

**4th CEWEP Congress**  
**Waste-to-Energy in**  
**Sustainable Waste and**  
**Energy policy**

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Bordeaux

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# Sustainability, security of supply and competitiveness are the goals of EU energy policy

## COMMON ENERGY GOALS

**“LISBON”**  
(Competitiveness)

- **Internal Energy Market**
  - Regulation
  - Competition
- **Investments**
  - Interconnections (min. 10%; TENs)
  - Generation capacity
- **Competitiveness**
- **Research and innovation**
  - Clean coal, Carbon sequestration
  - Alternative / renewable energy sources
  - Energy efficiency
  - Nuclear

**“KYOTO”**  
(Climate change)

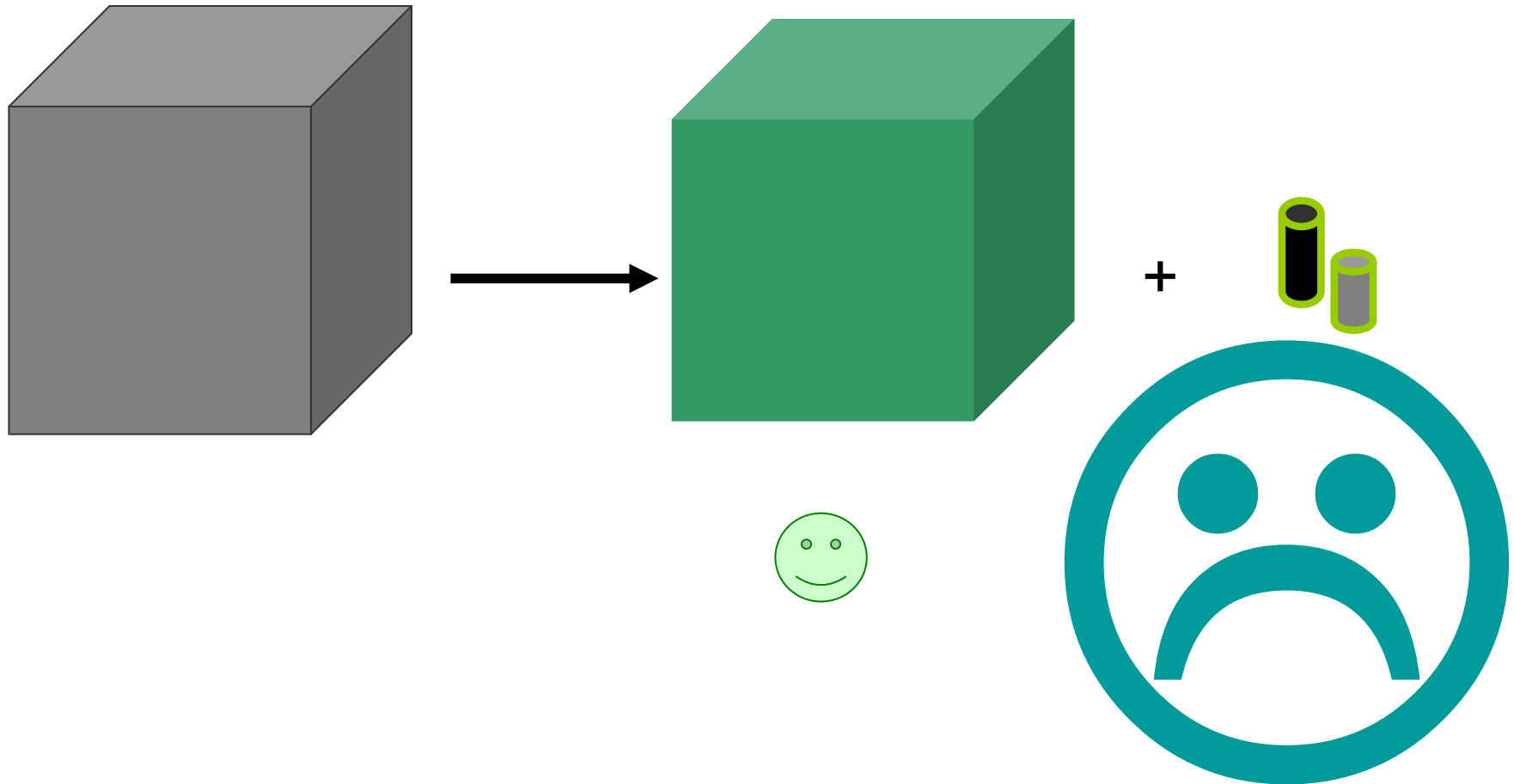
**20 20 20**

- **Sustainable and Diverse Energy Mix**
- Clean and indigenous energy
- More from less (energy efficiency)
- Nuclear energy
- Research and innovation (see Lisbon)

**“MOSCOW”**  
(Security of supply)

- **Speaking with one / the same voice**
- Dialogues, Int'l Organisations (IEA, ...)
- Sectoral Policies (WTO) and Agreements
- Wider-Europe Energy Market
- Financing external energy security (EIB, EBRD)
- **Facing a crisis / Solidarity**
  - Emergency stocks
  - Critical infrastructure protection
- **Diversity of supply / routes**

# All human activities produces wastes...



# A really living body

- 11.500 t fossil fuels
- 320.000 t water
- 2.000 t aliments

- 300.000 t waste waters
- 25.000 t CO<sub>2</sub>
- 1.600 t urban waste

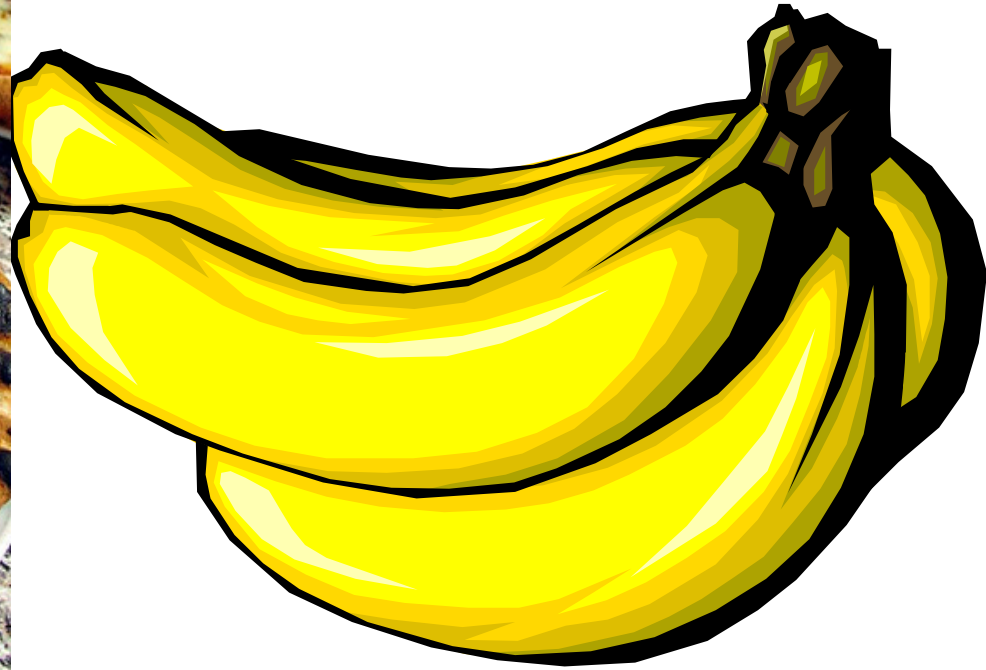


1 million  
inhabitants city

Daily

Sources : 2° evaluation report Dobris, EEA, 1995

What's relation between Pizza and banana?



## NDRANGHETA – NUOVI SVILUPPI NELLA OPERAZIONE NOE: SALE A 23 IL NUMERO DEGLI ARRESTI NELL'INCHIESTA PER TRAFFICO DI RIFIUTI PERICOLOSI CON LA CINA

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Sono dieci le persone, tra cui alcuni imprenditori e due cinesi da tempo residenti in Italia, arrestate dai carabinieri del Nucleo operativo ecologico nel corso dell'operazione, coordinata dalla **Procura della Repubblica di Palmi**, che ha consentito di stroncare un **traffico di rifiuti pericolosi, utilizzati per scopi industriali, con la Cina**.

# Italian/Napoli realities on wastes

- Not a new problem: Roberto Barbieri, Parliament Report of 13/6/07: waste sector is *“now, one of the field most privileged by illicit capital, trough out the management and handling of a an important share of the enterprises of the sector”*. *“Criminal organisation has past from an external subject to institutional circuits...to a subject always more involved in decision making process”*
- Giorgio Napolitano, President of Italian Republic, 4 June 08 : *“Camorra is responsible for most illicit trafics, including toxics ones”*
- 75 clan of Camorra handle the waste business
- 1456 infractions only in Napoli province.
- 189 smugglers arrested in Campania since 2002
- 143 Mt of wastes disappeared in Italy since 2000 and a lot are probably in Campania
- The second region is Calabria :<)
- According to Legambiente :18,4 B€/y (~20% of all mafia incomes)
- Michele Orsi, businessmen killed on 1 June 08 because he started to “talk” with inquirers

# Commissioner Dimas

- He has clearly declared that the main cause is failure on the part of the Italian authorities to fulfil their duties.
- The role of organized crime should not *“be used as a pretext to hide the fact that the main reason for the waste crisis seems to be the lack of political will and action to adopt the necessary measures to solve the problem”*.
- *“What we see in Naples is not a crisis that has come from nowhere. It is the culmination of 14 years of insufficient observance of European legislation on waste management, for which Italy has been regularly condemned by the European Court of Justice”*



# Vocabulary

- “termovalorizzatore” = thermal valorizer
- Because the word “incinerator” is **taboo** in Italy.
- The term “taboo” is Polynesian. It indicates something that is both invulnerable and that causes fear. It comes from the verb *tapui* which means “make something holy” .
- The waste problem of Naples is largely caused by the fact that a section of the population which is not representative, but nevertheless very well organized has been able to “*make holy what is called trash*”. We are in the full swing of a paradox.

# European Environmental Agency

- Report of 31 January, 2008
- By 2020 the quantity of urban waste is foreseen to increase by 25% compared to 2005.
- Greater reuse of this waste and its redirection from dumps would play a fundamental role in combating the environmental impact of the growing volume of garbage.
- Due to the increased use of recycling and incineration coupled with energy production, it is estimated that the net emission of greenhouse gases resulting from urban waste management will decrease substantially by 2020

# Prognos study

Can we still afford to waste "Waste"?

No.	Waste stream	Generation potential (in Mt/2004)	Total disposal (in Mt/2004)
1	glass	21.6	10.9
2	paper/board	79.5	35.3
3	plastics	26.2	17.0
4	Iron/steel	102.6	24.5
5	aluminium	4.6	1.3
6	copper	0.4	0.5
7	zinc	1.2	0.5
8	lead	1.0	0.4
9	other metals***	1.2	0.7

No.	Waste stream	Generation potential (in Mt/2004)	Total disposal (in Mt/2004)
10	wood	70.5	24.5
11	textiles	12.2	3.3
12	waste rubber & tyre	3.2	0.7
13	household waste	11.9	55.1
14	food & drink waste	70.1	55.0
15	oil containing waste	7.4	4.4
16	solvents	1.6	0.6
17	ashes & slag	131.4	48.4
18	minerals**	1,794.4	1,025.2

**54% of waste was wasted!**

Total (of the selected waste streams)	2,417.9	1,314.0
<i>Share of the total waste generated (2,823 Mt/ 2004)</i>	84%	54%

\* based on a project for the EC Joint Research Centre (DG JRC), Institute for Prospective Technological Studies in 2007

\*\* not part of the IPTS project

\*\*\* include tin, other metals (as group), precious metals

# Energy from waste: an old solution

- First plant for electricity generation from wastes in the 1880's in Nottingham
- At the end of 1890's electricity was produced from waste in various energy cities (Berlin, London, Bruxelles,...)
- Monceau-sur-Sambre (Charleroi)
- Abandoned with the arrival of bigger power plants in 1970's

# Wastes: an old problem

***“Throw away trash is an easy behaviour, but not economical, indecent, unsafe, without vision and stupid”***

**George Waring,  
waste manager of New-York city  
1895**

# Why waste is a good fuel

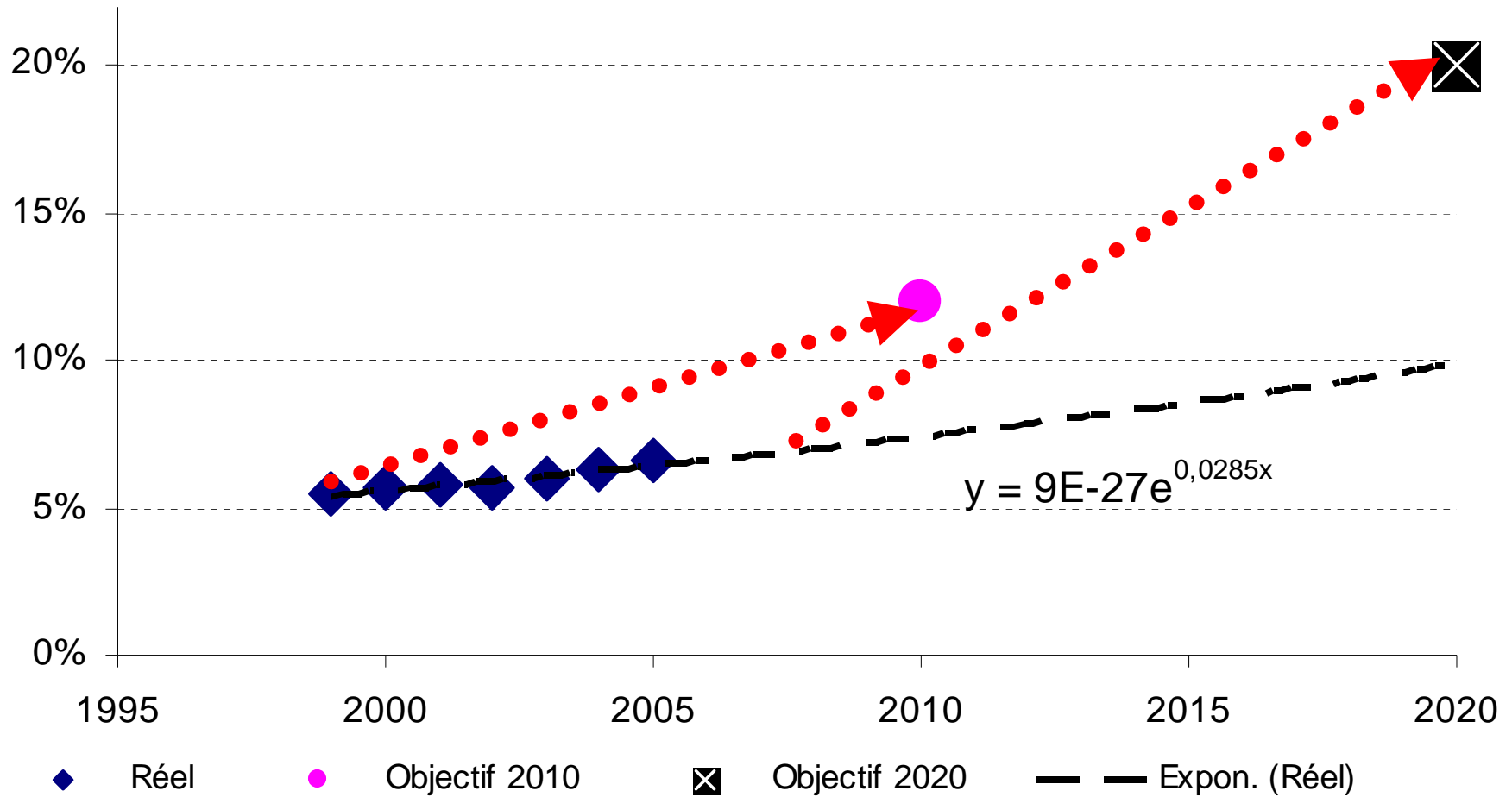
- Main part of carbon in urban wastes are from vegetal products (paper, food, ecc.)
- Energy from waste can therefore substitute electricity/heat from fossil fuels and so reducing CO<sub>2</sub> emissions
- If put in landfills, waste will rot in anaerobic conditions and produce methane (GHG)
- Burning wastes to recover energy is a real contribution to CC and also contribute to improve SOS.

# New Renewables Policy

- Increase share of renewable energies in EU energy mix
  - from 8,5% today to 20% by 2020;
- Binding overall renewables target for each Member State;
  - Member State National Action Plans,
  - setting share of
    - electricity,
    - heating & cooling
    - Biofuels
  - And policy measures.



# Renewable energies targets

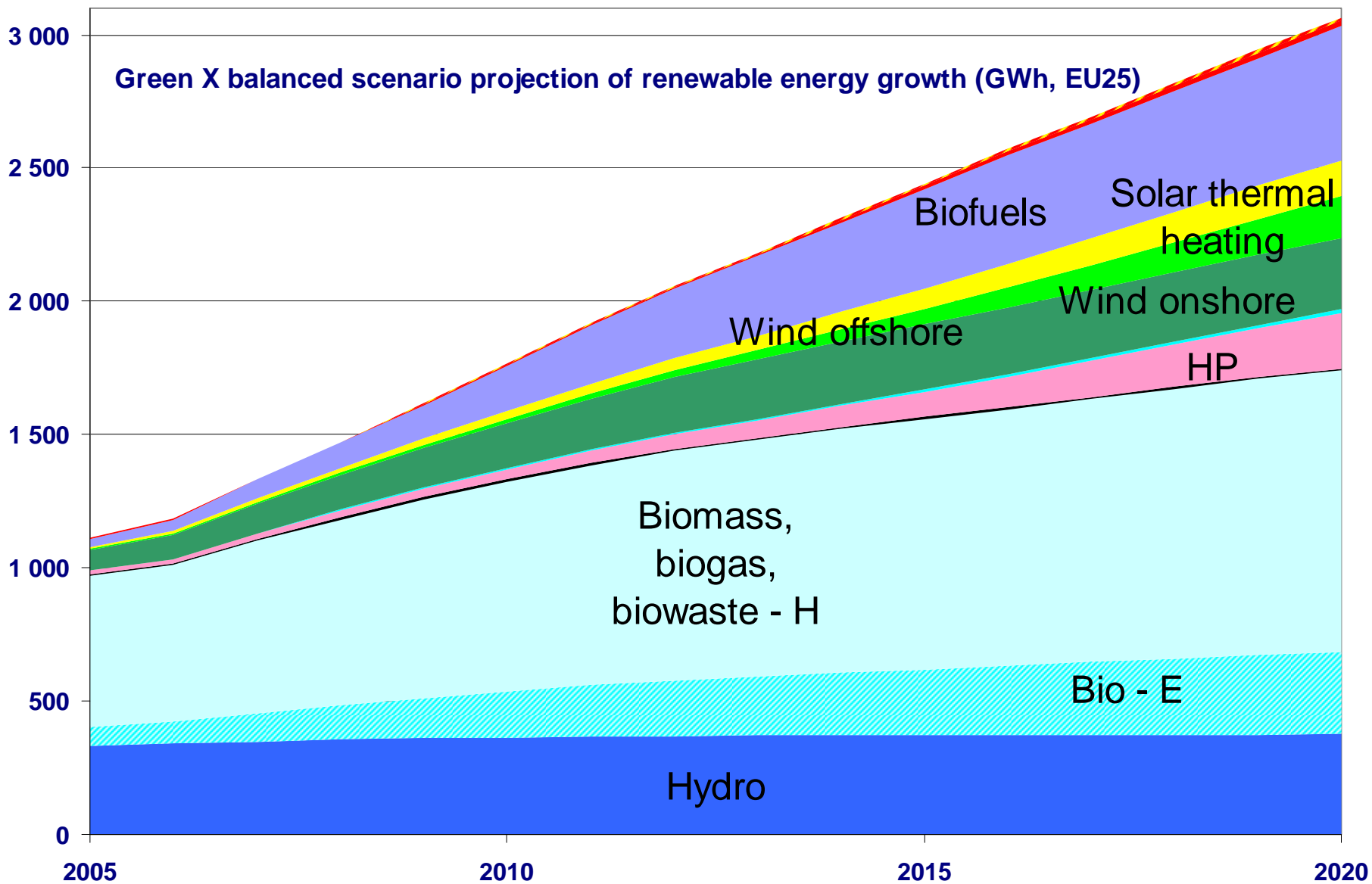




## What is renewable energies for this new directive?

- ***"energy from renewable sources"* means renewable non-fossil energy sources: wind, solar, geothermal, wave, tidal, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases;**
- ***"biomass"* means the biodegradable fraction of products, waste and residues from agriculture (including vegetal and animal substances), forestry and related industries, **as well as the biodegradable fraction of industrial and municipal waste;****
- **But discussion is under way for adding a "biological origin" ...**

# Which renewable energies ?



# Importance of local authorities

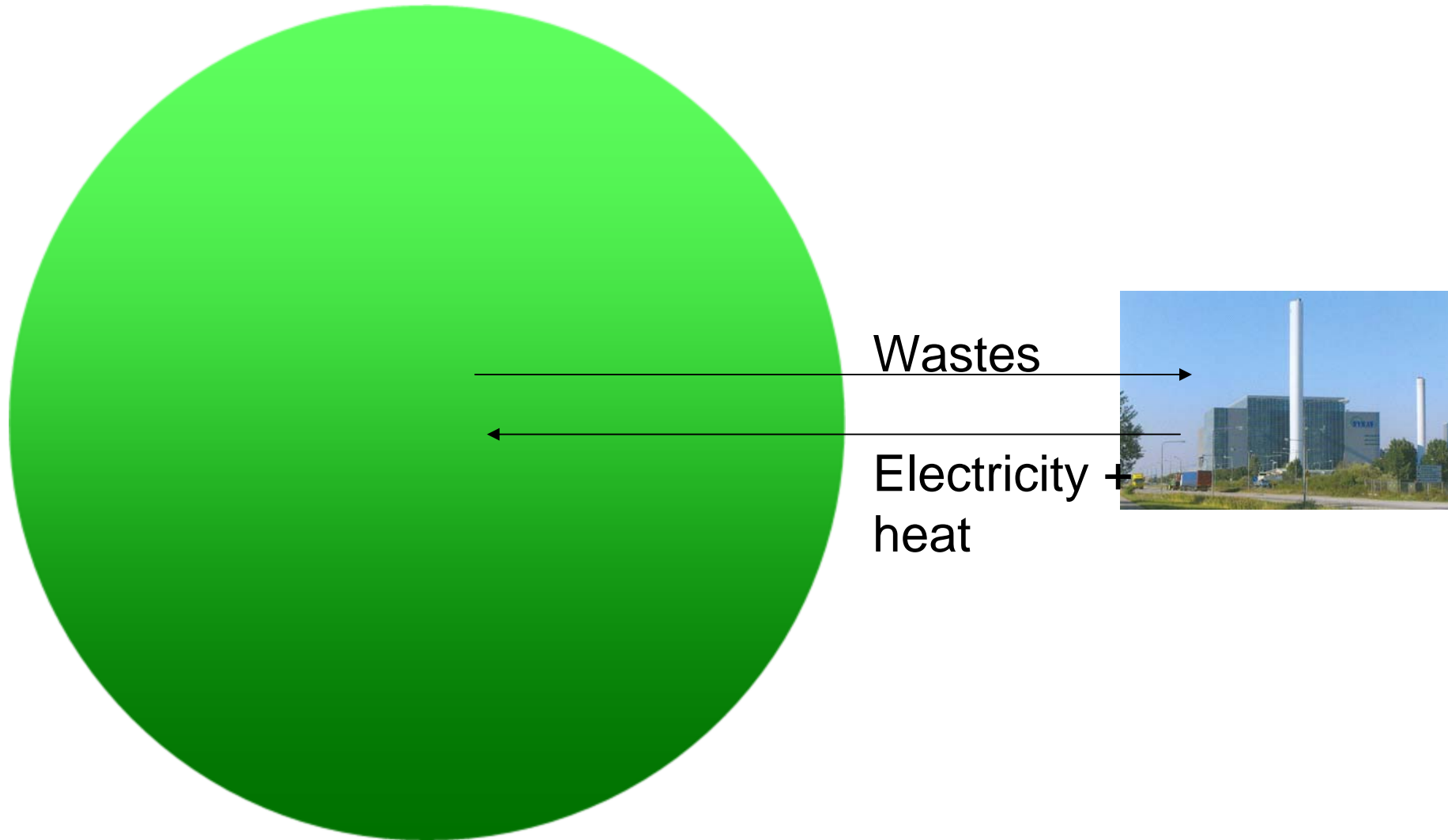
Art 12.3:

*“Member States shall require local and regional administrative bodies to consider the installation of equipment and systems for the use of heating, cooling and **electricity** from renewable sources and for district **heating and cooling** when planning, designing, building and refurbishing industrial or residential areas.”*

# Wastes are never-ending source of energy

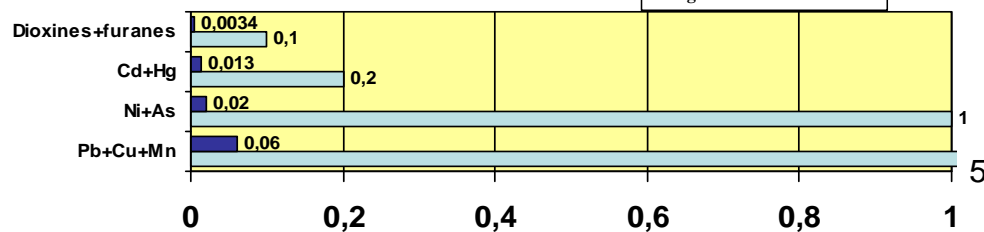
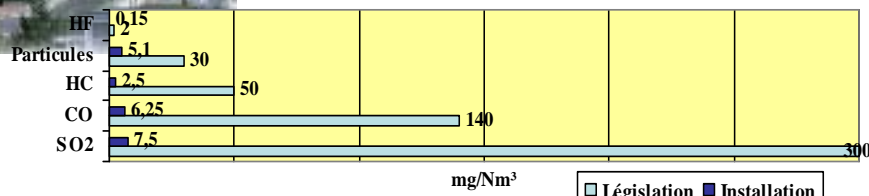
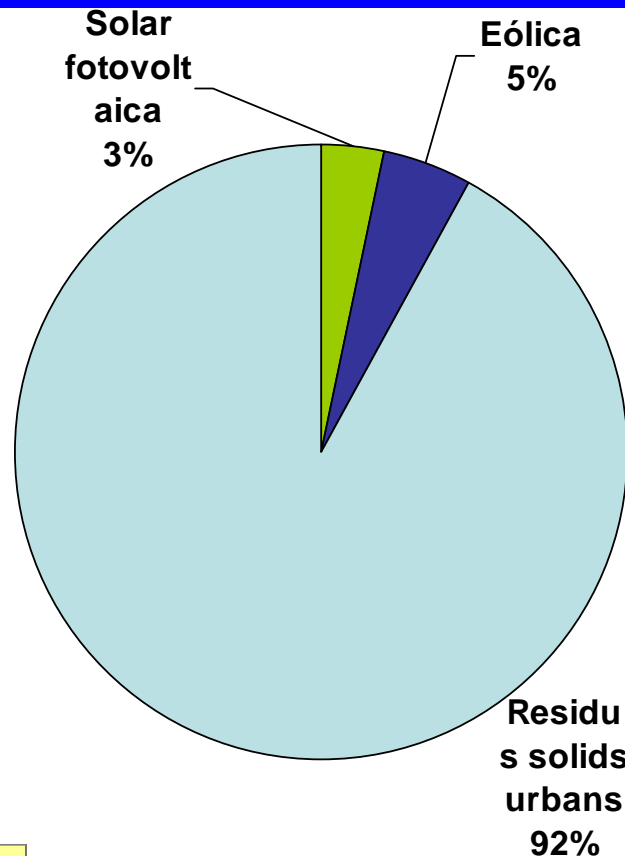
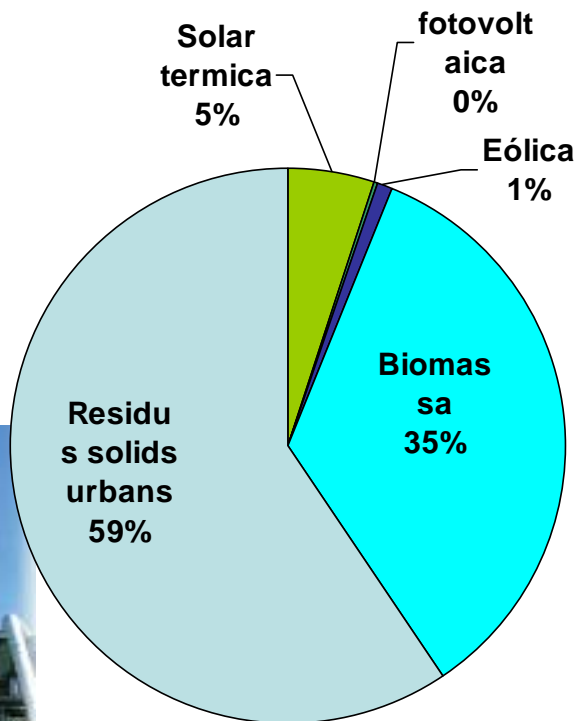
- **Fuel mix depends of good willing of Members States**
- **Example of Sweden**
  - ❖ Without production of electricity 451 SEK/ton (48 €/ton)
  - ❖ With production of electricity 90 - 451 SEK/ton (depending on level of electricity production)
  - ❖ When 20% or more of the total energy production is electricity, the tax is 90 SEK/ton (9.6 €/ton)

# Incinerator inside or outside the city?



# Urban wastes to energy in Palme de Mallorca Son Reus

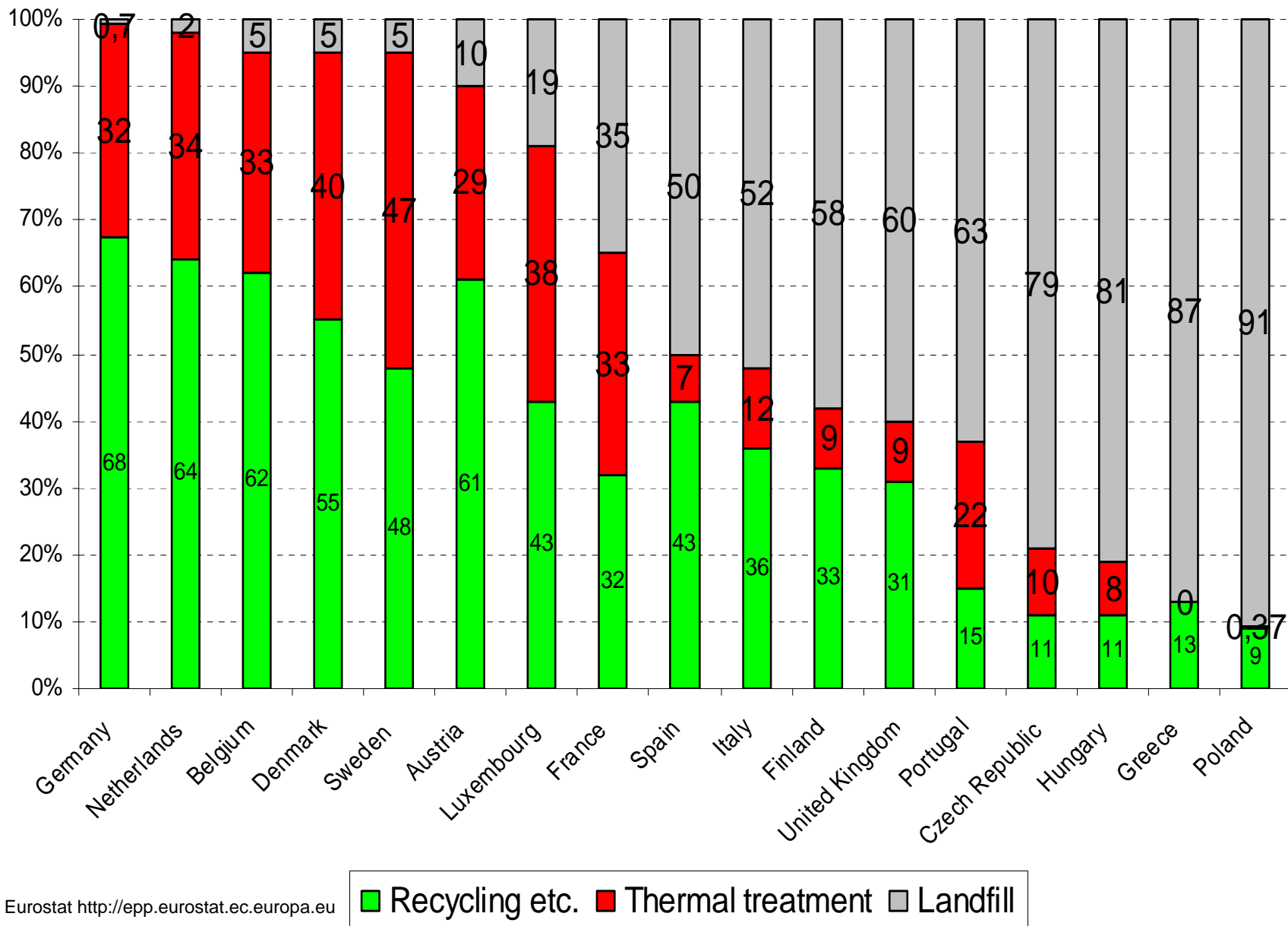
All renewable energies



Electricity

146 315 464 kWh =  
3,5 % (2006)

# What to we do with urban wastes?



# If cities do not want to earn money, industry will do it!

- Solvay & Tonsmeir
- Bernbug (D)
- 400.000 t/y of secondary fuel from selected and treated industrials wastes (boards, papers, plastics,...)
- 225 t/h of steam – 40b – 3 boilers
- Turbo alternator – backpressure – condensations
- CHP for the carbonate process
- Now Solvay is looking for others place to replicate this ...



# Haroun Tazieff

« **La terre va-t-elle cesser de tourner** »,  
**1989**

***Les immondices et les déchets nous agressent d'une façon bien plus grave et certaine que ne le font les CFC en attaquant l'ozone stratosphérique ..., et que ne le fera jamais un imaginaire effet de serre anthropologique***”



# Key role of geopolitics

Samuele Furfari

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