

The Waste Sector's Contribution to Reducing Greenhouse Gas Emissions

A Successful Experience in Germany

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Waste technology

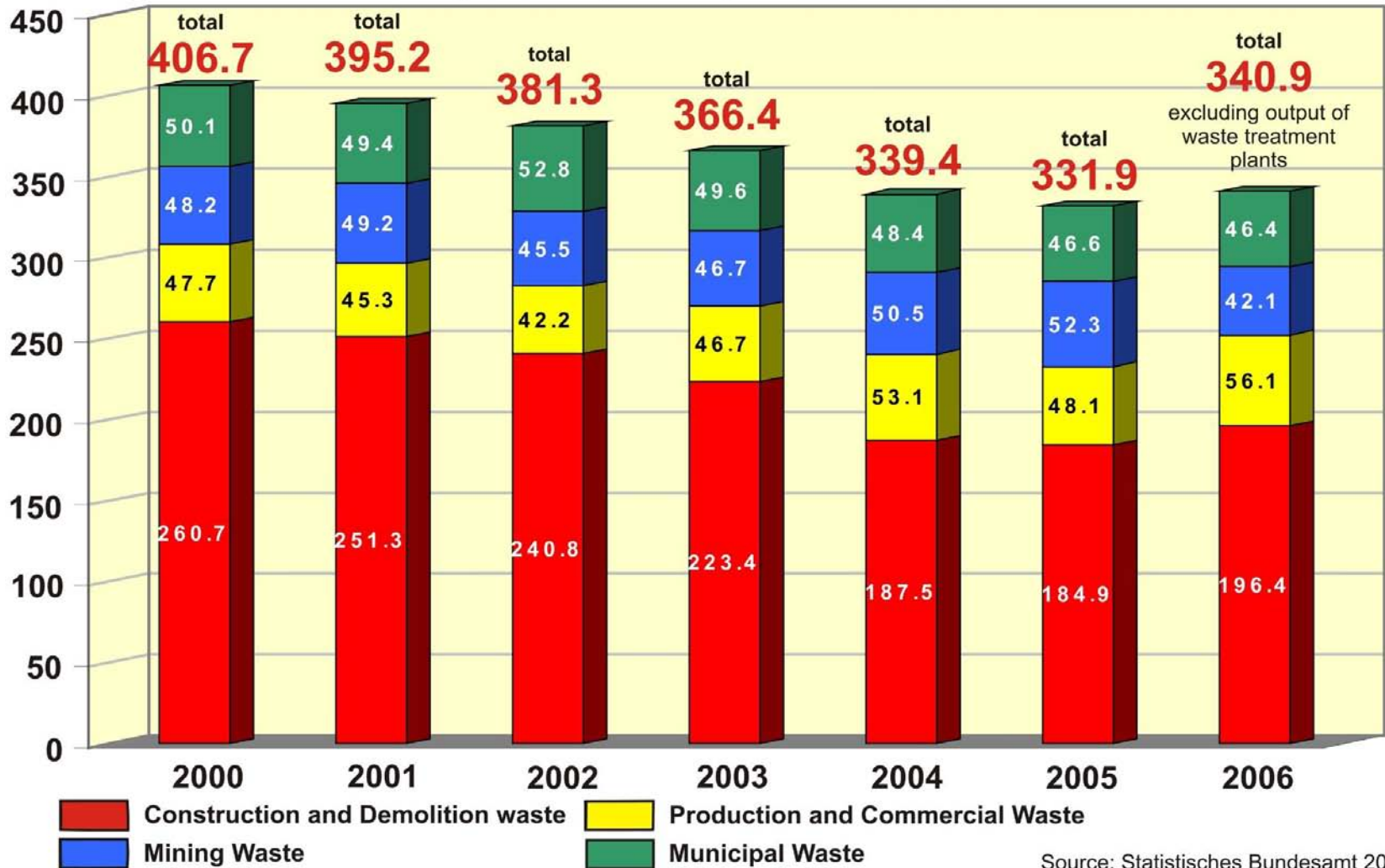
Technology transfer

Focus on the linkage
of waste management and
greenhouse gas emission



Waste Arisings

(in Mio Tons, including hazardous waste)

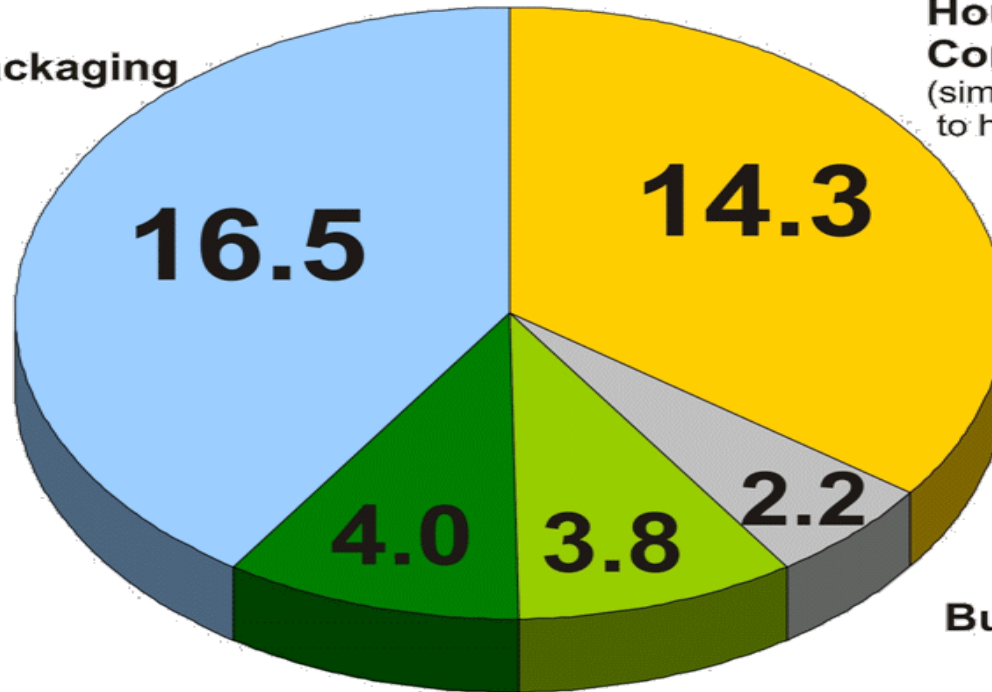


Composition of Household Waste 2006

Total: 40.8 Mio Tons

Other separately collected fraction
8.1 Paper,
4.5 Plastic/ Light Packaging

Household Waste,
Commercial Waste
(similar in composition
to household waste)



Garden and Park Waste,
Biological Fraction

Biowaste
(separately collected
from private households)

Separate collection of

- Paper
- Glass
- Packaging Waste
- Biowaste
- Waste Batteries
- Electronic Waste



More Recyclables than Residues in 2007

Household Waste



Source: Statistisches Bundesamt 2009.

Landfill ban for untreated waste

- Waste Storage Ordinance – June 2005: untreated waste can no longer be landfilled without pre-treatment
- 70 WIP – 20 Mio. t. cap.
- 50 MBWTP – 7.0 Mio. t. cap.



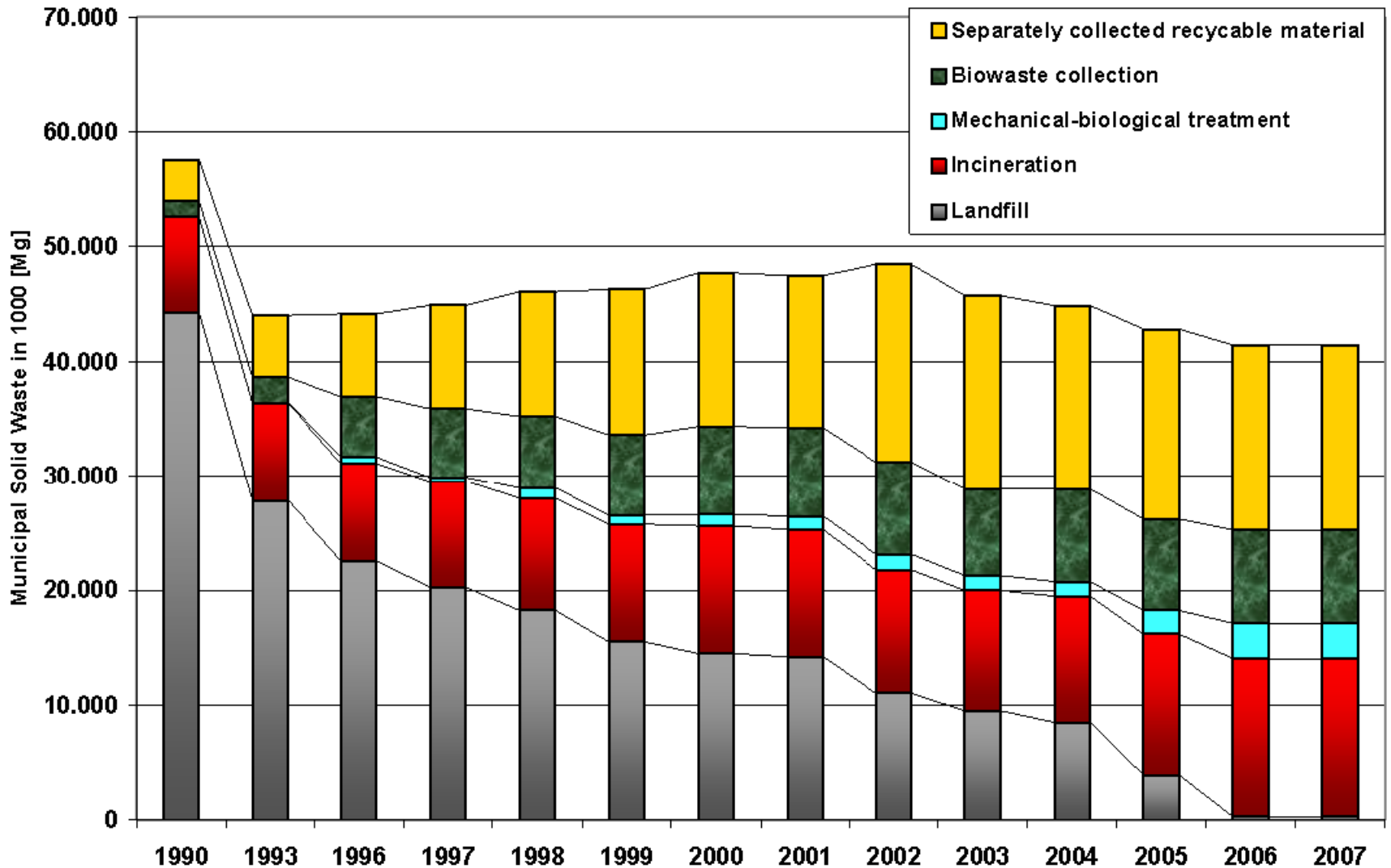
Landfills for Household Waste (2005 - Ban of landfilling of un-treated waste)

„Shrinkage goes on“

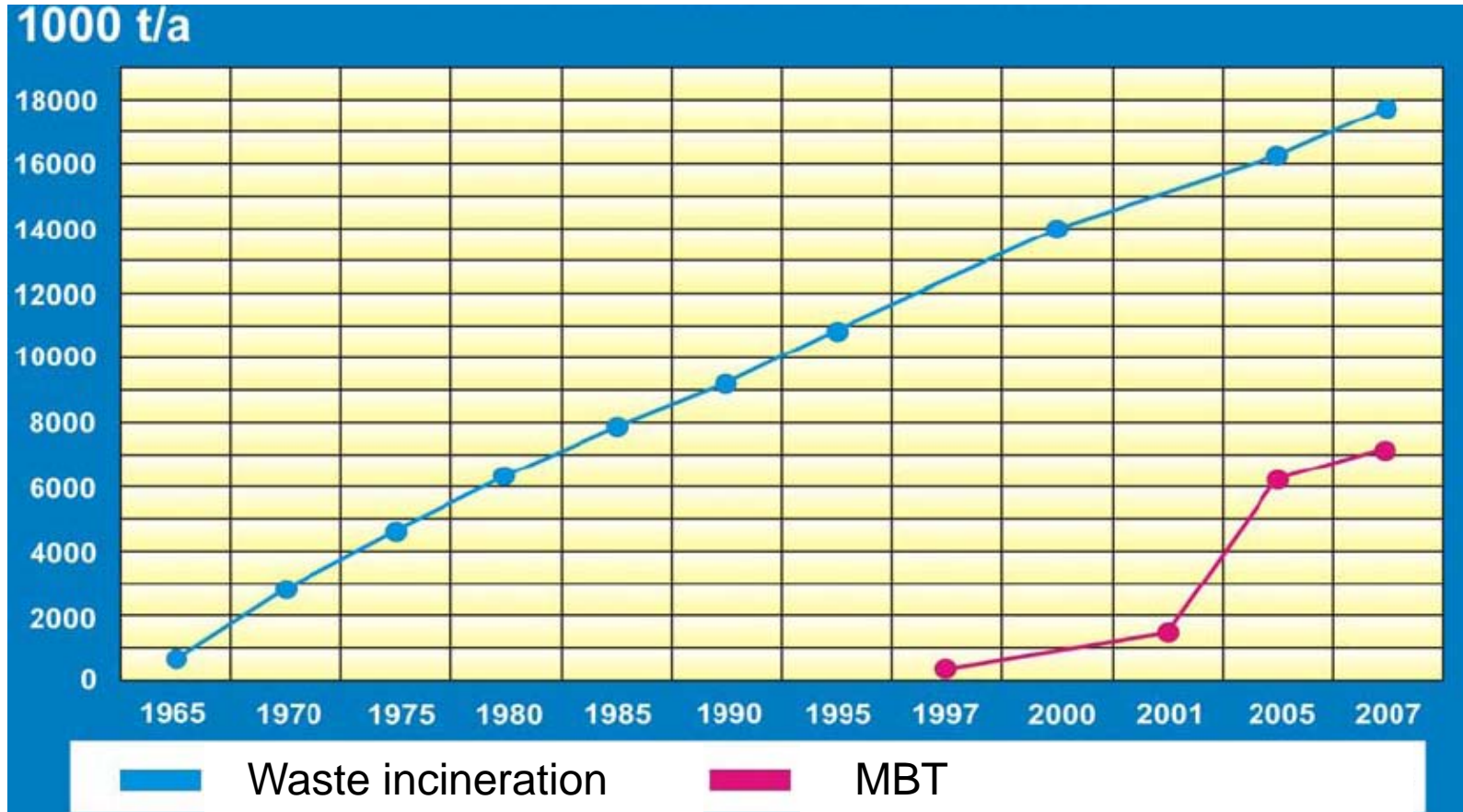


Source: Umweltbundesamt

Changes in pathways for management of household waste



Significant increase of waste treatment capacities



Waste incineration plant in Hamburg 1895



GHG Reduction Goals:

- Kyoto Protocol:
 - total cut of at least 5% by 2012 (baseline of 1990)
 - European Union: 8 %
 - Burdon Sharing; differentiated reduction goals
 - Germany: reduction goal by 21%

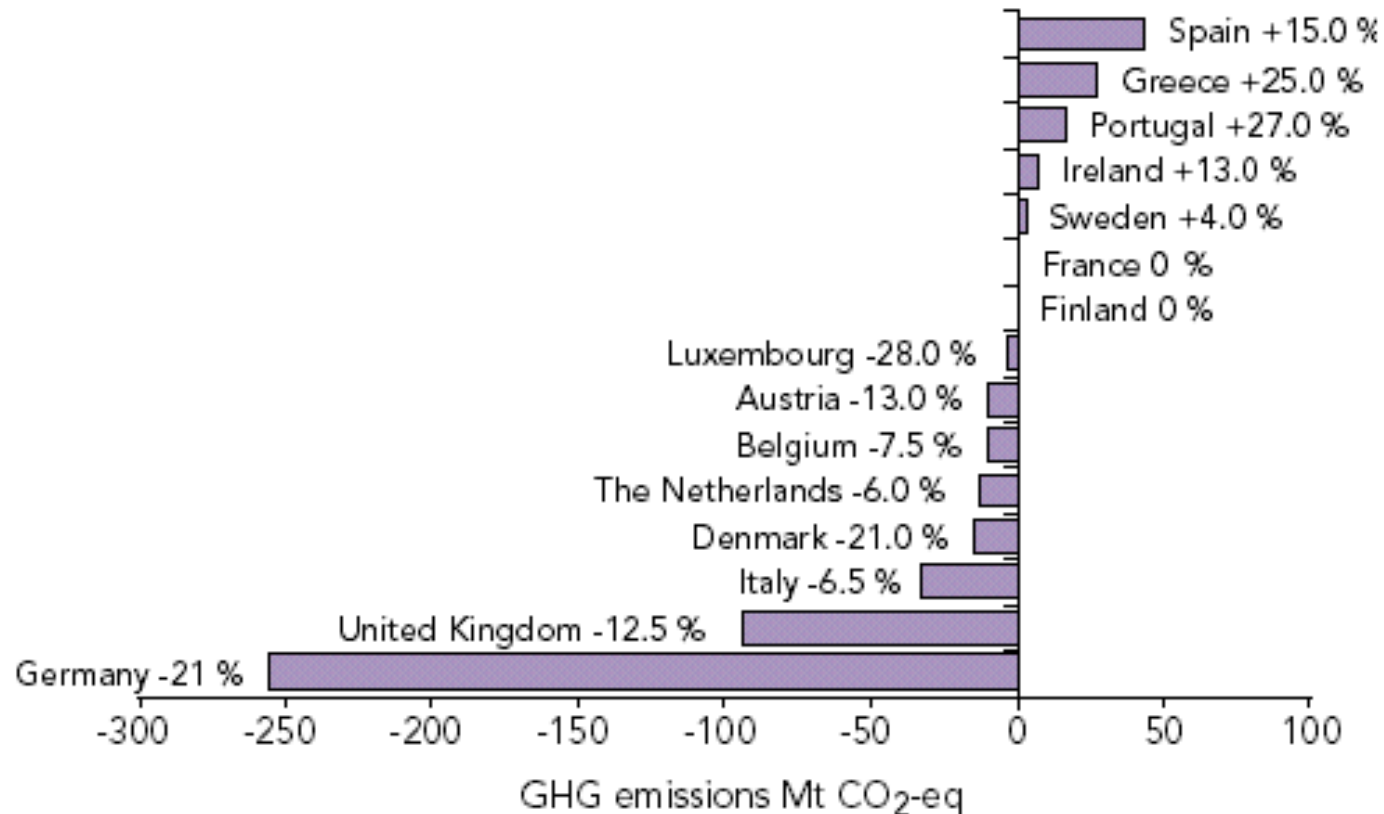
- Post-Kyoto-Process:
further development by 2020

- European Union: 20 (30) % by 2020

- Germany: 30 (40) % by 2020

EEA
2003

Greenhouse gas emission targets of EU Member States for 2008–2012 relative to base-year emissions under the EU burden-sharing decision



National Climate Protection Programme

Reduction contributions of the individual sectors up to 2012

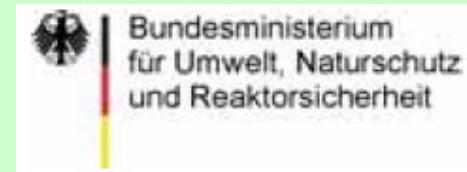
Measures and instruments	Reduction potential (in mill. t CO ₂ equivalent)
Ecological tax reform	20
Renewable energy sources	20
Measures in household and building sector	18 to 25 (by 2005)
Measures in industry	15 to 20 (by 2005)
Measures in transport sector	15 to 20 (by 2005)
Measures in energy sector	20 (by 2005)
Contribution by waste sector	20
Measures in the agricultural and forestry sector	not quantified

Status Report on the Waste Sector's Contribution to Climate Protection and Possible Potentials

by

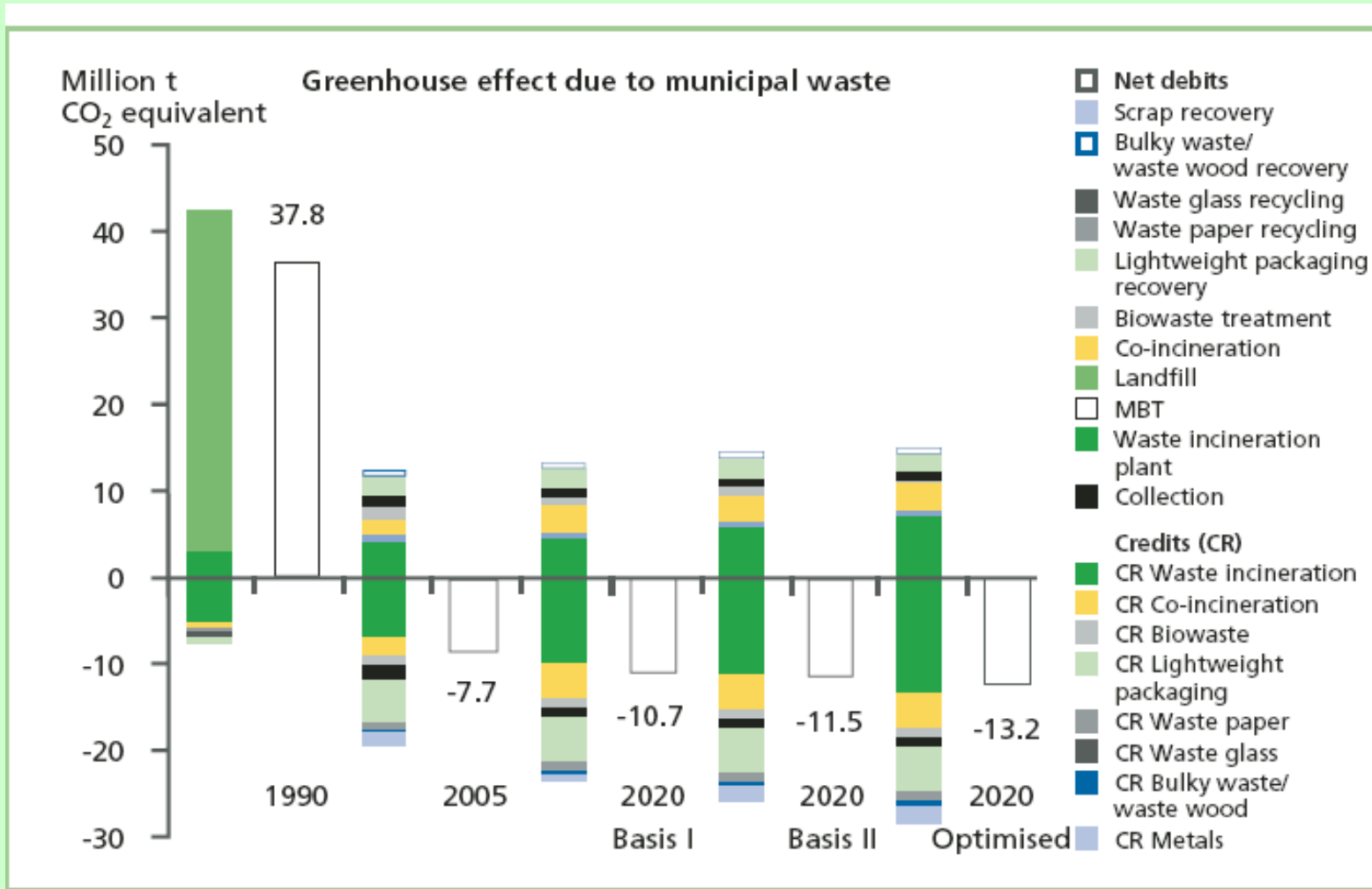


commissioned by the Federal Environment Agency
in co-operation with

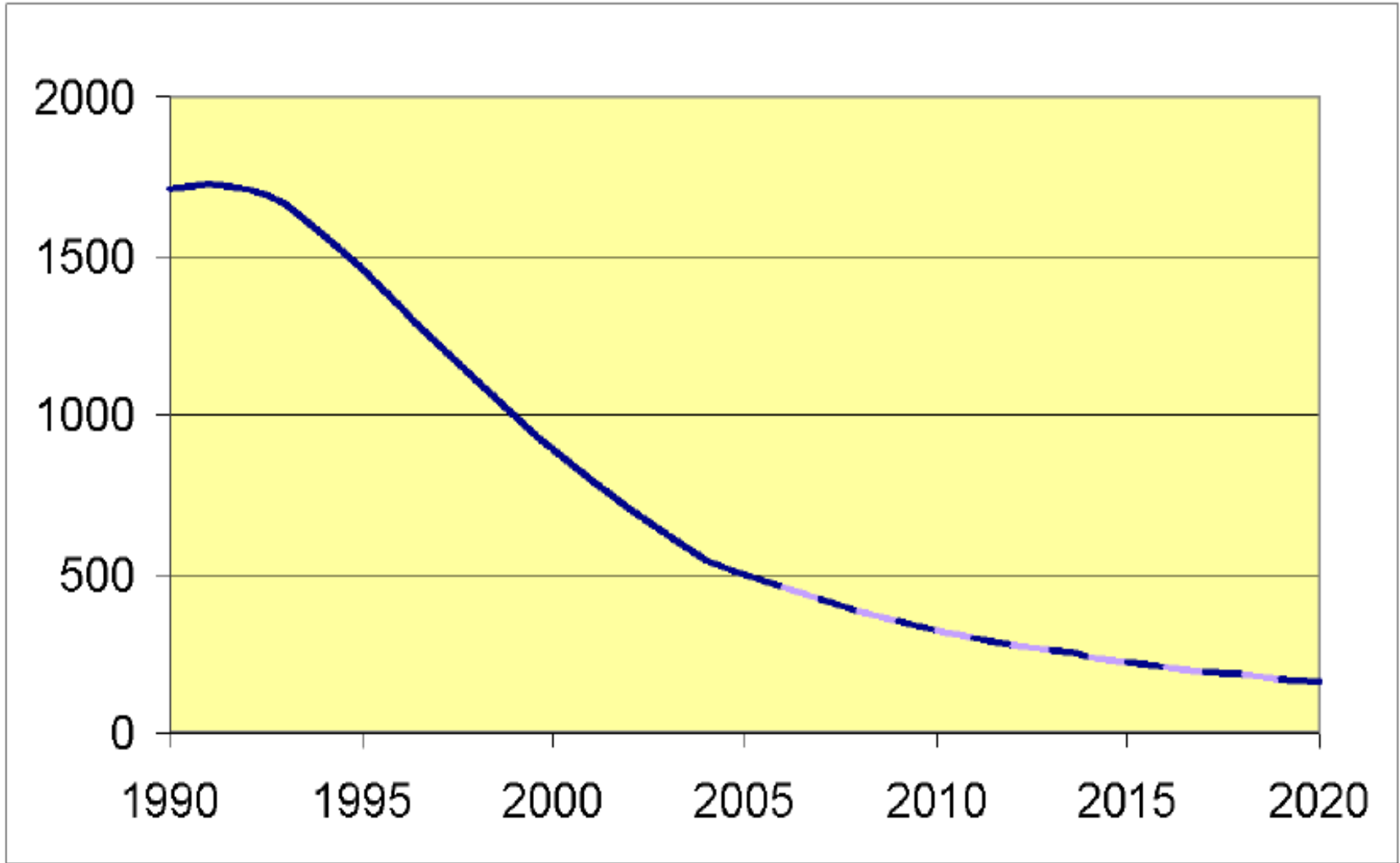


Possible substitute processes, taking waste incineration plants as an example

Waste incineration plant without energy utilisation	Waste incineration plant plus power	Waste incineration plant plus power and heat
<p>Debit (plus): CO₂ emissions from waste incineration plant due to combustion of fossil components in waste</p>	<p>Debit (plus): CO₂ emissions from waste incineration plant due to combustion of fossil components in waste</p> <p>Credit (minus): CO₂ emission savings due to avoidance of power generation in power plants</p>	<p>Debit (plus): CO₂ emissions from waste incineration plant due to combustion of fossil components in waste</p> <p>Credit (minus): CO₂ emission savings due to avoidance of power generation in power plants</p> <p>CO₂ emission savings due to avoidance of heat generation by a typical household heating system</p>



Methane emissions from landfill sites in Germany in Gg (IPPC-FOD)



for  **Öko-Institut e.V.**

Climate Protection Potential in the
Waste Management Sector

Examples: Municipal Waste and Waste Wood

FKZ 3708 31 302

Final Report


Client:
UBA
BMU
BDE


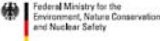

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Darmstadt/Heidelberg, 20.10.09

Recycling stops greenhouse gases

The contribution of the recycling and water management
industry to climate protection



***Selected results of a study
by Öko-Institute and IFEU ***

on behalf of

Federal Environment Ministry

Federal Environment Agency

***Federation of the German Waste,
Water and Raw Materials
Management Industry***

January 2010

<http://www.uba.de/uba-info-medien-e/4049.html>

Methodology

- GHG-balances following **LCA standard ISO 14040**
 - **No waste reduction or increase** was assumed for the scenarios to show only the effects of the waste handling
 - Calculations for **each** separated collected **waste type** and for **residual waste** to
 - incineration (MSWI plants) and
 - mechanical-biological treatment/stabilisation (M(B) plants)
 - Assumption for potential scenarios: using existing technology of the current situation in Germany
 - Assumption for material recycling of paper and cardboard: wood saved due to material recycling is used for energy production in Scandinavia (baseline)
-

GHG-balance for Germany

Scenarios

2006 current situation

GHG impacts and credits for recycling, incineration and treatment of residual waste on the basis of current technology → recycling rate about: 62 %

2020 Technology

improvement in the technical standards with unchanged waste flows. It is assumed that net efficiencies of plants and the gas yields of anaerobic digestion plants increase and highvalue secondary products are produced → recycling rate about: 62 %

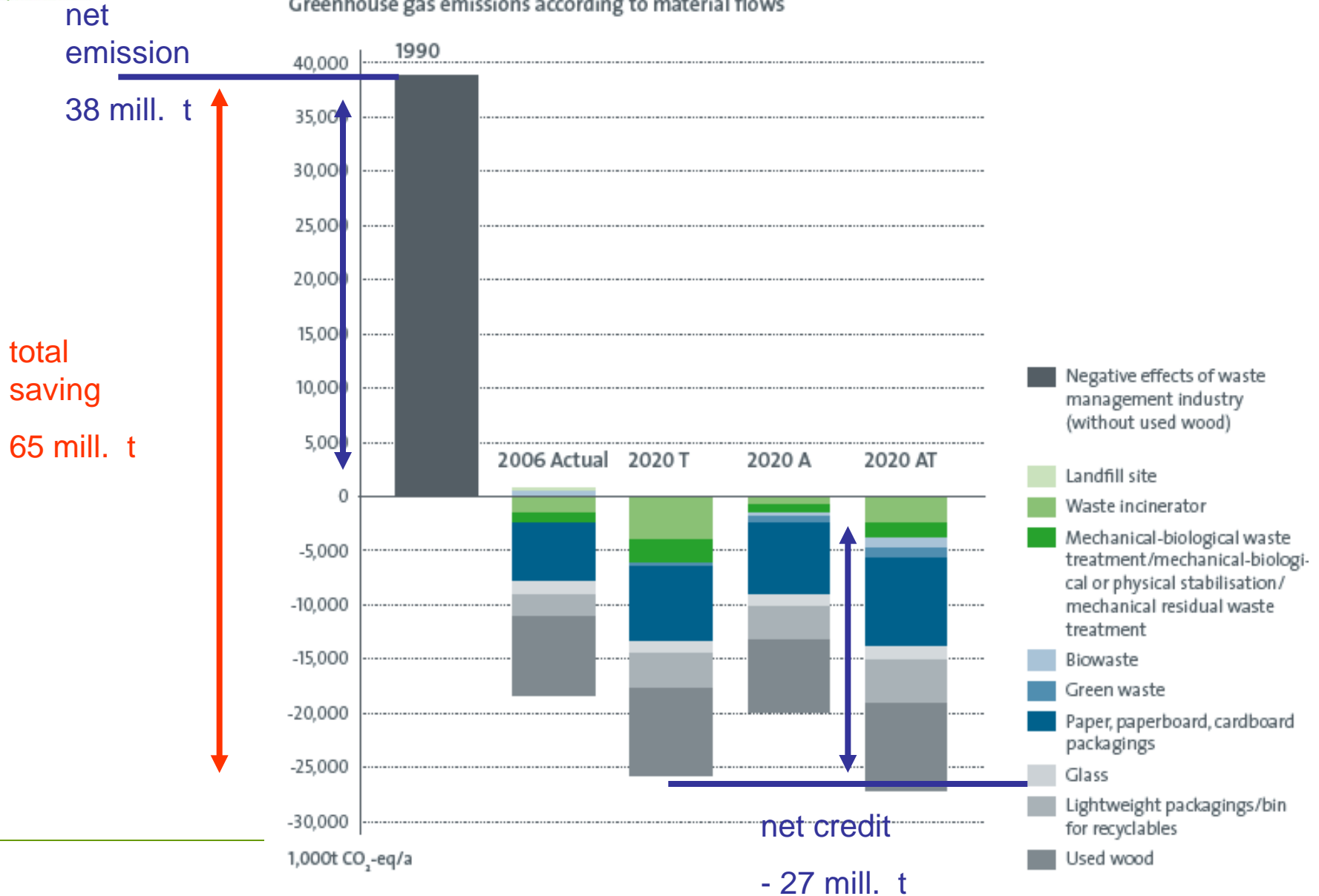
Scenario 2020 Abfall (waste)

change in the waste flows with increased collection and more recycling with unchanged technical standards. It is assumed that 50 % of the recyclable materials still in the mixed residual waste in 2006 are additionally collected and utilised. → recycling rate about: 72 %

Scenario 2020 AT

the combination of the scenarios 2020 T and A. → recycling rate about: 72 %

Greenhouse gas emissions according to material flows



Conclusions

To exploit the Climate Protection Potential of an effective waste management we need

- landfill ban
 - increasing recycling rates
 - waste-treatment with the best available technology
-

Technology Transfer



Informationssammlung über Ansätze zur nachhaltigen Gestaltung der kommunalen Abfallbewirtschaftung und dafür geeignete deutsche Technologien und Ausrüstungen



Information pool on approaches towards a sustainable design of municipal waste management and supporting German technologies and equipment



Observatoire des solutions durables pour la maîtrise des déchets des communes, des technologies et des équipements allemands



Информационный сборник по подходам к устойчивой организации муниципального менеджмента отходов и подходящим немецким технологиям и оборудованию



Bewährte Verfahren zur kommunalen Abfallbewirtschaftung

Best Practice Municipal Waste Management

Meilleures pratiques en maîtrise des déchets des communes

Испытанные методы муниципального менеджмента отходов



Gefördert durch
Funded by



Erstellt durch
Produced by



Thank you
for your attention!

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Further information:
www.umweltbundesamt.de