



CirCle 2019

Challenges for the Islands in the era of the Circular Economy

Circular Economy in the context of Waste Management

Maria Loizidou

National Technical University of Athens

Under the auspices of

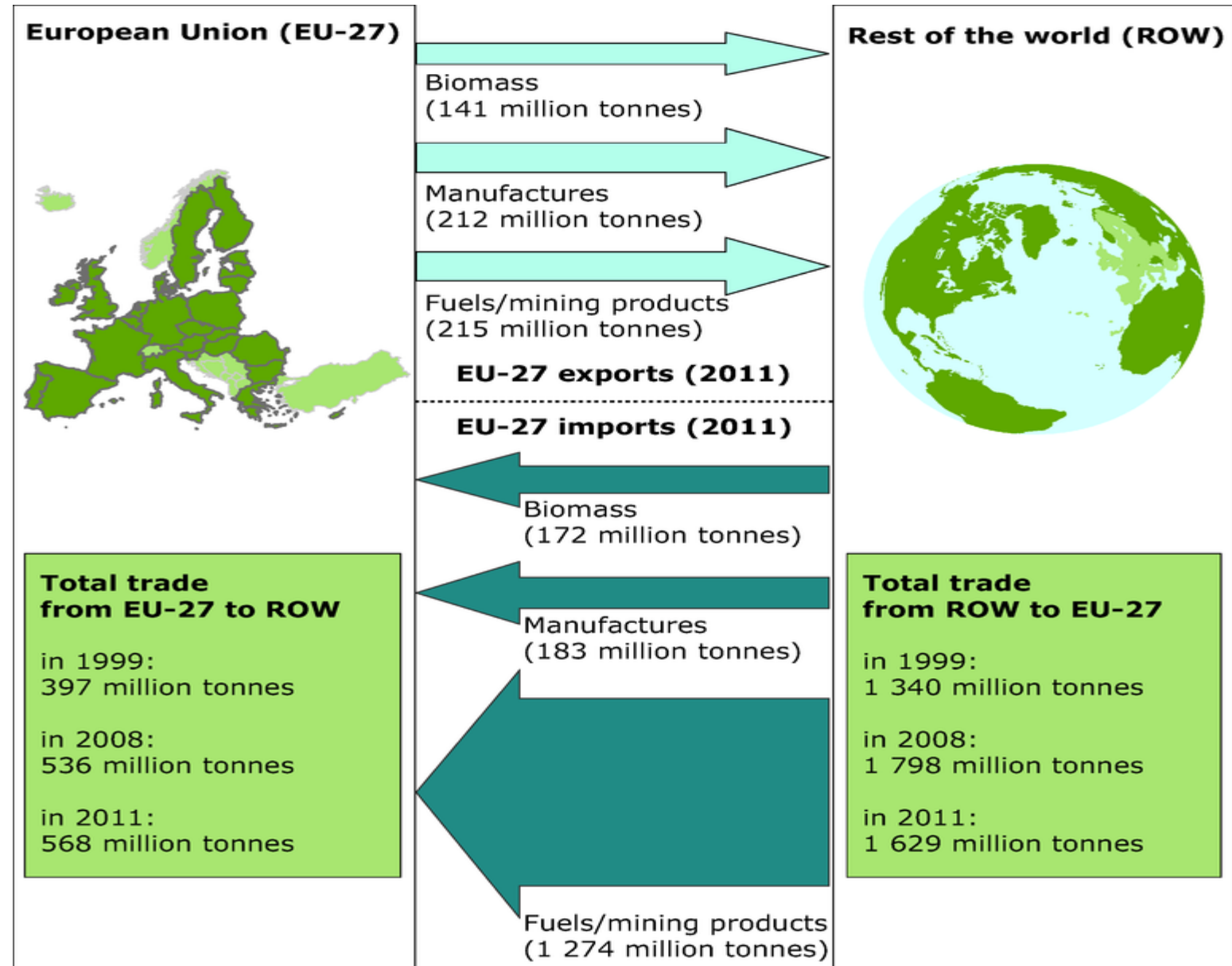


SMile 2019

6th Sustainable Mobility & Intelligent Transport conference



EU-27 physical trade balance with the rest of the world 2011



From Linear to Circular Economy: The future economic model

LINEAR ECONOMY



TECHNICAL & BIOLOGICAL MATERIALS MIXED UP

ENERGY FROM FINITE SOURCES

CIRCULAR ECONOMY



BIOLOGICAL MATERIALS

TECHNICAL MATERIALS

ENERGY FROM RENEWABLE SOURCES



«Closing the loop»: an ambitious package for **Circular Economy** in EU



On 2nd December **2015** the EU approved an ambitious set of measures for Circular Economy:

1. The value of products, materials, and resources is maintained in economy as much as possible
2. Waste generation is minimized.
3. Economy and competitiveness are strengthened creating new business opportunities and introducing innovative products and services
4. Economic, social and environmental benefits

Long-term Benefits – Targets & Expectations



It is estimated that **3.4 million new jobs** in circular economy, e.g. in the fields of: repairing, waste management, recycling, renting and leasing in EU until 2030



Development and new jobs – Up to **+ 7% of GDP**



Savings of up to **600 billion Euro** - **8% of the annual turnover** for companies in EU



Reduction of the total annual emissions of greenhouse gases by **2-4%**



Safety & stability of the supply of raw/secondary materials in supply chains

Circular Economy & international engagements

2015 UN «Agenda 2030» - 17 Sustainable Development Goals (SDGs)

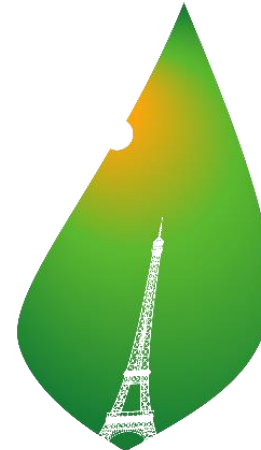


Circular Economy (**SDG 6, 8, 9, 11, 12, 13, 14, 15**) offers a reforming agenda with significant new jobs and encourages the sustainable consumption and production models.

2015

PARIS Agreement on Climate Change

The targets of the EU package for **Circular Economy** are linked with the targets of the **PARIS Agreement** :

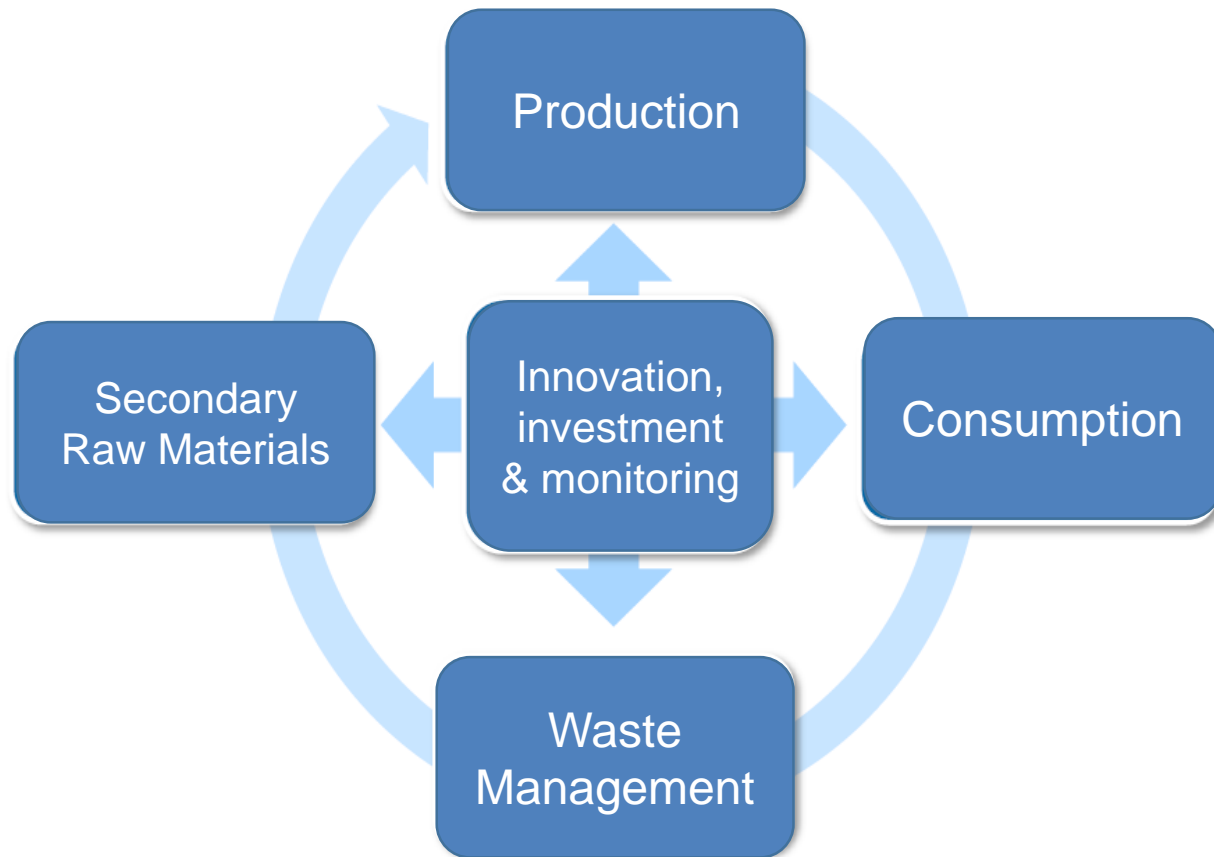


PARIS2015
UN CLIMATE CHANGE CONFERENCE
COP21·CMP11

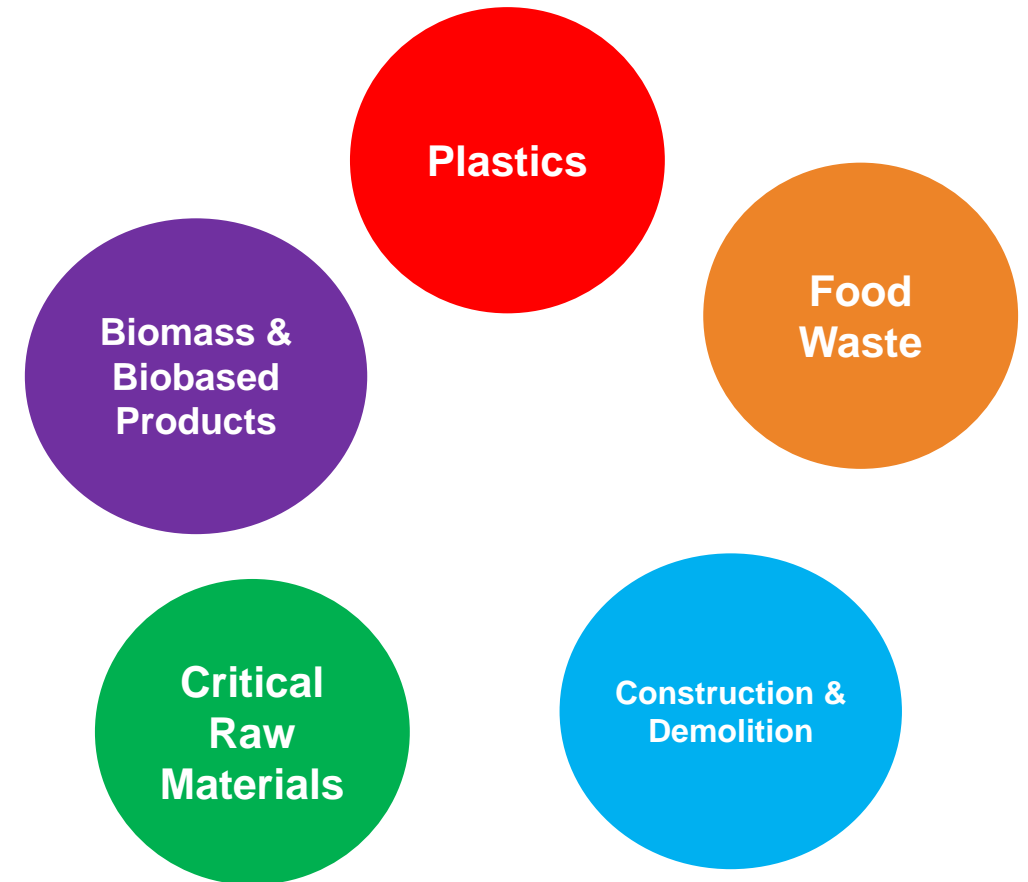
- Promotion of **Renewable Energy Sources**
- Development of **low carbon technologies** at world level
- Activation of processes that speed up public and private investments in **innovation**
- New **business opportunities** for EU

The EU Action Plan for Circular Economy

Key Action Areas



5 Priority Sectors



PRODUCTION

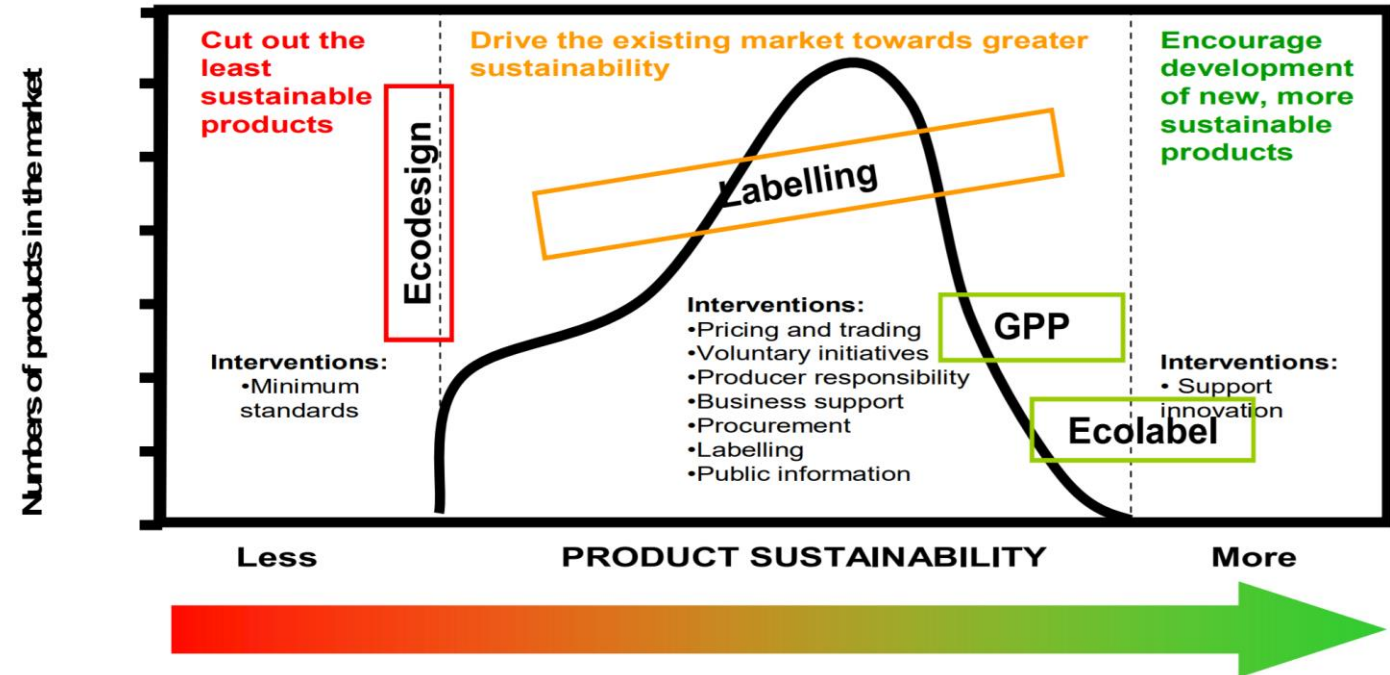
➤ Objectives

- Provide incentives to boost circular product design
- Innovative & efficient production processes

➤ Key Actions

- Reparability, durability, and recyclability in eco-design (e.g. TV screens)
- Best practices for waste management & resource efficiency in industrial sectors
- Industrial symbiosis

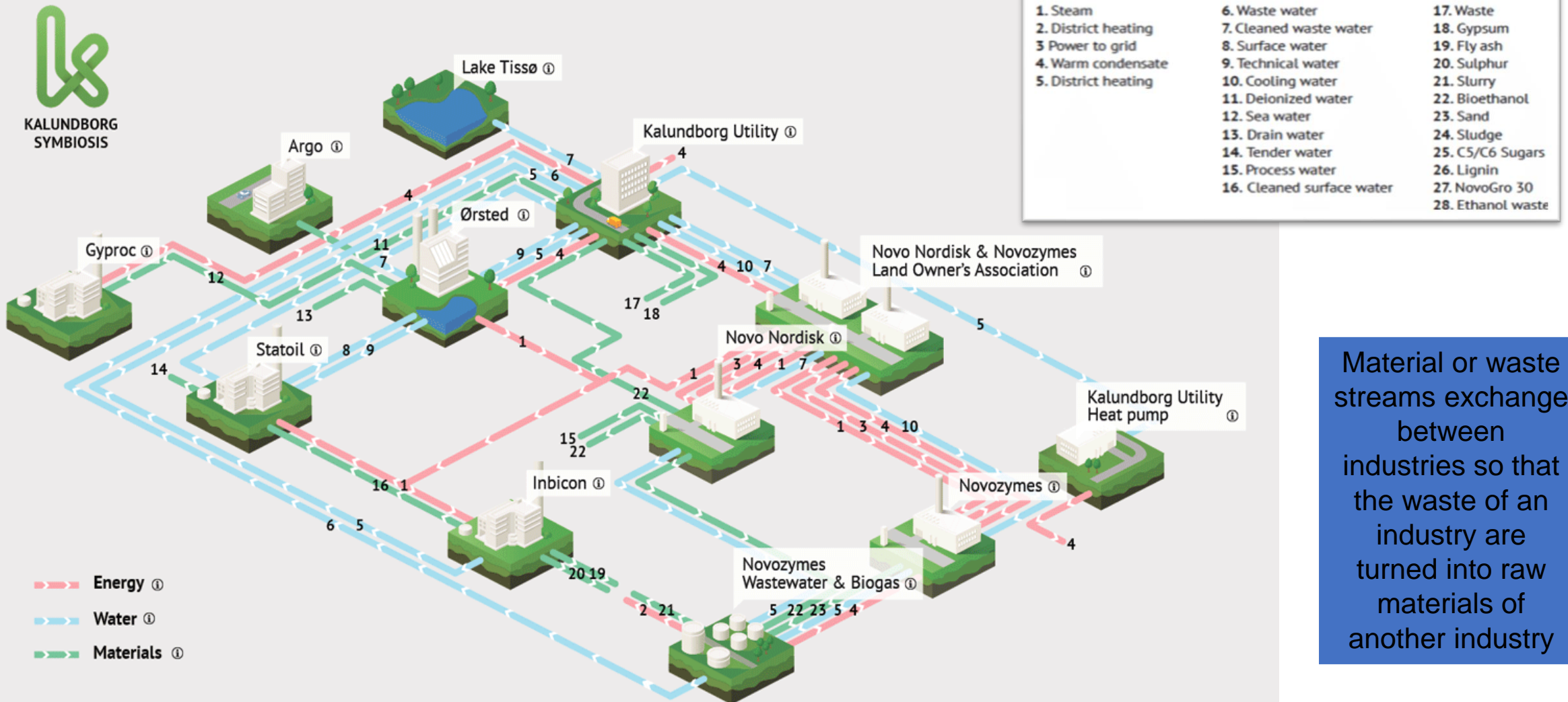
PRODUCT INTERVENTIONS – Overall approach



Ecodesign (Directive 2009/125/EC)

Energy Label (Directive 2010/30/EU)

Industrial Symbiosis



Material or waste streams exchange between industries so that the waste of an industry are turned into raw materials of another industry

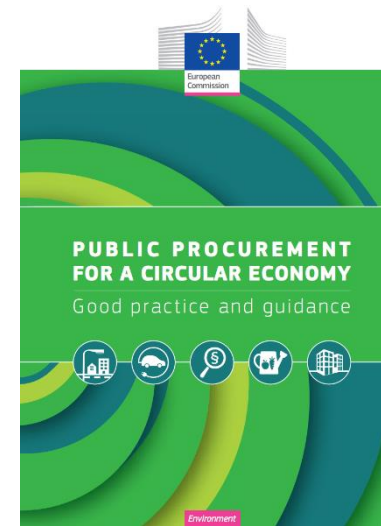
consumption

➤ Objectives

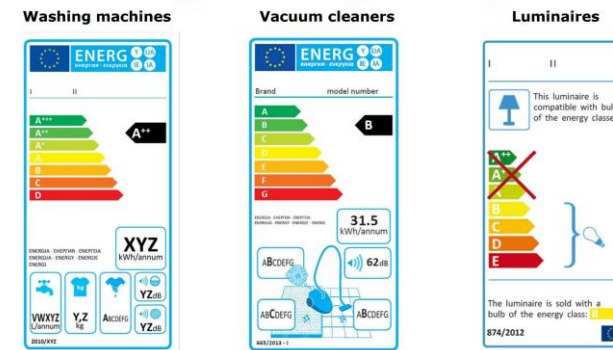
- Repair and reuse of products to avoid waste generation
- Provide consumers with reliable information on environmental impact of products

➤ Key Actions

- Encourage reuse activities (e.g. waste proposal)
- Ecodesign: availability of spare parts
- Guarantees and action on false green claims
- Circular Economy criteria in Green Public Procurement
- Independent testing programme to assess possible planned obsolescence
- Better labelling: EU Eco-lab



Energy Labelling – examples



WASTE MANAGEMENT

➤ Objectives

- Improve waste management in line with the EU waste hierarchy
- Address existing implementation gaps
- Provide long-term vision and targets to guide investments

➤ Key Actions

- Legislative proposals on waste
- Work with Member States to improve waste management plans, including to avoid overcapacity in residual waste treatment (incineration and mechanical-biological treatment)
- Ensure coherence between waste investments under EU Cohesion Policy and the waste hierarchy

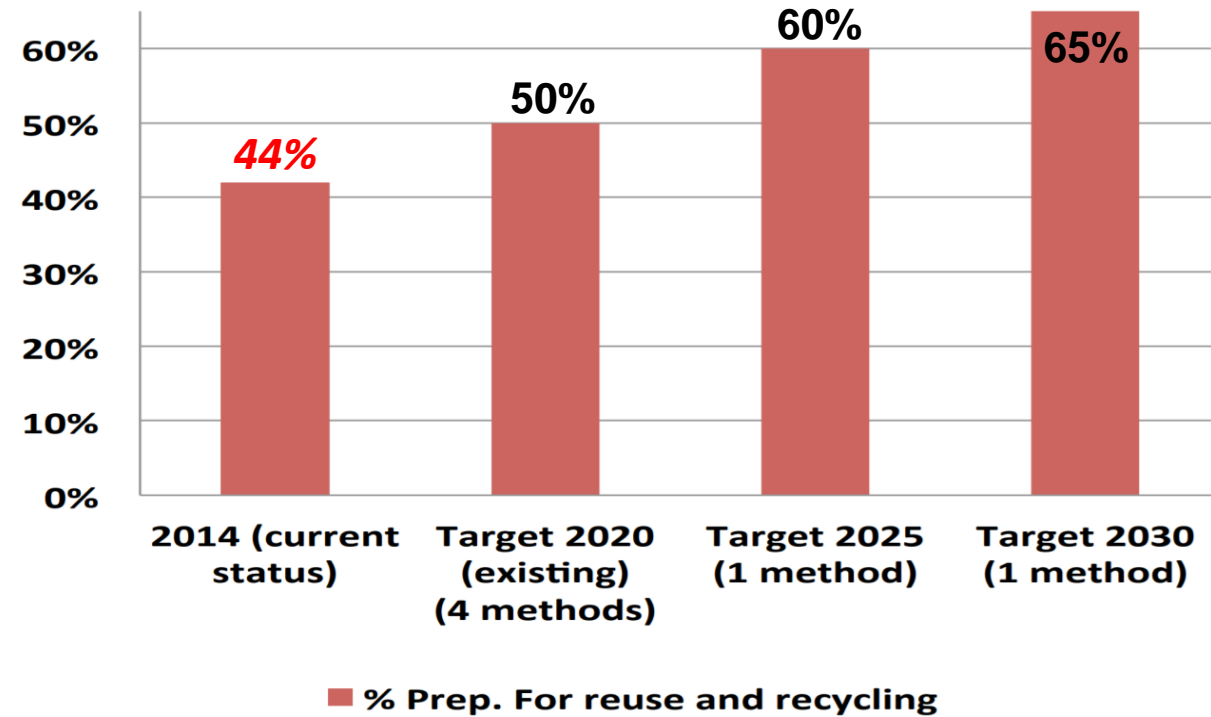
THE WASTE HIERARCHY



EU LEGISLATION REVISION

New targets

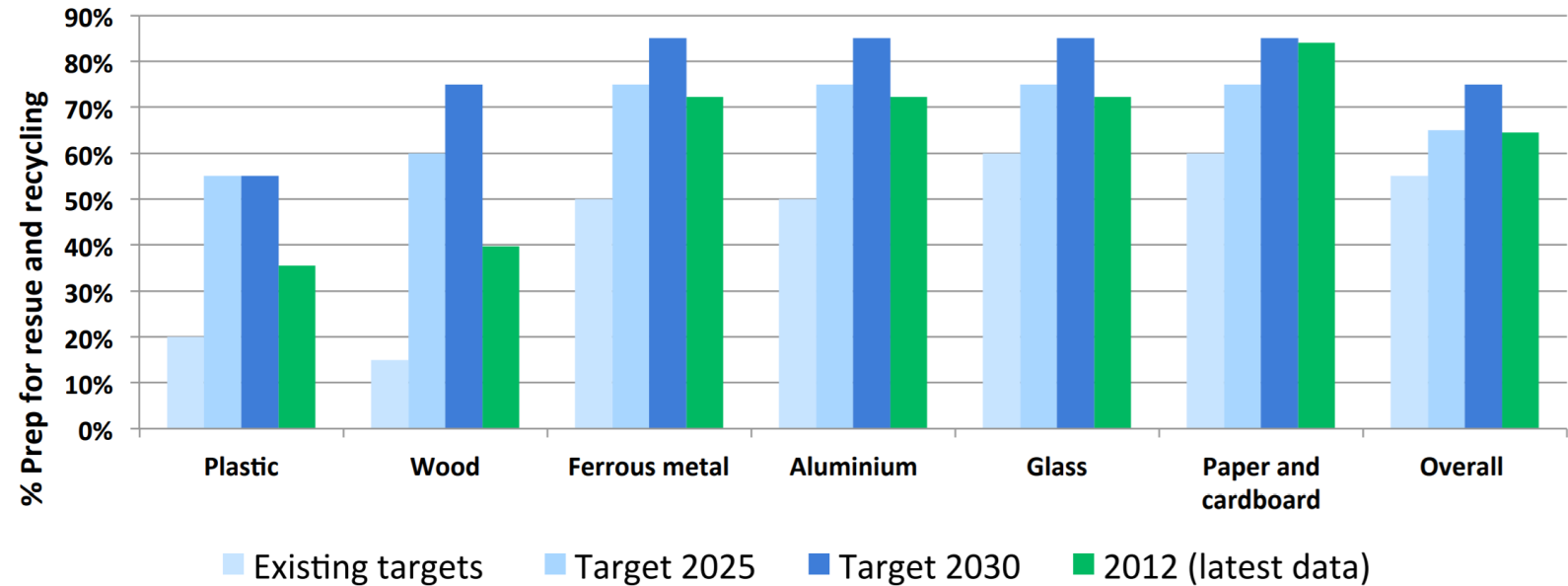
New recycling targets for MSW



EU LEGISLATION REVISION

New target

New Targets for recycling **packaging waste**

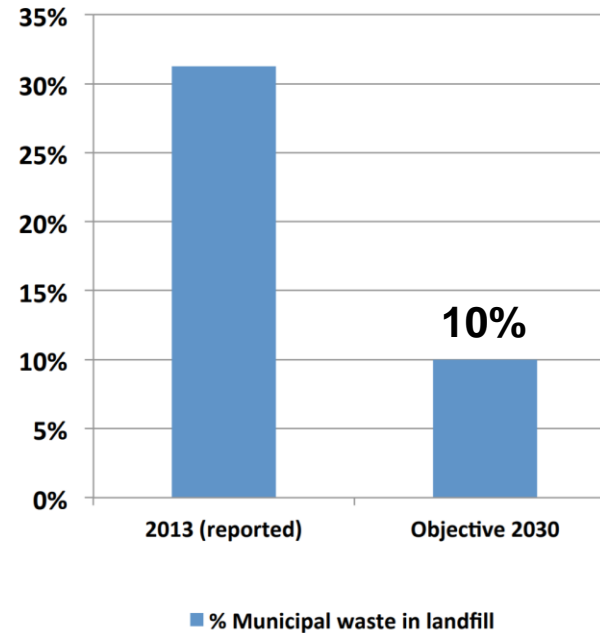


Packaging waste	Suggested Target 2025	Suggested Target 2030
Total	65%	75%
Plastics	55%	55%
Wood	60%	75%
Ferrous Metals	75%	85%
Αλουμινίου	75%	85%
Glass	75%	85%
Paper-Cardboard	75%	85%

EU LEGISLATION REVISION

New targets

New Target for MSW landfilling



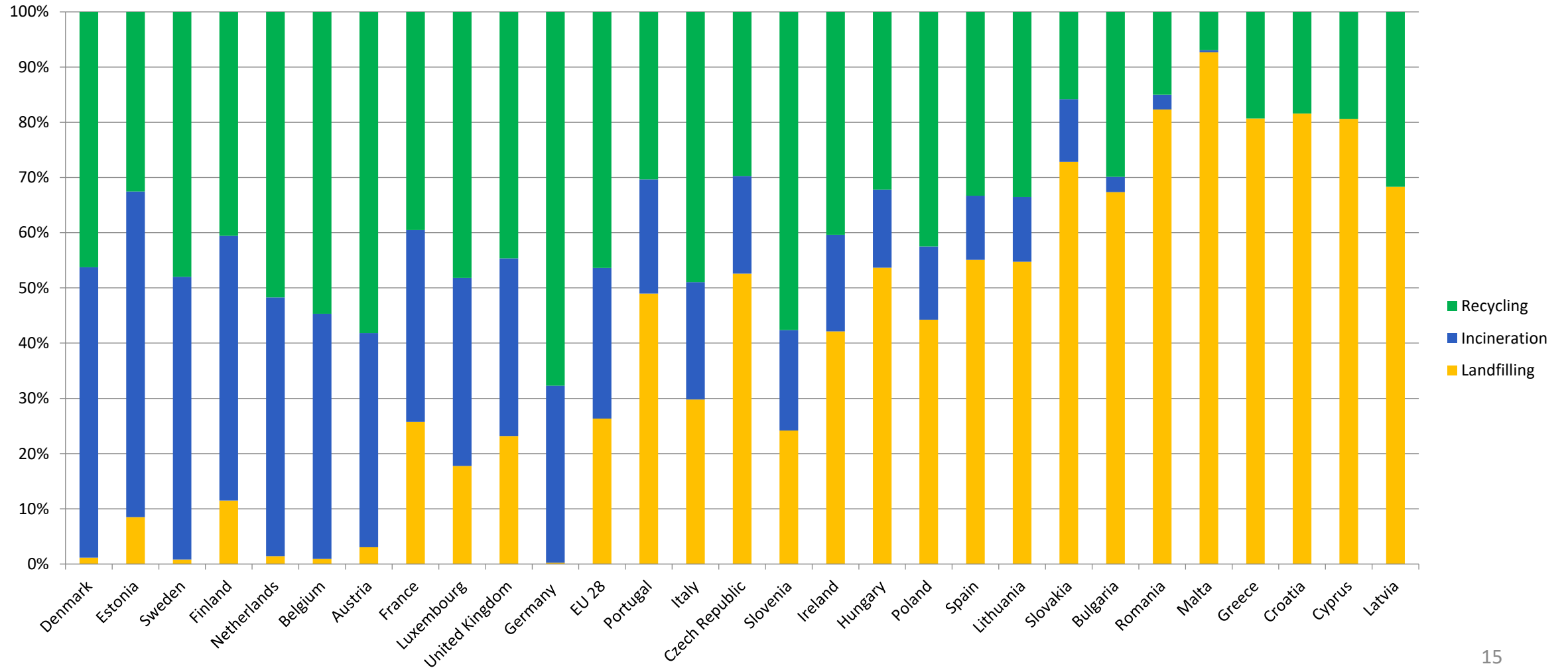
10% 2030

IN A LEGISLATIVE PROPOSAL THE
EUROPEAN COMMISSION CALLS ON
MEMBER STATES TO STRIVE TO
**REDUCE FOOD WASTE BY AT
LEAST 30% BY 2025.**

30% 2025

50% 2030.

WASTE MANAGEMENT IN EU (2015)



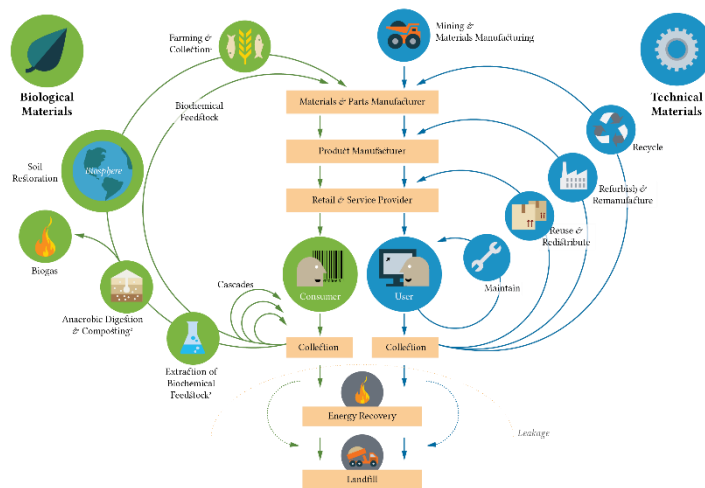
MARKET FOR SECONDARY RAW MATERIALS

➤ Objectives

- Increase the use of secondary raw materials
- Increase the use of recycled nutrients and the reuse of treated wastewater
- Safely manage risks of chemicals of concern
- Improve knowledge of material stocks and flows

➤ Key Actions

- Quality standards for secondary raw materials
- EU regulation on fertilisers
- Legislative proposal on minimum requirements for reused water
- Analysis on the interface between chemicals, product, and waste legislation
- EU-wide electronic system for cross-border transfers of waste



INNOVATION & INVESTMENT

➤ Objectives

- Create the right environment for innovation & investment

➤ Key Actions

- Horizon 2020 initiative launched on 'Industry 2020 in the Circular Economy' (EUR 650 million)
- Pilot 'innovation deals' to address potential regulatory obstacles for innovators
- Targeted outreach of EU funding, as Cohesion Policy Funds and for SMEs
- New platform for financing Circular Economy with



Priority SECTORS



Plastics

**Critical
Raw
Materials**

**Construction
& Demolition**

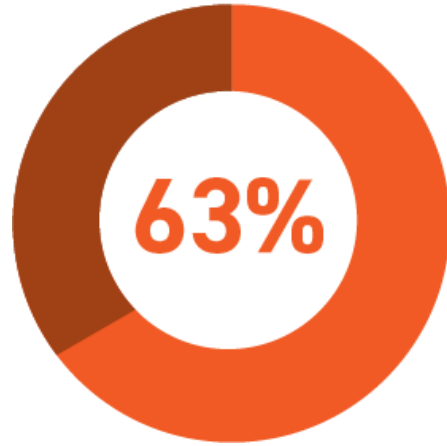
**Food
Waste**

**Biomass &
Biobased
Products**

PLASTICS



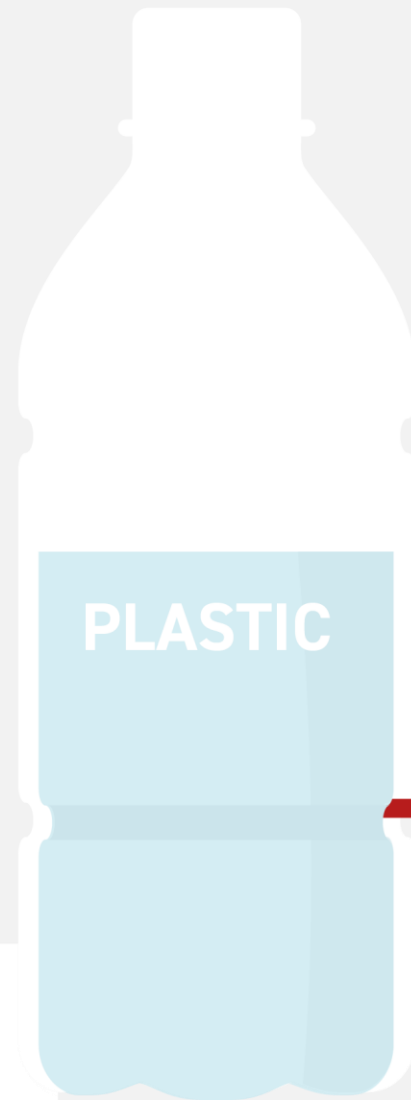
PLASTICS INDUSTRY FACTS EUROPE



26.000.000 tonnes

EUROPE'S PLASTICS WASTE

PACKAGING



34.5M
STOCKED

European strategy for plastics in the circular economy

**A European
Strategy for
Plastics in
the Circular
Economy**

Approved in January 2018 in Strasbourg

Four main axis:

Improve the
economics
and quality of
plastics
recycling

Curb plastic
waste and
littering

Drive
investments
and innovation
towards
circular
solutions

Harness
global action

Improve the
economics
and quality of
plastics
recycling

- Better separate waste collection
- Boosting recycled content
- Stimulate design for circularity



all plastics packaging
reusable or recyclable
by 2030

Curb plastic
waste and
littering



- Actions on single use plastic
- Tackling marine litter
- Litter National plans (Waste Package)



- ✓ Strategic Research Innovation Agenda for Plastics (2018)
- ✓ H2020 additional investments of € 100 million (up until 2020)



- Call for global action
- Support to multilateral initiatives on plastics
- Development in cooperation funding (European External Investment Plan)

FOOD WASTE



➤ Objectives

- Reach Sustainable Development Goal (SDG) to halve food waste by 2030 –today around 100 million tonnes of food are wasted every year in the EU

➤ Key Actions

- Develop an EU methodology to measure food waste
- Create a platform for the SDG on food waste and share best practices and results achieved
- Clarify EU legislation on waste, food and feed, and encourage food donation
- Improve the use and understanding of date marking along the food chain (e.g. 'best before' label)

CRITICAL RAW MATERIALS (CRM)

➤ Objectives

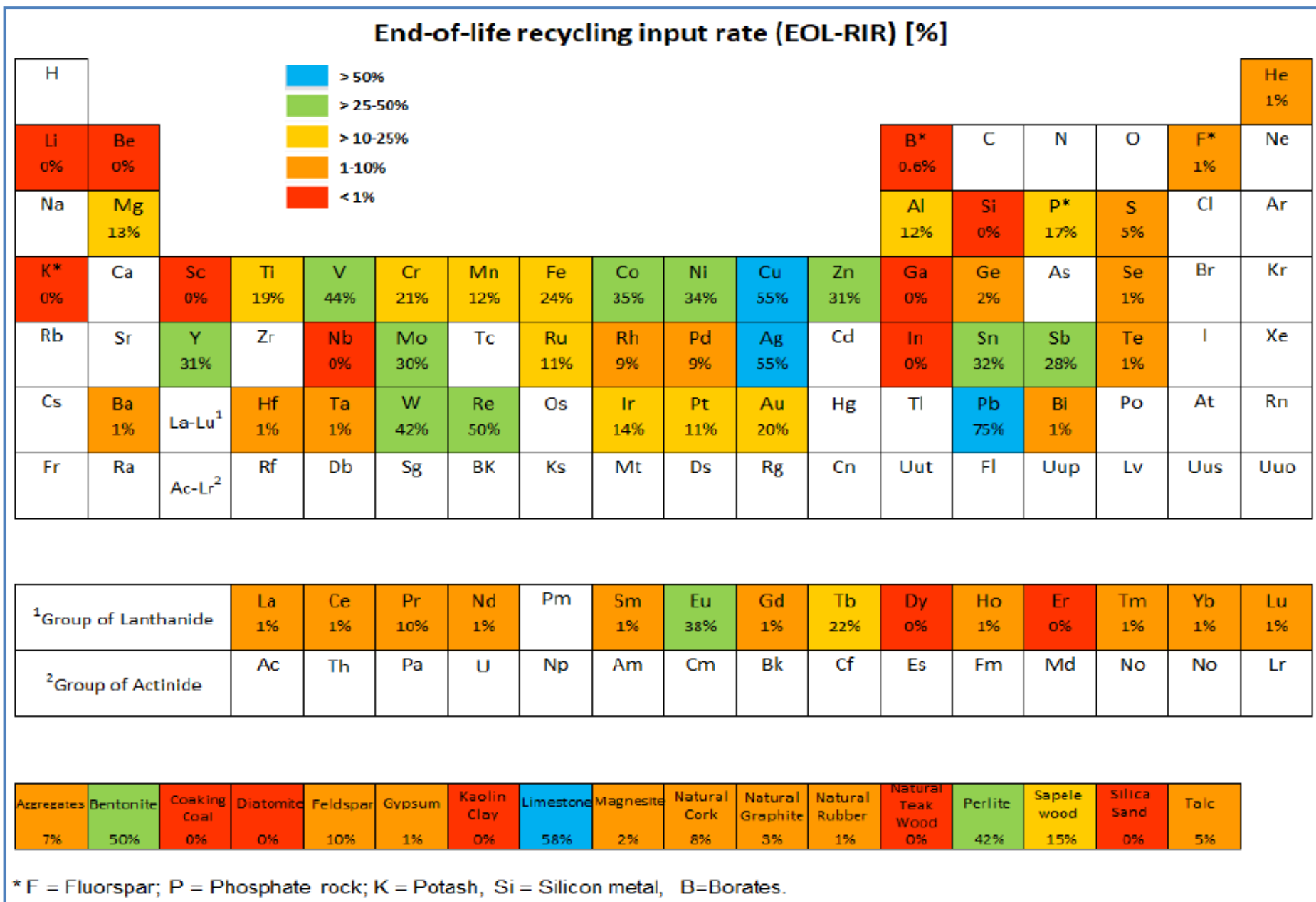
- Increase efficient use and recovery of CRMs

➤ Key Actions

- Encourage recovery of CRMs, and draft a report on best practices and options for further action at EU level
- Encourage action by Member States



End-of-life recycling input rates (EOL-RIR) in the EU-28 (CRMs and non-CRMs)



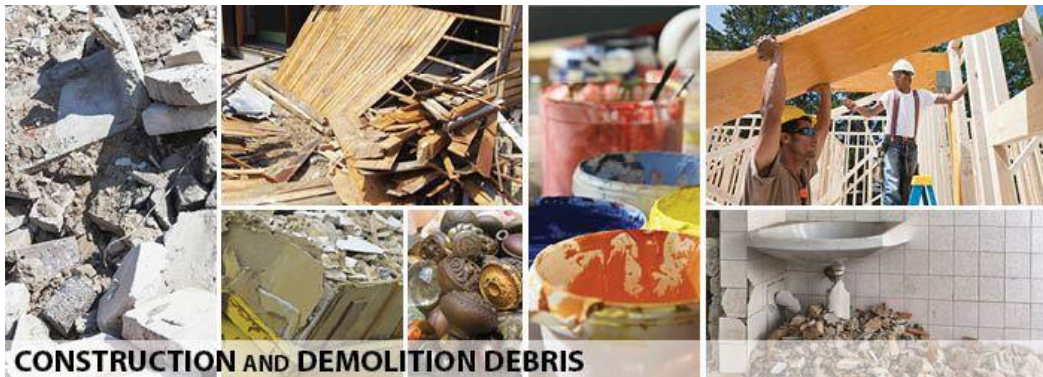
CONSTRUCTION & DEMOLITION WASTE

➤ Objectives

- Identify & increase recovery of valuable materials

➤ Key Actions

- Ensure recovery of valuable resources & adequate waste management in the construction and demolition sector, as well as facilitate assessing the environmental performance of buildings
- Put in place pre-demolition guidelines to promote high-value recycling, and voluntary recycling protocols



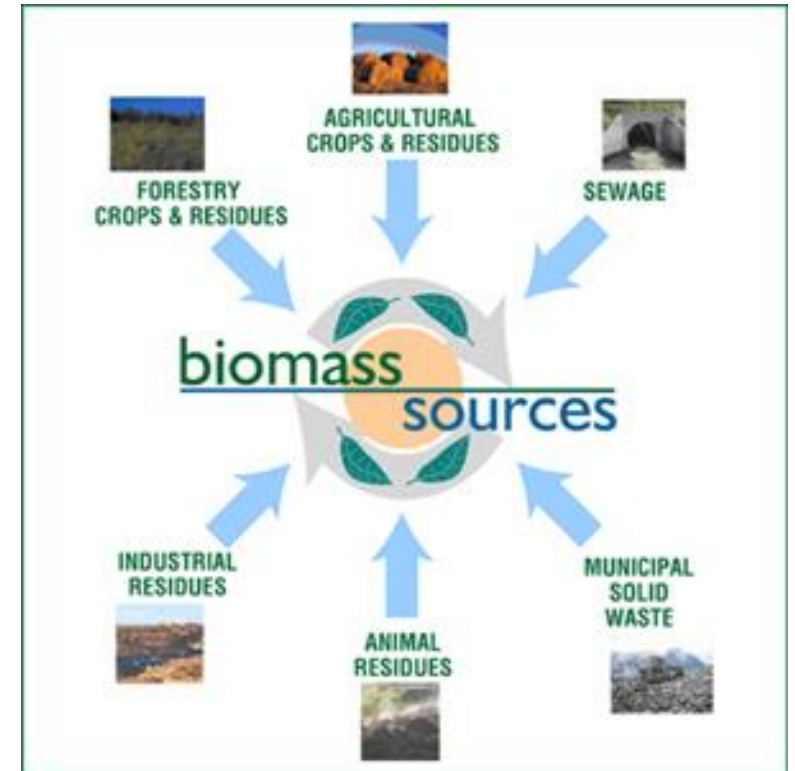
BIOMASS & BIO-BASED PRODUCTS

➤ Objectives

- Support an efficient use of wood and bio-based products
- Increase recycling of bio-waste

➤ Key Actions

- Promote an efficient use of bio-based resources through a series of measures, including promoting the cascading use of biomass and support bio-economy innovation
- Set a new target for recycling wood packaging and a provision to ensure the separate collection of bio-waste



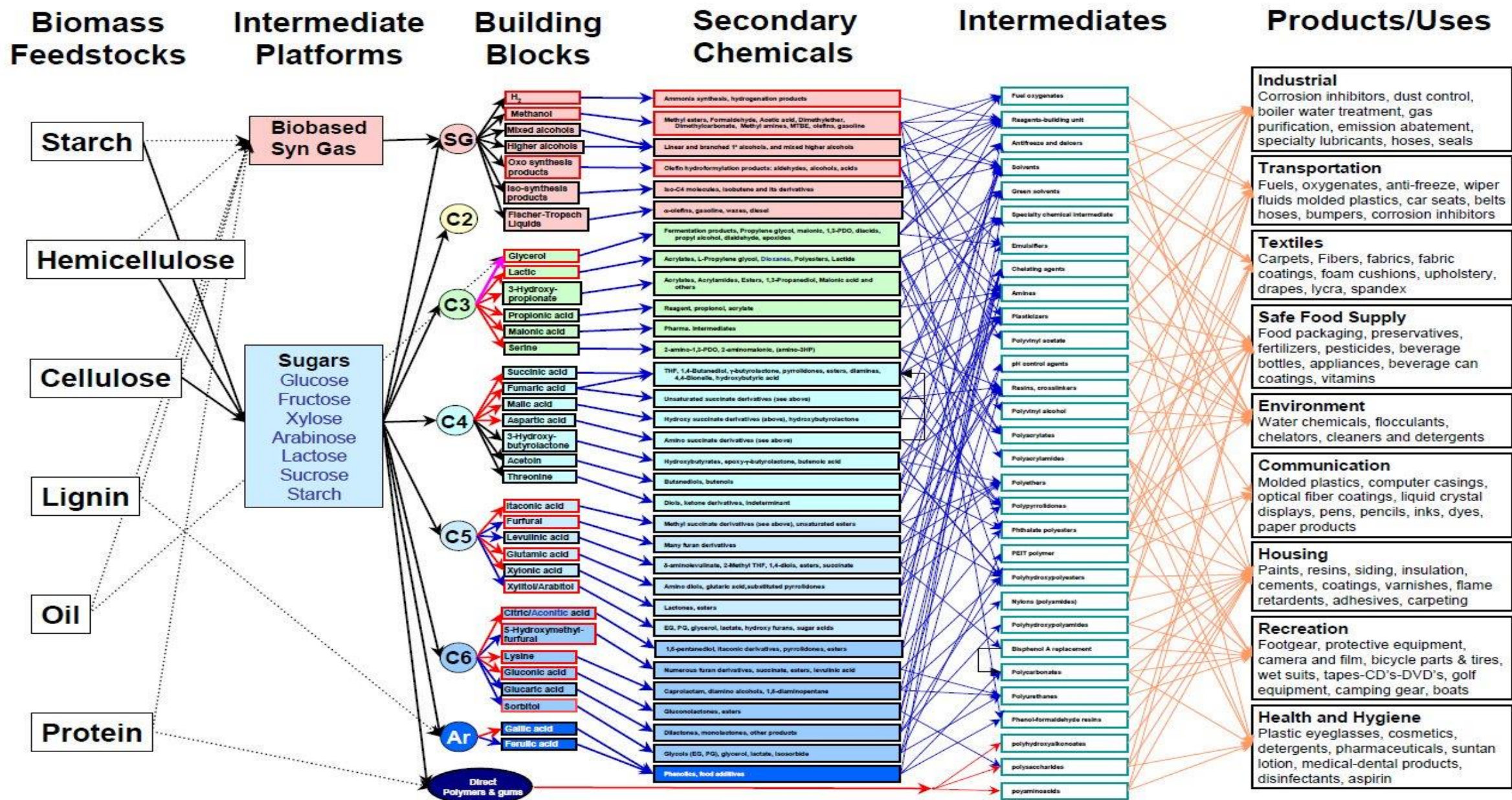


Figure 1 – Analogous Model of a Biobased Product Flow-chart for Biomass Feedstocks

**‘Good practice’ examples of
implementing**

on waste management in islands

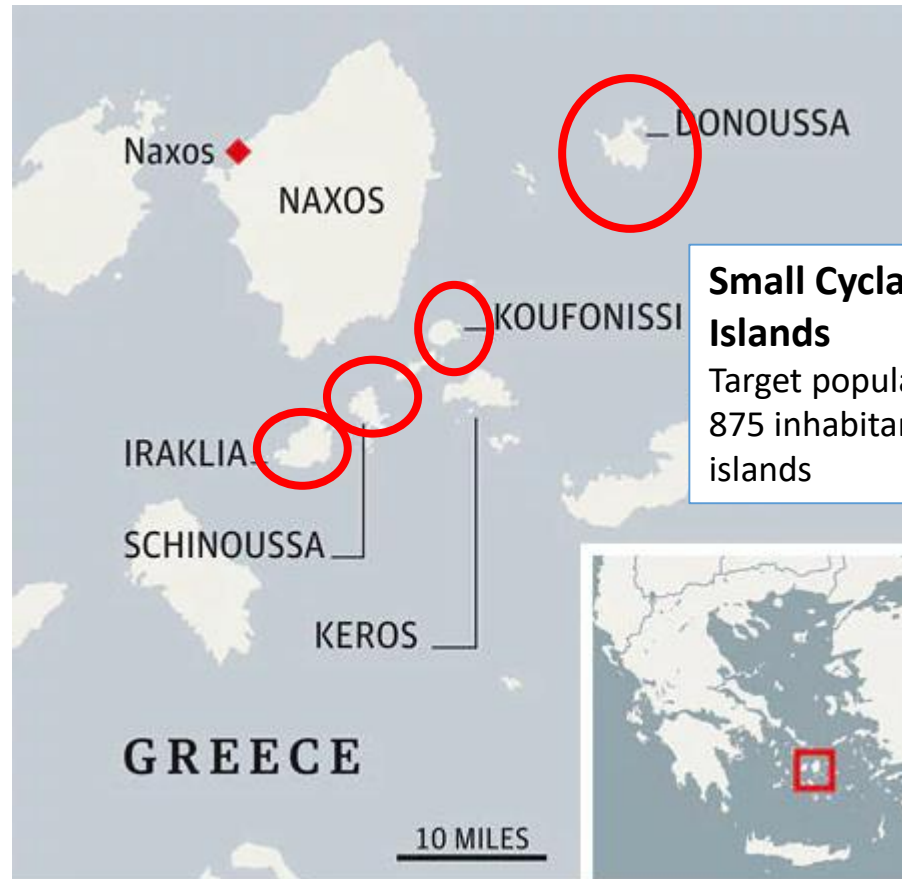
The 'PAVEtheWAYSTE' LIFE project



LIFE 14 ENV/GR/000722

Website: www.pavethewayste.eu

Demonstrating resource efficiency through innovative, integrated waste recycling schemes for remote areas



Small Cyclades Islands

Target population:
875 inhabitants in
islands

▪ **LIFE 'PAVEtheWAYSTE' project** in Small Cyclades Islands of Naxos Municipality (& Ancient Olympia):

- Donousa
- Schinoussa
- Irakleia
- Koufonissi
- (& Ancient Olympia)

- Fine source separation in **15 different streams** and pre-treatment of recyclables at **neighbourhood level**

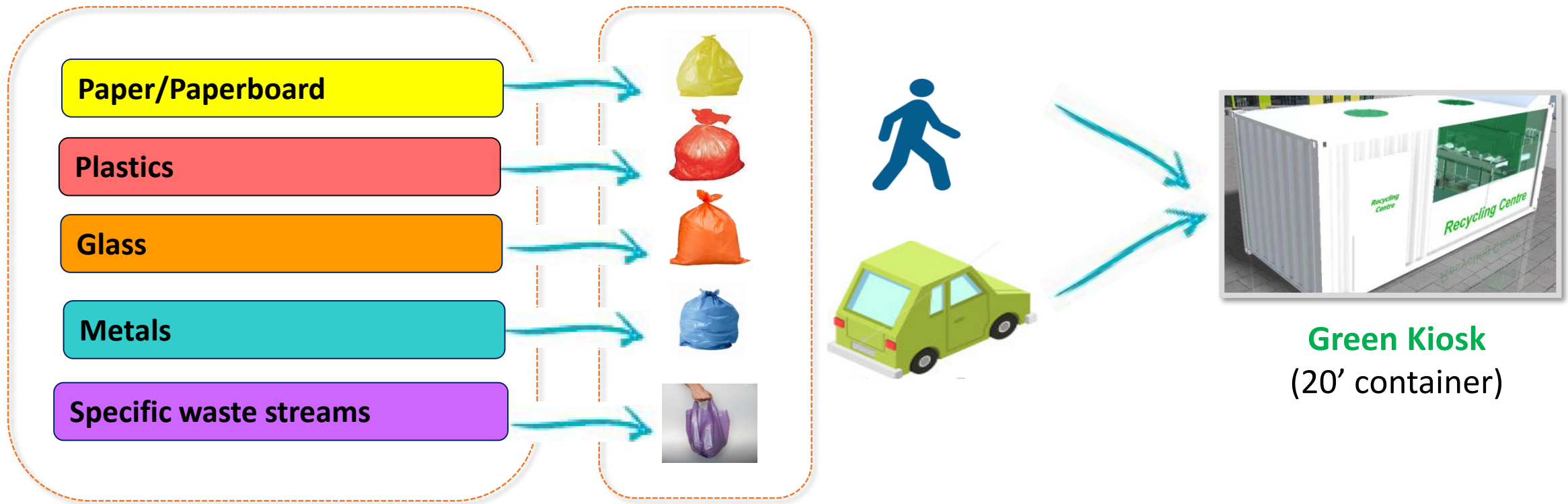
'PAVEtheWAYSTE' MSW management scheme (1)

1. Source separation in 5 main streams

MSW production

MSW source separation

Drop off site



Nάξος
Δήμος Νάξου και Μικρών Κυκλάδων



'PAVEtheWAYSTE' MSW management scheme (2)

2. Further separation in sub streams

Green Kiosk



1 employee



Participants

ID card for participants Rewarding System

Printed Paper
Paperboard
Mixed paper
PET non-coloured
PET coloured
HDPE
LDPE
PP/PS
Glass non-coloured
Glass coloured
Ferrous metals
Non-ferrous metals
Waste oils
WEEE
Batteries
Lamps



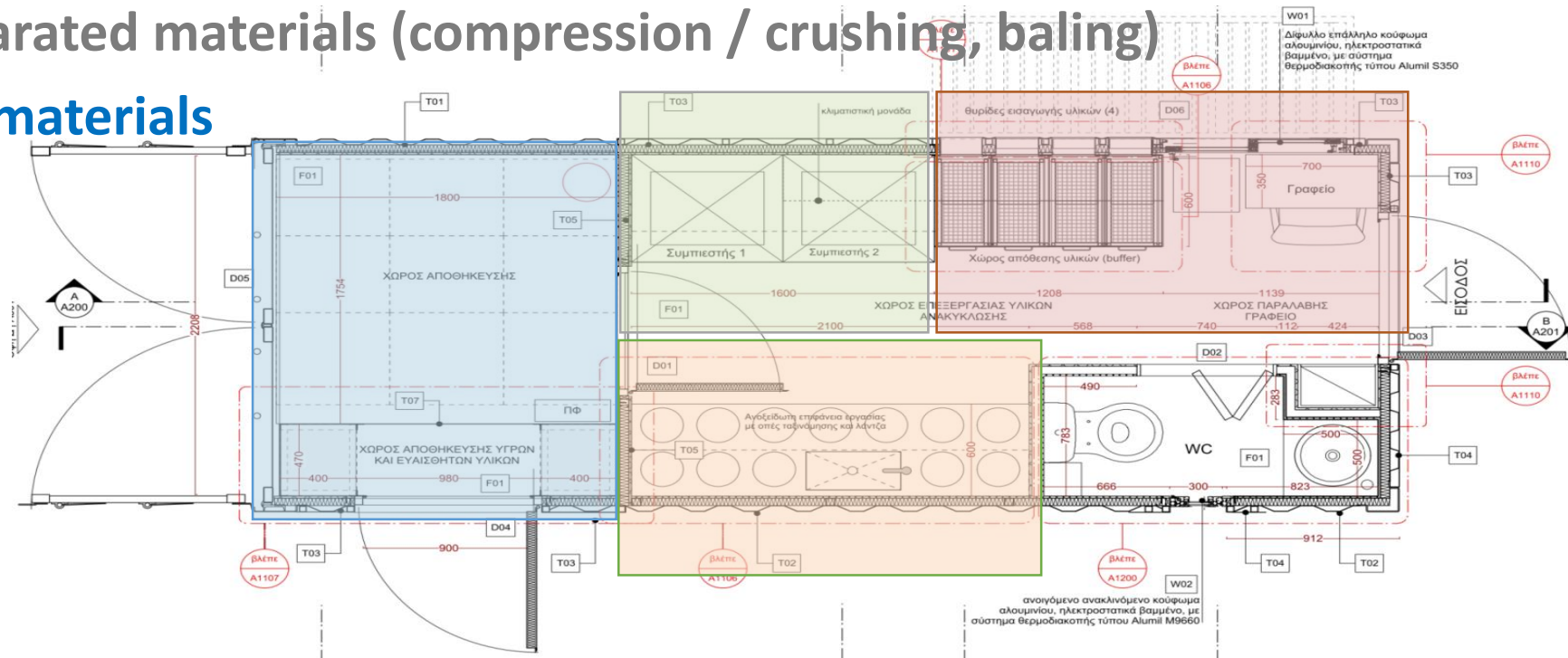
Νάφος
Δήμος Νάφου και Μικρών Κυκλάδων



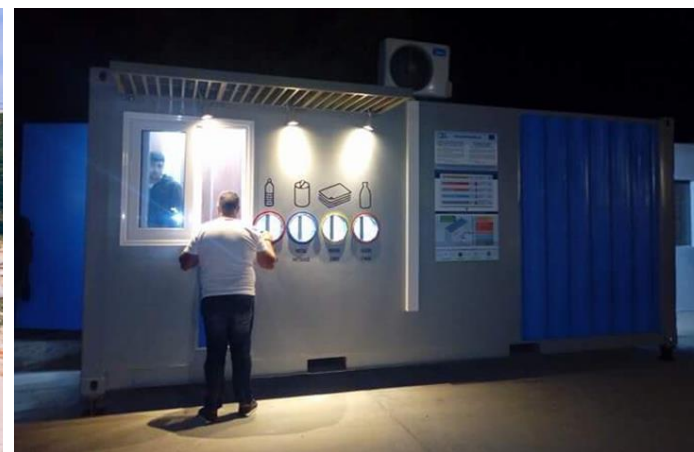
The 'PAVEtheWAYSTE' recycling system

1. Reception area of 5 pre-sorted waste streams (plastic, glass, metal, paper & special waste streams)
2. Fine separation area of pre-sorted waste into subcategories (PET, HDPE, LDPE, Aluminium, paperboard, etc.) by the system operator
3. Processing of fine separated materials (compression / crushing, baling)
4. Storage area of baled materials

System Plan and
space arrangement of
20m³ container,
(6.06m x 2.59m x 2.44m)



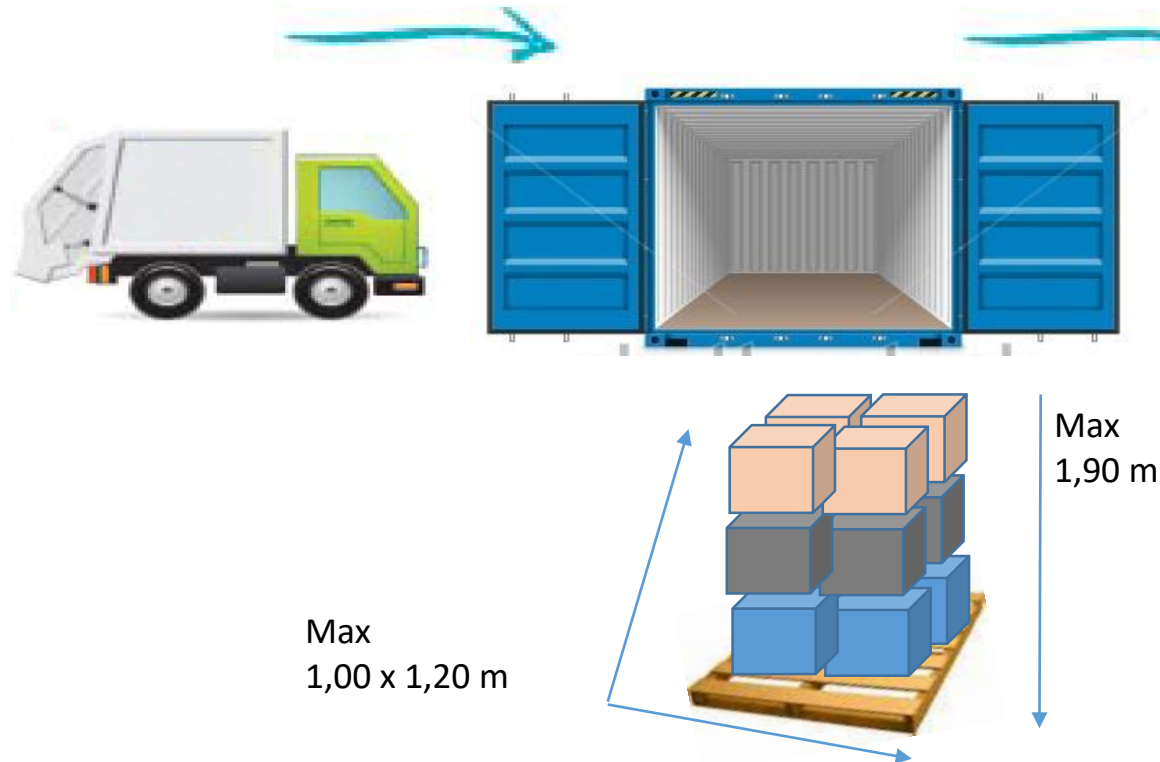
The 'PAVEtheWAYSTE' recycling system (photos)



'PAVEtheWAYSTE' MSW management scheme

Printed Paper
Paperboard
Mixed paper
PET non-coloured
PET coloured
HDPE
LDPE
PP/PS
Glass non-coloured
Glass coloured
Ferrous metals
Non-ferrous metals
Waste oils
WEEE
Batteries
Lamps

3. Temporal storage



4. Transportation to the market

- ✓ Private Sector
- ✓ industries





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www.heraklion2019.uest.gr

7th International Conference on Sustainable Solid Waste Management

26-29 June 2019

Thank you for your attention



mloiz@chemeng.ntua.gr



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Thursday 28 - Friday 29 March 2019, Nicosia, Cyprus

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