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Waste-to-Energy: Energy & Resource Efficiency

View from a European Member State - Germany

Dr. Helge Wendenburg, German Ministry of the Environment

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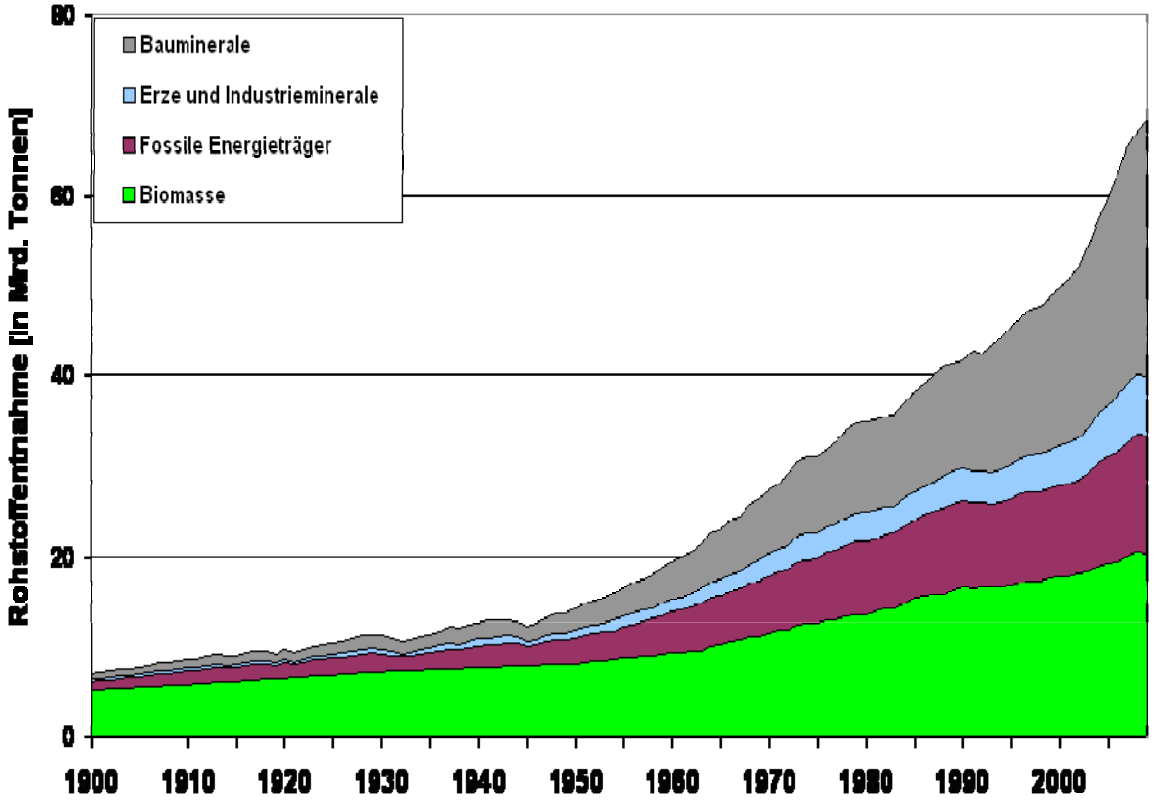
Global raw materials use



Ref.: Krausmann et al. (2009): Growth in global materials use, GDP and population during the 20th century, Ecological Economics Vol. 68, Nr. 10, 2696-2705, Version 1.2 (August 2011), www.uni-klu.ac.at/socec/inhalt/3133.htm

Resource use:

- Steep rise: +50% in last 30 years
- Impacts on the environment

Drivers:

- Population growth
- Growth in prosperity

2050: ?

- 9,2 billion people
- Resource Use: ?

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Challenges for Germany

Materials account for **45% of costs** in German manufacturing sector

Rising and highly volatile prices

- 85% of German entrepreneurs report a moderate or even dramatic rise in material costs in last 5 years
- 97% expect rising costs in future

Germany depends on imports

- 80 % of raw materials imported in 2010

Secure resources supply and resource efficiency

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ProgRess

Goals:

- **Decouple** economic growth from resource use
- **Reduce** environmental impacts of resource use
- **Improve** the sustainability and competitiveness of the German industry

Impacts along the whole value chain

- raw materials supply
- production and product design
- consumption
- closed cycle management

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ProgRess - Structure

Guiding Principles	1 For Environment & Economy	2 Global Responsibility	3 Innovation: Low Resource Economy	4 Transition: Qualitative Growth

Fields of Action / Approaches

Sustainable Raw Materials Supply	Resource Efficient Production	Resource Efficient Consumption	Closed Cycle Management	Overarching Instruments
Raw Materials Strategy	Efficiency Advice	Awareness Raising	Product Responsibility	Instruments for Market Penetration
Use of Renewable Materials as Feedstock	Production & Manufacturing Processes	Trade & Consumer Decisions	Optimizing Recycling	Optimizing Instruments
	EMAS	Certification Schemes	Prevention of Illegal Exports	Research
	Product Design	Public Procurement		Legal Framework
	Standardisation			Technology & Knowledge Transfer
				EU / International

Examples / Material Flows

- Mass Metals
- Rare Strategic Metals
- Construction & Living
- Photovoltaics, Electric mobility
- Green IT

- Phosphorus
- Indium
- Gold
- Plastics waste

Annex: Stakeholders

Departments, Länder, Associations, Institutions

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ProgRess: guiding principles

Guiding principle 1: Joining **ecological necessities** with **economic opportunities**, innovation support and social responsibility

Guiding principle 2: Viewing **global responsibility** as a key focus of our national resource policy

Guiding principle 3: Gradually making economic and production practices in Germany **less dependent** on primary resources, developing and expanding **closed cycle management**

Guiding principle 4: Securing sustainable resource use for the long term by guiding society towards **quality growth**

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Action Field Production

Resource-efficient Production

Proposed actions:

Programme to provide **tailor-made advice** on resource-efficiency for companies

Support dissemination of **resource-efficient production** and processing methods

Promote environmental management systems (**EMAS**)

Incentives for resource-efficient **product design**

Integrate criteria for resource efficiency into **technical norms**

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Action Field Consumption

Resource-efficient consumption

Proposed actions:

raising **awareness and education**

make resource use **visible** as a criterion for trade and consumers

Transparency and certification of raw materials trade chains (EITI, DERA)

public procurement

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Action Field
Closed Cycle Management

Closed Cycle Management

Proposed Actions:

Strengthen **product responsibility**

optimize **collecting and recycling**

prevent **illegal exports**

strengthen **recovery structures** in developing countries (e.g. ReTech-Initiat

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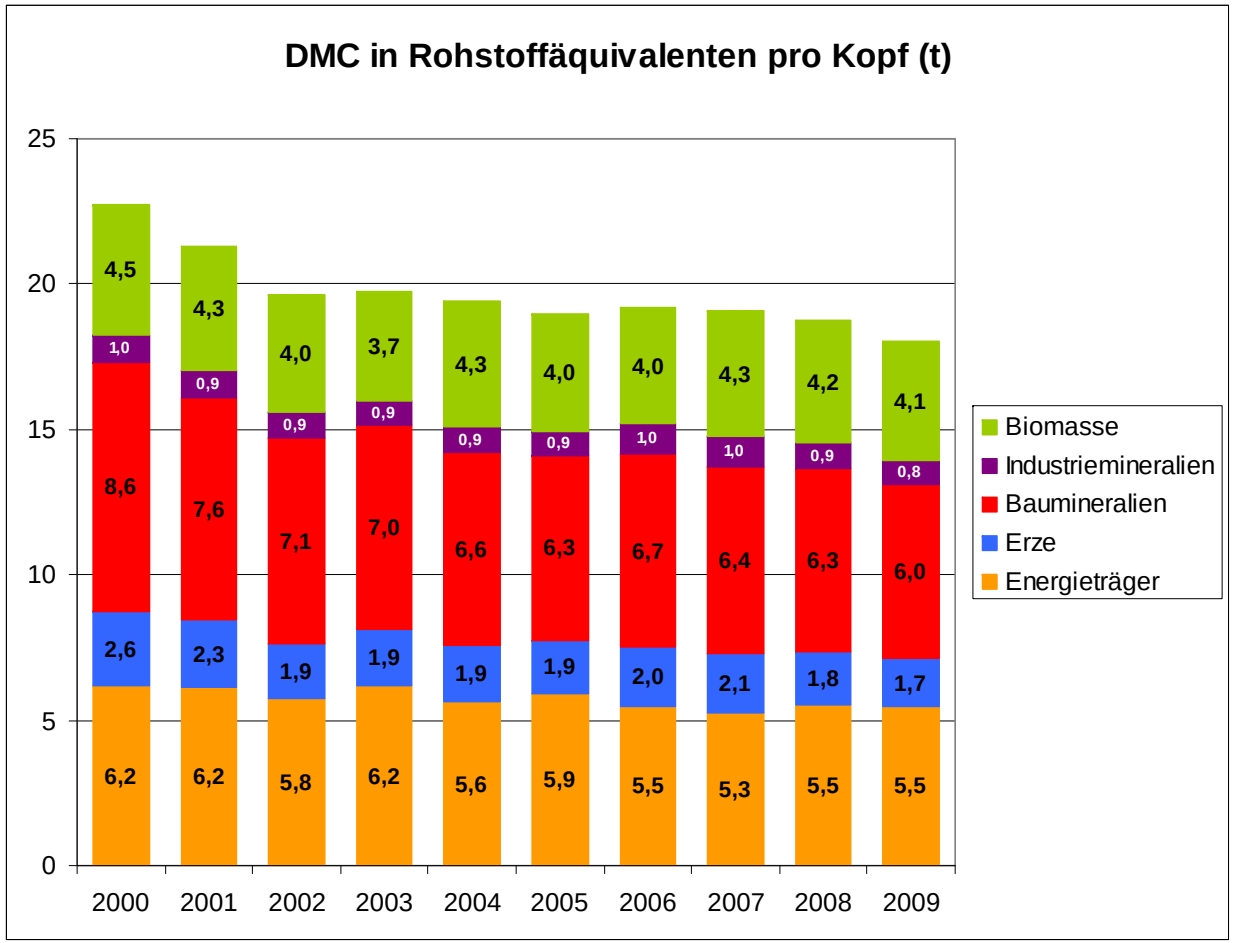
Decreasing raw materials use



The raw materials use decreases

(11,1% since 2000!)

→**<u>Germany proofs:</u>**

The decrease of the raw material use and economic success go side by side

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The European Perspective

Janez Potocnik

European Commissioner for the Environment

Resource efficiency *is the* ***next revolution*** *that the planet needs and the world can pull off. And yes, it is a common sense revolution. So, let's use that common sense to* ***embark on this revolution now***

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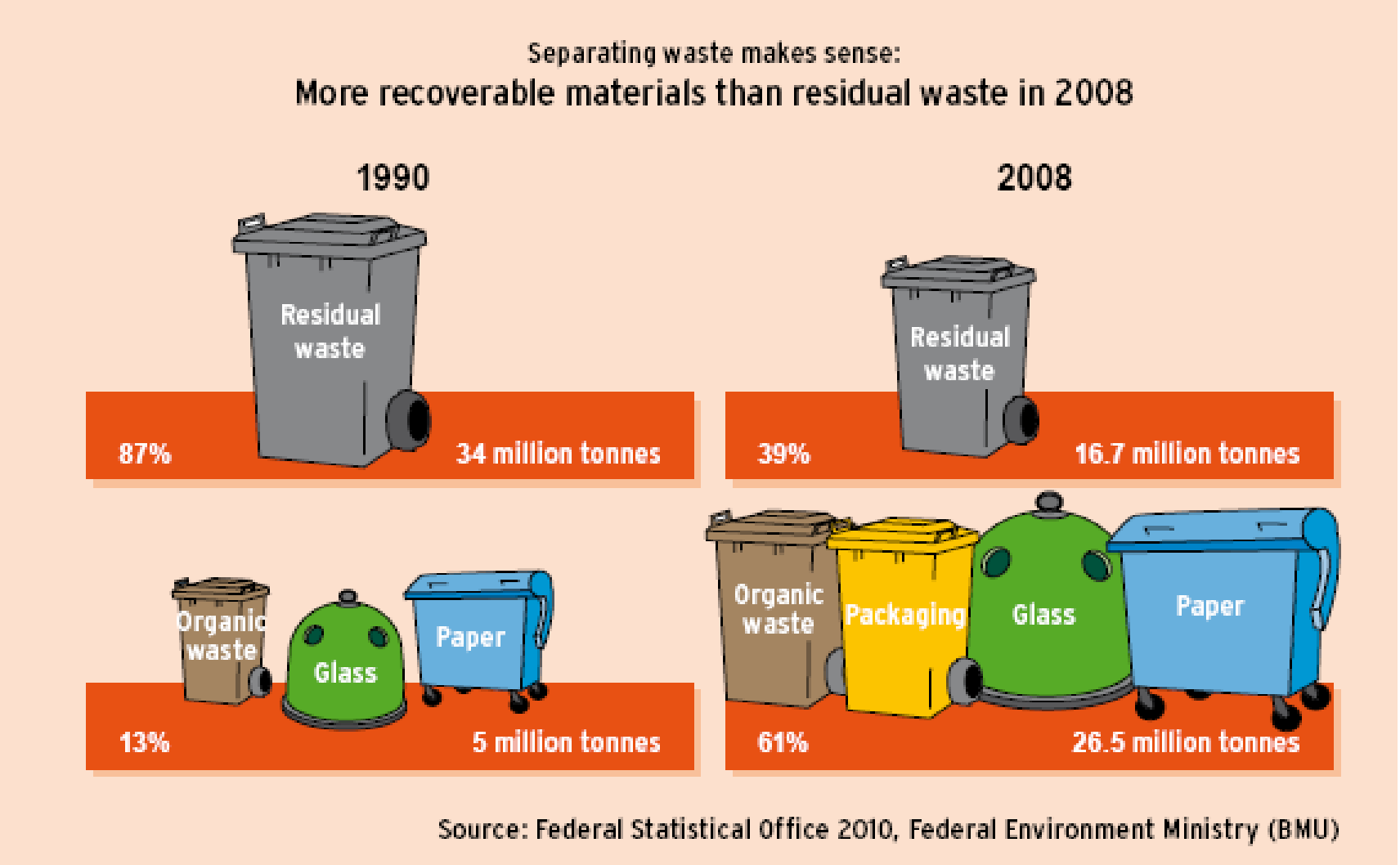
Success of 20 Years Waste Management



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Waste Management Policy

- increasing and optimizing the efficient use of raw materials
- maximizing recovery quotas
  - reuse
  - recycling
  - energy recovery
- removing from our environment that residual waste which can not longer be used

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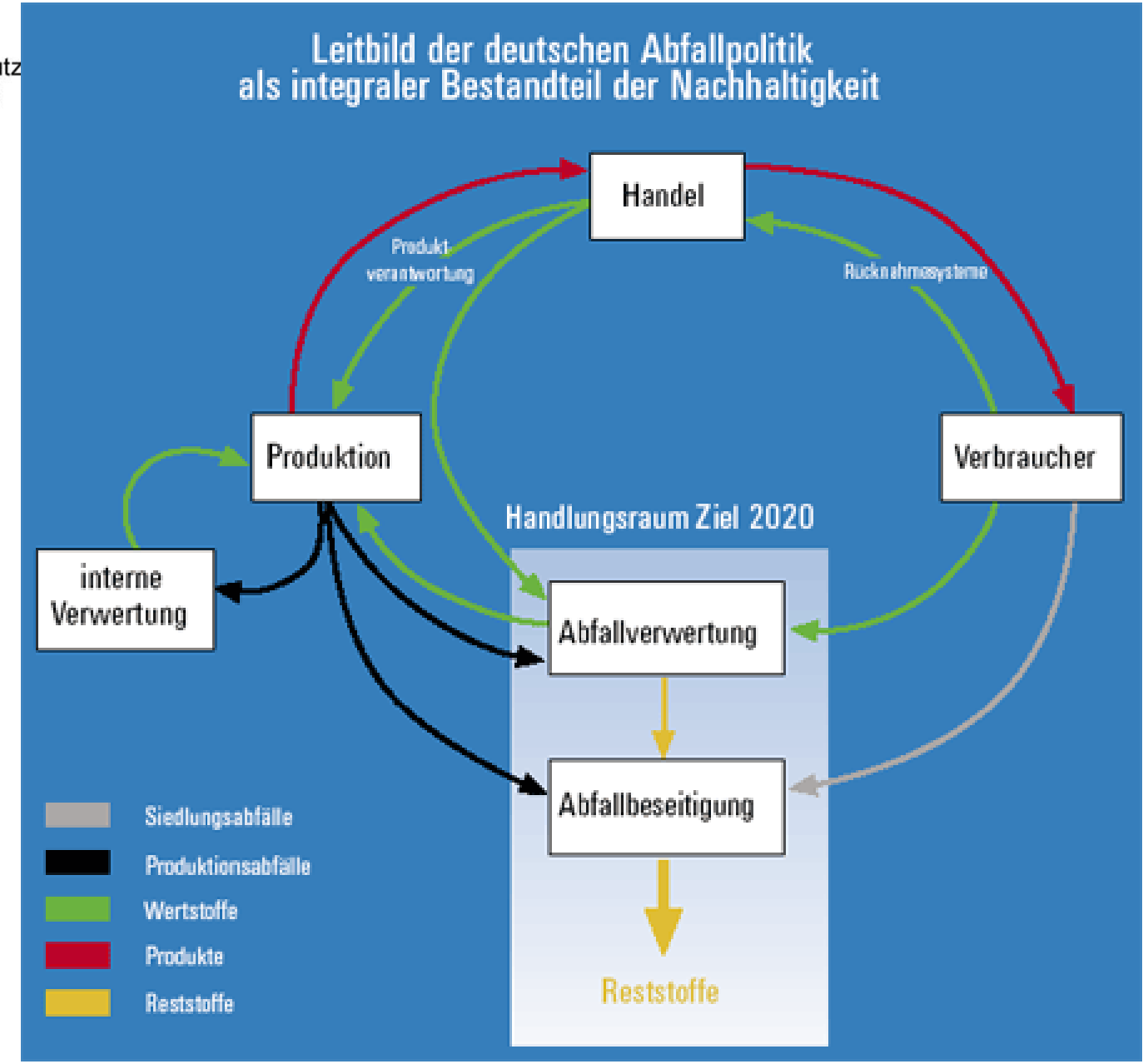

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Closed Cycle Management and energy recovery

the waste hierarchy

- prevention
- preparation for reuse
- recycling
- other recovery
  - material recovery, e.g. underground waste storage ore material for backfilling operations
  - energy recovery
- disposal

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Thinking in Cascades

modern recovery

- looking at different waste streams
  - metal
  - plastics
  - biogenic material (wood, organic waste from kitchen, households as well as from gardens an parks, animal by-products, manure)
- re-use and recycle where possible
  - wood for furniture
  - organic waste for compost and biogas
- using the energy content of non-recyclable waste

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Results of Incineration

- landfill ban and strengthening incineration
  - minimizes methane and CO2 – emissions
  - substitutes fossil fuels
  - heating and cooling of houses
  - steam energy for industrial processes
- recovery of waste in different facilities
  - waste-to-energy incineration plant (R 1–formula)
  - EBS- power plants
  - cement kilns

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Thank You for Your Attention