

LCA AS A TOOL OR PHILOSOPHY FOR INTEGRATED WASTE MANAGEMENT: OPPORTUNITIES IN PORTUGAL



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ABSTRACT

The use of Life Cycle Assessment (LCA) in the municipal solid waste (MSW) management sector is a reality with some existence by now in many European countries where its application has been meaningfully increased during the last years.

The legislation recently published in Portugal for the MSW sector states, as never before, both the LCA technique and the life cycle concept as part of an evaluation process and as an approach, respectively, for some applications in this sector.

The objective of this poster is to identify the opportunities for the use of both LCA technique and life cycle concept as stated in the new legislation and also to spot some other applications for this technique as a decision support tool, in the scope of the targets and objectives defined in the legislation.

NEW LEGISLATION FOR MSW

❑ **Decreto - Lei 178/2006, from 5th September**

Establishes the general regulations for waste management

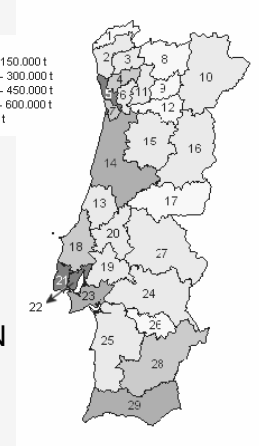
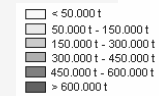
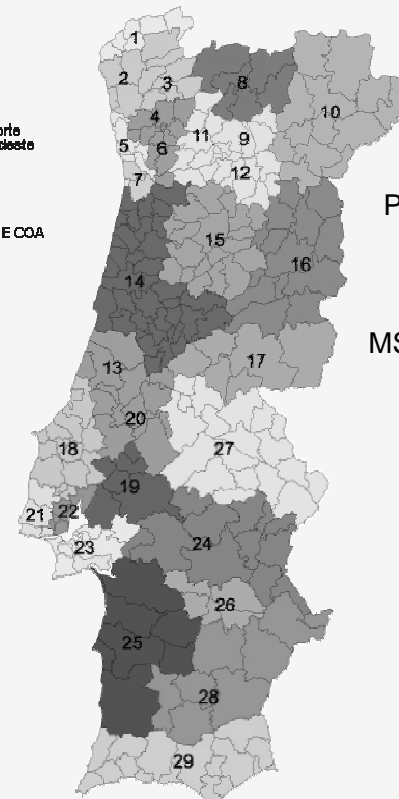
❑ **Portaria 187/2007, from 12th February**

Approves the Strategic Plan for Municipal Solid Waste (PERSU II)

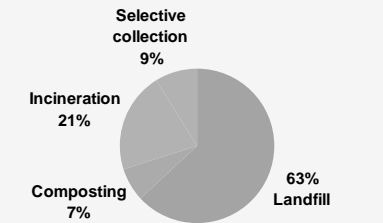


MUNICIPAL WASTE – current situation

- 1 - VALORMINHO
- 2 - RESULIMA
- 3 - BRAVAL
- 4 - Amave
- 5 - Lipor
- 6 - Valsouza
- 7 - SULDouro
- 8 - RESAT
- 9 - Vale do Douro Norte
- 10 - Resíduos do Nordeste
- 11 - REBAT
- 12 - RESIDUORO
- 13 - VALORIS
- 14 - ERSUC
- 15 - Ecobetão
- 16 - ÁGUAS ZEZERE E COA
- 17 - Raia - Pinhal
- 18 - RESIOESTE
- 19 - Resúrio
- 20 - Resúrio
- 21 - Amires
- 22 - VALORSUL
- 23 - AMARSUL
- 24 - Cassão
- 25 - Amáizal
- 26 - Amoi
- 27 - YALNOR
- 28 - Resúrio
- 29 - ALGAR



PLURIMUNICIPAL
MANAGEMENT
SYSTEMS
AND
MSW PRODUCTION
(2005)



MSW FINAL DESTINATION
(2005)

Decreto - Lei 178/2006, from 5th September Establishes the general regulations for waste management

TITLE I – General regulations and principles

CHAPTER I – General regulations

CHAPTER II – General principles of waste management

Article 4 – Principle of self-sufficiency

Article 5 – Principle of the responsibility for the management

Article 6 – Principles of prevention and reduction

Article 7 – Principle of waste management operations hierarchy

Article 8 – Principle of citizen responsibility

Article 9 – Principle of waste management regulation

Article 10 – Principle of equivalence

1 — The management of the waste is part of its **life cycle**, being of the responsibility of the respective producer.

TITLE II – Waste management regulation

CHAPTER I – Waste management planning

CHAPTER II – Technical standards of waste management operations

CHAPTER III – Waste management operations licensing

TITLE III – Information registration and waste management monitoring

CHAPTER I – Integrated system of electronic waste registration

CHAPTER II – Waste management monitoring

TITLE IV – Economic and financial system of waste management

CHAPTER I - Fees

CHAPTER II - Waste market

TITLE V – Offences regulation and transitory and final provisions

CHAPTER I – Supervision and infractions

CHAPTER II – Transitory and final provisions

4 — The use of best available technologies with sustainable costs must be favoured to extend the **materials life cycle** through reuse, in compliance with complimentary strategies.

4.9 — From this it is indispensable a combination of measures to promote waste prevention, reuse and recycling in order to allow an optimized reduction of the impact accumulated throughout the resources **life cycle**, which passes for guaranteeing the feasibility of the main objectives:

- In waste management activities, to consider both the environmental protection and public health
- To include in the main principles of waste management the principle of producer responsibility, in complement to the other ones stated – the precautionary, the proximity and the self-sufficiently principles
- To define the hierarchy of waste management giving priority to prevention and placing the landfill disposal as the last option to be adopted
- To adopt to waste management a **life cycle thinking** approach throughout the creation of incentives to the producers for the ecodesign of the products placed in the market emphasizing the importance of the promotion of products that allow the reuse, as well as through the public awareness for eco-consumption
- To emphasize the crucial role that the use of the economic instruments can have in reaching prevention targets
- To continue the work in the area of the best technologies in the production processes showing the prevention in the BREF (best available techniques reference documents)
- To develop indicators of prevention
- To strengthen the importance of communication and public awareness for the promotion of sustainable production and consumptions and the citizen demand of "green" products

4.45 - II. The revision of the waste framework directive due to the main reasons identified in the thematic strategy on waste prevention and recycling, in particular the need of adapt the waste framework directive to the new approach of waste policies induced by this strategy and by the thematic strategy on sustainable use of natural resources, adopting an approach centered in the resources considering the **life cycle**, including in that way this concept on the waste politics and increasing its cost-effectiveness relation.

6.8 — The integrated product policy is based on the three stages of the decision process that determine the environmental impact of the products **life cycle**:

- application of the polluter-pays principle when setting the products prices
- informed choice of the consumers
- products ecodesign
 - in this step it is necessary to produce and publish information about the products environmental impact throughout the **life cycle**

6.12 — Reinforcement of the politic measures related with chemical substances based on REACH system (Registration, Evaluation and Authorization of Chemicals), that will allow a better control to the use of dangerous substances including the one that turns into waste and promoting at the same time the substitution of dangerous substances which will decrease the hazardous waste production (in production and post-consumption stages)

REACH preambles:

Obligation of the producers and other downstream users to evaluate the security of its products in the **life cycle** part for which they contribute, including waste management and disposal
Promotion of dangerous substance substitution by less dangerous ones, whenever there exist an appropriate alternative, and more responsibility and information of downstream users for alternative chemical substances selection

Portaria 187/2007, from 12th February Approves the Strategic Plan for Municipal Solid Waste (PERSU II)

1 — Introduction

2 — Scope and objectives

3 — Main conclusions from PERSU I monitoring

4 — Strategic, legislative, scientific and technological framing

4.1 — Strategic framing

A) Thematic strategy on the prevention and recycling of waste (4.8 and 4.9)

B) Thematic Strategy on the sustainable use of natural resources

C) Thematic strategy for soil protection

D) National strategy on the reduction of biodegradable municipal waste from landfills

E) Contingency plan for municipal solid waste (PIRSUE)

F) National strategic framework (QREN)

4.2 — Legislative framing

4.2.1 Legal system on waste management and proposal for a framework directive on waste (4.45 – II.)

4.2.2 Agents and responsibilities

4.3 — Scientific and technological development

5 — Analysis of the current situation

6 — Actuation Axles for 2007-2016

6.1 — Framing

6.2 — AXLE I — Prevention: national program

6.2.1 — Axle I / Measure 1— Reduction of the amount of waste produced (6.8 and 6.12)

6.2.2 — Axle I / Measure 2 — Reduction of waste hazardous

6.2.3 — Instruments and respective actions and measures for prevention

6.3 — AXLE II — Public awareness/mobilization

6.4 — AXLE III— Waste management quantification and optimization

6.5 — AXLE IV — Information system as pillar of waste management

6.6 — AXLE V — Qualification and optimization of the public entities intervention in the scope of MSW management

7 — Targets and objectives for 2007-2016

7.1 — Objectives and targets for 2007-2016 and respective staging

7.2 — Allocation of systems to national objectives and targets

7.3 — Sustainability

7.3.1 — Social sustainability (7.68)

7.3.2 — Environmental sustainability

7.3.3 — Economic and financial sustainability

8 — Participants

9 — Articulation with QREN and Investments plan

10 — Implementation and monitoring

Bibliography

Glossary

ANNEX I – Evaluation of PERSU I by strategic base

I.1 — Prevention (I.5)

I.2 — Treatment or management MSW solutions

I.3 — Education

I.4 — Recycling

I.5 — Management and operation

I.6 — Monitoring

ANNEX II – Methodology for MSW quantification and characterization

4.8 — In the long term one intends that EU becomes a recycling society, avoiding waste production and using waste as resources. For that, it is stated in this strategy the modernization of the legal framework through the introduction of the **Life Cycle Assessment (LCA)**.

7.68 — In this framework, the attention of PERSU II to prevention by reduction – both the waste amount and danger – focuses in the environmental impact of waste and products that precede them in the **life cycle**

I.5 — From the evaluation of PERSU I, it was concluded that the waste management systems considered as prevention measures public awareness campaigns able to support new environmental behaviors related to waste. However, the prevention strategy, taking into account materials and energy flows and tools as **LCA**, passes essentially to the connection between the research and the industry through the design, production and marketing of products with less environmental impacts throughout the **life cycle** and in particular when they turn into waste.

