



Anaerobic digestion and composting

A “must” under the new EU waste legislation

Webinar on ‘Biogas from organic wastes’, 15 May 2020

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**Interreg
Europe**



European Union | European Regional Development Fund

The Circular Economy

The technical and biological cycles

OUTLINE OF A CIRCULAR ECONOMY

PRINCIPLE 1

1

Preserve and enhance natural capital by controlling finite stocks and balancing renewable resource flows
 ReSOLVE levers: regenerate, virtualise, exchange



Regenerate Substitute materials Virtualise Restore

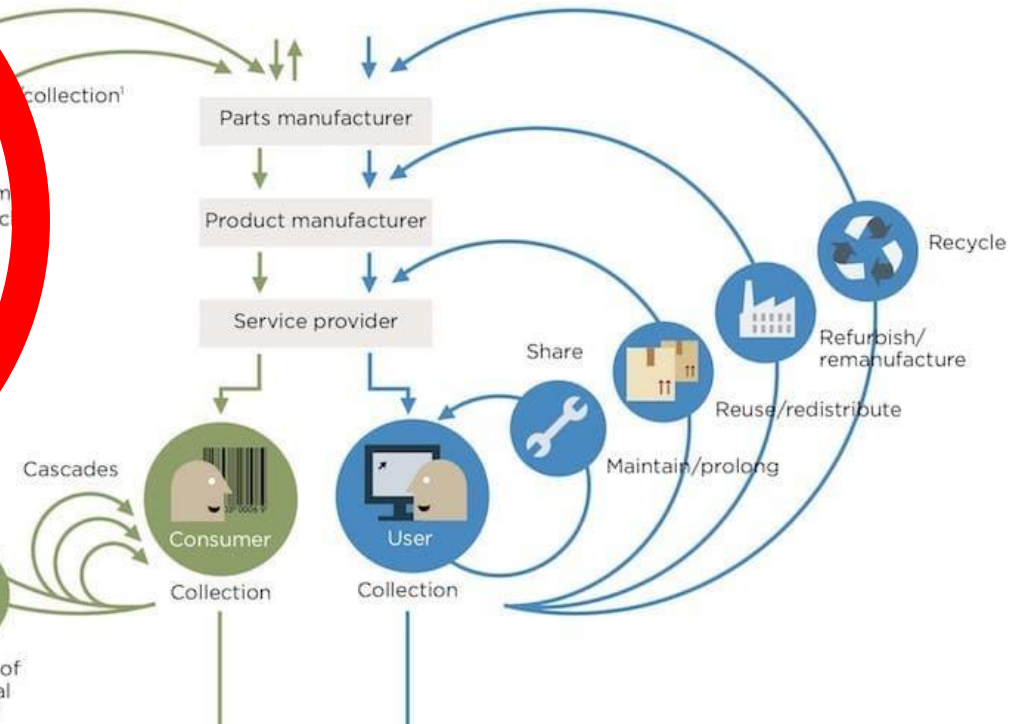
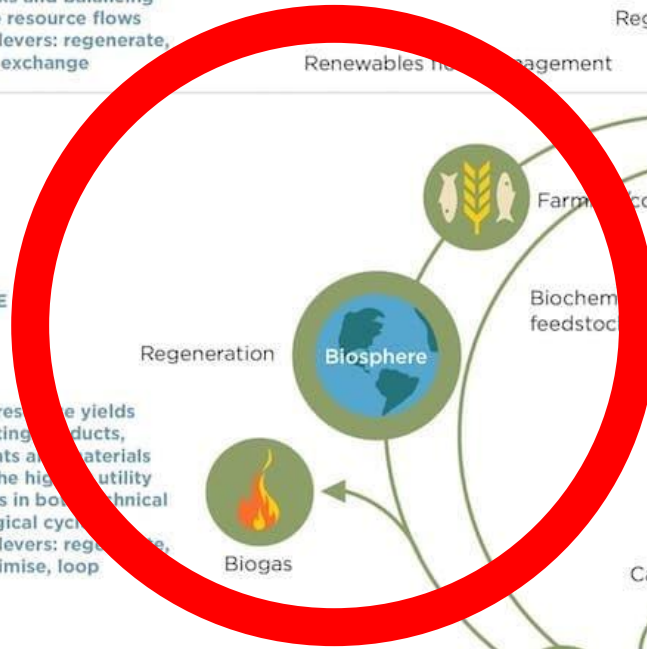
Renewables management

Stock management

PRINCIPLE 2

2

Optimise resource yields by circulating products, components and materials in use at the highest utility at all times in both technical and biological cycles
 ReSOLVE levers: regenerate, share, optimise, loop



PRINCIPLE 3

3

Foster system effectiveness by revealing and designing out negative externalities
 All ReSOLVE levers

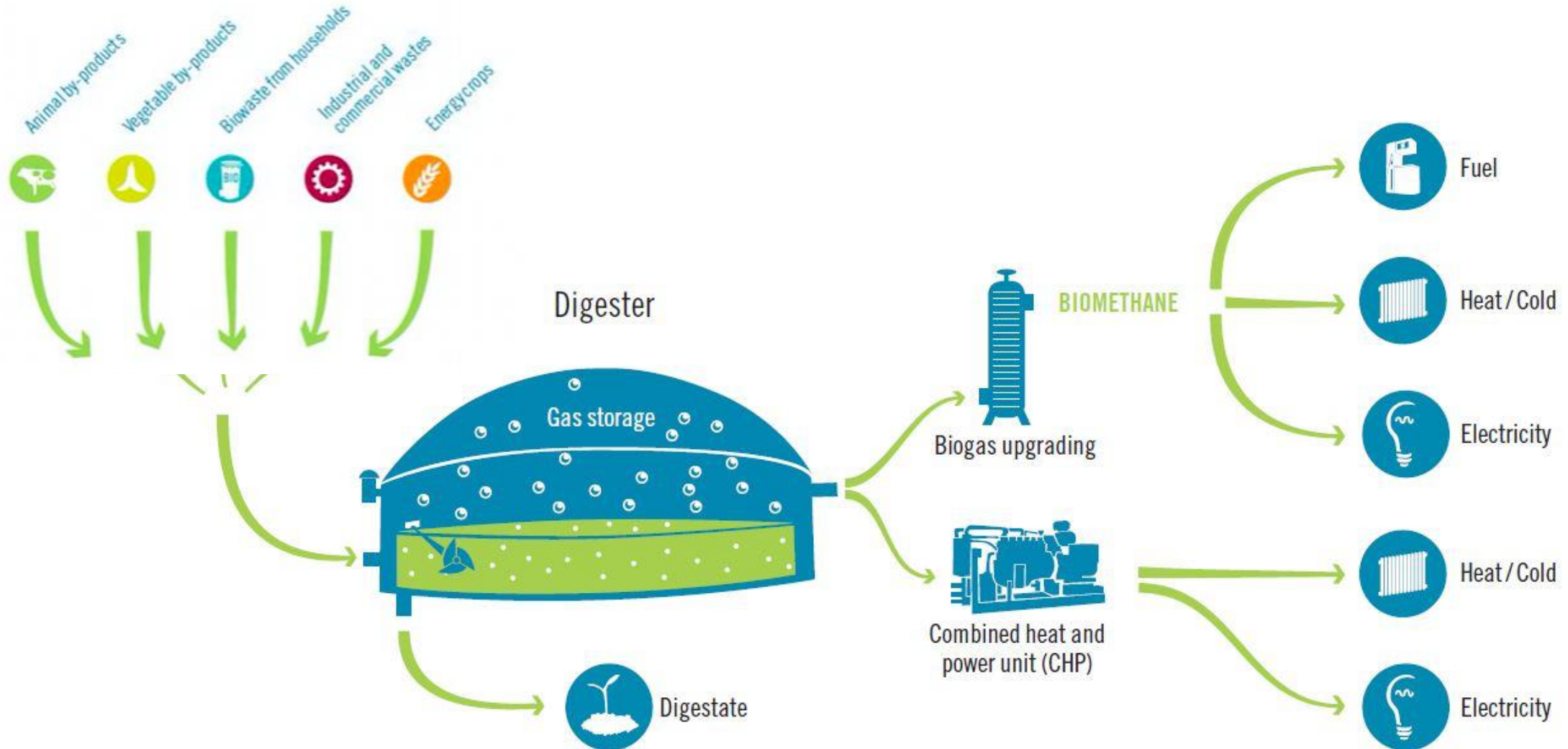
Minimise systematic leakage and negative externalities

1. Hunting and fishing
 2. Can take both post-harvest and post-consumer waste as an input

Source: Ellen MacArthur Foundation, SUN, and McKinsey Center for Business and Environment; Drawing from Braungart & McDonough, Cradle to Cradle (C2C).



Anaerobic digestion



The EU 'Renewables Directives'

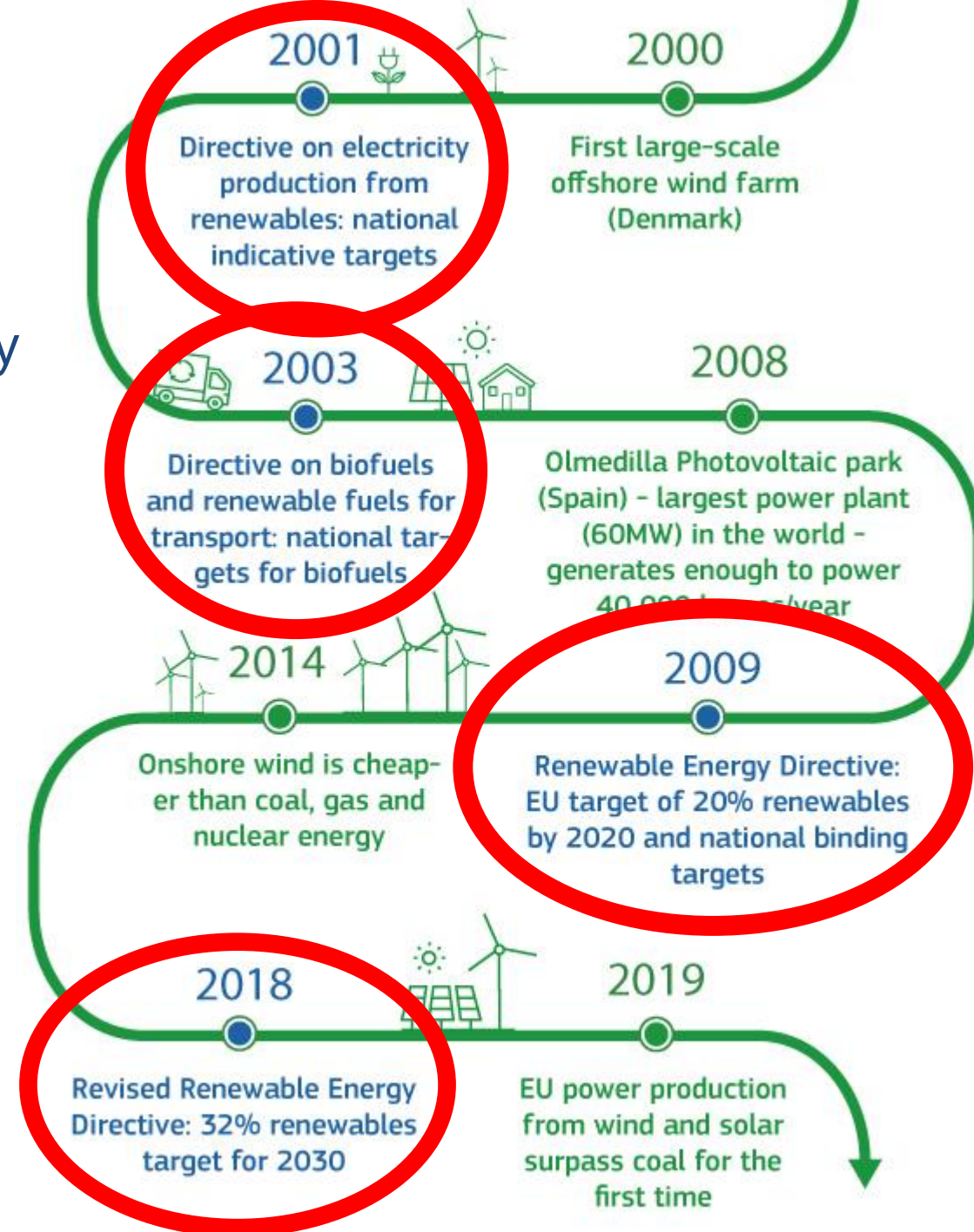
Among the most ambitious Renewable Energy Policies World-Wide since 2001

Previous targets:

- National indicative targets
- National binding targets and EU overall target of **20% by 2020**

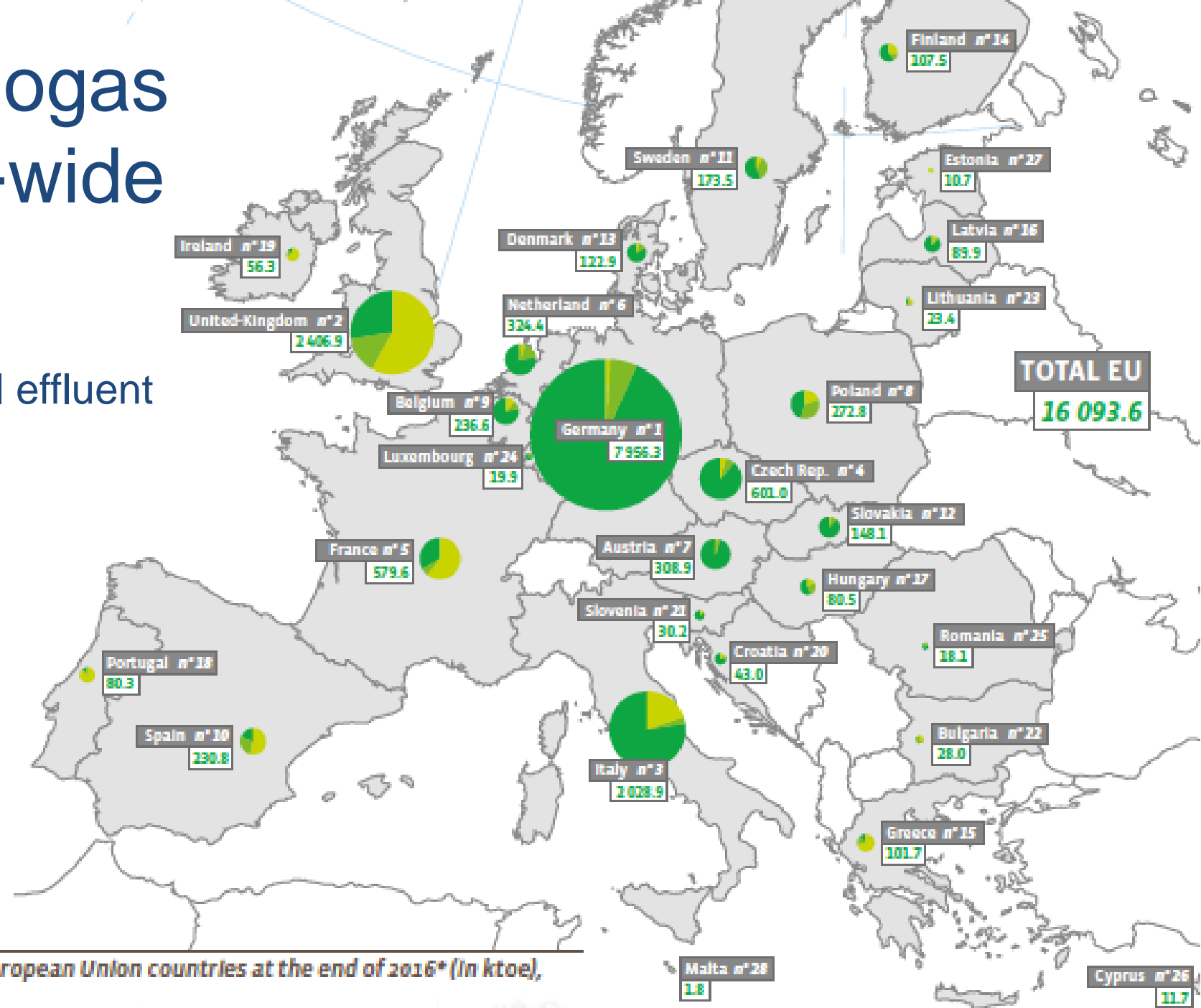
Next target to be met:

- Binding EU overall target of **32% by 2030**
- EU MS must draft 10-year National Energy & Climate Plans (NECPs) for 2021-2030



Energy from Biogas production EU-wide

- Urban sewage & industrial effluent biogas
- Landfill biogas
- Other biogas from AD (Agri-waste, MSW, etc)



Primary energy production from biogas in the European Union countries at the end of 2016* (In ktOE), with the respective shares of each sub-sector.

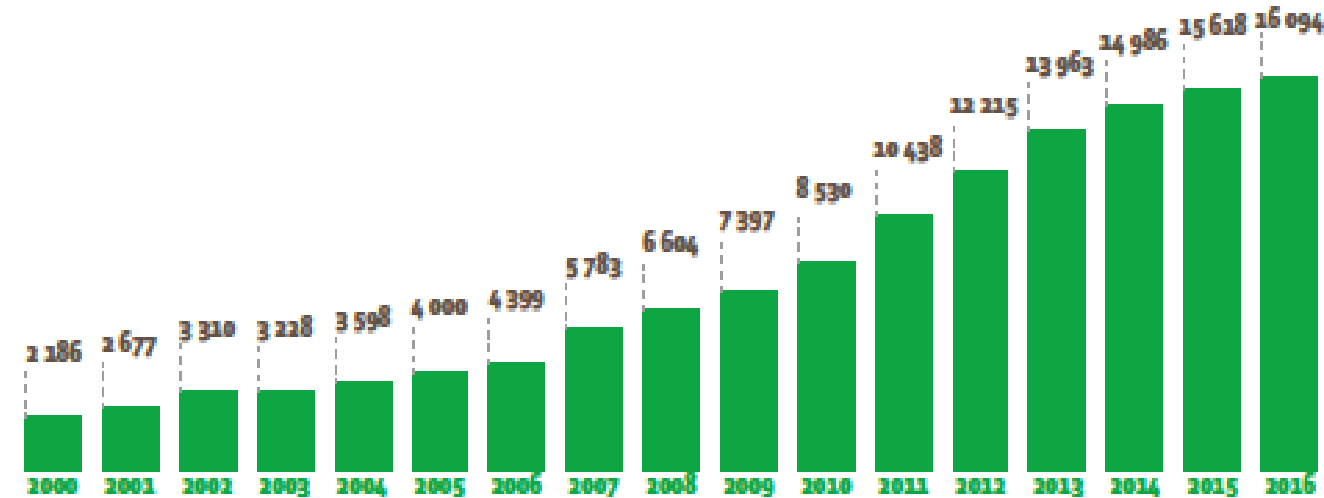


Biogas in the Renewables Directives

Biogas development since 2000 is clearly correlated to **political & economic framework conditions** created in response to the Renewable Energy Directive, e.g.

- Technology-specific feed-in tariffs
- Mandated market shares per technology
- Bonus for the joint use of heat & power

Evolution of primary biogas energy production in European Union (EU 28) since 2000 (in ktoe)



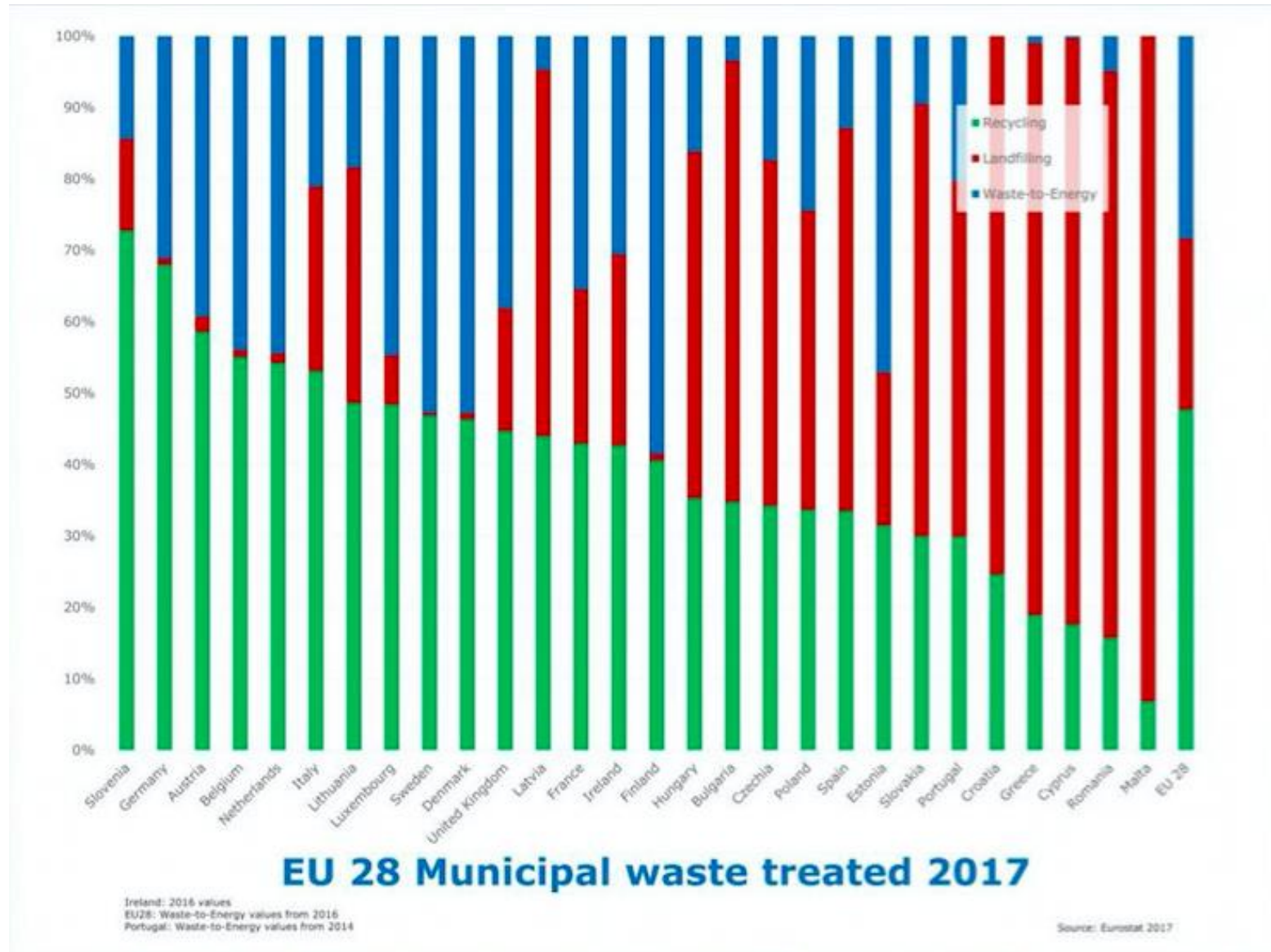
Source: EurObservER 2017

Revised Renewable Energy Directive ('RED II') supports biogas in 3 ways:

- Overall RE target of 32% EU-wide
- Annual target increase of 1.3% for renewable energy in the **heating** sector
- End target of 14% renewables in the **transport** sector by 2030.



Waste treatment in the EU



Source: ESWET



Bio-waste in the European Union

Bio-waste is defined as biodegradable garden and park waste, food and kitchen waste from households, restaurants, caterers and retail premises, and comparable waste from food processing plants.

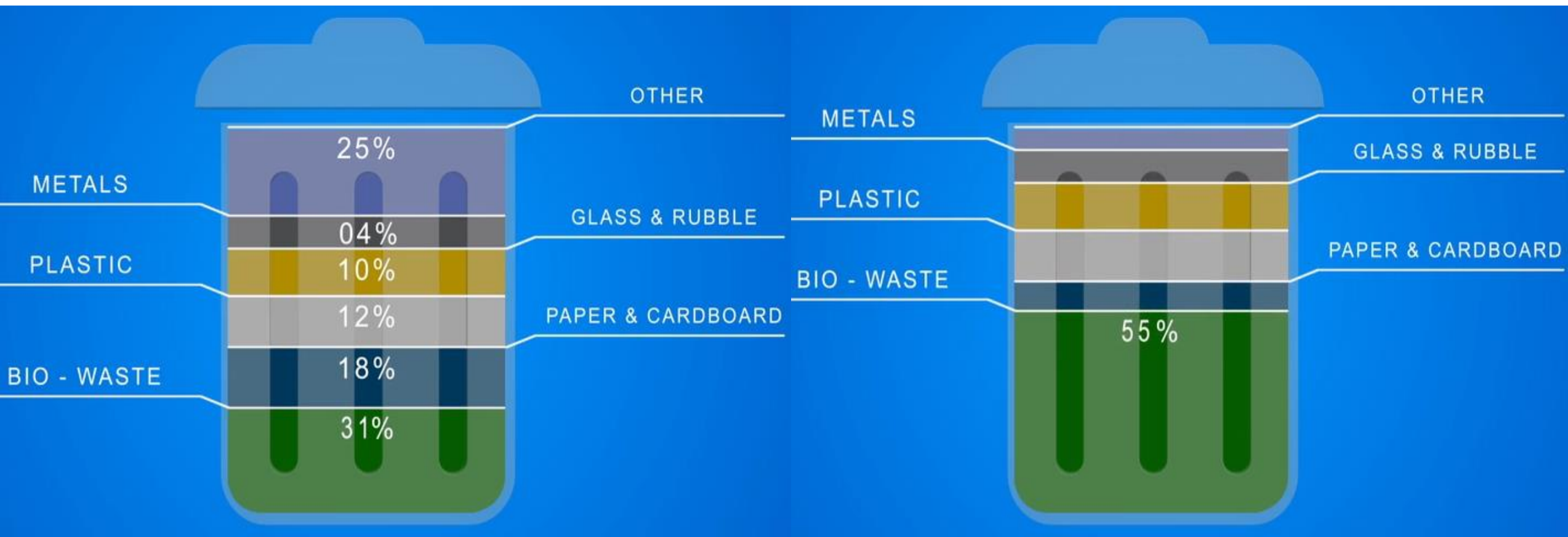
- Bio-waste generation
 - About 96 million t/a of bio-waste generated annually in the EU
 - 41 million t / a food residues from industrial food manufacturing
- Main social threat: wasting food and resources
- Main environmental threat: production of methane and leachate in landfills

Bio-waste is a large part of household waste (MSW)



Northern Europe: ca. 30%

Southern Europe: ca. 55%





Current treatment of bio-waste in Europe

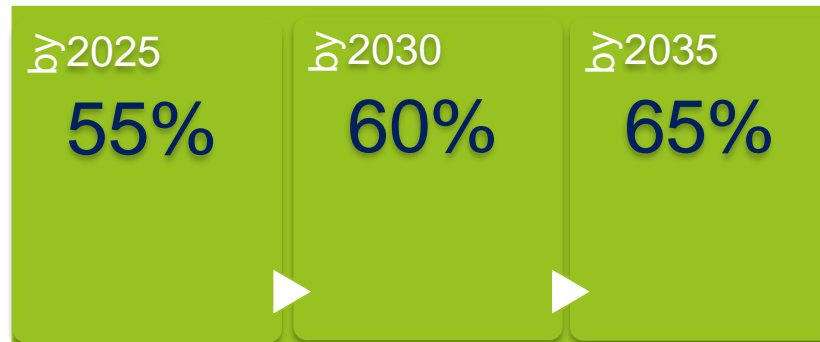
- Main treatment methods:
 - landfilling (31%)
 - incineration (26%)
- About 30 million t/a of separately collected bio-waste is composted or digested in ca. 3,500 treatment plants across Europe
 - > 50% of bio-waste is green waste
 - ca. 60% of plants are composting plants
- Composting predominates over anaerobic digestion for the bio-waste stream
- Over 90% of food and green waste is processed into compost.





EU Circular Economy Package targets

- Divert all recyclable and bio-degradable waste from landfills
- Only 10% rest waste allowed onto landfills by 2035
- Collect bio-waste separately from households by 2023
- Overall recycling targets:



- **Bio-waste recycling is key to achieving recycling targets**
 - **Biogas and composting counts as recycling!**
 - Incineration and landfilling does not count as recycling

Separate collection of bio-waste enables recycling



- **Bio-waste has to be collected separately by 2023 by EU Directive**
- **Currently, large differences exist in the provision of separate collection and treatment capacity for bio-waste across Europe**
 - Frontrunners: Austria, Switzerland, Germany, the Netherlands, Flanders (Belgium), Sweden and Norway
 - Catching up: UK, Italy, Finland, Ireland, Slovenia, Estonia and France
 - Expansion potential: Bulgaria, Greece, Croatia, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovakia, Spain, Czech Republic, Hungary and Cyprus.
- **Potential for expansion in countries with established bio-waste collections**
 - Predominant collection and composting of green waste; potential for separate household food waste collections.
 - High proportion of bio-waste (60-70 kg per inhabitant / year) remains within the residual waste stream



Status on Separate Collection of Biowaste in Europe

Sweden:

67 sites, 1.07 million tons of biowaste

Finland:

259 sites, 0.48 million tons of biowaste

United Kingdom:

199 sites, 2.95 million tons of biowaste

Netherlands:

135 sites, 4.20 million tons of biowaste

Belgium:

81 sites, 2.03 million tons of biowaste

Germany:

912 sites, 8.87 million tons of biowaste

France:

692 sites, 4.62 million tons of biowaste

Spain:

67 sites, 0.87 million tons of biowaste

Switzerland:

287 sites, 1.00 million tons of biowaste

Italy:

298 sites, 5.30 million tons of biowaste

-
- Separate collection and composting/digestion of biowaste
 - Separate collection of biowaste in preparation/implementation
 - Only limited collection of biowaste



Thank you!

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