

Resource Management and Technological Innovation



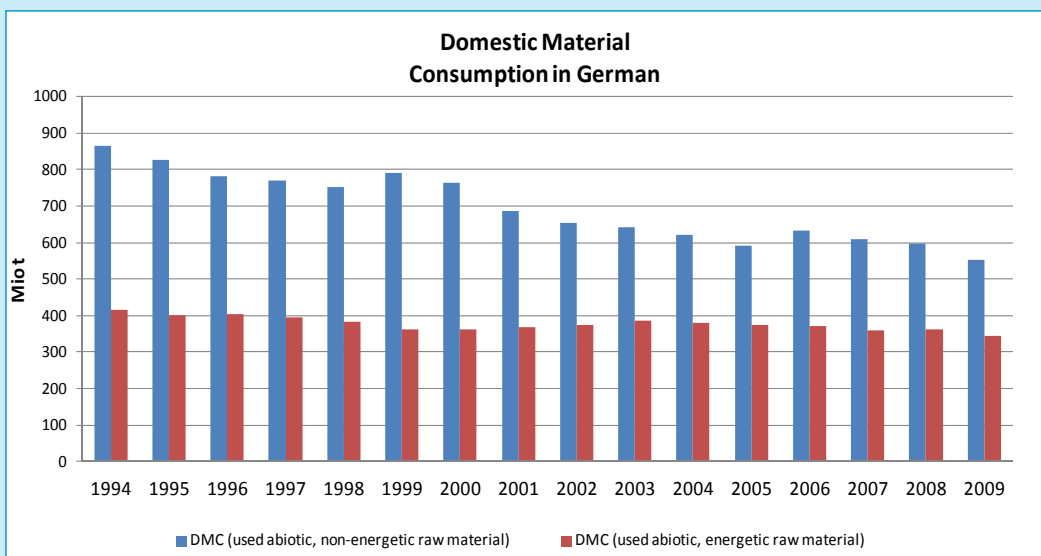
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RE-development in Germany



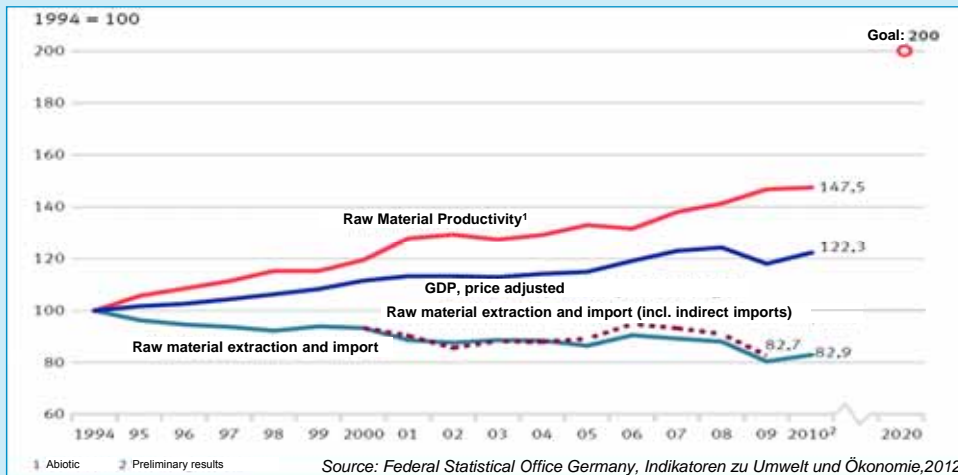
German raw material consumption declines



Source: own calculations based on "Tabellen zu den Umweltökonomischen Gesamtrechnungen", Federal Statistical Office Germany, 2011

Successful development in Germany

National Strategy for Sustainable Development: Goal of the federal government is to double the (abiotic) raw material productivity (RMP)



$$RMP = \frac{\text{Value added (GDP)}}{\text{Extracted + imported, used, abiotic raw material = Direct Material Input (DMI)}}$$

Development of raw material prices



Source: London Metal Exchange www.lme.com (2012)

German Resource Efficiency Programme (ProgRes)

- adopted by the Federal Cabinet:
29 February 2012
- **Goals:**
 - To decouple economic growth from **resource use**
 - To reduce associated **environmental pollution**
 - Responsibility for our **demand of resources**
 - To strengthen the sustainability and **competitiveness** of the German economy

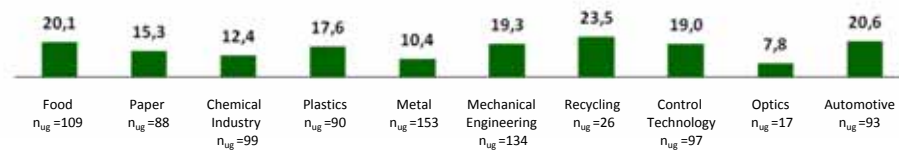
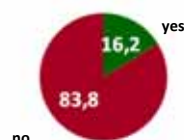


Resource Efficiency in SMEs

$n_{ug} = 906$, answers in percent

In our sector all resource efficiency potentials are already utilised.

Do you agree with this statement?



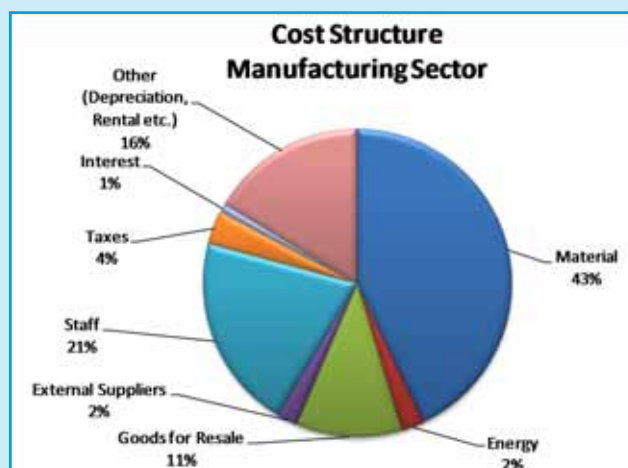
- Study „Implementation of Resource Efficiency Measures in SME's and their Driver“ (VDI ZRE, 2011: www.vdi-zre.de/fileadmin/user_upload/downloads/studien/28-11-2011_Broschuere_Web.pdf)

VDI Centre for Resource Efficiency (VDI ZRE)



The approach of VDI ZRE

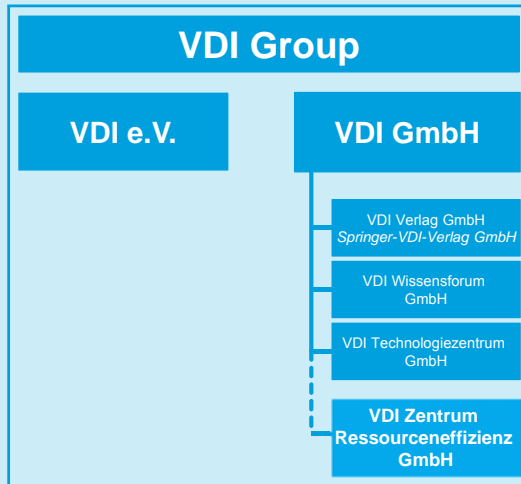
... is Information, Cooperation and Activation.



Source: Graph based on data from the Federal Statistical Office Germany, 2011

- Increasing the competitiveness of SME by realising cost-savings through RE.
- VDI ZRE helps to identify these potentials.

Institutional Context of VDI ZRE



VDI Centre for Resource Efficiency (VDI ZRE)

- project cooperation of the German Ministry for the Environment (BMU)
- and the Association of German Engineers (VDI)
- funded in the framework of the National Climate Initiative of BMU.

Goals and strategic focus

The main tasks of VDI ZRE are to provide information and to identify standards of best practice into all fields of technical applications. Goals:

Reduction of :

consumption of natural resources

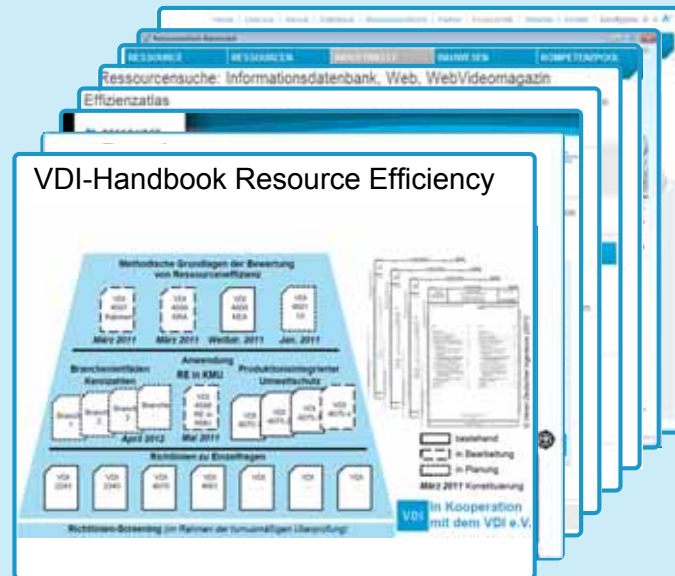
Increase of:

- Value added to the economy
- Number of jobs
- Qualification of employees
- Biodiversity and Health

Main fields of action: **Manufacturing Sector** and **Construction Sector**.

VDI ZRE Information Tools – overview

- Process Chains
- Resource Efficiency Checks
- Innovation Radar
- Information Database
- Efficiency Atlas
- Movies with Best Practice Examples
- Qualification Seminars
- VDI-Handbook Resource Efficiency
(in Cooperation with VDI e.V.)
- Newsletter



www.ressource-deutschland.de

Examples of successful innovation



Examples of successful innovation

Manufacturing rotationally symmetrical components

Saving by:

- Choice of process

Source of loss:

- Much waste from chipping
- High tool wear



Measures:

- Use of precast molding blanks instead of full material



Results:

- 50 % less material waste
- Less tool wear due to less chipping power
- Surplus in efficiency due to smaller time requirement
- 2.370.000 € potential savings

Source: On the Basis of demea (2010)

Examples of successful innovation

Resource Efficiency in Manufacturing – Tital GmbH



Casting instead
of milling.



Source : VDI ZRE (2010)

75% less material- 75% less energy – reduction of cost of >30%

Examples of successful innovation

Process optimisation: Warming and Cooling



Low-loss pre-heating:
33 % less gas consumption



Efficient cooling:
evaporation cooling instead of water bath:
200.000 l/a less sewage water



Source: www.pfaffmann.de (2010)

ROI: 2 Years

VDI Zentrum Ressourceneffizienz GmbH

Sascha Hermann, Managing Director
Johannisstr. 5-6
10117 Berlin

Telephone: +49 30 27 59 506-0
Fax: +49 30 27 59 506-30
Email: info@vdi-zre.de

www.Ressource-Deutschland.de