E-waste handling process from A to Z in Portugal

Conference Proceedings

Editors

Samsun M. Başarıcı
Yaşar University

İbrahim Zincir
Yaşar University

Tohid Ahmed Rana
Yaşar University

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Polytechnic Institute of Tomar

Vasco Gestosa da Silva
Polytechnic Institute of Tomar

ipt Instituto Politécnico de Tomar

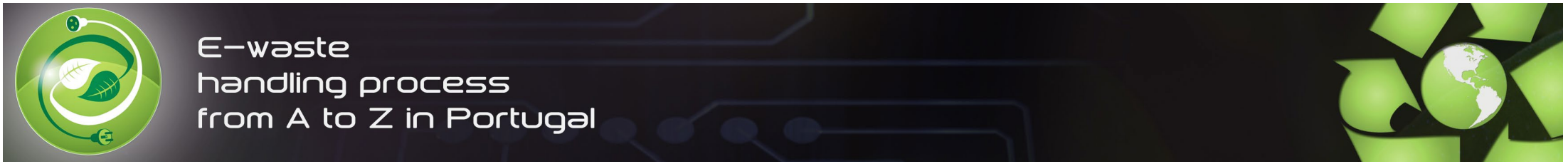
EWASTEU

Lifelong Learning Programme

Diploma Supplement Label 2013 — 2016 Awarded by the European Commission to

ECTS Label 2013 — 2016 Awarded by the European Commission to

YAŞAR ÜNİVERSİTESİ



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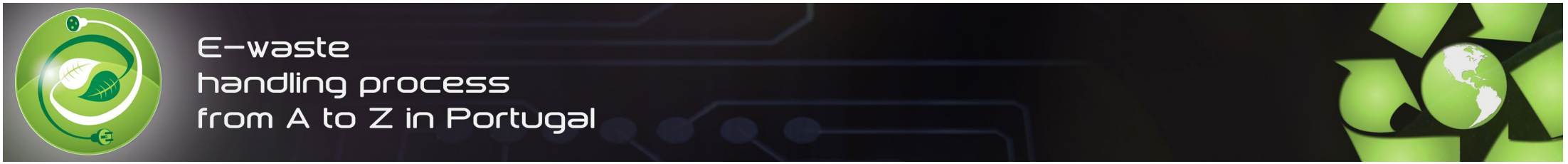


CONTENTS

FOREWORD

The conference "E-waste handling process from A to Z in Portugal", held in Portugal on May 6 and 13, 2014, and focused on the general aspects in the treatment of electrical and electronic equipment (EEE) at the end of life cycle was carried out under the program EWASTEU - Legal Regulations and Implementations on e-waste in EU. This program had its first edition in 2013 in Yasar University (Izmir, Turkey), with the participation of several higher education institutions in Europe, including the Polytechnic Institute of Tomar (Portugal). The project aims to promote discussion, reflection and awareness about the issues related to the waste from electrical and electronic equipment (WEEE). The conference allowed a clear view of the processes involving the EEE since its entry to the stages of collection, management and recycling. Among the entities involved, we highlight the ANREEE - National Association of Registration of Electrical and Electronic Equipment, ERP Portugal (one of the two managing bodies of WEEE in Portugal), Interecycling (1st Portuguese WEEE recycling company) and RESITEJO – Association of Management and Treatment of Waste in the Middle Tagus. This conference was promoted by the Polytechnic Institute of Tomar, Yasar University and Turkish National Agency.

PROGRAMME

06 may

9h00 . Welcome Session
- Samsun M. Başarici
  EWASTEU project coordinator, Yaşar University
- Célio Gonçalo Marques
  Instituto Politécnico de Tomar, Organizing Committee
- Vasco Gestosa da Silva
  Instituto Politécnico de Tomar, Organizing Committee

10h00 . E-waste handling process from A to Z in Portugal
- Rui Cabral
  Executive Director of ANREEE . Associação Nacional para o registo de Equipamentos Elétricos e Eletrónicos
- Filipa Moita
  Communication Director of ERP Portugal . European Recycling Platform
- Filipe Queiróz e Melo
  Communication Director of Resitejo . Gestão e Tratamento dos Lixos do Médio Tejo

13h00 . Lunch break

15h00 . E-waste handling process from A to Z in Portugal (Part II)
- Hugo Cristóvão
  Education Alderman of the City of Tomar

17h00 - Closing Ceremony

13 may

9h00-13h00 . E-waste handling process from A to Z in Portugal (Part III)
- Ricardo Vidal
  Director of Interecycling

EEE in Portugal

The vision of the national register entity

Rui Cabral
Executive Director of ANREEE

EWASTEU
Legal Regulations
and Implementations
on E-Waste in EU

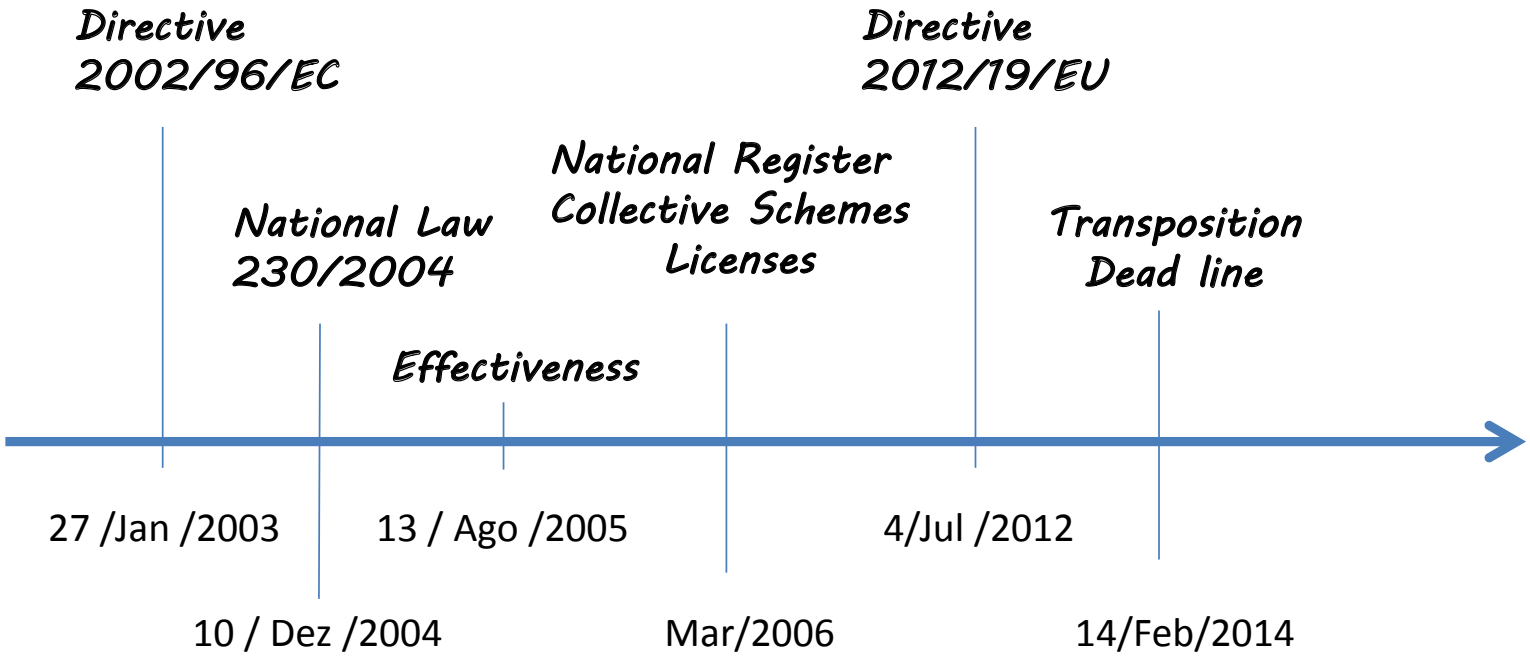
EEE in Portugal

The vision of the national register entity

Polytechnic Institute of Tomar

6/May/2014

E-waste handling process from A to Z in Portugal



WEEE1 in Portugal (DL 230/2004)

1 National register

Private !

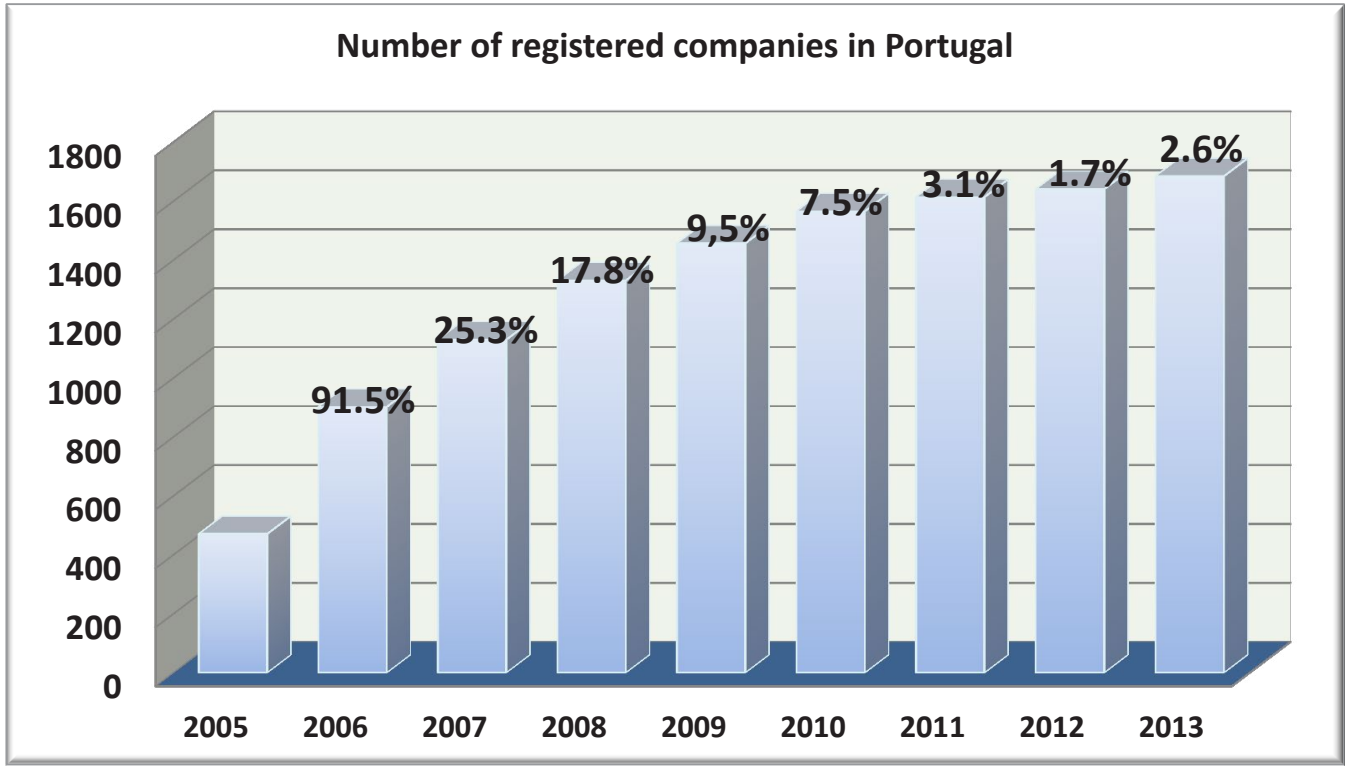
Private vs Public ?

WEEE1 in Portugal (DL 230/2004)

National registers performance

COUNTRY	POPPULATION	REGISTERED CMP	RATIO (n. of registers per M inah
Ireland*	4.156.119	1450	**348,9**
Denmark *	5.484.723	1530	**279,0**
Portugal*	10.676.910	1641	**153,7**
Germany*	81.471.834	10700	**131,3**
France	65.312.249	6700	**102,6**
UK	62.698.362	5825	**92,9**
Spain	46.754.784	2057	**44,0**

WEEE1 in Portugal (DL 230/2004)

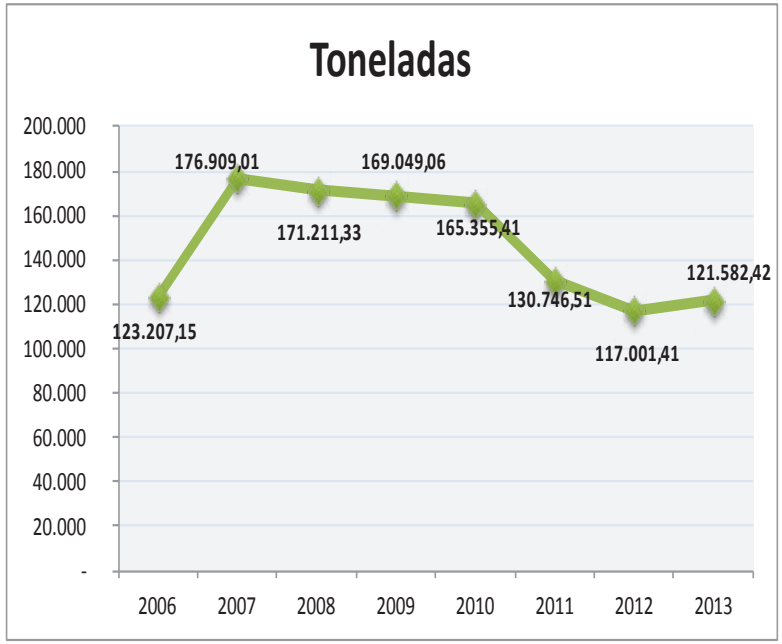


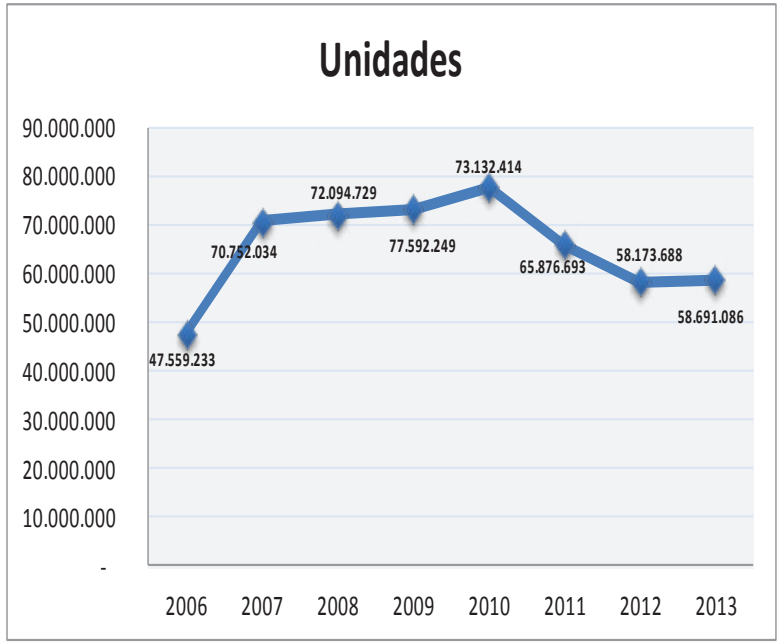
WEEE1 in Portugal (DL 230/2004)

Reports !!

WEEE1 in Portugal (DL 230/2004)

Reports





WEEE1 in Portugal (DL 230/2004)

1 Private National register

2 Collective schemes

2 Enforcement bodies

EPA (Apa)

WEEE2

- *Why?*

Adapt (to new equipments)
Harmonization (scoping, reporting)
Get more WEEE
...It was foreseen

WEEE 2

Master Differences (to WEEE1):

Scope

FV panels immediately

Open Scope (2018)

New exclusions

6 categories

WEEE 2

Master Differences:

Open Scope

New collection targets

2016 - 45% of EEE

2019 - 65% of EEE

or 85% of the WEEE

WEEE 2

Master Differences:

Open Scope

New collection targets

Authorized Representatives

MS level

Distance selling end users

replacing importers (option)

Cost

Inter-MS support

WEEE 2

Master Differences:

Open Scope

New collection targets

Authorized Representatives

Registering and reporting Harmonization (?)

The big burden?

WEEE 2

Annex X·

·

"A. ***Information to be submitted <u>upon registration:</u>***

1. *Name and address of the producer or of the authorised representative where appointed under Article 17 (postal code and location, street name and number, country, telephone and fax number, e-mail, as well as a contact person). In the case of an authorised representative as defined in Article 17, also the contact details of the producer that is represented.*
2. *National identification code of the producer, including European tax number or national tax number of the producer.*
3. *Category of EEE set out in Annex I or III, as appropriate.*
4. *Type of EEE (household or other than household equipment).*
5. *Brand name of EEE.*
6. *Information on how the producer meets its responsibilities: individual or collective scheme, including information on financial guarantee.*
7. *Selling technique used (e.g. distance selling).*
8. *Declaration stating that the information provided is true."*

WEEE 2

Annex X·

Information to be submitted <u>for reporting</u>:

- *1. National identification code of the producer.*
- *2. Reporting period.*
- *3. Category of EEE set out in Annex I or III, as appropriate.*
- *4. Quantity of EEE placed on the national market, by weight.*
- *5. Quantity, by weight, of waste of EEE separately collected, recycled (including prepared for re-use), recovered and disposed of within the Member State or shipped within or outside the Union.*

WEEE 2

Attention to the details

- To whom does the producer report?

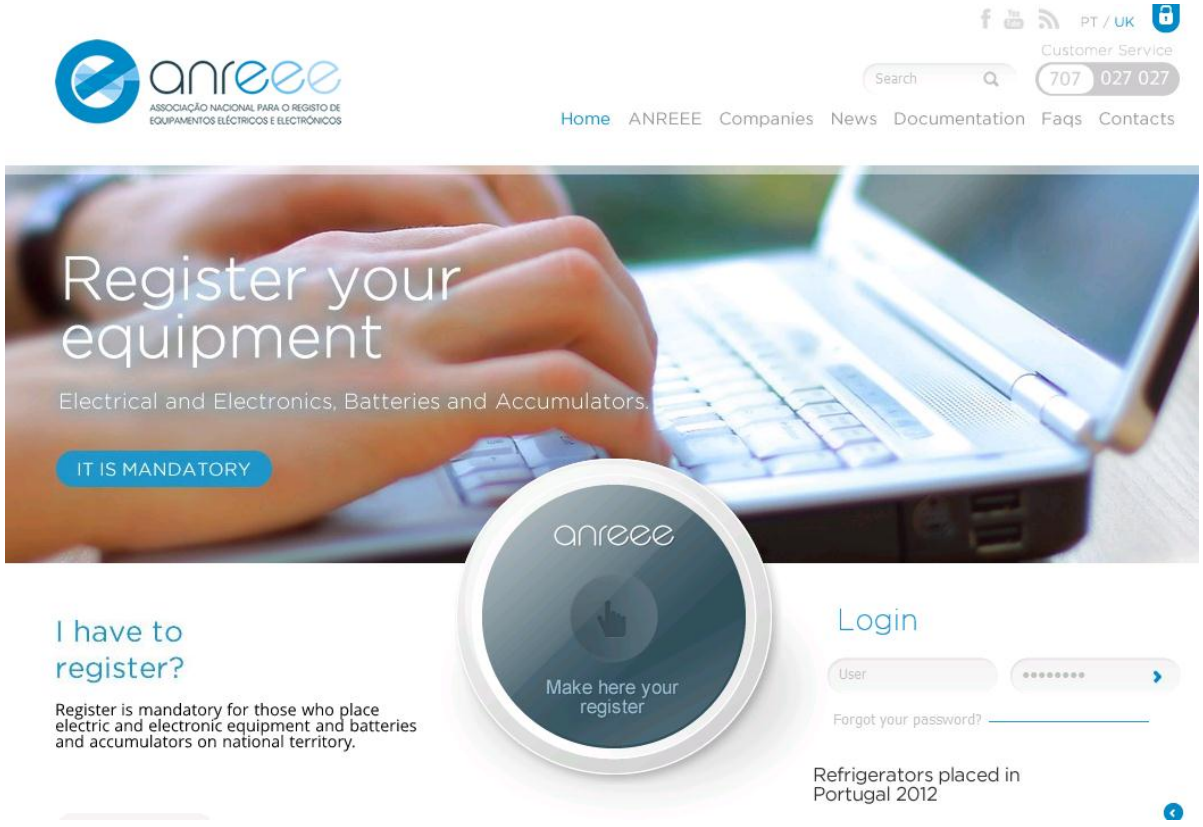
Effectiveness of this harmonization ??

WEEE 2

6 recommended points to be worked

- Authorized representative
- Free riders
- Enforcement
- Clarification of key definitions
- Weight
- Reporting

Thank you !



ISO 9001 BUREAU VERITAS Certification

ISO 27001 BUREAU VERITAS Certification

EWRN european weee registers network

anreee

ERP PORTUGAL

Filipa Moita
Communication Director of ERP Portugal

European Recycling Platform

ERP PORTUGAL

Instituto Politécnico de Tomar

5 May 2014

Filipa Moita

PR Manager

BIG STEPS
SMALL FOOTPRINT
WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE) RECYCLING

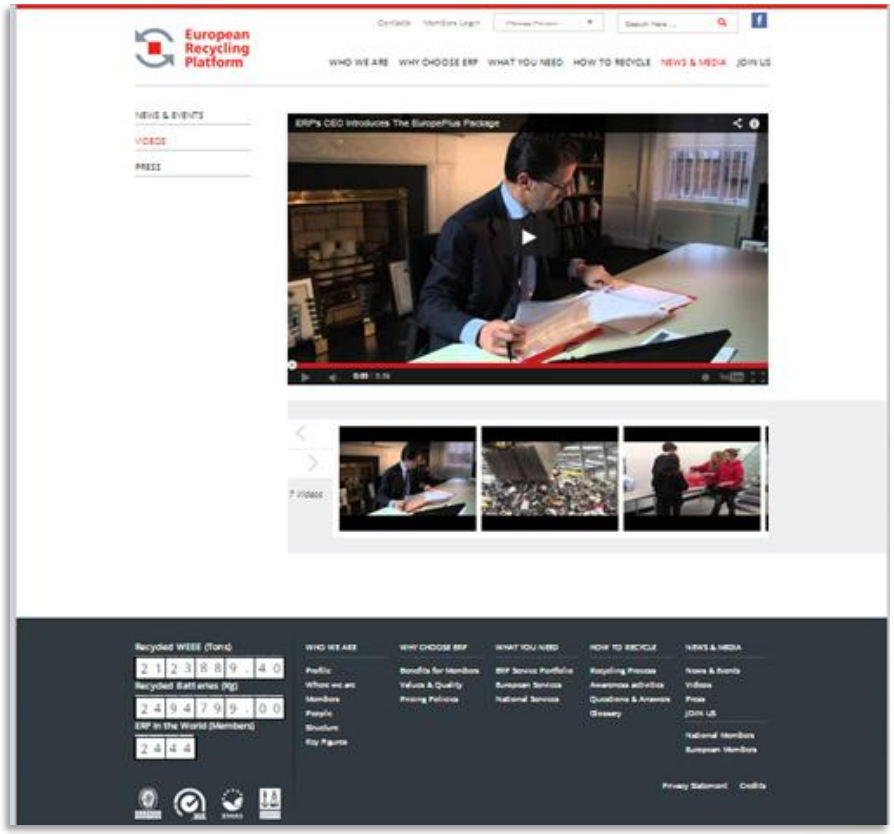
2 MILLION TONNES RECYCLED

European Recycling Platform

Agenda

1. ERP (European Recycling Platform)
2. The Waste – WEEE and WB&A
3. Waste's Flow
4. Communication and Awareness
5. Contacts

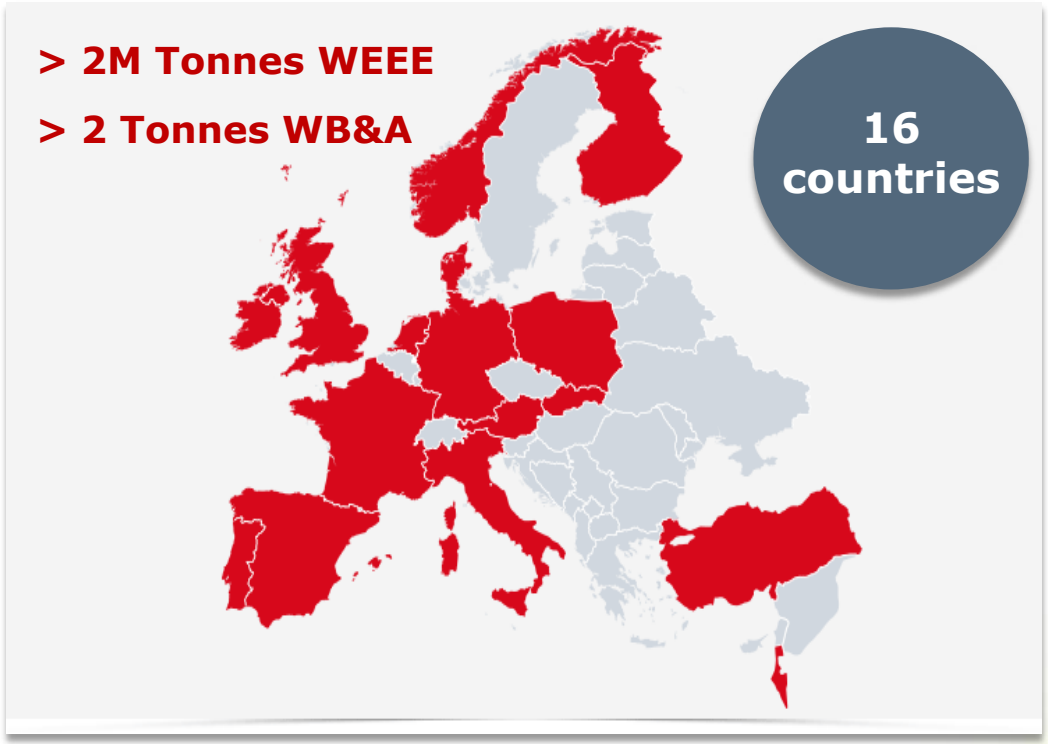
ERP (European Recycling Platform)



ERP (European Recycling Platform)

European Recycling Platform

WASTE MANAGEMENT SYSTEM



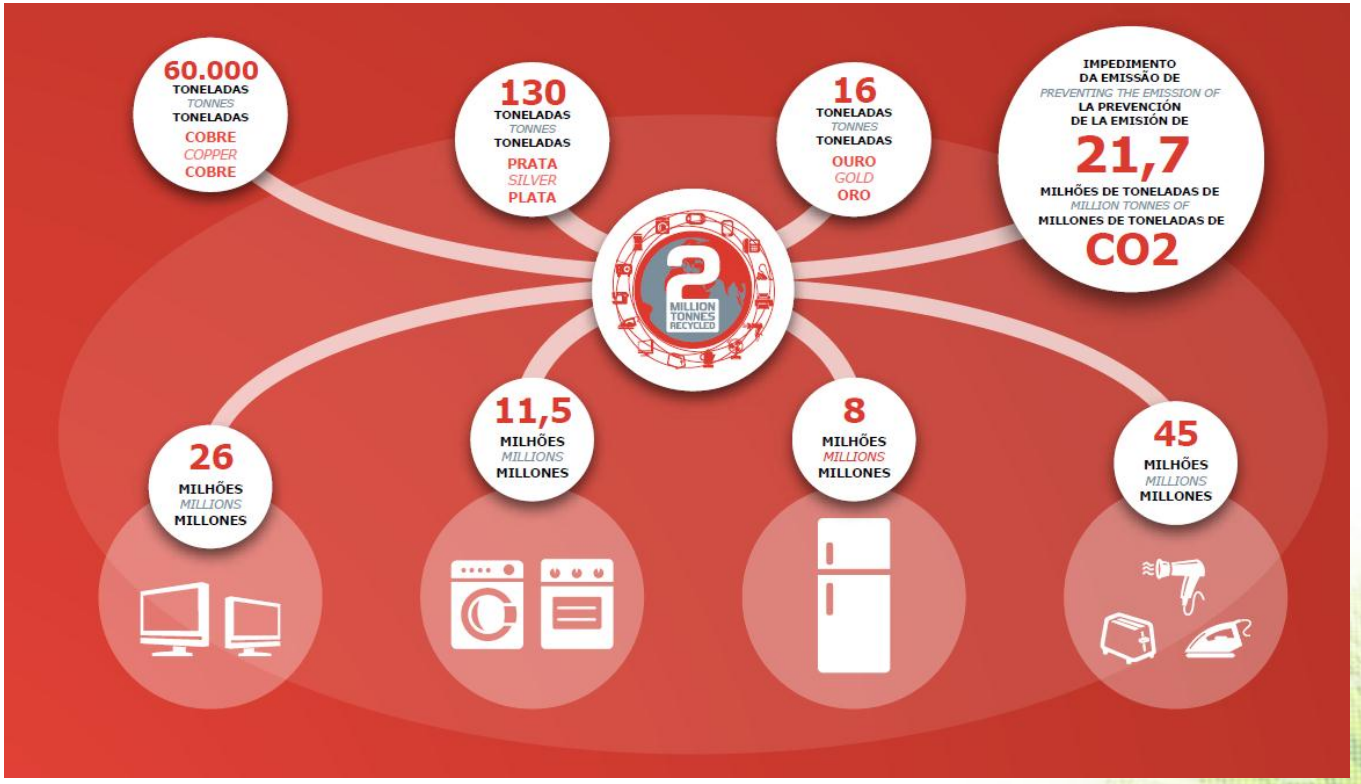
Thinking of you Electrolux · hp · P&G · SONY make.believe

E-waste handling process from A to Z in Portugal

ERP (European Recycling Platform)

European Recycling Platform

BIG STEPS SMALL FOOTPRINT
WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE) RECYCLING



European Recycling Platform

ERP (European Recycling Platform)

BIG STEPS
SMALL FOOTPRINT
WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE) RECYCLING

ERP (European Recycling Platform)

European Recycling Platform

WASTE MANAGEMENT SYSTEM

ERP´s services meet each customer´s needs, through a suite of custom-tailored compliance, recycling and consultancy services, such as:

- Project Management
- Supply Chain Management
- IT Development and Management
- Environmental Engineering
- Legal & Regulatory Knowledge

European Recycling Platform

- WEEE compliance scheme – April 2006
- WB&A compliance scheme – March 2010

W W W . E R P - R E C Y C L I N G . P T

European Recycling Platform

The Waste

WEEE
(Waste of Electrical and Electronic Equipment)

- Lage Household Appliances
- Cold
- Tv & Monitors
- Others
- Lamps

LD 230, 10 December 2004

WB&A
(Waste of Batteries & Accumulators)

- Portable
- Industrial and incorporable in EEE

LD 6, 6 January 2009

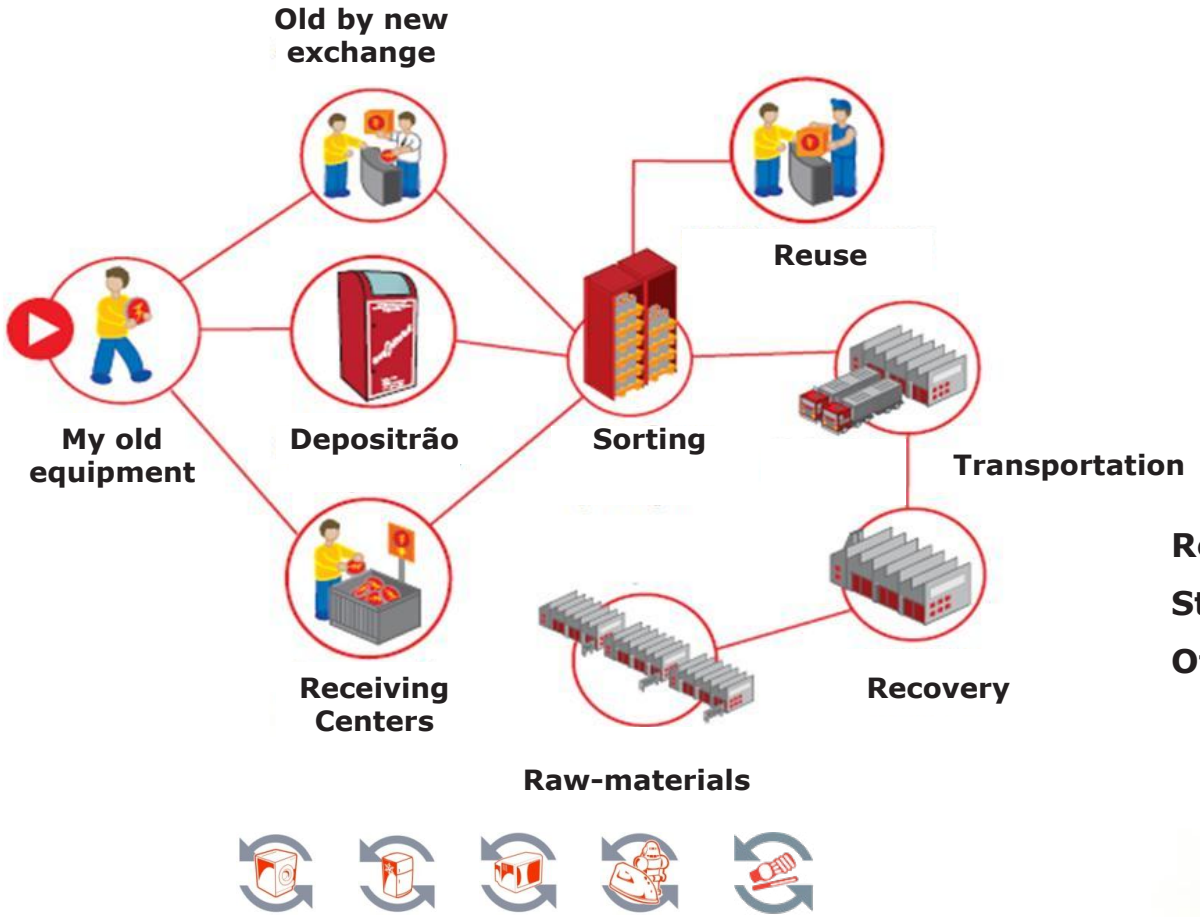
European Recycling Platform

WASTE'S FLOW

WWW.ERP-RECYCLING.PT

European Recycling Platform

Waste's Flow



Receiving Centers

Stores

Other points

European Recycling Platform

Depositrão

1000 DEPOSITRÕES

depositrão+

Stores | Companies

GERAÇÃO DEPOSITRÃO

Eco-Schools

PORTUGAL depositrão+

Town Halls

European Recycling Platform

Waste Players

PRODUCERS
[any person who sells EEE, including sale through distance communication]

i) produce and place in the **national market EEE** under his own brand
ii) **resells** under his own brand equipment produced by other suppliers
iii) **import** or put EEE on the national market

↓

RETAILERS/DISTRIBUTORS
any entity that supplies EEE to **consumers commercially**

↓

CONSUMERS
people that **transform EEE in WEEE**

European Recycling Platform

Waste Players

TREATMENT = any activity after the delivery of WEEE for decontamination, dismantling, decommissioning, recovery or preparation for disposal and any other operation carried out for the recovery or disposal of WEEE

- mercury (lamps)
- printed circuit boards (moblie phones)
- cathode ray tubes (tv)
- chlorofluorocarbons (CFC) (refrigerators)

RECYCLING = the reprocessing of WEEE during a manufacturing process, for its original or other purposes, excluding energy valorisation

- gold
- silver
- copper
- plastics
- glass
- metal

European Recycling Platform

Waste Players

PLASTIC


Garden furniture


Bucket


Hanger

GLASS


Roads


Glass brick


New CRT

METAL


Gold


Silver


Copper

European Recycling Platform

COMMUNICATION AND AWARENESS

WWW.ERP-RECYCLING.PT

European Recycling Platform

Communication & Awareness

Our responsibility to **inform and make people aware of WEEE and old batteries management** is always a goal in our activity.

The consumers must know about their obligations, namely regarding the **correct channels** to guide their waste and why they should do it.

This way, there are some communication actions/campaigns that aim to highlight the concepts that must be known by everyone.

European Recycling Platform

Communication & Awareness

DEPOSITRÃO GENERATION

. Partnership with **Eco-Schools Program**

. More than **600** national schools

. **Collection** of WEEE and WB&A

. Several **creative activities**

WEEE TEAM

Cartoon that explains the WEEE flow, using some funny characters, such as Depositrão and some other old equipment.

European Recycling Platform

Communication & Awareness

AWARENESS SESSIONS

Awareness activities (**recycling games**), partership with Municilities and other companies/entities

European Recycling Platform

Communication & Awareness

RECYCLING PARTY

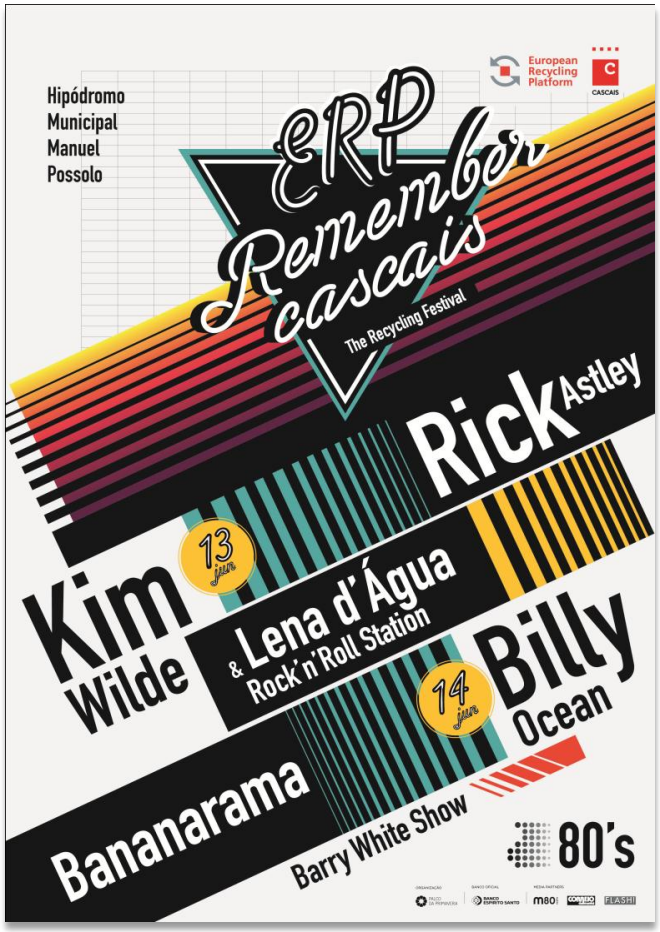
Concert to celebrate the 1million tonnes milestone

Free tickets by deliviring small old equipment

1 MILHÃO DE RAZÕES PARA CELEBRAR

European Recycling Platform

Communication & Awareness



ERP REMEMBER CASCAIS

80's music Festival

Call to action

Awake people's attention to this subject

European Recycling Platform

Communication & Awareness

AWARENESS CENTER

Free visits where it is possible to learn about the waste management (schools, companies)

European
Recycling
Platform

WWW.ERP-RECYCLING.PT

European Recycling Platform

Danke Thank you Dziękuję Takk
Takk Grazie Tak Kiitos Gracias
Obrigado Grazie Tak Merci
Grazie Merci Gracias Danke
Thank you Dziękuję Merci
Takk Grazie Tak Kiitos Gracias
Obrigado Grazie Thank you

filipa.moita@erp-recycling.org| 21 911 90 30
www.erp-recycling.pt

INTERECYCLING

Ricardo Vidal
Director of Interecycling

interecycling

Recycling Waste Electrical and Electronic Equipment

intproducts final products · intpolymers plastics · intconsulting R&D, consulting · intlogistic logistic · intglass glass

E-waste handling process from A to Z in Portugal

"We live a way of life that has evolved the ability to extract, add and manipulate the 98 natural elements ... Our challenge is the ability to recover, separate and return them in their purest state. Humanity in XXI century requires us this ability."

OUR MISSION

With high standards of quality, service and innovation, working with all persons and entities contributing to a better environment and sustainable development through the recycling of waste of electrical and electronic equipment (WEEE's) and forwarding final products.

OUR HISTORY

Located in Santiago de Besteiros, municipality Tondela, since 2000, Interecycling is a company dedicated to recycle waste of electrical and electronic equipment (WEEE's).
With an investment of 12.5 M €, more than 60 workers, about 12,000 m2 of covered area and a park of 30,000 m2, Interecycling is prepared for recycle 9 of the 10 categories of WEEE'S, according to European Directives.

OUR SERVICES

To achieve our mission, we introduce ourselves as an integrated solution of service, products, logistic and consulting. We are a reception, disassembly and recycling center of WEEE's.
In the different divisions of the company and with our recycling lines, using the best technology with the best practices, we are prepared to treat these wastes in strict respect for the environment, neutralizing its dangerous components and return all materials in their purest state.

- Reception Center of WEEE's
- Disassemble Center of WEEE's
- Recycle of WEEE's
- Processing Electrical Cables
- Collection of WEEE service
  Destruction and slaughter tax service

OUR CERTIFICATIONS

Licença Ambiental
LA nº 394/2011

interecycling
WEEE Recycling Company, since 2000
www.interecycling.com

Our recycling lines

Small and large domestic appliances

RECYCLED EQUIPMENT:

Small and large domestic appliances, computer equipment, telecommunications equipment, medical devices, electrical and electronic tools

MAIN PROCESSES:
- Manual disassembly (removal of all dangerous components)
- Trituration
- Granulation (size reduction)
- Separation of various materials

MAJOR ENVIRONMENTAL BENEFITS

Recovery, separation, and treatment of:
- Dangerous elements
- Printed circuits
- Ferrous (iron, stainless steel)
- Non-ferrous metals (copper, aluminum, zinc, tin, nickel)
- Plastic (ABS, PS, etc.).

Refrigerators and cooling appliances

RECYCLED EQUIPMENT: equipments containing CFC's and HCFC's

MAIN PROCESSES:
- Removal of shelves, drawers, doors and wheels
- Suction of the oil with CFC from the refrigerant circuit.
- Separate CFC from the oil
- Removal of the motor-compressor
- Shredding in nitrogen inerted atmosphere, separating and isolating the CFC foam from walls, through a system of criocondensation (-120 ° C)

separation of final materials:
- iron
- aluminum / copper
- plastics
- polyurethane (foam)

MAJOR ENVIRONMENTAL BENEFITS

Full recovery of CFCs preventing their release into the atmosphere
the CFC is sent for destruction on truly adequate facilities
Recovery of all materials, preserving natural resources

Televisions and monitors

RECYCLED EQUIPMENT:
TVs and Monitors

MAIN PROCESSES:
- Removing the plastic housing
- Removal of cables and plates
- Metal band and cannon image cutting
- Panel and cone glass separation
- Aspiration of the luminescent layer

MAJOR ENVIRONMENTAL BENEFITS

Suction and recovery of the luminous layer
Separation of the different glass and plastic types
Recovery and separation of ferrous

Electrical cables

RECYCLED EQUIPMENT:
Copper wires, aluminum wires, aluminum and copper wires

MAIN PROCESSES:
- Separation of copper, aluminum and plastic on densimetric and airflow tables
- Shredding
- Separation of ferrous
- Granulation (size reduction)

MAJOR ENVIRONMENTAL BENEFITS

Recovery, separation, and treatment of:
Ferrous, non-ferrous, plastics

Our divisions

intlogistic
logistic

Serving the needs of the market, Interecycling has a division specialized in the development of logistics solutions for each customer.
Intlogistic offers our customers the best solutions for collection, transport and temporary storage of WEEE's, always under the supervision of an expert team able to give all the technical and logistical support necessary, ensuring all the correct procedures including our recycling statements, for legal purposes.

intconsulting
R&D, consulting

This division is where Interecycling gather skills of public relations, our internal social component, our hiring and training employees center, formalities and implementation of laws and procedures and environmental certifications.
It is also the central laboratory for testing and analysis of materials, and where all the research and development of Interecycling is concentrated.

intproducts
final products

Intproducts is the division that centralizes all final fractions / products resulting from the activity of Interecycling. It is divided into two areas:

• Final products of recycling process returning to the base of value chain (commodities);

• Products that, after separation and recycling, become products to another application. These new products, based on recycled materials, are the result of our R & D process.

The main products are metals: fragmented iron, pressed iron, copper, aluminum, steel, pieces or granulated brass.
But also other: printed circuits boards, power supplies, engines and compressors batteries, liquid crystals and capacitors, oil cooling, PUR, CFC or pentane (bottled) , halon, etc.

intglass
glass

Is the division specialized in glass from WEEE's.
After separation and decontamination, both at the recycling or disassembly center, they are sent to Intglass for final decontamination and cleaning.
In this process the elements which prevent their reuse are eliminated (such as small metals, textiles alloys, plastics, films of oxide of iron, aluminum or lead) and a granulometric separation is done.
The final product is packed in big bags, being accompanied by chemical analysis and all legally required documentation.

intpolymers
plastics

Division specialized in polymers. After separation and identification either in the recycling or dismounting center, these are sent to this division for selection and final cleaning of unwanted elements for reuse, such as small metals, textiles alloys, other plastic contaminants elements. After this step the material is fragmented having a particle size up to 10 mm. This process yields an excellent final quality, innovating the consumer market for polymers, which gets the best quality / price ratio.
Types of polymers produced: ABS, PC, PC / ABS, PS, PE, PP, PA, PVC.

RESITEJO
eWaste intermunicipal management case study

Filipe Queiróz e Melo
Communication Director of Resitejo

RESITEJO

eWaste intermunicipal management case study

Sara Louro e Filipe Melo

Instituto Politécnico de Tomar, 6th May 2014
EWASTEU - Legal Regulations and Implementations on e-waste in EU

RESITEJO
eWaste intermunicipal management case study

Resume:

1.	**CONTEXT** (movie)	*5 min*
2.	**KEY INDICATORS**	*5 min*
3.	**eWASTE** regional management	*20 min*
4.	Environmental **AWARENESS** vs Public Communication	*10 min*
5.	**RIBAS** challenges	*5 min*
		45min

Presentation

- RESITEJO's 5 Ws:

  Who? What? Where? When? Why?

- HOW does this region manages its eWASTE?

- Ideas to promote a regional engagement / commitment with public system.

The rampant use of natural resources
are running out our sources of potable water, clean air and farmland
needed for the life preservation as we wished.

O uso desregrado dos recursos naturais está a esgotar
as fontes de água potável, o ar puro e as terras cultiváveis
necessárias à preservação da vida, tal como desejávamos.

Planet earth's strong consumerism is leading
to increasing waste generation
(exacerbated by the inability to treat some of them).

O forte consumismo do planeta terra
conduz ao aumento dos resíduos produzidos
(situação agravada pela incapacidade de tratar parte deles).

BUT, if we look at waste as resources
we can reduce the exploitation of the natural resources.

MAS, se olharmos para os resíduos como recursos
podemos reduzir a exploração dos recursos naturais.

1 imagem = 1.000 palavras

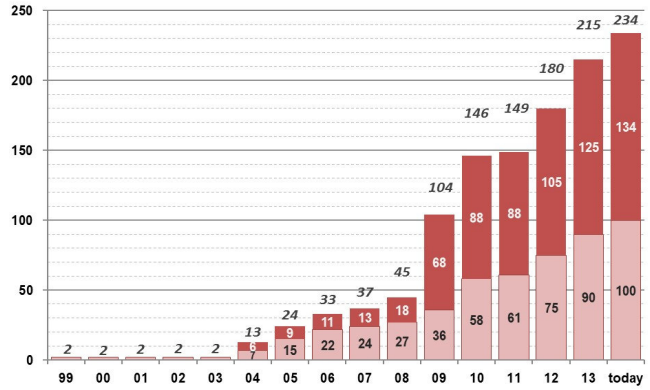
...vamos ver um pequeno filme...

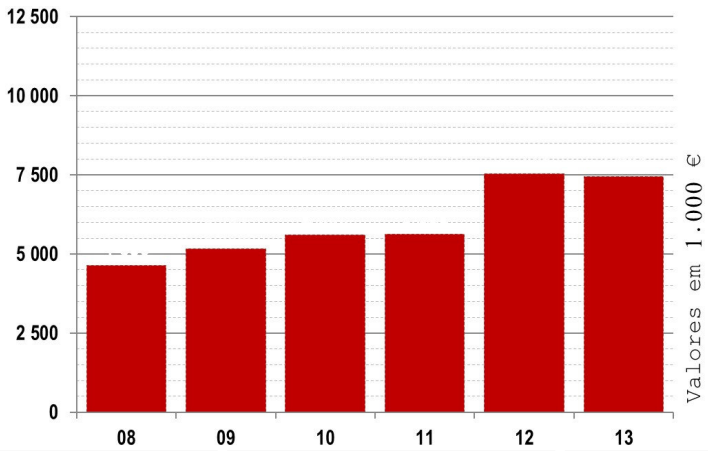
1 image = 1.000 words

...let´s see a small movie...

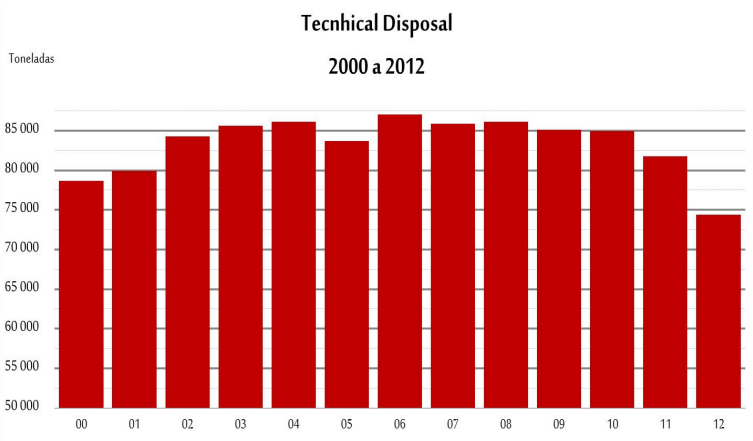
KEY INDICATORS

Employment + Business



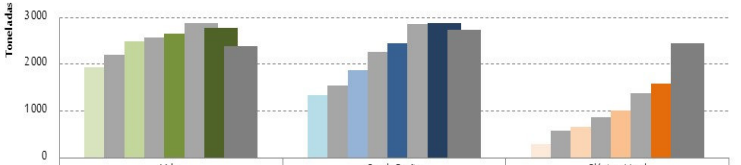


WASTE

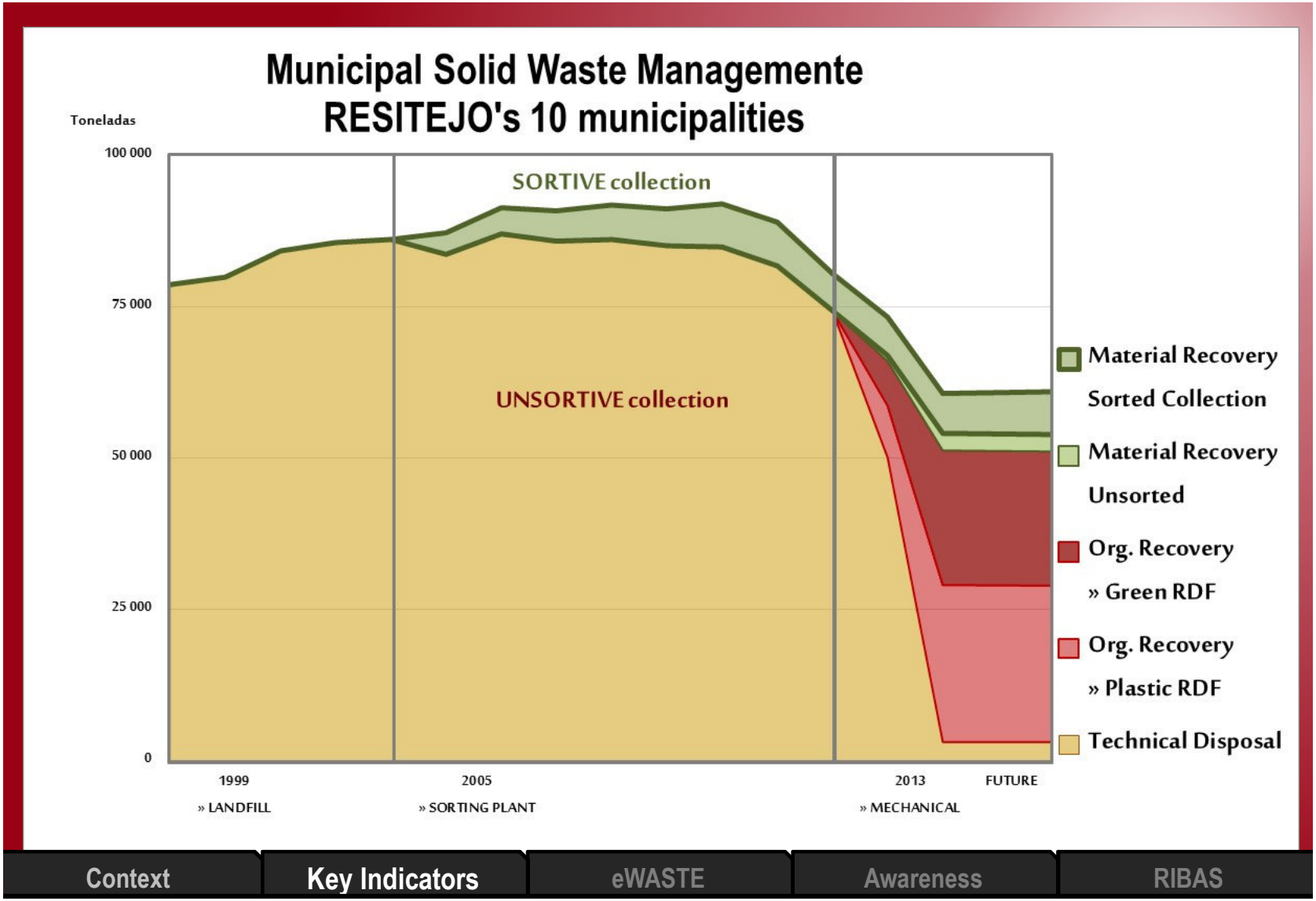


10 Concelhos da RESITEJO

Evolução da Recolha Selectiva entre 2005 a 2012



	Vidro	Papel+Cartão	Plástico+Metal
2005	1 932	1 342	295
2006	2 208	1 541	574
2007	2 488	1 877	652
2008	2 574	2 265	854
2009	2 642	2 441	1 015
2010	2 881	2 849	1 379
2011	2 774	2 873	1 580
2012	2 390	2 733	2 449


Municipal Solid Waste Managemente
RESITEJO's 10 municipalities
Toneladas
100 000
75 000
50 000
25 000
0
SORTIVE collection
UNSORTIVE collection
1999
» LANDFILL
2005
» SORTING PLANT
2013
» MECHANICAL
FUTURE
Material Recovery
Sorted Collection
Material Recovery
Unsorted
Org. Recovery
» Green RDF
Org. Recovery
» Plastic RDF
Technical Disposal

SISTEM UNITS

UNIDADES DO SISTEMA

Landfill
Technical confinement
1999

Aterro Sanitário
Confinamento Técnico
1999

Unidades de Transferência e Ecocentros
1999

Transfer Units +
Recycling Centers

Estação de Triagem
Valorização Multimaterial
2005

Sorting Plant
Material Recovery
2005

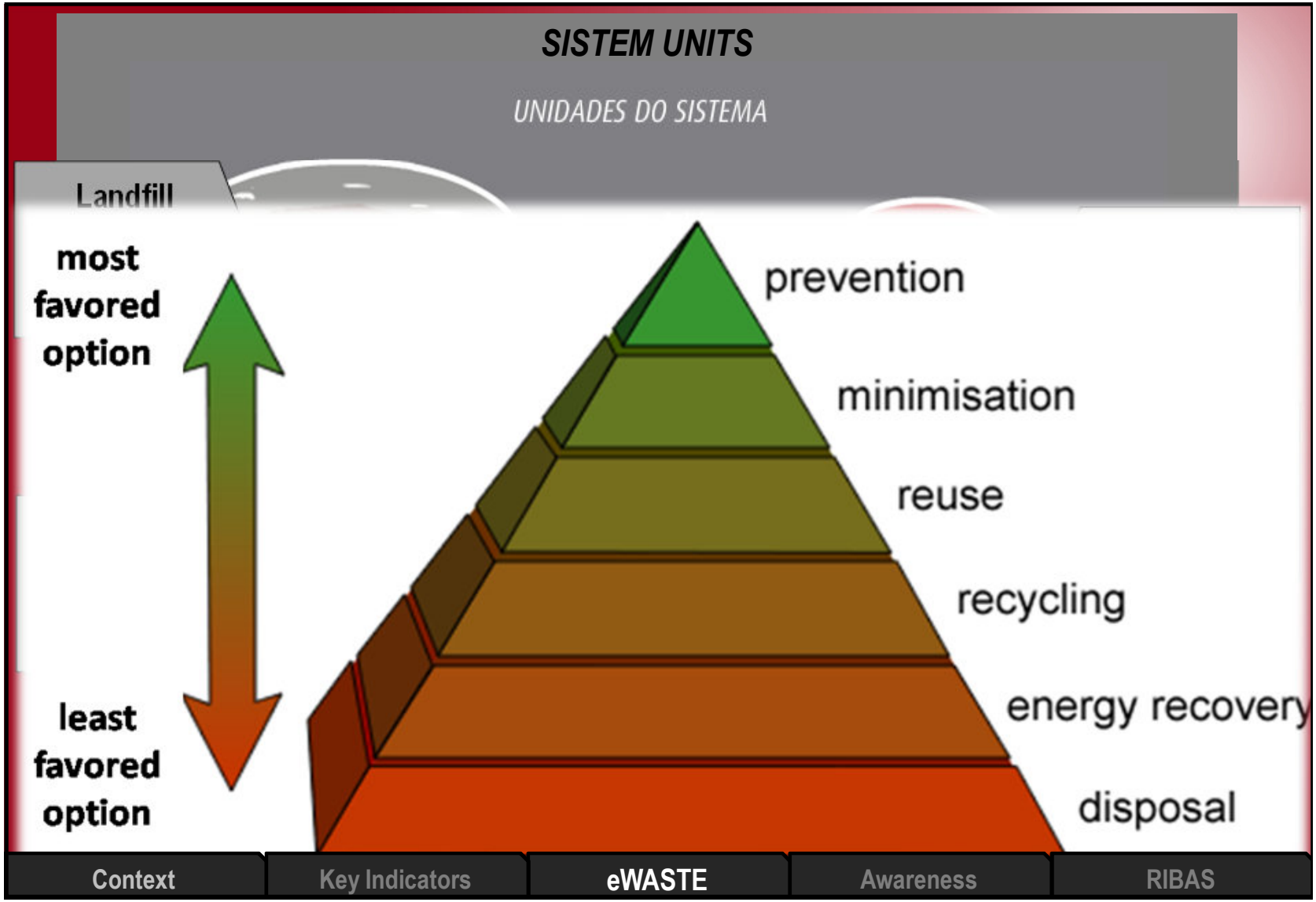
Mechanical Treatment Plant
Organic Recovery
2013

Unidade de Tratamento Mecânico
Valorização Orgânica
2013

Central de Biogás
Valorização Energética
2013

Biogas Unit
Energetic Recovery
2013

resitejo


SISTEM UNITS
UNIDADES DO SISTEMA
Landfill
most favored option
least favored option
prevention
minimisation
reuse
recycling
energy recovery
disposal
Context
Key Indicators
eWASTE
Awareness
RIBAS

E-waste handling process from A to Z in Portugal

Landfill

Mechanic Treatment Plant

Selective collection: the 1st step to recycle!

Recolha seletiva: o 1º passo para RECICLAR!

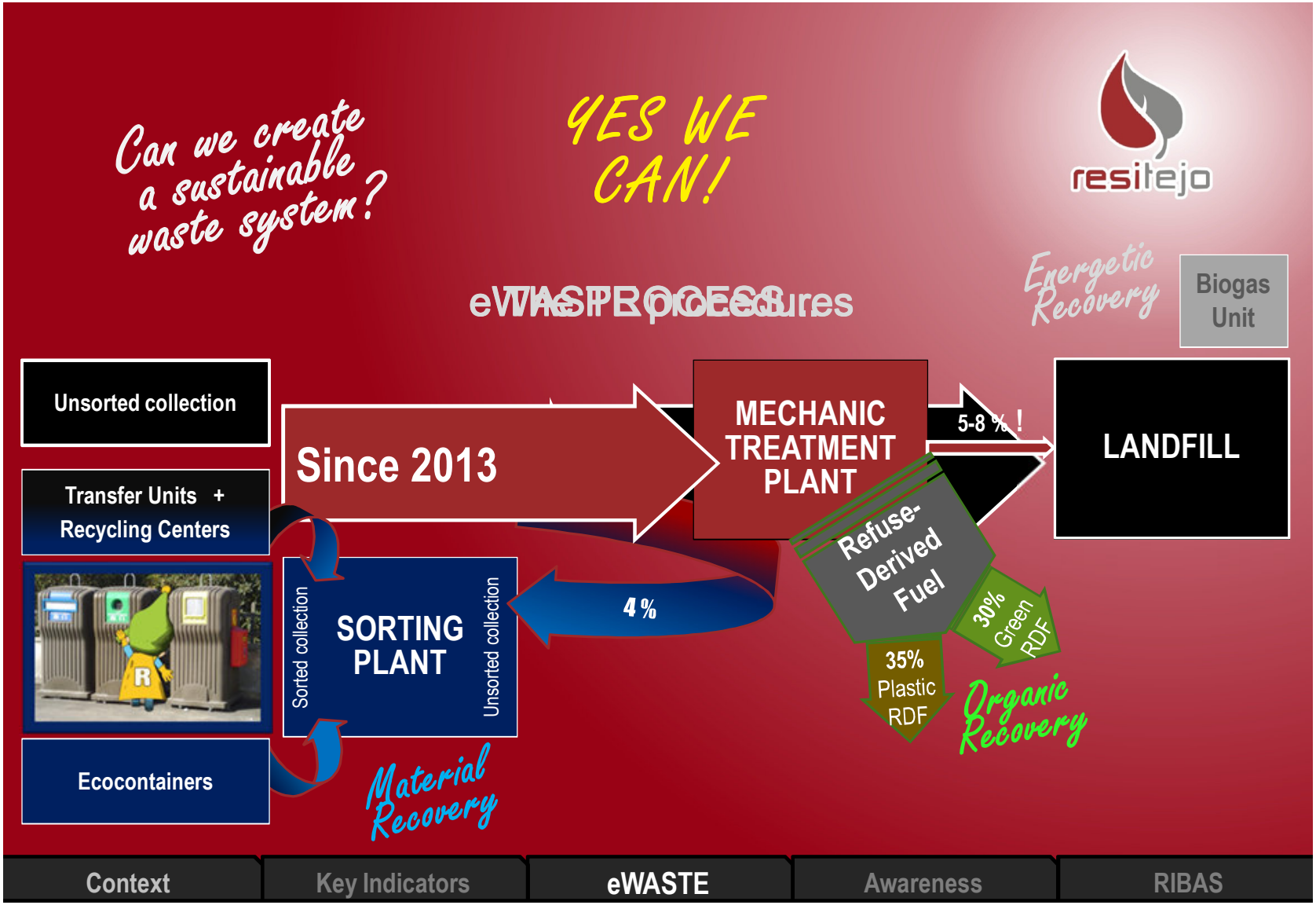
resitejo

Transfer Units + Recycling Centers

Sorting Plant

Biogas Unit

E-waste handling process from A to Z in Portugal



E-waste handling process from A to Z in Portugal

eWASTE procedures

Unsorted collection

Transfer Units + Recycling Centers

Ecocontainers

Sorted collection

SORTING PLANT

Unsorted collection

Context | Key Indicators | eWASTE | Awareness | RIBAS

A) Big Equipments

B) Refrigerating Equipments

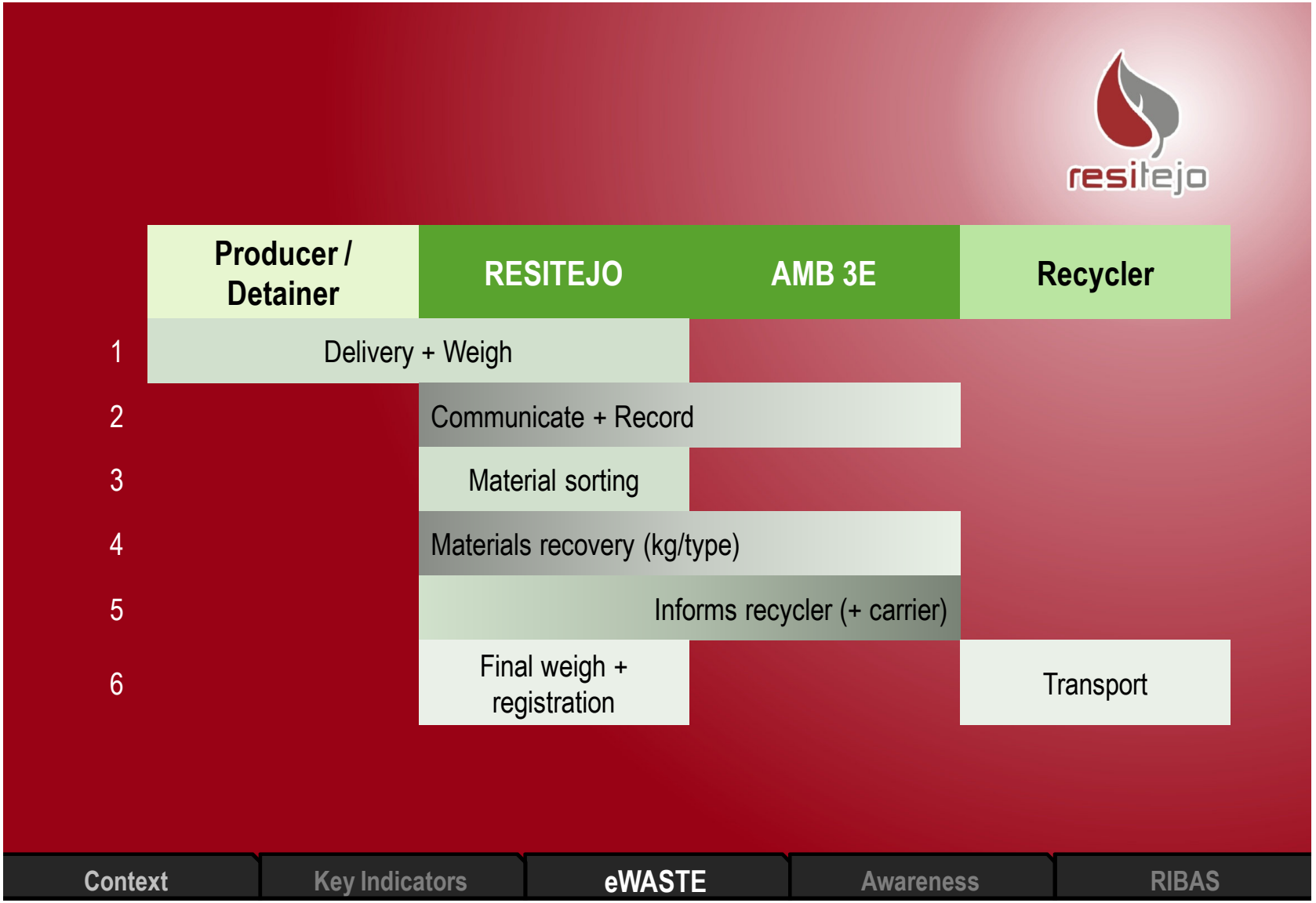
C) Small Equipments

D) Lamps

E) TV & PC monitors

Others….

E-waste handling process from A to Z in Portugal

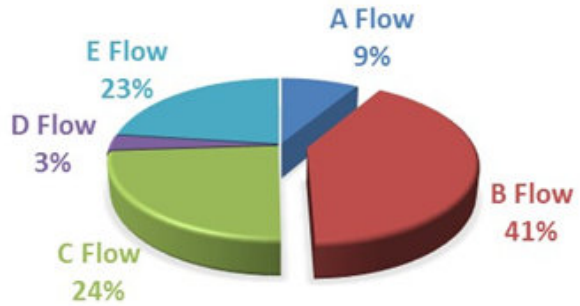


resitejo

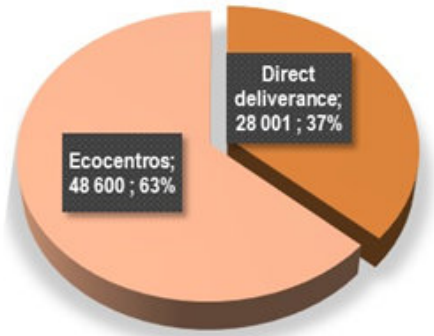
eWASTE images

RESITEJO's eWASTE numbers

2013 RESITEJO incorporated eWASTE



2013 eWASTE origins

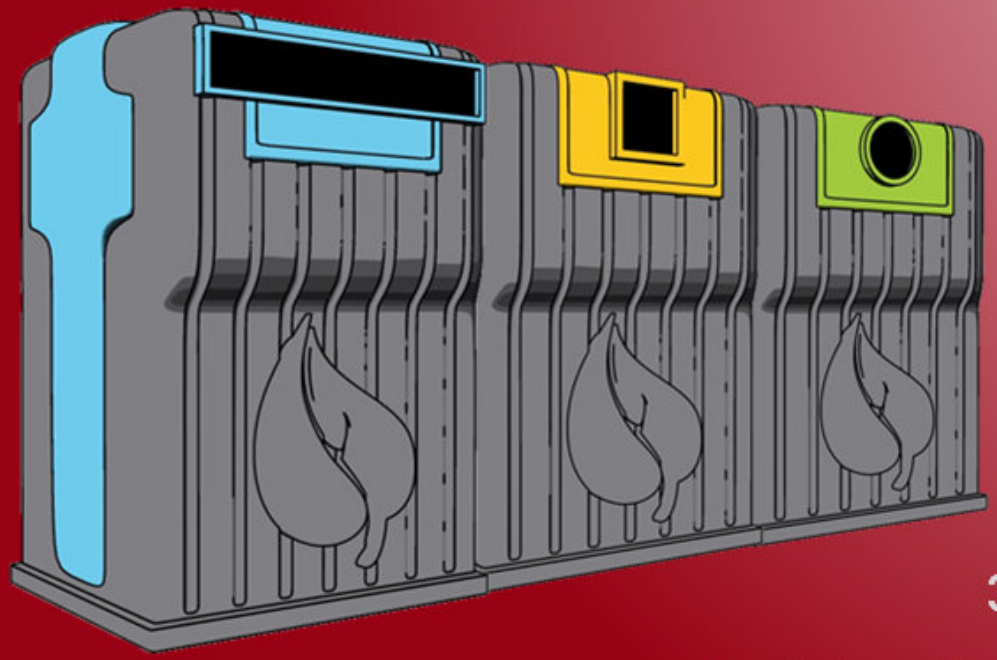


Environmental AWARENES vs Public Communication

1. Objective » increase selective collection
2. Message » “SEPARATE WASTE!”
3. Action = $\Sigma \int_1$ (public ; channels) x $\int_2$ (€ ; time)

E-waste handling process from A to Z in Portugal

SEPARATING RULES



1. Drain
2. Take caps / labels
3. Tapering packaging
4. Put on the appropriate container

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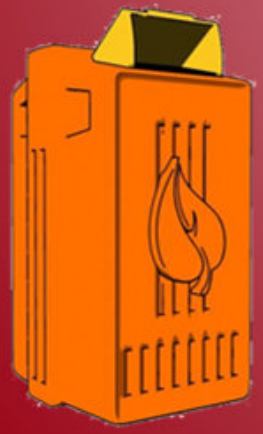
Used Cooking Oils ONLY IN the "*OLEÃO*"!

To check:

BOTTLE!



1 l of oil can contaminate
1,000,000 l of water
enough for a person
to live to age 40.

but 1.000 l of UCO allow
produce 920 -980 gallons of biodiesel
fuel with emission rates of carbon
dioxide by 80% + down
than those issued when using diesel.

Batteries and Accumulators only in “Pilhão” ...

Do you know?

1 battery might contaminate trough 50 years

The batteries are hazardous waste,

a stack can contaminate 3.000 l of water.

SPECIFIC WASTE
SPECIAL FLOWS

resitejo

Clothing, footwear and toys

Small electrical and electronic equipment

Plastic cups

Manure of horses

CITIZENSHIP: YOUR RESPONSIBILITY

1. Promote waste separation (quantity and quality)

2. Knowing better RESITEJO system
   - Site www.resitejo.pt
   - Channel YOUTUBE da RESITEJO
   - Facebook " RESITEJO" e "Diário do Ribas"

3. Visit RESITEJO complex, Eco-Parque do Relvão.

CHALLANGE

Promote improvements in my COMMUNITY

ATTITUDE

Give positive examples

Small gestures large changes

resitejo

ACTION







resitejo

ALL HAVE THE DUTY TO CONTRIBUTE FOR

THE SUCCESS OF THE RECYCLING

FOR THE PRESERVATION

OF OUR ENVIRONMENT!

THANK YOU
ON BEHALF OF
FUTURE GENERATIONS

info@resitejo.pt

Waste collection in the Municipality of Tomar

Hugo Cristóvão
Education Alderman of the City of Tomar

Waste collection in the Municipality of Tomar

TOMAR
TEMPLAR CITY

Types of Waste Collection in the Municipality of Tomar:

- Undifferentiated Waste Collection (waste collection without previous separation); Municilality of Tomar jurisdiction.
- Selective Waste Collection (waste collection with previous separation); Resitejo jurisdiction.

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Undifferentiated Waste Collection

- For a population of 40.677 inhabitants (Censos 2011);
- Waste collection around 13.253 tons per year;
- Without previous waste separation;
- **Deposition points of containerisation;**
- The waste collection is carried out through five circuits: three rural circuits during the day and two nocturnal circuits in the city;
- The waste is transferred to a transference unit (where it is temporarily stored) , located in the Parque Empresarial of Tomar;
- Finishes the Municipality of Tomar jurisdiction.

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- Resitejo jurisdiction starts; (Waste Treatment and Management Association of Médio Tejo, which includes the municipalities of Alcanena, Constância, Entroncamento, Ferreira do Zêzere, Golegã, Santarém, Tomar, Torres Novas, Vila Nova da Barquinha and the Military Camp of Santa Margarida);
- Waste transportation from the Transference Unit, in hermetically sealed containers, to the Resitejo premises (Eco-parque do Relvão – Chamusca);
- The waste is sent to the Mechanical and Biological Unit Treatment, which guarantees the recovery of 90% of the undifferentiated waste;

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- Mechanical and Biological Unit Treatment aims to achieve the separation of the several components of the undifferentiated waste in the most systematically and efficiently way possible. The Resitejo Unit differentiates from the others Mechanical and Biological Units of Treatment because it accomplishes the separation more effectively, obtaining in the end of the process some recycle materials within a minimal contamination.
- The Mechanical and Biological Treatment was designed to treat the waste based on its nature, being that urban or industrial. The processing of municipal waste and equivalent and non-hazardous industrial waste are distinguished from each other by the initial phase.

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(Operating of the Mechanical and Biological Unit Treatment)

- The urban waste is initially sent to the Tromel 1 (mesh < 400mm), the fraction with higher dimensions than sieve size is routed to the sorting cabin of urban waste, the ones with smaller dimensions are processed / treated in a way that organic matter is separated from the recyclable materials;
- The non-hazardous industrial waste is forwarded directly to the sorting cabin of industrial waste. Residues that are not screened are send, by negative screening, to the primary crusher;

TOMAR
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(Products Resulting from the Mechanical and Biological Treatment)

- Organic Matter;
- Mixed plastics;
- Polymers (PET containers, HDPE Film, PP, PVC and others);
- Metals (Ferrous and non-ferrous);
- Rejected (Non organic matter fraction and plastics mainly consisting of inert waste).

TOMAR
TEMPLAR CITY

(Destination of the Mechanical and Biological Unit Treatment Products)

- Mixed plastics, polymers and metals are routed to the recycling industry;
- The rejected materials are forwarded to the (Sanitary) Landfill of Resitejo;
- The organic matter is routed to the composting zone.

TOMAR
TEMPLAR CITY

Selective Collection

- For a population of 40.677 inhabitants;
- With tons of waste collection per year around:

Fileiras	Quantidade
Glass	382
Paper/Card	266
Plastic/Metal	186
Monsters	52
EEEW	7

TOMAR
TEMPLAR CITY

- With previous glass, paper/card and plastic/metal waste separation;
- **Deposition by points of containerization in batteries of containers, commoners EcoPontos.**
- The collection is accomplished by selective collection circuits;
- The waste is directly sent to the Resitejo premises.

TOMAR
TEMPLAR CITY

- The waste resulting from the selective circuit collection has the following destination:
- - Glass doesn't suffer any kind of sorting and through out the Green Point Society is appointed a recycler;
- -Paper/card undergo a sorting and through out The Green Point Society is appointed a recycler;
- - Plastic/metal undergo a sorting and through out The Green Point Society is appointed a recycler.
- Monsters and the EEEW are collected by the Municipality of Tomar through daily circuits.
- The collection of the latter typology of waste can be requested by the blue phone line of the Municipality **808 201 567.**
- The waste is transported to the Ecocentre of Tomar (located in the business park of Tomar and then it goes to the Resitejo, where the Portuguese Association for the Management of Electrical and Electronic Equipment Waste (Amb3e) selects a recycler.

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(Sorting facility - Operating)

The sorting facility (for waste that suffers selection), is functionally subdivided into the following areas:

- a) Waste reception area;
- b) Sorting line;
- c) Baling line;
- d) Bale storage zone;
- e) Batteries and accumulators sorting zone;
- f) Scrap park;

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(Sorting facility - Operating)
(Packaging sorting)

- In the sorting facility the packaging waste is separated into the following categories:
  - Card;
  - Card Packaging for Liquid Food (CPLF);
  - Newspapers and magazines (mixture);
  - PET (polyteraftalato ethylene);
  - PEAD (high density polyethylene);
  - Plastic Film (high-density polyethylene and low density polyethylene - e.g. plastic bags;
  - EPS (expanded polystyrene);
  - Steel packaging;

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(Sorting facility - Operating)

(Packaging sorting)

- Aluminium packaging;
- Packaging which have contained edible oils (PET oil);
- Mixed plastics and PVC;
- Rigid plastic, not packed.

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(Sorting facility - Operating)

(Monsters and woods sorting)

The Monsters, Wood and Metals, collected in the recycling centres, are separated as follows:

- Wood packaging and furniture;
- Mattresses;
- Scrap.

TOMAR
TEMPLAR CITY

Electronic and electric equipment waste sorting (EEEW)

The EEEW's are collected in the recycling centres and they are sorted into the following groups:

- Coolness equipments and refrigerating (refrigerators, air conditioning etc.…);
- Large equipments (dishwasher, washing machine, electrical stoves etc.);
- Small equipments (vacuum cleaners, irons, mouse, computer keyboards, printers etc.);
- TV screens and computers;
- Florescent lamps;

TOMAR
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Electronic and electric equipment waste sorting (EEEW)

- Electrical and Electronic Equipment (EEE), the equipments whose correct operation depends on electric currents or electromagnetic fields to work properly, as well as equipments that generate, transfer and measure those currents and electromagnetic fields that fill in under the categories set out in law and designed for use with a voltage rating not exceeding 1000 V for alternating current and 1500 V for current continues.
- Electrical and Electronic Equipment Waste (EEEW), are the EEE that according to the legislation constitute a waste, including all components, subassemblies and consumables that are an integral part of the equipment at the time that it is discarded, with the exception of those who are not part of other equipment not listed in the legislation.

TOMAR
TEMPLAR CITY

EEEW considering categories:

- Large appliances (refrigerators, washing machines, microwaves, air conditioning equipments);
- Small appliances (vacuum cleaners, irons, toasters);
- IT and telecommunications equipments (computers, printers, calculators, telephones);
- Consumer equipments (radios, televisions, musical instruments);
- Lighting equipment (fluorescent lamps);
- Electrical and electronic Tools (drills, sewing machines);

TOMAR
TEMPLAR CITY

- Toys and sports and leisure equipments (electrical trains, video games);
- Medical devices except all implanted and infected products (radiology equipments);
- Monitoring and control instruments (smoke detectors, thermostats);
- ATMs (automatic dispensers for drinks and food, automatic cash dispensers).

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- In Portugal there is a managing entity for the EEEW, it is called Amb3e, Portuguese Association for the Management of Electrical and Electronic Equipment Waste, it is a non-profit organization that organizes and manages the Integrated System for the Management of Electrical Equipment and Electronic Waste .

- In 2010 the Amb3e became licensed to take care of the management of batteries and accumulators waste embeddable in electrical and electronic equipment.

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Electronic and Electric Equipment Waste (EEEW)

What should you do to a EEEW?

- Exchange them at a sale point for a new one, as long as it performs the same function as the one that was purchased;
- Put the small EEEW at a Eletrão, usually located in large shopping areas;
- Or you can call the blue phone line and request to the municipality the waste collection.

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- In the integrated system for the management of EEEW, there is a ECOEEEW, who is a financial provision supported by producers of EEE, which has an effect into the commercial chain.
- The ECOREE is calculated on the basis of the EEE characteristics and number placed on the market.

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In waste management, we must prevent the production of it, encourage re-use and contribute to the recycling.

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Waste collection in the Municipality of Tomar

TOMAR
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