

6th CEWEP Congress 2012

Waste-to-Energy

▶ Energy & Resource Efficiency

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10 years' momentum in Waste-to-Energy

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WtE in Europe - today



CEWEP

**Confederation of European Waste-to-Energy Plants
Represents 371 Waste-to-Energy plants in Europe**

Waste-to-Energy Plants thermally treat household and similar waste that remains after waste prevention, reuse and recycling by generating energy from it.

Waste-to-Energy (WtE) Plants

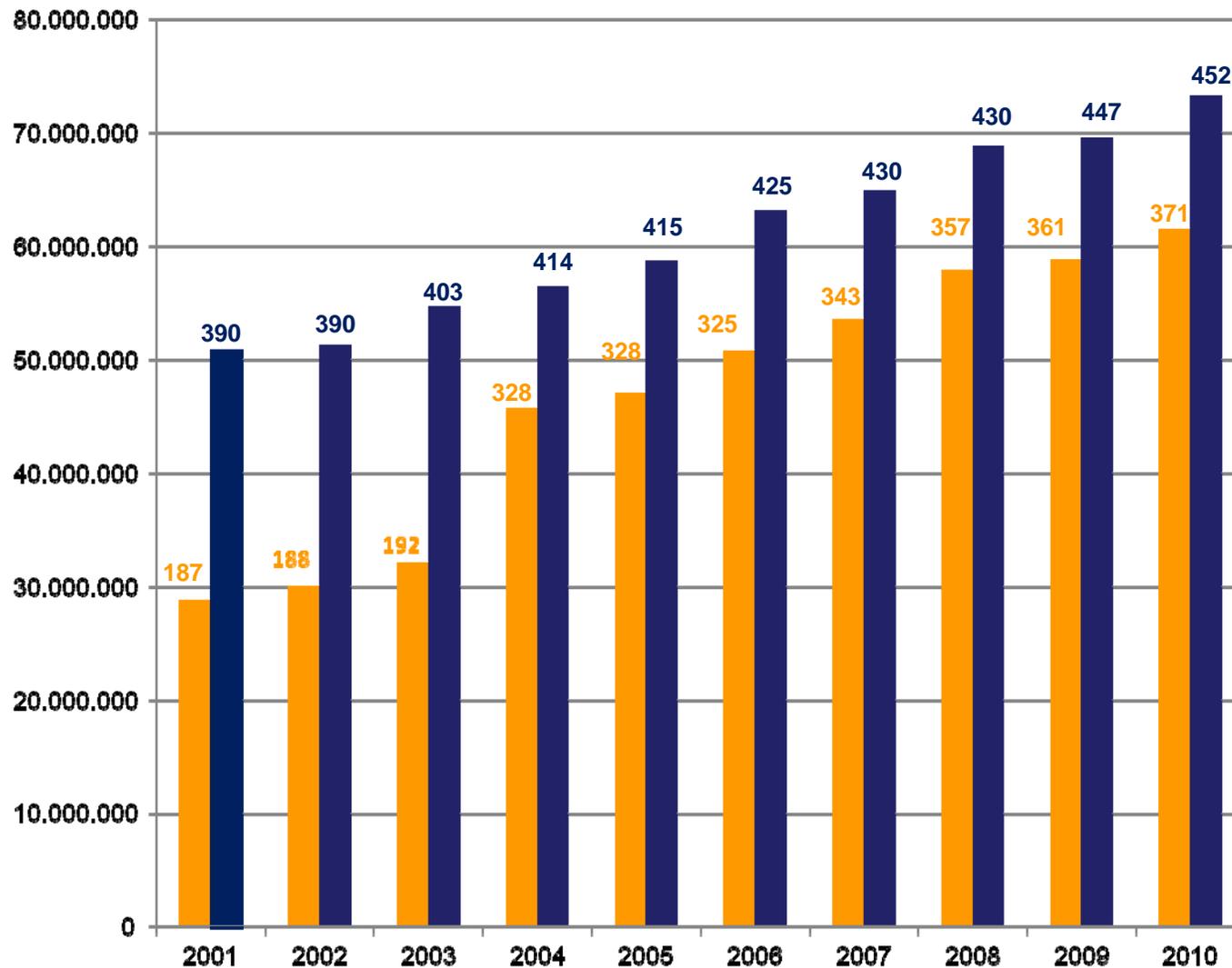
Capacity CEWEP Members Europe: 62 Mio. tonnes (85%)

Capacity Europe: 73 Mio. tonnes

Data for 2010

In total:
452 plants in Europe

Incinerated MSW in EU27+CH+NO 2001-2010, in tonnes

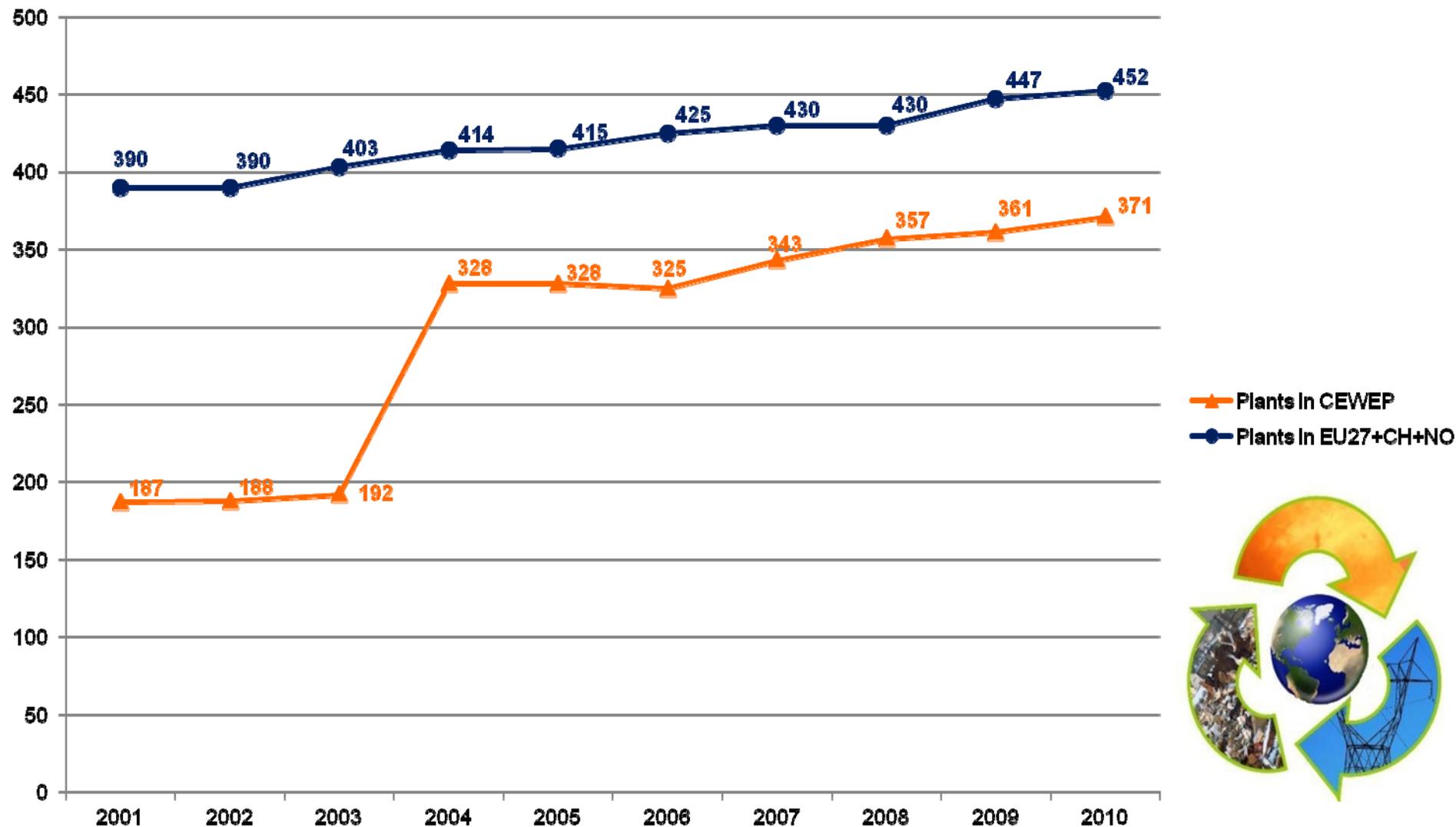


■ Incinerated MSW by CEWEP members
■ Incinerated MSW in EU27+CH+NO

number of plants in CEWEP
number of plants in EU27+CH+NO

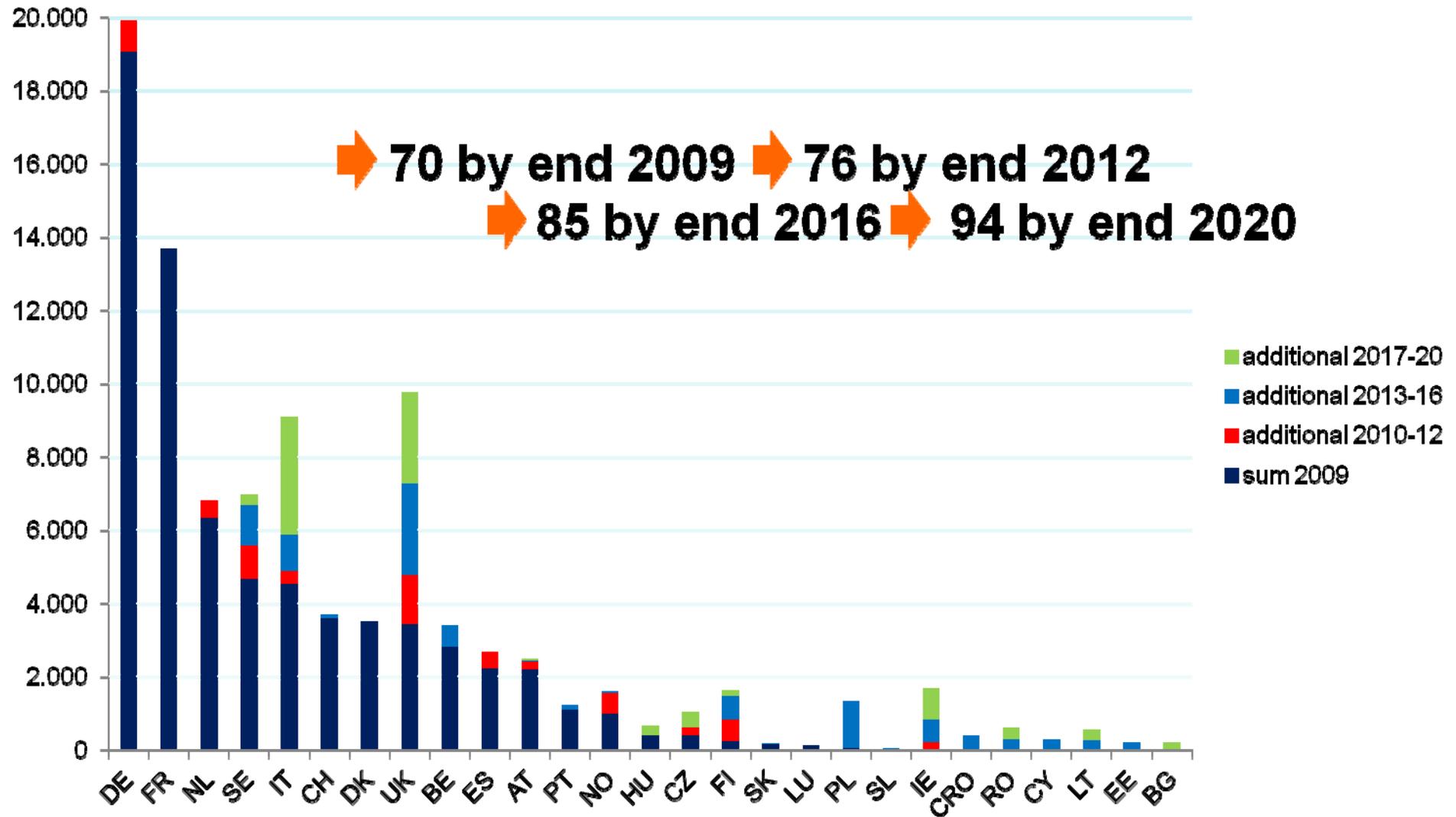


Number of WtE plants in EU27+CH+NO, 2001-2010

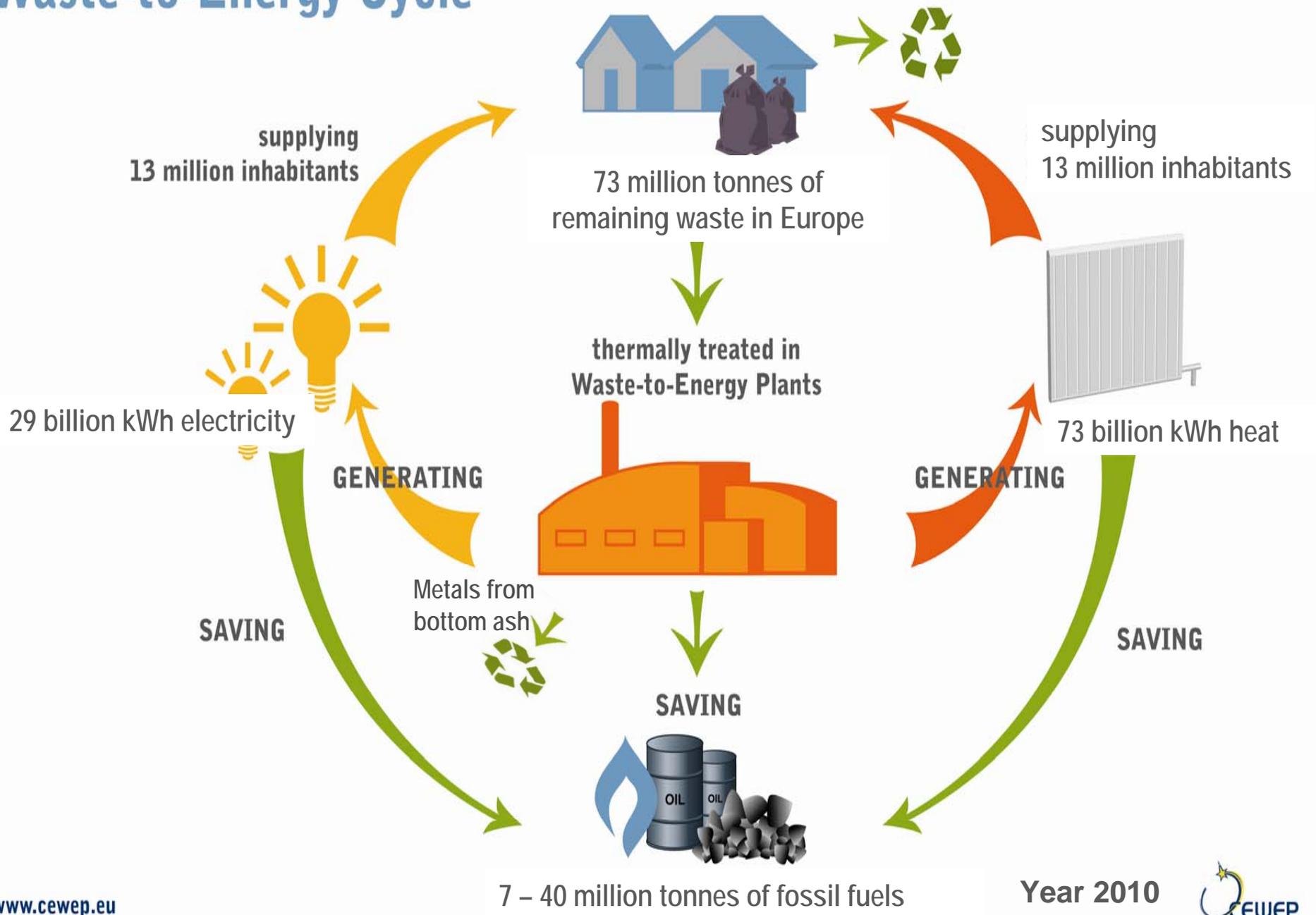


European **WtE capacity development** (million tonnes) est.

At the same time: **Recycling will constantly grow**
and **landfilling (currently > 90 m t MSW) will be reduced**



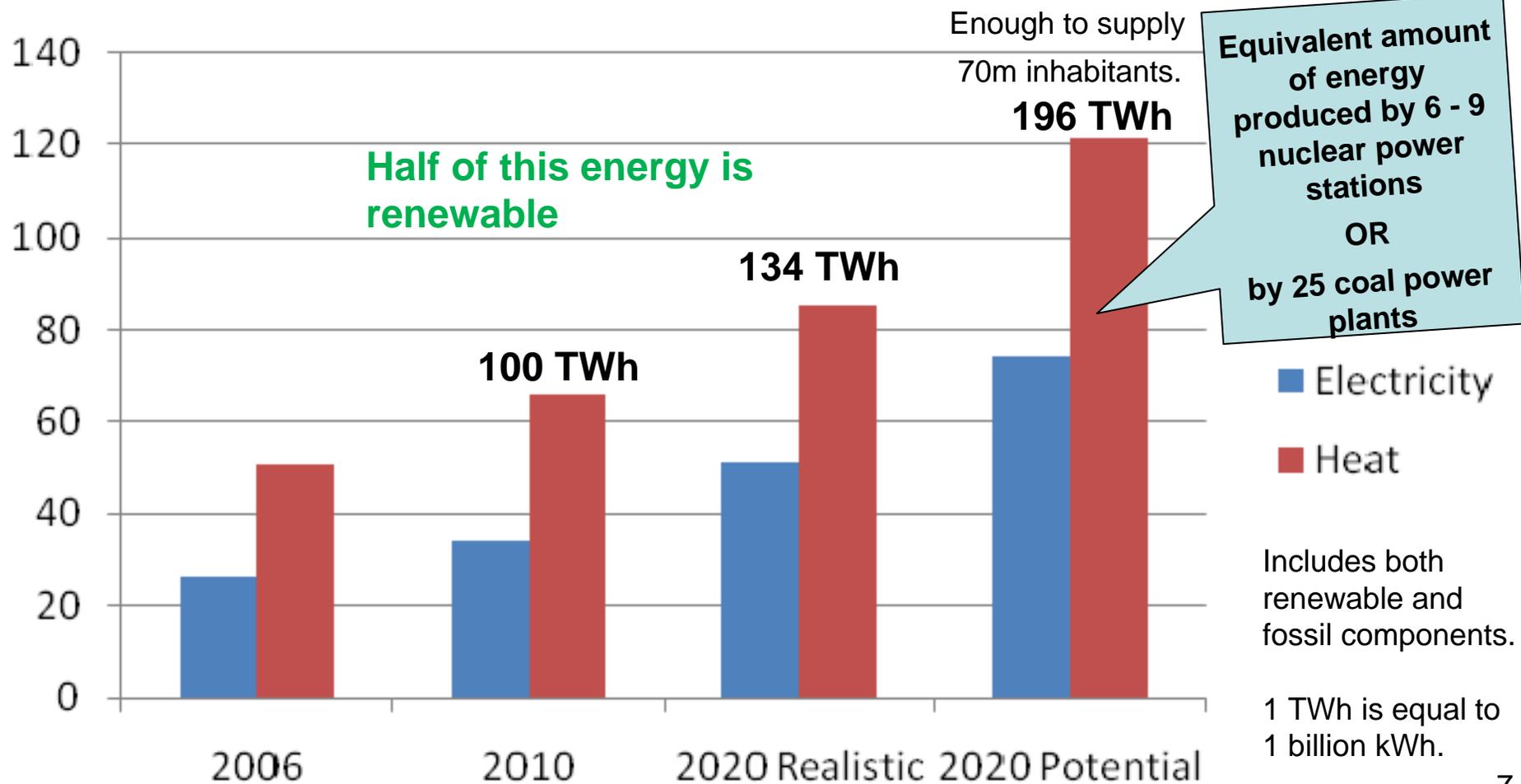
Waste-to-Energy Cycle



Sustainable Energy from Waste-to-Energy



Projection of Total Energy from WtE in TWh



Sustainable waste management



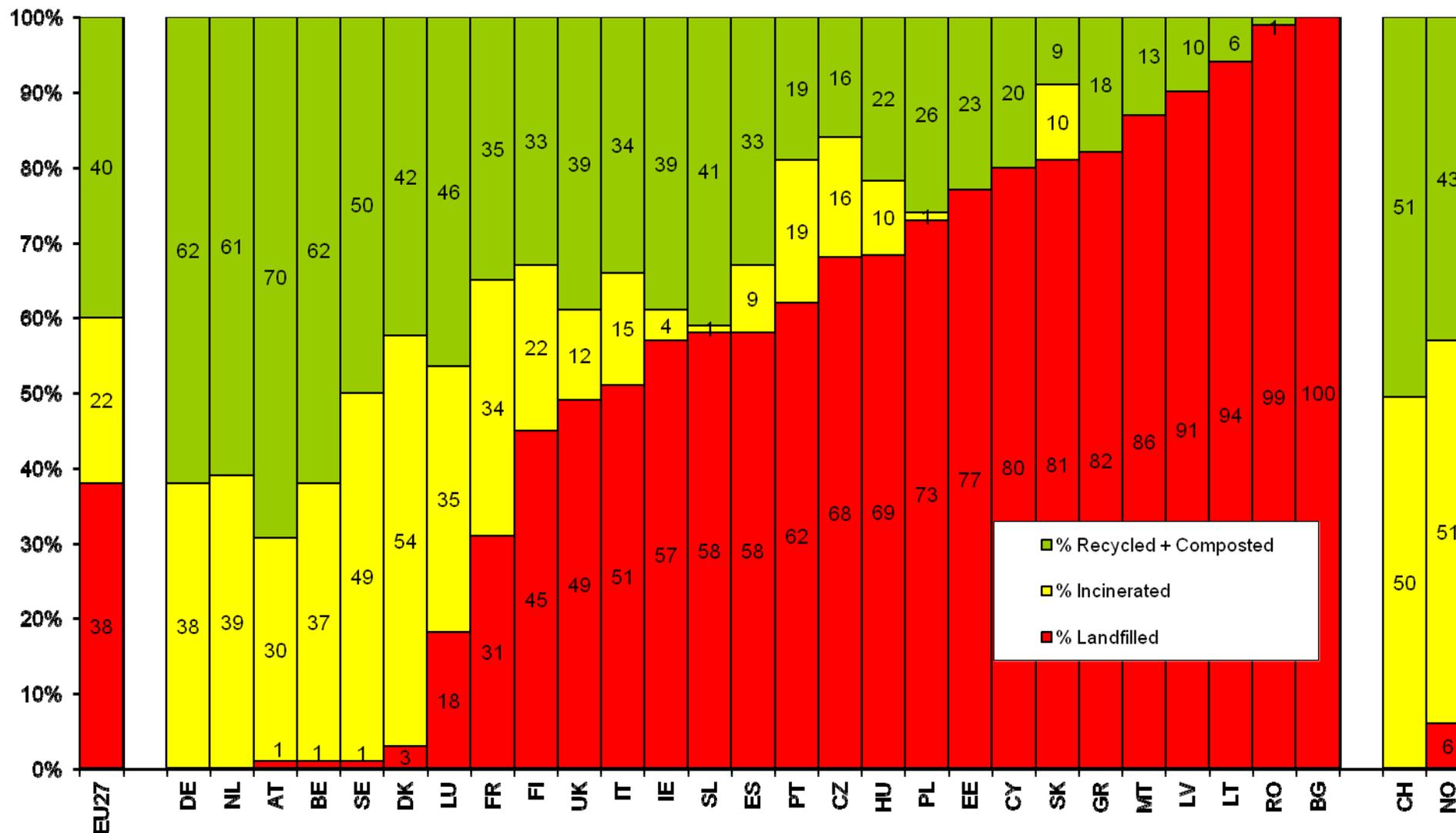
In order to achieve sustainable waste management, waste should be **diverted from landfills**, **recycled as much as possible** with the remaining waste (i.e. waste not suitable for recycling) used to **generate energy**.

Recycling and Waste-to-Energy are complementary options to divert waste from landfills, helping the EU to become a Resource Efficient society.

Municipal waste treatment in 2010

EU 27 & CH+NO

Graph by CEWEP, Source: EUROSTAT 2010



Moving up the waste hierarchy



Lessons to be learnt from the 5 countries in the EU27

landfilling 1% municipal waste or less:

Austria, Belgium, Germany, the Netherlands and Sweden

- They have all introduced landfill bans
- Waste-to-Energy & Recycling are complementary to divert waste from landfills

→ Turning the waste not suitable for recycling into precious **energy!**



Roadmap for a Resource Efficient Europe

Published by European Commission on 20/09/2011



- *landfilling is virtually eliminated* 
- *high quality recycling is ensured* 
- *Energy recovery is limited to non recyclable materials*
 - *What are “non recyclable” materials ???*

Can't everything be recycled?



New recycled materials depend on the quality of the sorted waste:

- ▶ Materials too dirty or too contaminated (e.g. vacuum cleaner bags),
- ▶ Mixed materials (too difficult to sort)
- ▶ Materials degrade after repeated recycling
- ▶ Demand necessary for recycled products

If high quality recycling is not possible, the waste should be turned into energy, rather than being landfilled.

It is worth noting that residues from recycling also often need thermal treatment

Even countries with the highest recycling rates in Europe (e.g. Germany, Netherlands, Austria and Sweden) depend on Waste-to-Energy to treat remaining waste not suitable for recycling.

Recycling precious metals from Waste-to-Energy bottom ash



Recycling Waste-to-Energy bottom ashes:

- Ferrous and non-ferrous metals can be extracted and recycled into new products, e.g. aluminium castings for the automotive industry.
- Minerals can be used as secondary aggregates, e.g. in road construction or in building products.



1 tonne of bottom ash contains between 10-15% metals, including 15 to 20kg of aluminium

Waste-to-Energy Plants contribute to achieving a recycling society and to improving Europe's resource efficiency, by using unavoidable waste as a valuable resource wherever possible.

Thanks to progressive EU legislation

▶ Enormous strides have been made in Waste-to-Energy



- Waste Framework Directive
 - Incentives for Waste-to-Energy Plants to improve their energy efficiency
- Waste Incineration Directive/Industrial Emissions Directive and Best Available Techniques Reference Document
 - Most stringent emission levels, strictly controlled
- Landfill Directive
 - Sets targets to divert biodegradable waste from landfilling
- Renewable Energy Directive
 - Biodegradable waste is a renewable energy source
- Energy Efficiency Directive/ Cogeneration Directive
 - Promoting the use of district heating and cooling

Maximize the energy use of residual municipal waste that is not suitable for recycling

Policy recommendations



Waste-to-Energy can help achieve the EU's aim of improving **Resource Efficiency** if:

- ▶ existing EU waste legislation is fully implemented in order to divert waste from landfills to Recycling and to Waste-to-Energy, treating the remaining part not suitable for recycling by generating precious energy from it
- ▶ more ambitious policy to divert waste from landfills would be implemented, providing huge potential benefits for climate change mitigation

Waste-to-Energy contributes towards **Energy Efficiency** goals:

- ▶ There is a major opportunity to use even more energy from waste in the form of heat, if linking of heat (or process steam) customers to Waste-to-Energy Plants would be encouraged. Therefore we need **drivers for improving infrastructure for district heating and cooling** in addition to **incentives to maximize electricity production from waste (incl. grid access)**



For more information on Waste to Energy:



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