



Waste-to-Energy in Europe

WTERT Annual General Meeting 2006

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CEWEP

Confederation of European Waste-to-Energy Plants

**CEWEP represents over 330
Waste-to-Energy Plants in
15 European countries
45 Mio. t capacity/y = 90% of the
whole European WtE Market.**

**Member associations and
plants provide necessary
public infrastructure –**

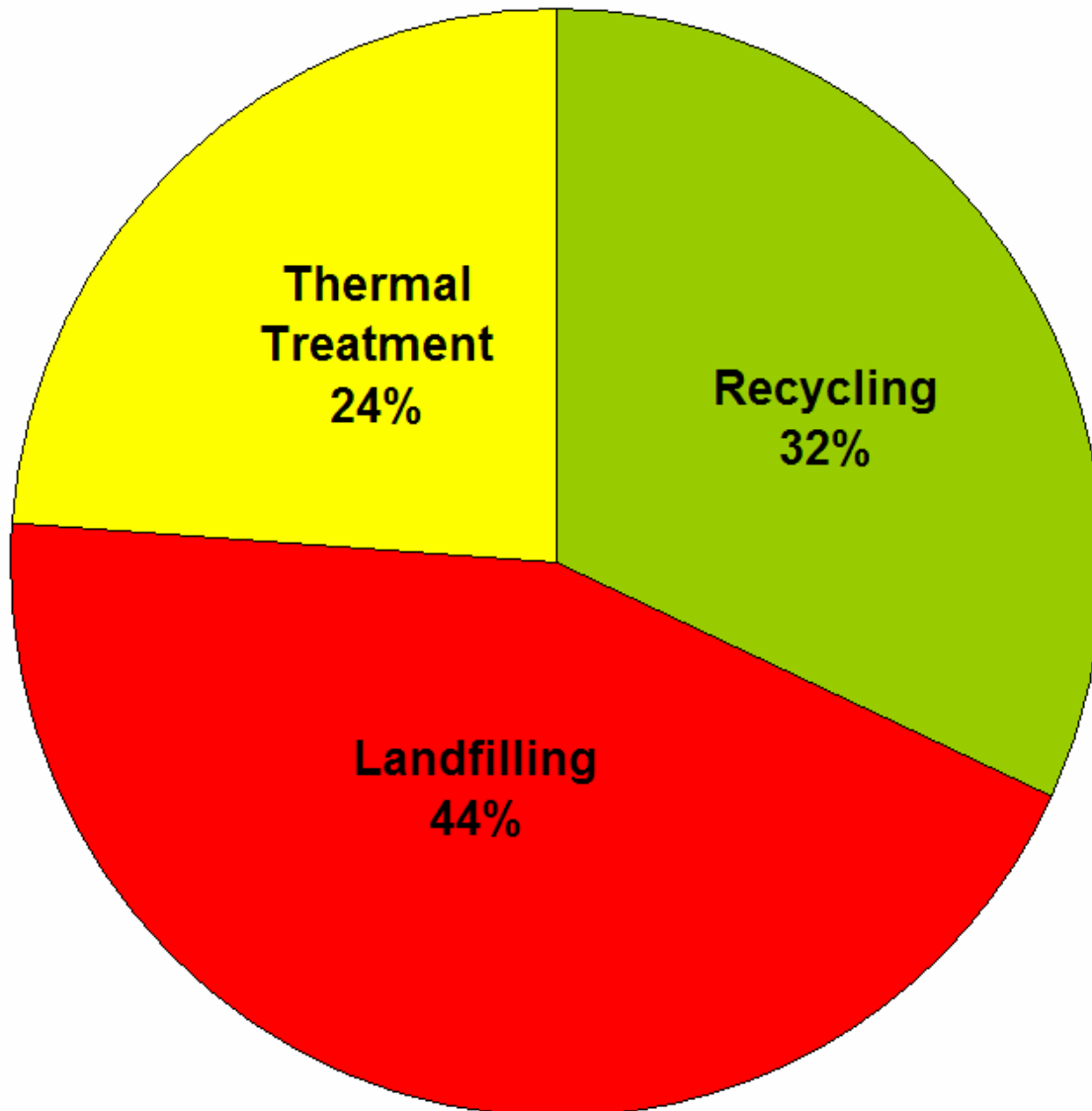
- **Careful handling of waste**
- **Conserving natural resources**
- **Minimising possible emissions**



Waste-to-Energy Plants in Europe operating in 2004
Thermally treated waste in million tons/year

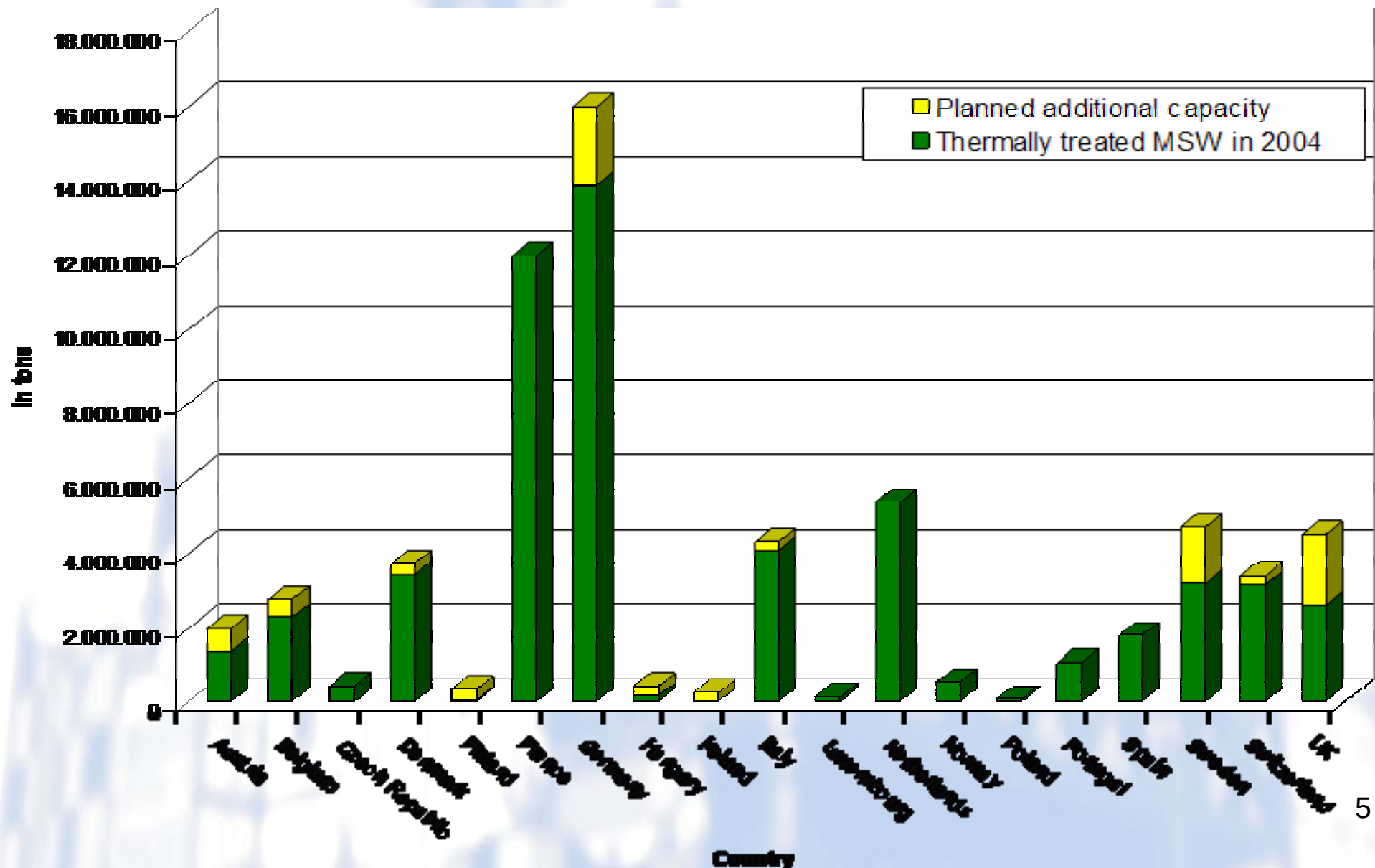


Treatment of MSW in Europe

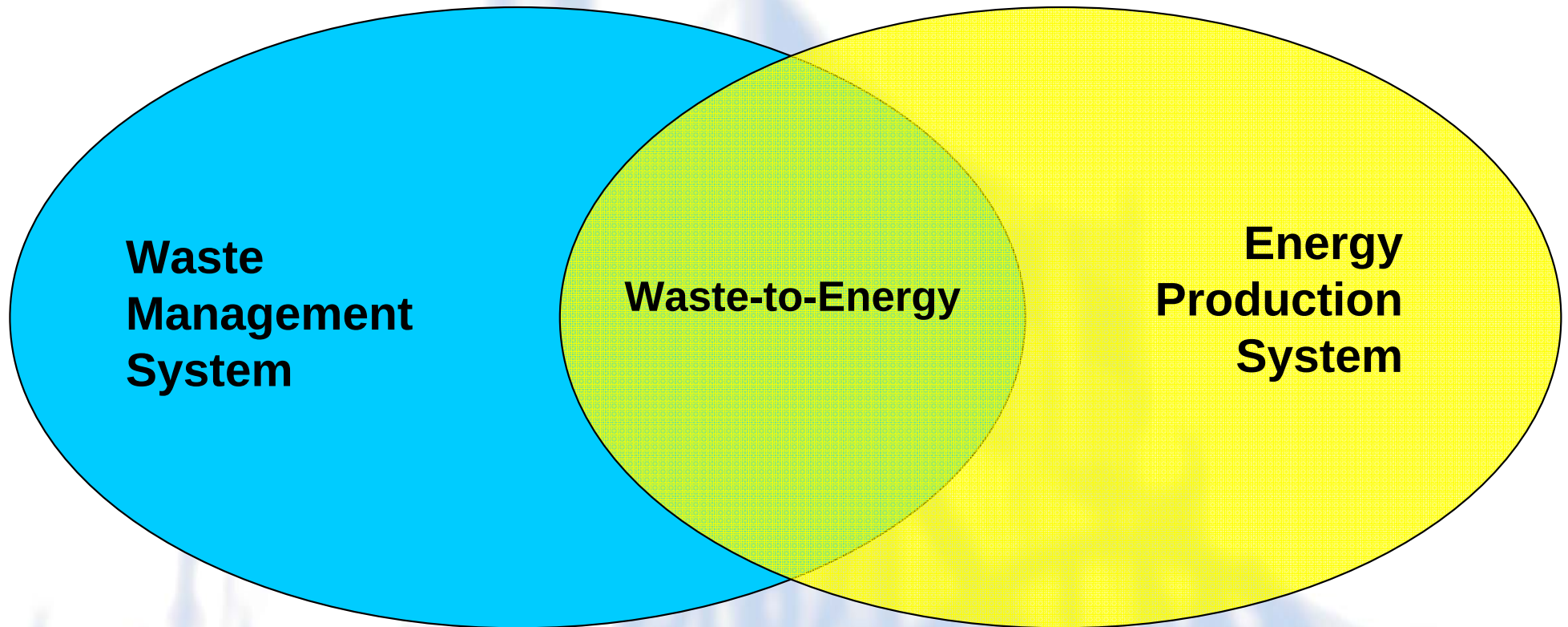


In the whole of Europe about 50 million tons of MSW is thermally treated in some 420 Waste-to-Energy plants

Planned additional Waste-to-Energy Capacity (base year 2004)



The role of Waste-to-Energy



WtE: Complementary in the waste management system

- **recovers energy from waste not recycled by other means**

Not all household waste can be adequately sorted and recycled.

Why not use this un-recyclable waste as a resource to produce energy?

- **hand-in-hand with recycling**

It is no coincidence that the EU Member States with the highest recycling rates, also have the highest levels of Waste-to-Energy Production.

WtE goes hand-in-hand with recycling

Country	Recycled/composted and other (per cent of total)	Landfill (per cent of total)	Incineration (per cent of total)	Waste per capita (kg)
Netherlands	65	3	32	624
Austria	59	31	10	627
Germany	58	20	22	600
Belgium	52	13	35	469
Sweden	41	14	45	464
Denmark	41	5	54	696
Luxembourg	36	23	41	668
Spain	35	59	6	662
Ireland	31	69	0	869
Italy	29	62	9	538
Finland	28	63	9	455
France	28	38	34	567
UK	18	74	8	600
Greece	8	92	0	433
Portugal	3	75	22	434

WtE and MATERIAL RECYCLING

BRESCIA, ITALY

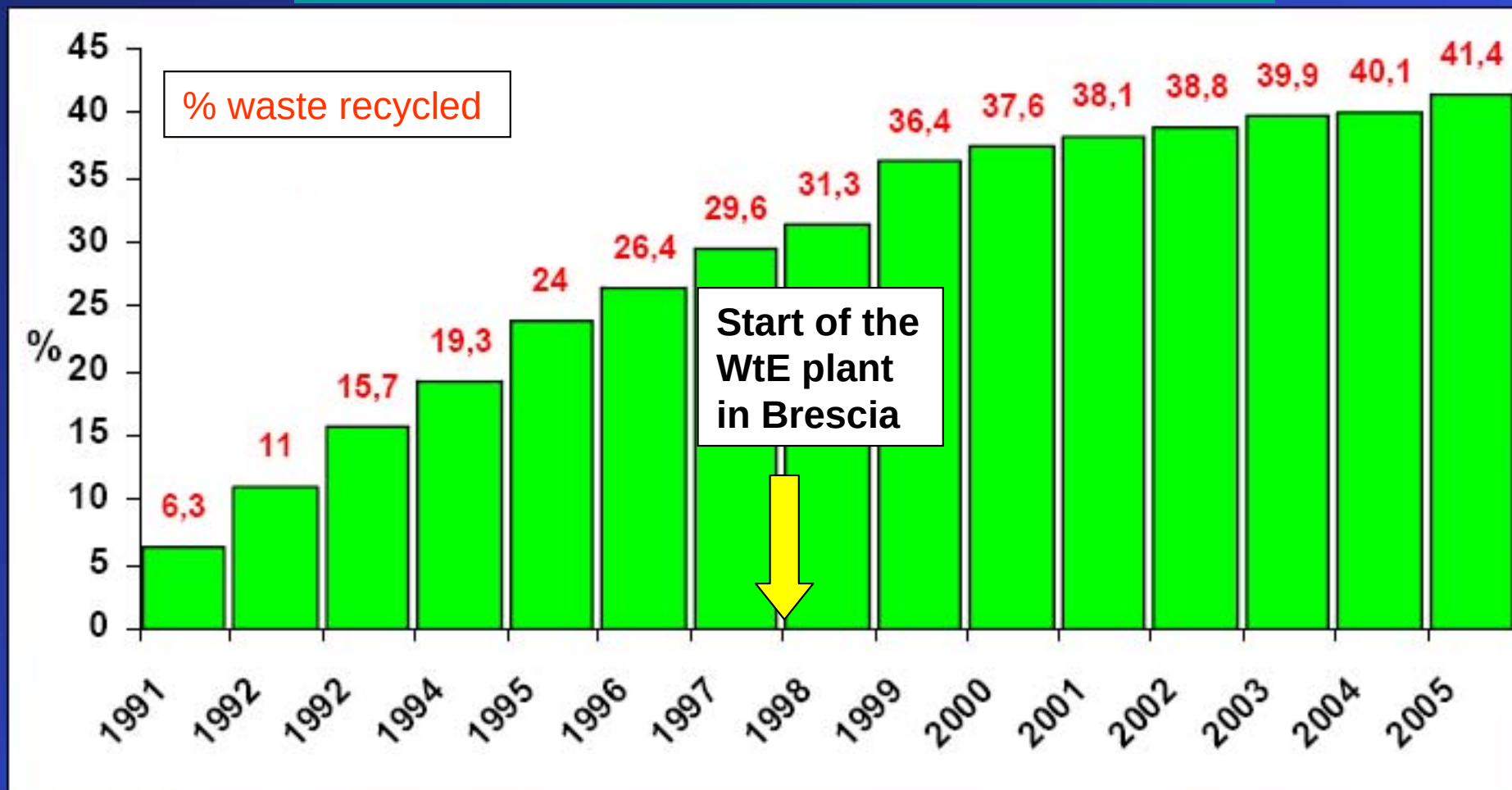
- 1991 Material recycling rate: 6,3 %
- 1992 Approval of WtE plant construction by Brescia City Council within an “Integrated Waste Management Project” with material recycling goal of 36%
- 1998 Start up of WtE plant
- 1999 Material recycling 36,4%
- 2004 New goal 50% decided for material recycling
- 2005 41% has already been achieved

This clearly demonstrates that recycling and WtE goes hand in hand and that WtE does not hamper recycling

ASM Spa

MATERIAL RECYCLING

Through separate waste collection* in Brescia



* Paper, glass, metals, organic waste.

WtE: Instrumental in EU Waste Policy

According to the Landfill Directive (1999/31/EC) biodegradable municipal waste going to landfills must be reduced: to 35 % of the total amount (base year 1995) by 2016.

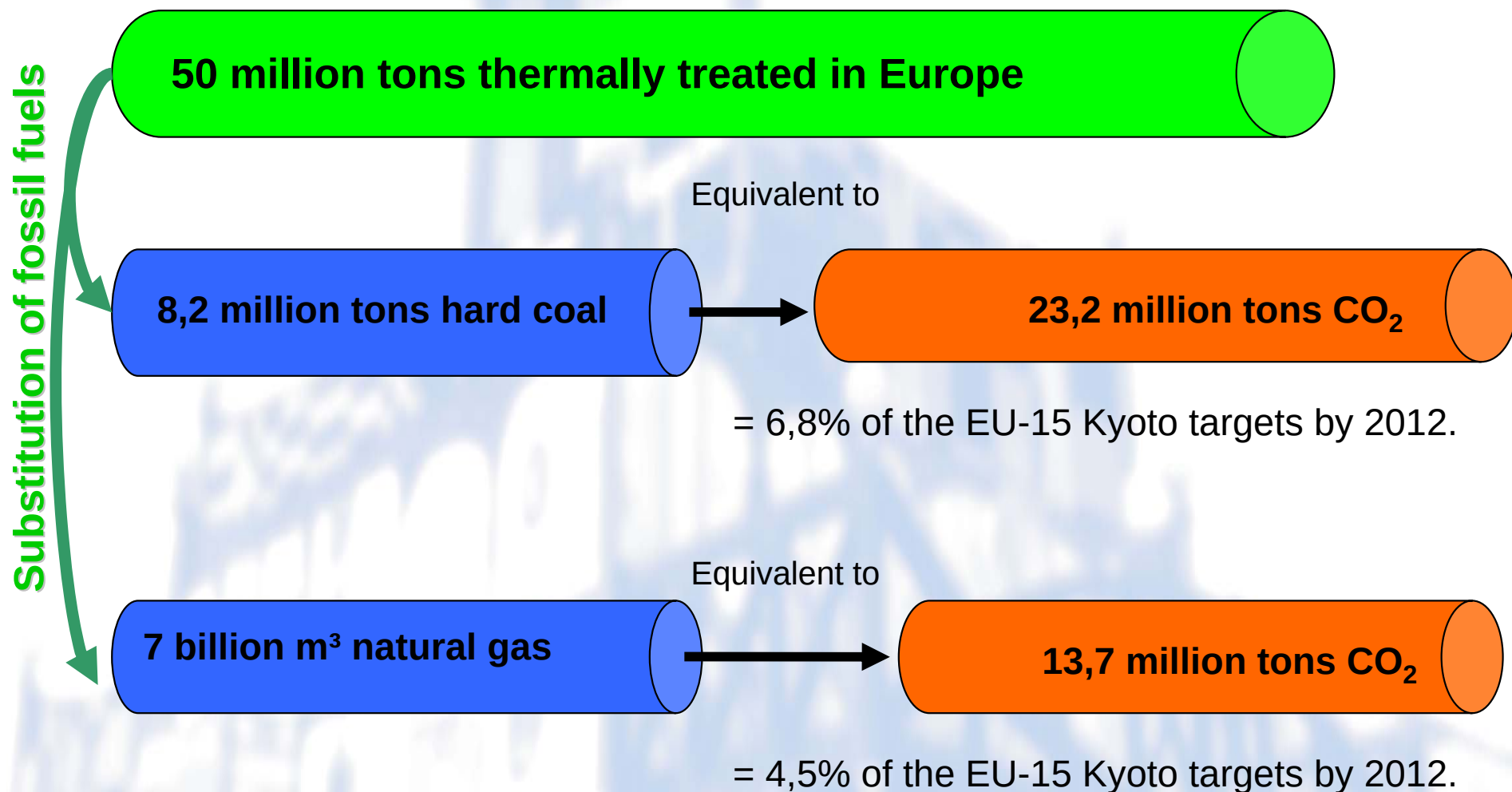


reducing greenhouse gas emissions by around 74 million tons CO₂-equivalents

Methane emissions from landfills are much more significant to global warming than CO₂.

WtE helps to fulfill the Landfill Directive while also contributing to climate protection through the substitution of fossil fuels.

WtE: Contribution to Climate Protection



WtE: Complementary in the Energy Production System

50 million tons of MSW annually treated
can generate



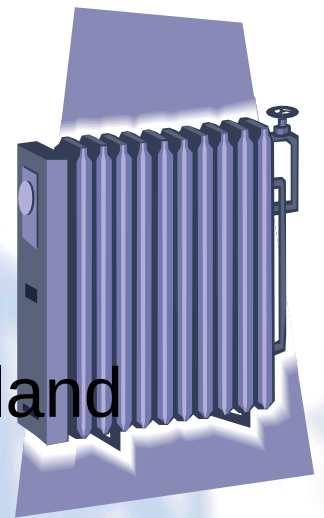
20 million MWh of electricity

(can supply 20 million inhabitants
= population of Belgium, Denmark and Lithuania)



50 million MWh of heat

(can supply 32 million inhabitants
= population of the Netherlands, Hungary, Finland
and Malta)



Renewable energy from waste

Considering that more than half of MSW is biodegradable (62%) this part is considered biomass and thus a Renewable Energy Source (RES Electricity Directive 2001/77/EC).

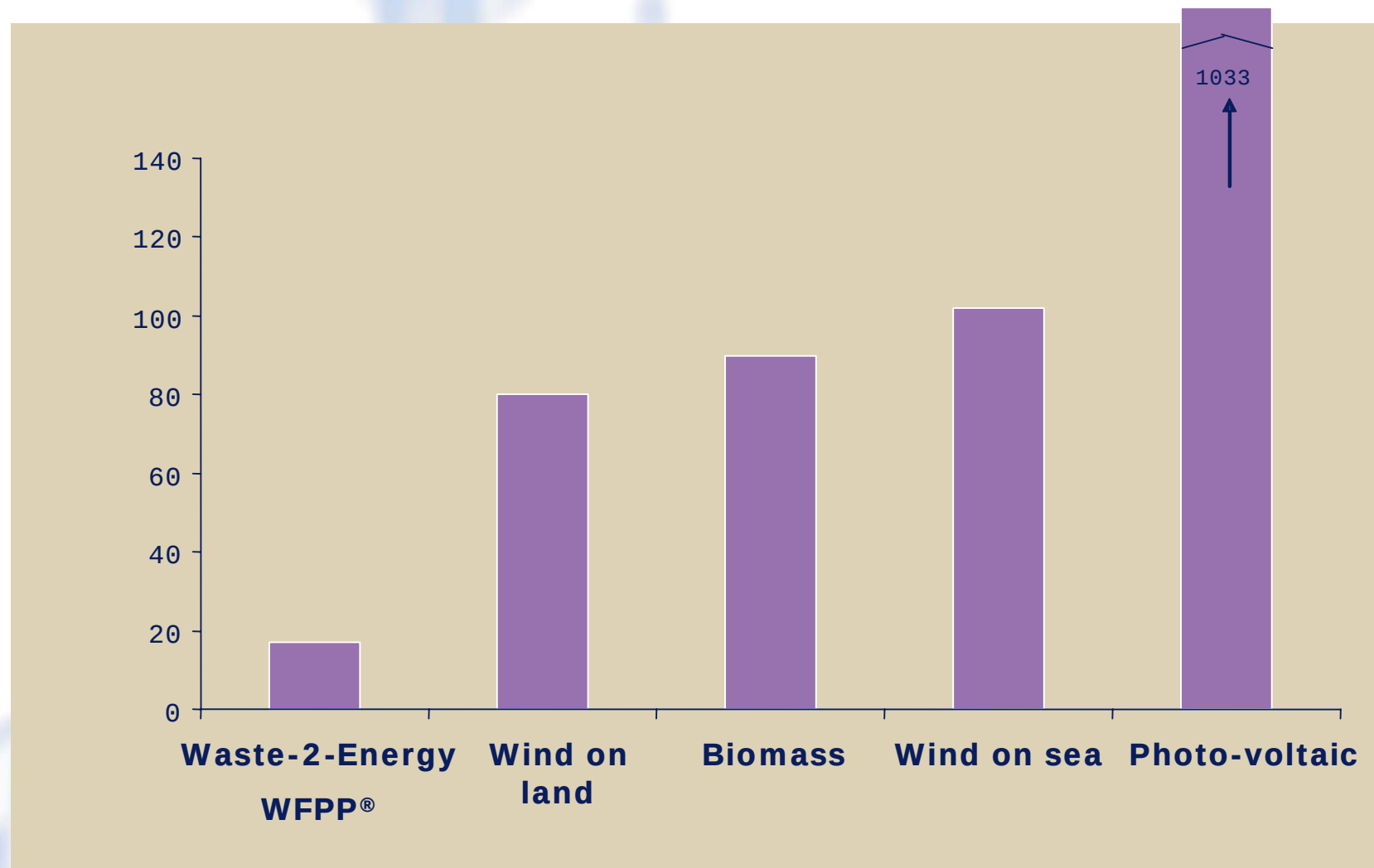
	Recognition as renewable energy	Price in € cents
Belgium (Flanders)	+ (40%)	1 cent market price + 10 cents/kWh Green certificates
Denmark	+ (80%)	0.19926 market price + 3.598 cents
Germany	+	3.5 cent market price (no subsidy)
Italy	+	9.6 cents/kWh Green Certificates
Netherlands	+ 47%	1.45 cents/kWh (minimum 26 % net efficiency required) subsidy
Portugal	+	7.5 cents/kWh (renewables tariff)

Renewable Energy

The European Commission has recently held a public consultation on Heating and Cooling from renewable energy

CEWEP aims to get support for heat generation:
A RES Heat Directive?

WtE is the most cost effective option to reduce CO₂



Sources: EZ, Regeling subsidiebedragen milieukwaliteit elektriciteitsproductie; VROM, personal communication; ECN, 2002, Duurzame Energie en Ruimte, M. Menkveld; analysis Deloitte

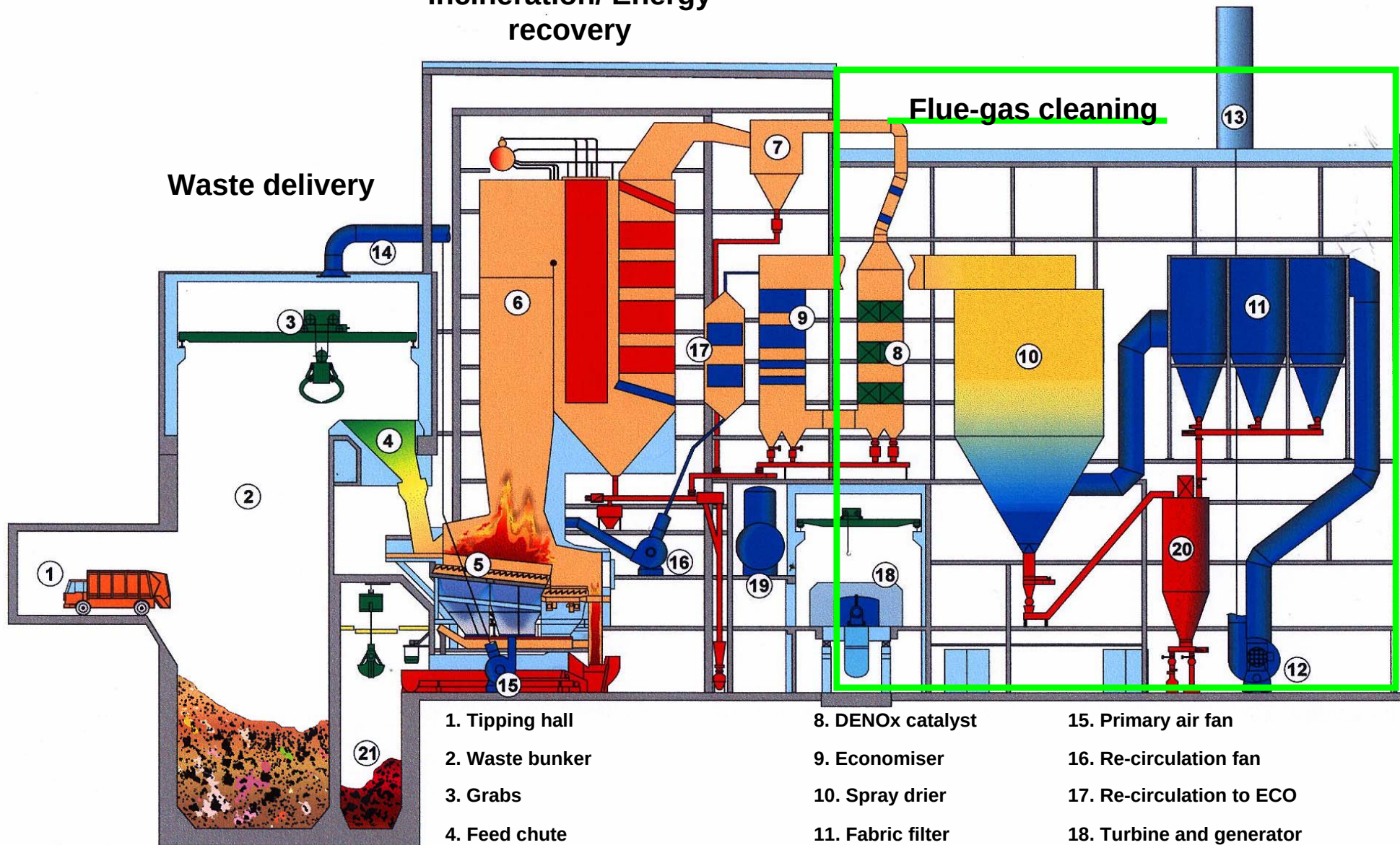
WtE: minimising emissions



Sophisticated filtering devices minimise the emissions into the atmosphere by blocking the pollutants, originating from the waste, such as heavy metals.

Waste-to-Energy Plant (Würzburg)

Incineration/ Energy
recovery



1. Tipping hall
2. Waste bunker
3. Grabs
4. Feed chute
5. Moving grate
6. Boiler
7. Electrostatic precipitator

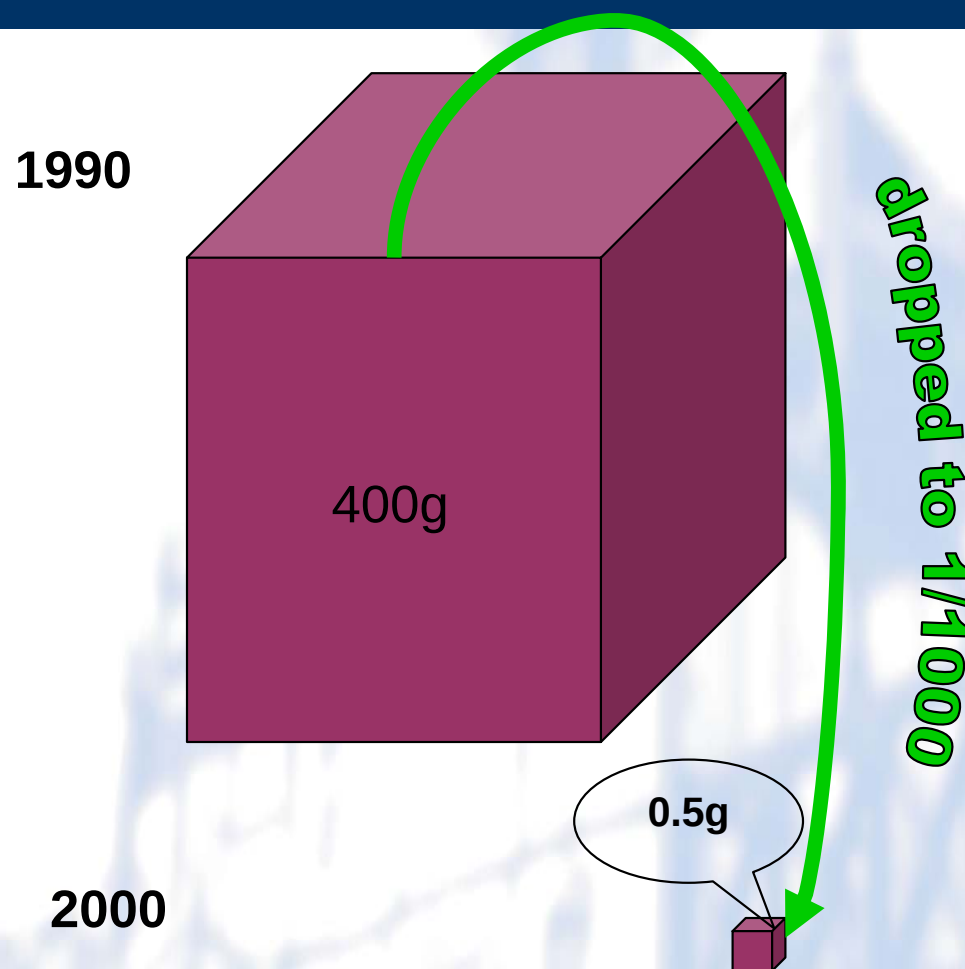
8. DENOx catalyst
9. Economiser
10. Spray drier
11. Fabric filter
12. Fan
13. Stack
14. Bunker air extraction

15. Primary air fan
16. Re-circulation fan
17. Re-circulation to ECO
18. Turbine and generator
19. Boiler water tank
20. Residue silo
21. Bottom ash bunker



ZWECKVERBAND ABFALLWIRTSCHAFT
RAUM WÜRZBURG

WtE: reduces emissions



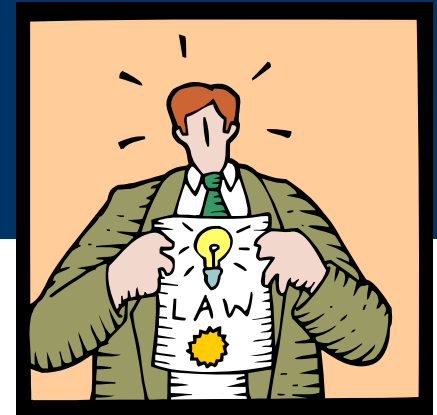
“in 1990 one third of all dioxin emissions in Germany came from waste incineration plants, for the year 2000 the figure was less than 1% ” (BMU July 2005).

Source: German Federal Environment Ministry (BMU), July 2005.

Waste-to-Energy serves the public

- Waste-to-Energy plants are an essential part of both the waste management and the energy supply network
- Provides solutions for EU and Member States Waste Management policy and climate protection goals (incl. security of energy supply)
- Creates jobs and know-how in a world leading technology

So what?



What needs to be done?

With regard to the review of the Waste Framework Directive (WFD) ...

Efficient WtE plants must be classified as an Energy Recovery option

... and should not be regarded as a waste disposal operation only

Why should efficient WtE plants get the recovery status?

- Giving incentives to further invest in energy efficiency
- Helping to fulfill the Landfill Directive (= diverting biodegradable waste from landfills).
It would be counterproductive for European Environment policy if WtE plants are classified on the same level as landfills, i.e. disposal
- Many countries still rely heavily on landfilling. Investment in WtE plants would be easier if WtE's status is recovery rather than disposal

Why should efficient WtE plants get the recovery status?

- To get the balance right: Currently, we have a curious situation: WtE plants, which operate with the lowest emissions are discriminated against, while any industrial plant taking waste for co-incineration is qualified as energy recovery



- In terms of long-term security WtE can guarantee to treat MSW permanently in an environmentally sound way - Whereas industrial plants depend on the market ...

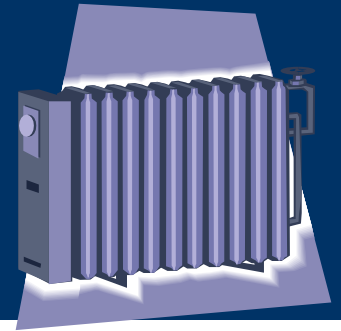
The Commission's proposal on the WFD

$$\frac{E_p - E_{imp}}{E_w - E_f}$$

- § The COM's proposal demands high energy efficiency values for WtE plants to get the energy recovery status, using a formula (Annex II, R1)
- § Chosen process: co-decision
for all other recovery operations: comitology
- § CEWEP welcomes the COM's energy efficiency approach, however, the proposed factor of 0.6 is too high for existing WtE plants, even for those operating BAT.

For future plants, requirements can be more demanding

Heat

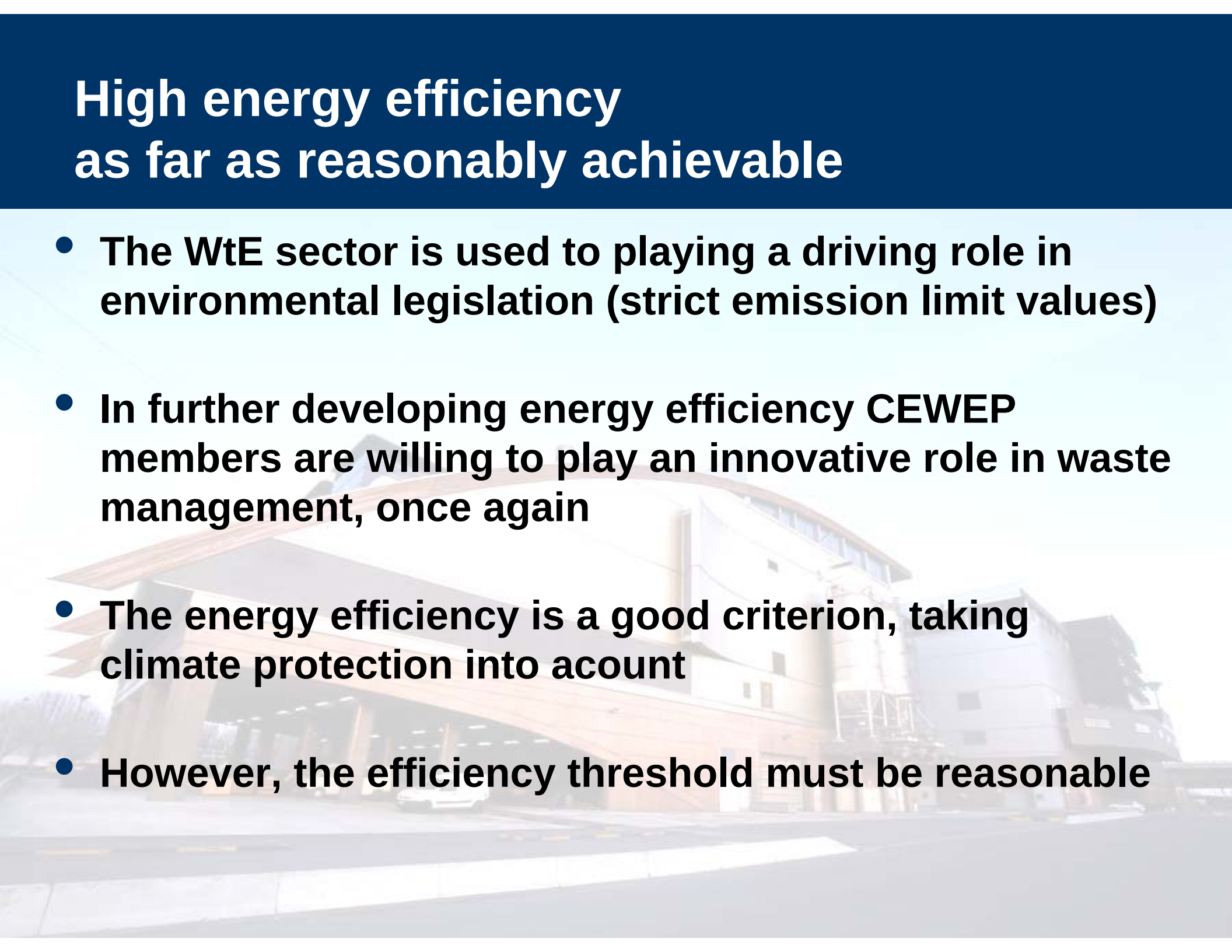


- For heat, the formula takes into account both the efficiency of the plant to recover heat from waste and also the 'efficiency' of supplying consumers with the recovered heat.
- High energy efficiency can only be realized where there is a demand for the heat produced, because it cannot be transported long distances.
- Consumers for the heat need to be located near the plant. However, due to public reluctance WtE plants are often forced to be constructed far away from potential consumers.
- CEWEP hopes that this attitude will change in the future, considering WtE plants now operate with minimal emissions.

CEWEP Energy Efficiency report

- CEWEP carried out a report on energy efficiency, based on the R1 formula proposed by COM.
- 97 WtE plants assessed with a capacity of 24 million tons of MSW, representing 27% of the total amount of the plants in the EU and 49% of total EU capacity.
- Although most efficient WtE plants in Europe took part, only 67 WtE plants achieve the energy efficiency threshold of 0.6 proposed by COM.
- An energy efficiency threshold of 0.5 instead of 0.6, could be achieved by 85 WtE plants from the 97 plants studied by CEWEP.

High energy efficiency as far as reasonably achievable

- **The WtE sector is used to playing a driving role in environmental legislation (strict emission limit values)**
 - **In further developing energy efficiency CEWEP members are willing to play an innovative role in waste management, once again**
 - **The energy efficiency is a good criterion, taking climate protection into account**
 - **However, the efficiency threshold must be reasonable**
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Thank you for your attention



Please contact us if you would like some further information about Waste-to-Energy



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