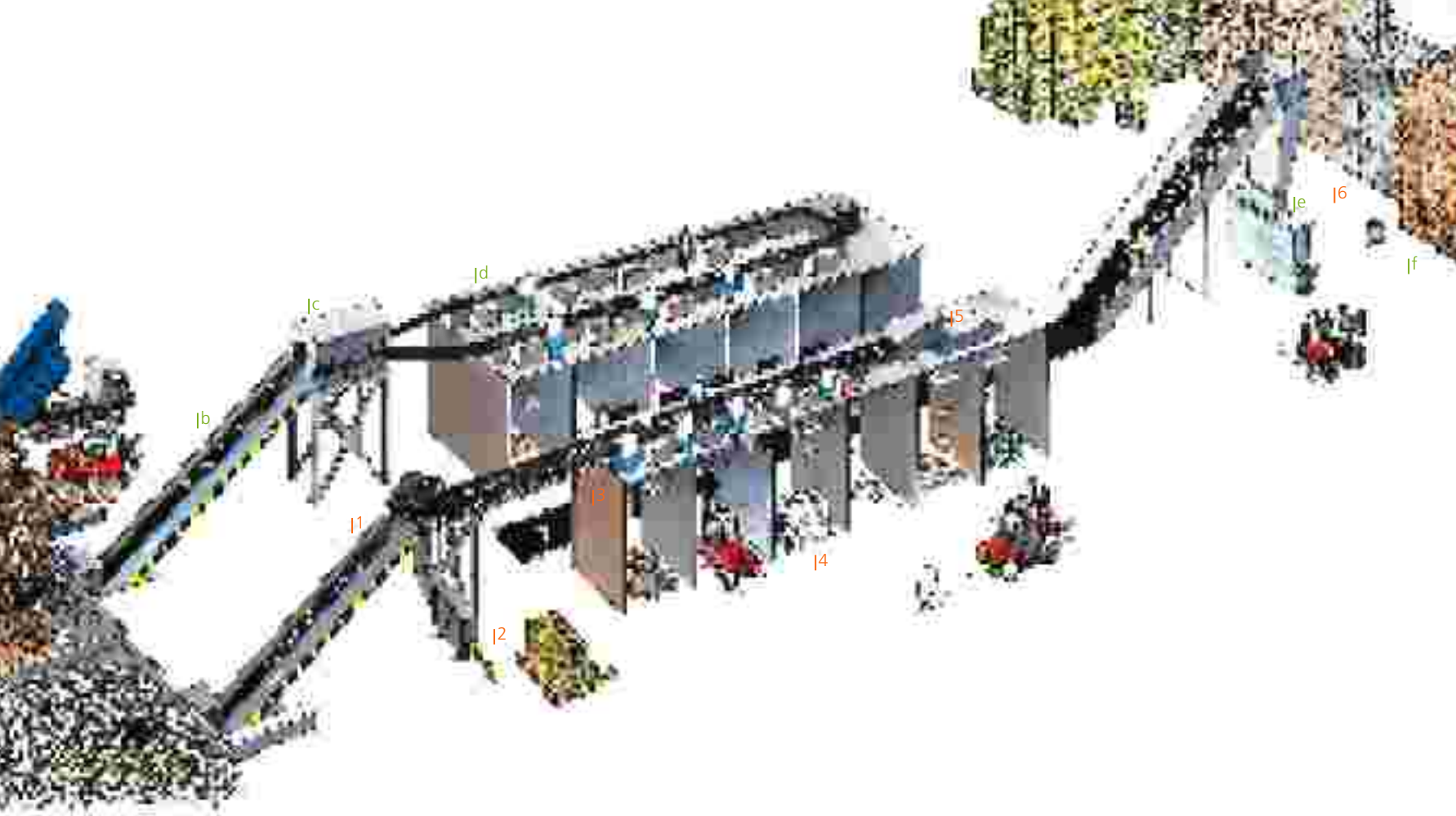


Selective door-to-door collection

Drop off sites

Eco-points





Paper and Cardboard



Plastic and Metal



Energy Recovery Project

FROM WASTE TO LIGHT

The Lipor **Energy Recovery Plant**, located in Maia, is used to valorise the fraction of waste that cannot be reused through the composting and recycling processes by transforming it into energy.

Equipped with two processing lines working continuously and being practically self-running, the Plant processes around 1 000 tons of waste per day and produces 25MWh of energy; enough to supply a 150 thousand people conglomerate.

The Energy Recovery Plant ensures the reuse of the calorific potential of waste by means of a controlled thermal process that transforms it into energy.

The waste deposited in the Plant is burned at high temperatures (1000° C to 1200° C). This process produces energy but also gases, dross and inert ash, which are submitted to a thorough control and environmental monitoring. The gases are neutered and filtered before being launched to the atmosphere; the inert ash and dross are shipped for confinement in the Sanitary Landfill of Maia.

The Energy Recovery Plant was a pioneer in its sector, having obtained certification for the Quality, Environment and Safety Management System, in accordance to the NPEN ISO 9001, NPEN ISO 14001 and OHSAS 18001/NP4397 norms, respectively.



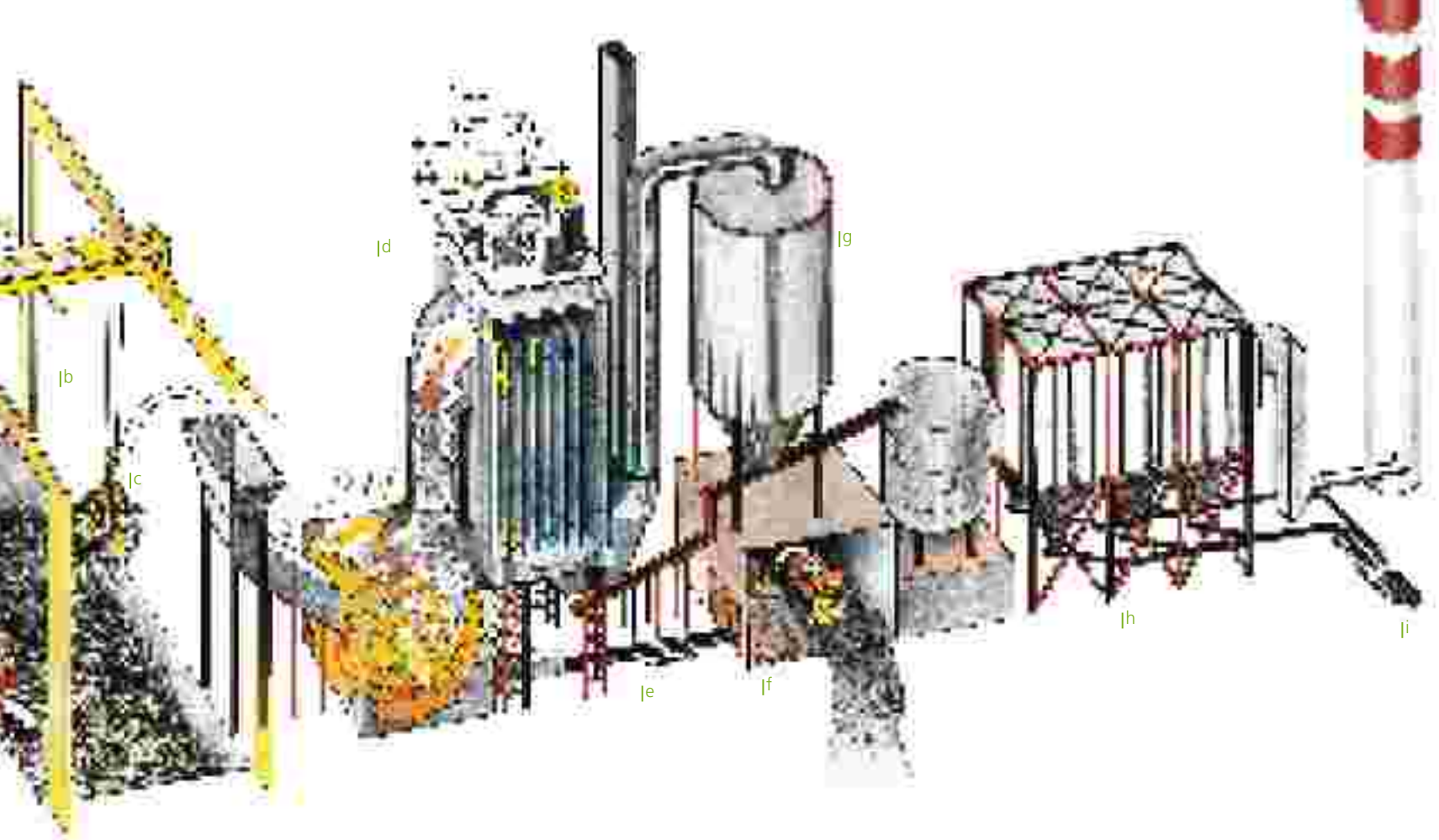
Energy Recovery Plant

External Monitoring Program

A team of researchers from the Universities of Aveiro, Lisbon and Porto developed the External Monitoring Program with the purpose of following and evaluating the effects of the Lipor II complex in the surrounding environment. It includes a vast set of environment descriptors, as well as several psychosocial and public health aspects.

**1000 tons of waste
are enough to produce
energy for 150 000
inhabitants.**





a | Reception pit



b | Rolling bridge with polyp



c | Polyp with feeding hopper



l | Operators at control room



l | Waste combustion



d | Alternator and turbine



e | Vibrating conveyor belt



f | Refuse pit



g | Reactor



h | Sleeve filter



i | Inert zone



l | Power sub-station

The Composting Project

THE NEW COMPOSTING PLANT

Lipor's new **Composting Plant** is placed on a 40 thousand square meters area and allows for the valorisation of up to 60 thousand tons of biowaste from selective collection (green and food waste) per year, producing around 20 thousand tons of high quality compost per year.

The new composting unit began its activity in October 2004 and comprises four basic operations:

- ▶ Preparing the mixture to compost (mechanical processing)
- ▶ Composting and maturing
- ▶ Refinement
- ▶ Storage, Packaging and Pellet transformation

This unit comprises two functionally autonomous but articulated buildings:

- ▶ The Administrative Building, where social and administrative services, as well as an auditory and support laboratory, are located;
- ▶ The Building for Mechanical and Biological Processing, Maturing, Storage, Packaging and Pellet transformation.

Aiming to minimize any odour problems, the new Composting Plant facility is completely closed. The unit has an integral odour treatment system by washing and biofiltration.

One noteworthy aspect is the sensible architectural integration of the plant with its surroundings, achieved by architect Carlos Prata with the resource to buildings of uneven volume and different sorts of roofing. The presence of vast garden spaces and a water mirror, along with a sensible choice of materials, provide this project with superior quality.

Quality of the Compost

Due to its characteristics, resulting from the used of biowaste from selective collection and the technology used in composting process, the new compost will be a high-quality product, to be used in horticulture, floriculture, gardening and fruit growing.

The compost will be presented under its traditional form or in pellets. It is, therefore, a modern product adapted to the market's new realities.



Composting Plant

Technical Confinement

THE END FOR NON-REUSABLE WASTE

Technical confinement is the last stage of Lipor's global waste management, processing and valorisation process, an essential infra-structure that closes the cycle of an integrated management thought and developed to valorise life and the environment. To complete this effort, waste that could not be valorised through multimaterial organic or energy recovery must be given an end.

The **Sanitary Landfill of Maia**, next to the Energy Recovery Plant, has an area of 6,3 hectares and a disposal capacity of 520 000m³. It receives the by-products resulting from the thermal processing waste treatment conducted in the plant, as well as brute waste that could not be processed at any of the industrial treatment poles implemented by Lipor.

How it works

There are 3 specific landfills, according to the type of material to be confined. Inert slags and ash are deposited separately in two landfills located at the north alveolus, in an area of 3,5 ha; brute waste is placed on a third landfill located at the south alveolus, in an area of 3 ha.

This landfill is used as a fuse for all the system, receiving waste resulting from stopped treatment units or whenever its valorisation isn't possible by any other means.

Technical Confinement has also a Quality, Environment and Safety Management System certified by the NPEN ISO 9001/NPEN ISO 14001 and OHSAS 18001/NP 4397 international norms.

Environmental protection and Control: Impermeability and Monitoring

The Sanitary Landfill of Maia was designed to be utterly sealed, with several layers of draining geo-composites that assure the protection of soil and water against the eventuality of accidental migration of lixiviates.

This infrastructure was designed within strict environmental and control parameters, including a thorough monitoring program which controls received waste (solids), lixiviates (liquids) and biogas (gas) as well as other environmental descriptors, thus guaranteeing the quality of the all process and minimising any potentially harmful effects for the environment and public health.

Treatment of Lixiviates

After a stabilising stage in a 2 600 m³ capacity lagoon, lixiviates are submitted to a biological nitrification/denitrification treatment that creates nitrogen and reduces the amount of organic matter. After this they undergo an ultra-filtering and inverse osmosis process, releasing them from any organic matter, mineral salts or heavy metals, with the result being an effluent that can be used as irrigation water.



Sanitary Landfill

GIL

LIPOR INFORMATION CENTRE

To educate for the environment, the promise of a different tomorrow.

The purpose of the Lipor Information Centre (GIL) is to divulge the several Lipor projects in a didactic and attractive way, so as to sensitise and educate the population, mainly the youngsters, for environmental awareness. The GIL wishes that the citizens take part in the recycling project and it promotes several activities aiming to turn an environmental duty into a usual and fun gesture.

To cultivate an ecological awareness, a pedagogical bet.

The GIL develops several activities next to schools, making didactic material and pedagogical games available, as well as monitoring for specific actions such as: Workshops, Ecocolourful, Ecogames, Theatre, Mobile Stand, Ecoland, Holiday Camp, Ecoteca, Formation for teachers, aiding staff and tutors, The Teacher Dossier, Guided Tours, Eco's Newspaper and Traineeship Support.

To cultivate
an ecological
awareness,
a pedagogical
bet.



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