



# Global dimensions of European natural resource use

Results from the Global Resource Accounting Model (GRAM)

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# Background: trade and material flows

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Increasing international trade (5.5% growth p.a., 1990-2006)

Outsourcing of environmental-intensive stages of production processes /  
Relocation of environmental burden / increasing dependency on imports

Production vs. consumption indicators

## **Global Resource Accounting Model (GRAM)**

Global, multi-regional IO model extended by material extraction data

Calculation of indirect material flows (as raw material equivalents) of traded products & calculation of comprehensive MF-based indicators

# The Global Resource Accounting Model (GRAM)

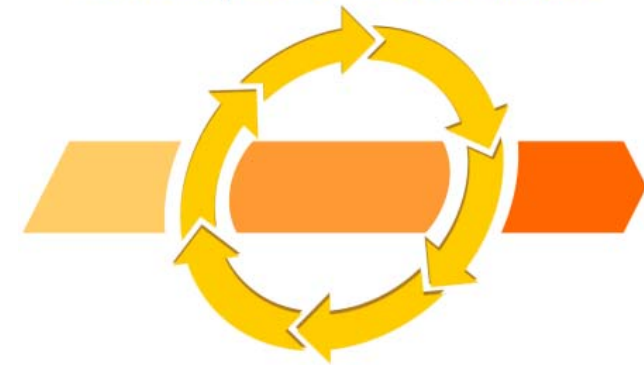
- + Coverage: 50 countries plus 2 regions (OPEC & RoW)
- + Economic core model: IO tables linked by bilateral trade (OECD data)
- + Material extraction data (physical units)

**[www.materialflows.net](http://www.materialflows.net)**

- + 188 countries
- + Time series: 1980 – 2005

GRAM: 8 aggregated material categories

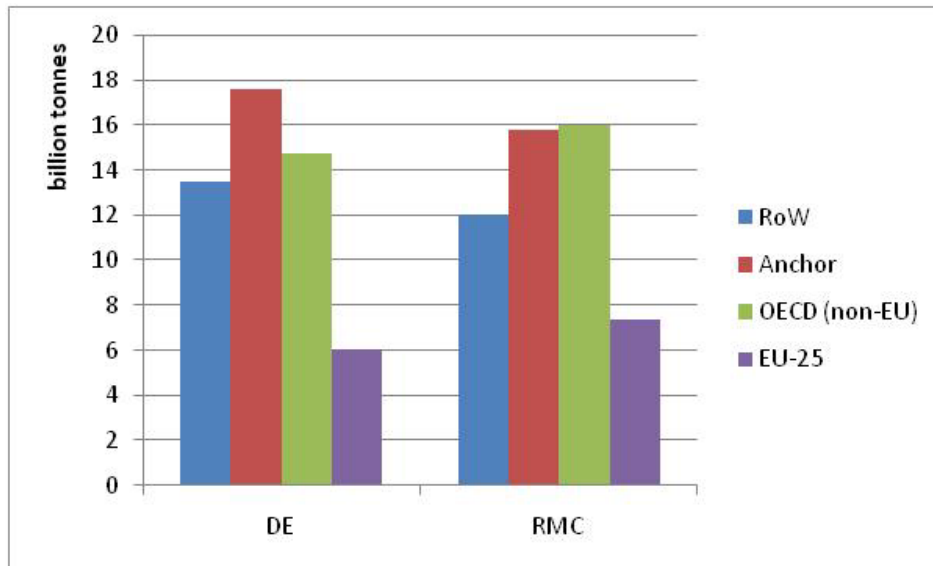
**[www.materialflows.net](http://www.materialflows.net)**  
The online portal for material flow data



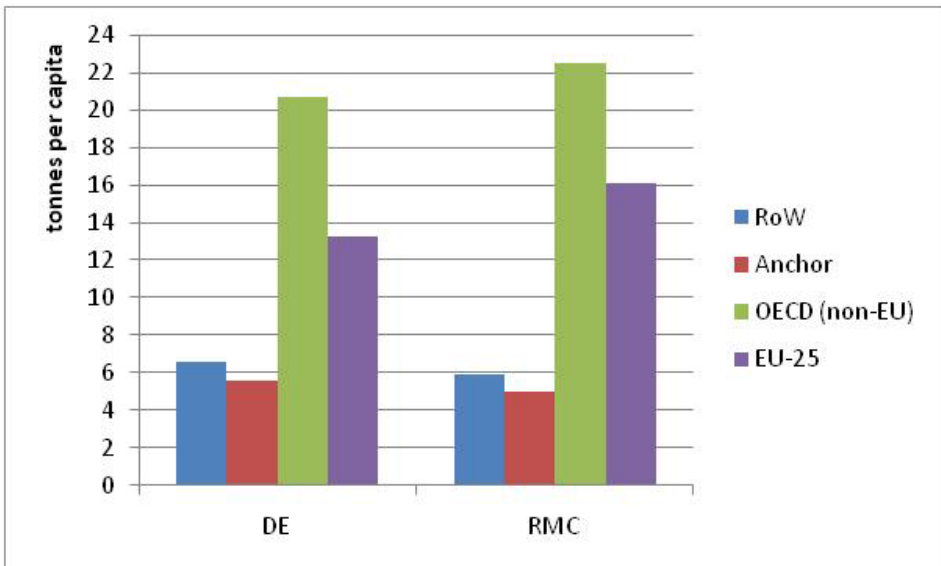
# Results

## Material Extraction vs. Material Consumption in 4 World Regions (2000)

Absolute numbers



Per capita

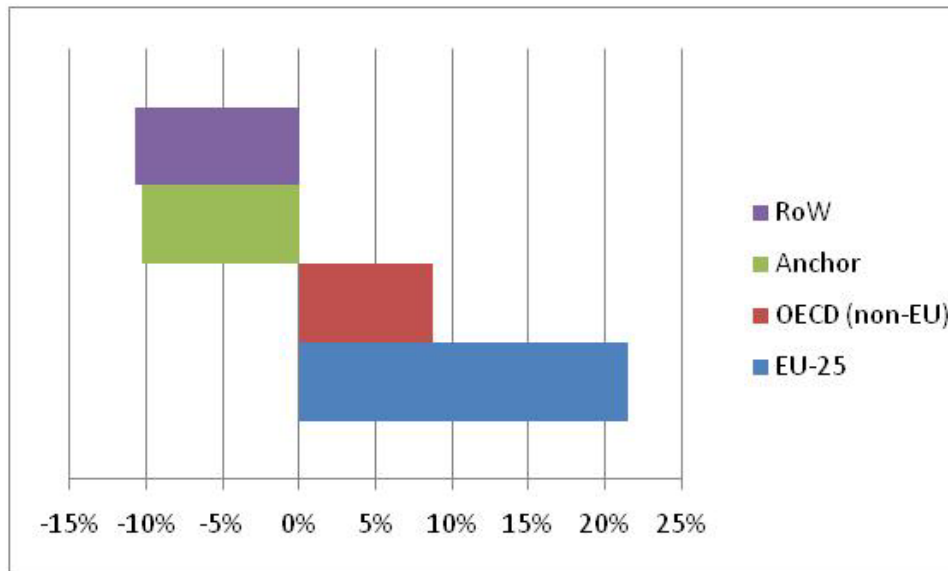


DE ... Domestic Extraction; RMC ... Raw Material Consumption

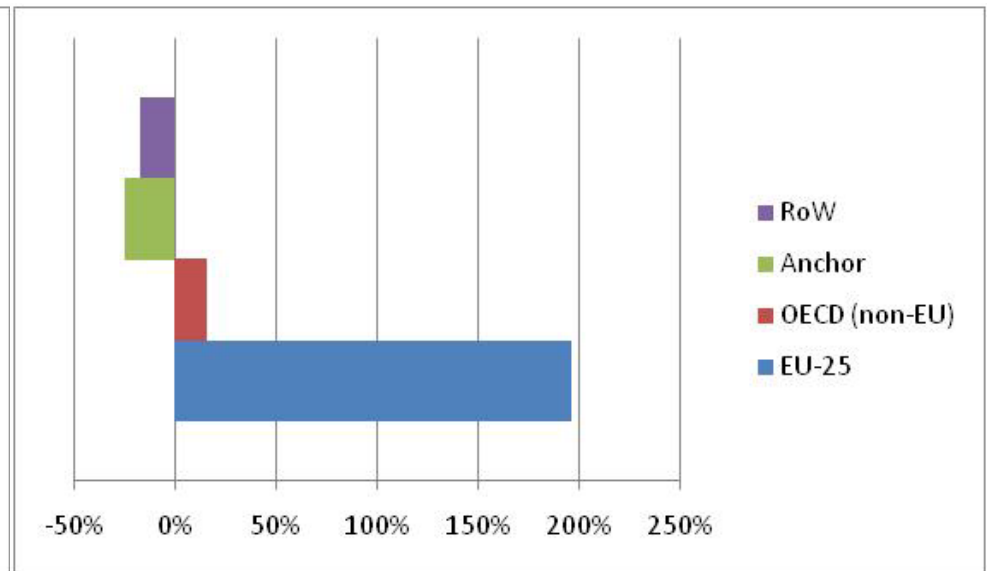
# Results

## Net-Imports / Net-Exports as Percentage of Domestic Extraction (2000)

All materials

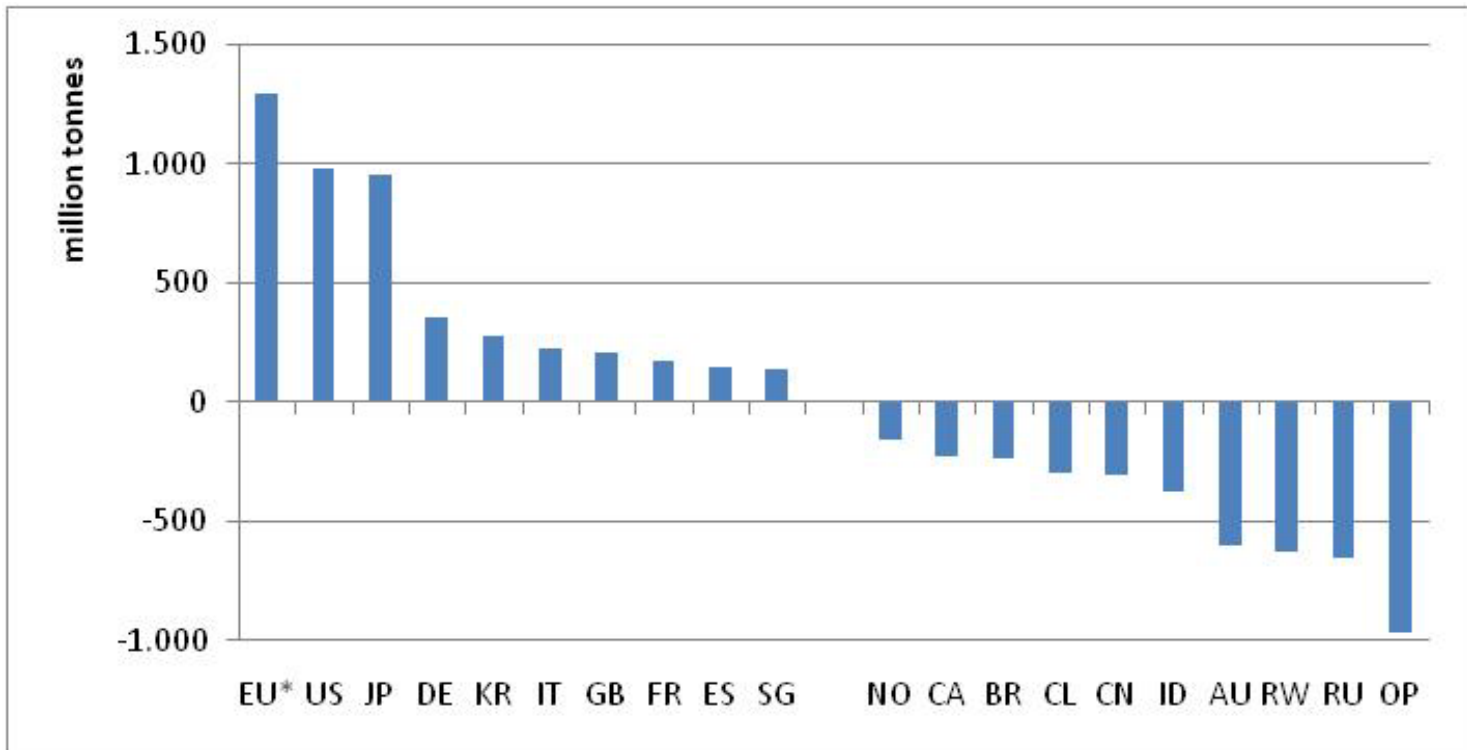


Metal ores



# Results

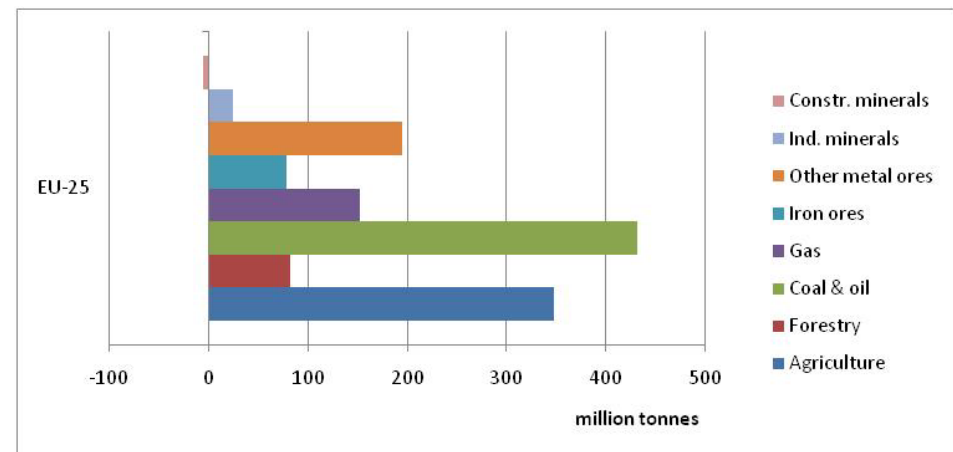
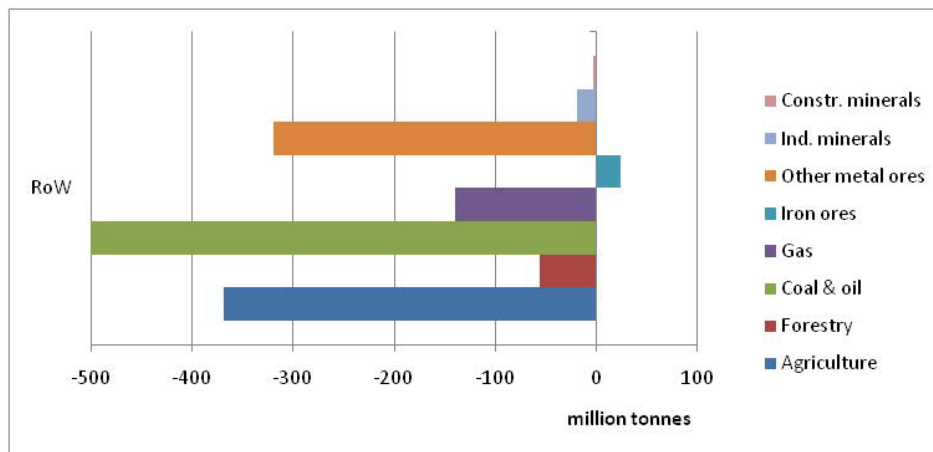
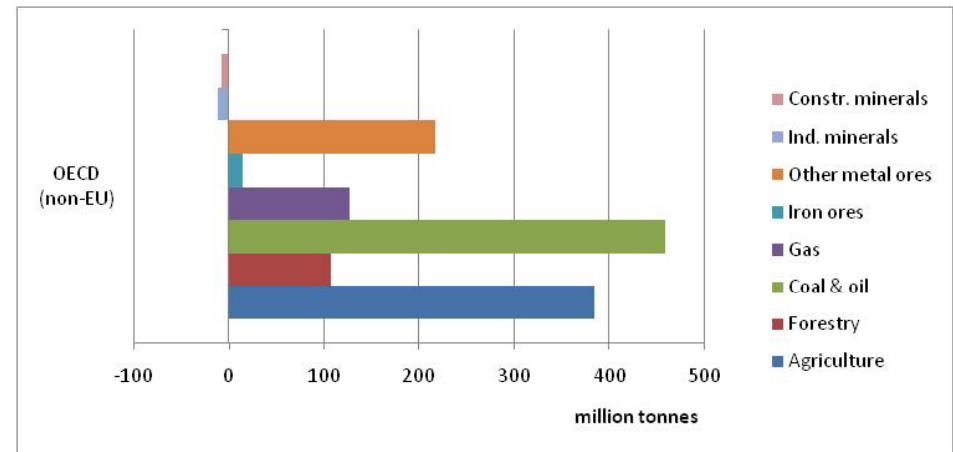
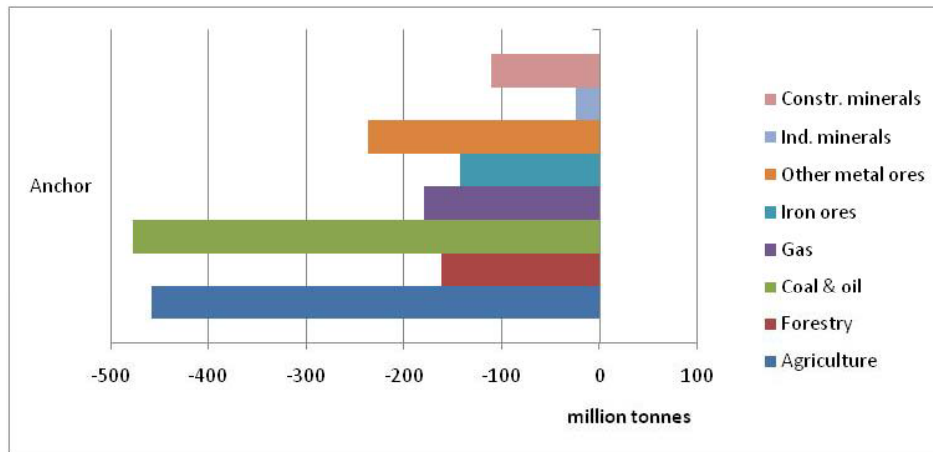
## Net-Importers vs. Net-Exporters (2000)



\* For illustrative purposes we included the region EU-25 (EU\*) in this country ranking.

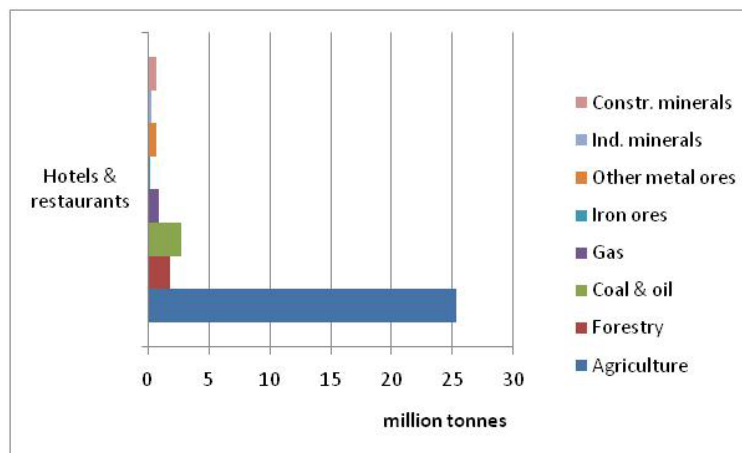
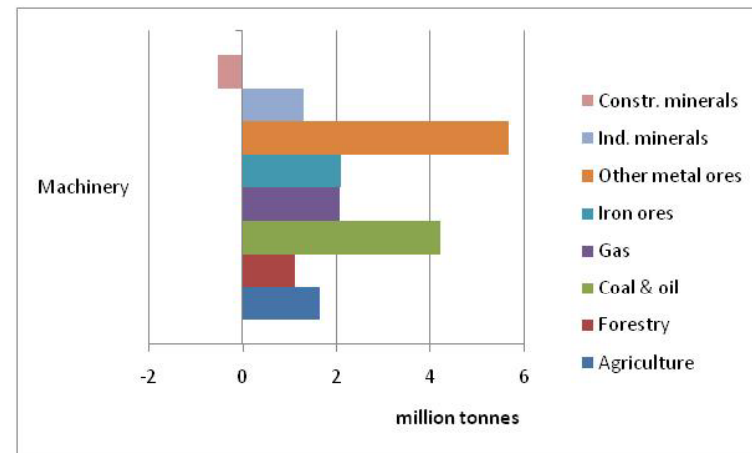
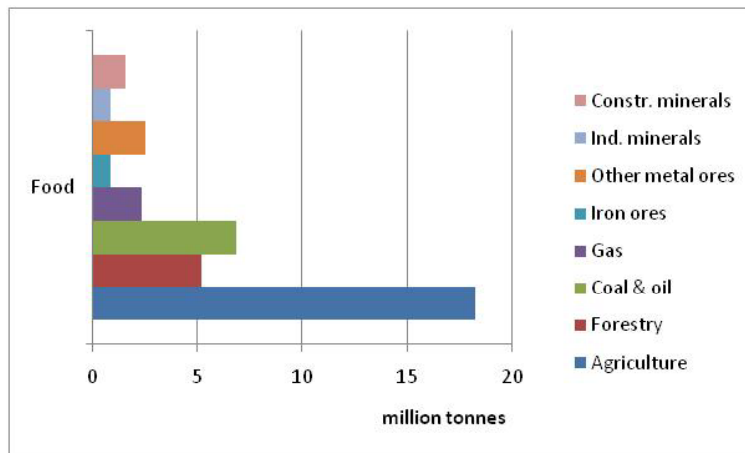
# Results

## Trade profiles of embodied materials by world regions (2000)



# Results

## Trade profiles of selected sectors of the German economy (2000)





# Conclusions

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**Trade reinforces unequal levels of resource extraction; Southern extraction → Northern consumption**

**Poor, developing countries are largest net-exporters per capita → development implications?**

Policy issues:

- **EU environmental policies:** consideration of trade aspects in resource and energy policies (fossil fuels; metals; biomass)
- **EU economic and trade policies:** secure and stable access to resources vs. increasing net-imports and foreign dependency
- **EU development policies:** increasing material welfare / standard of living in developing countries (“combat poverty”) vs. net-exports of resources from these countries (distribution / investment of export revenues & diversification)

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**The end .... Thank you!**

**More information:**

**[www.seri.at](http://www.seri.at); [www.gws-os.de](http://www.gws-os.de)**

**[www.materialflows.net](http://www.materialflows.net)**

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