

From MFA to SEEA to SMM

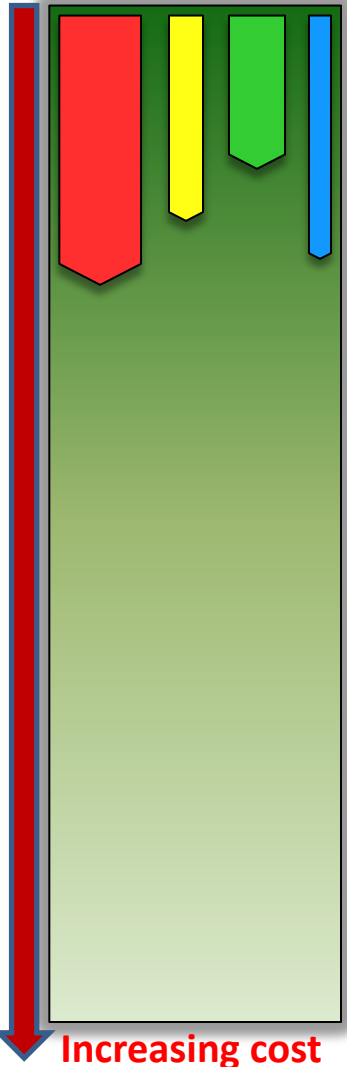
Material Sado-Masochism for Beginners

Simon Upton

*Director
OECD Environment Directorate*

A story of industrial entropy

Resource Stocks



Reservoirs

Atmosphere

49 Gt of GHG

Water

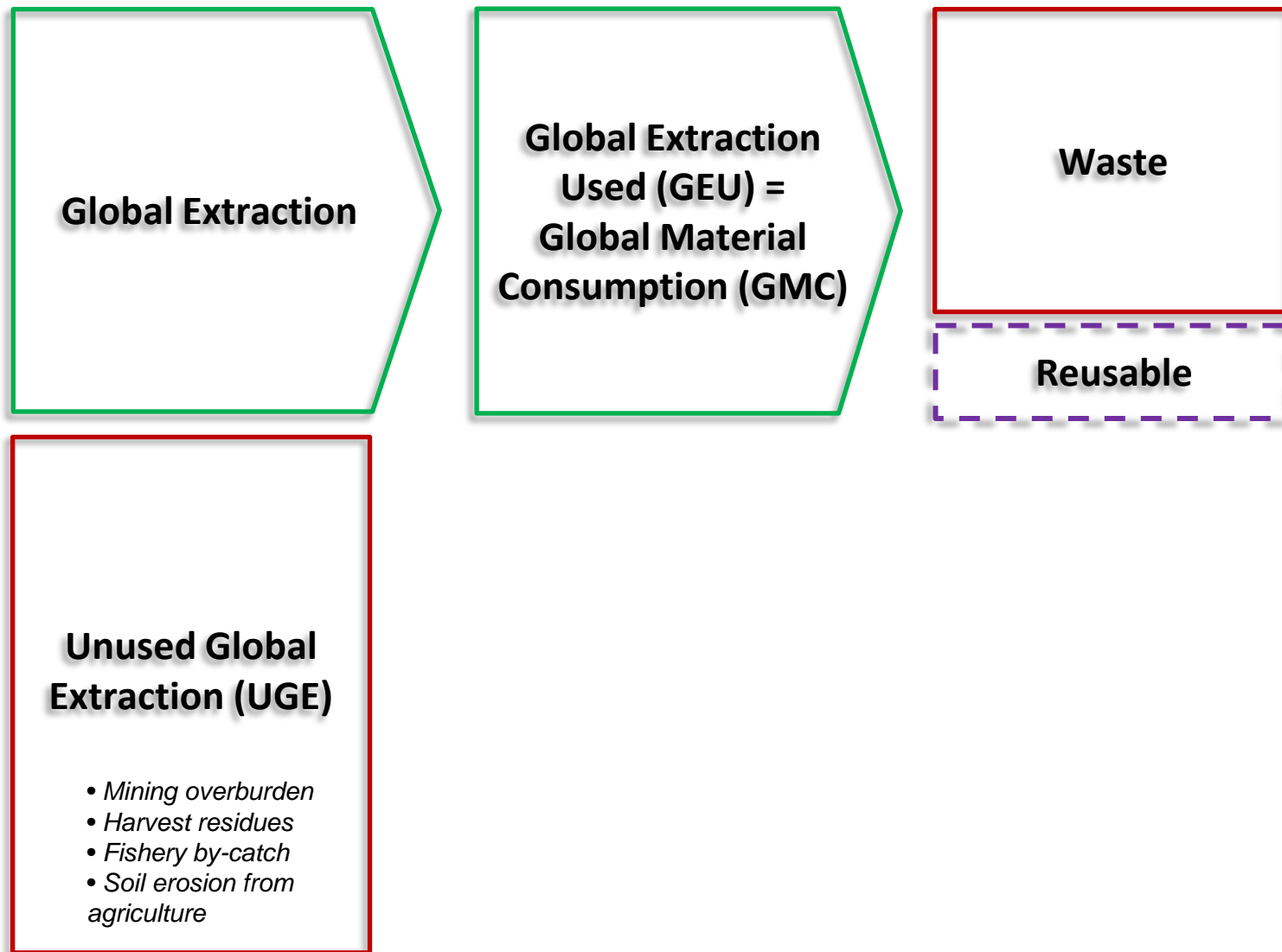
22 Mt of P

Terrestrial

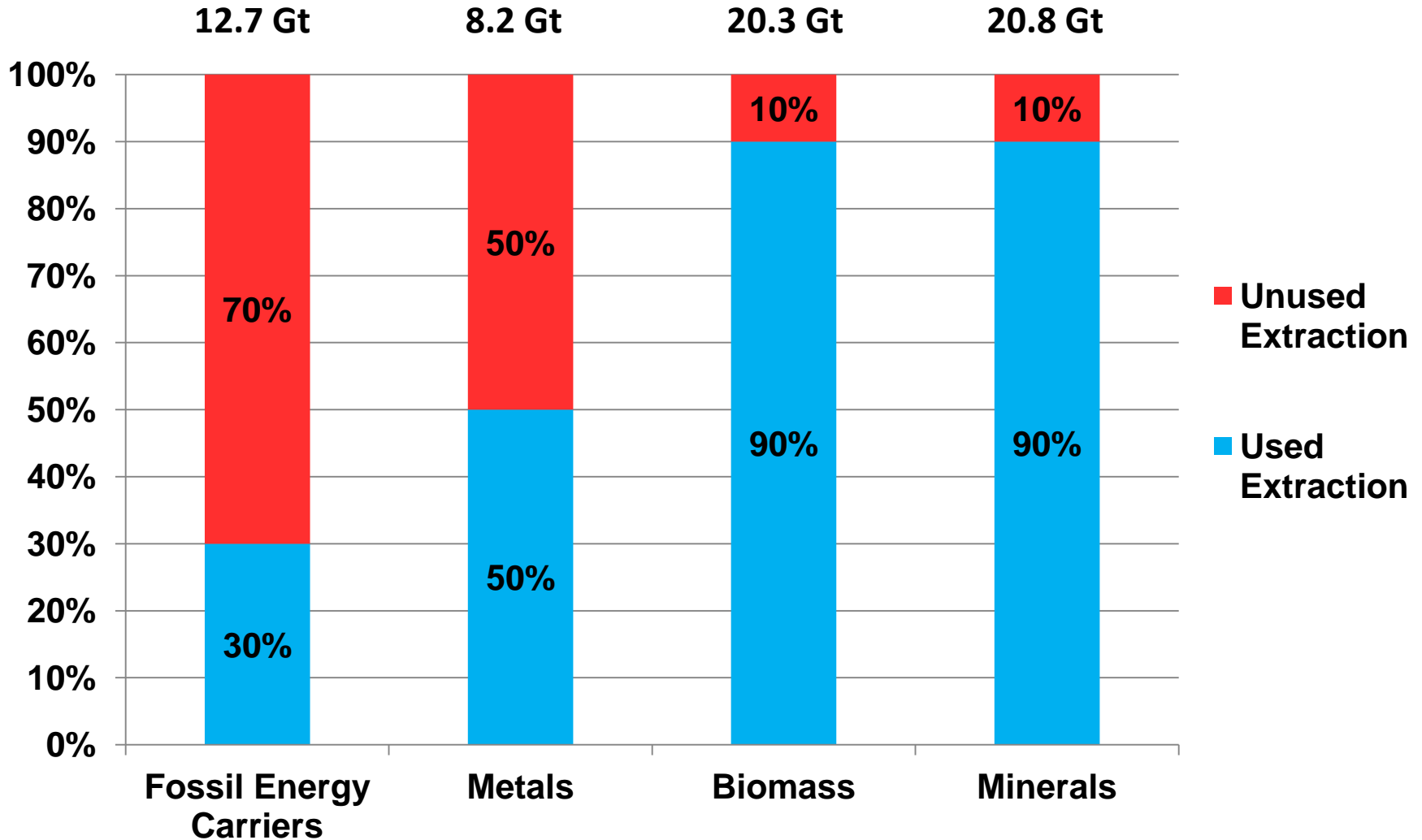
12 Gt of Waste



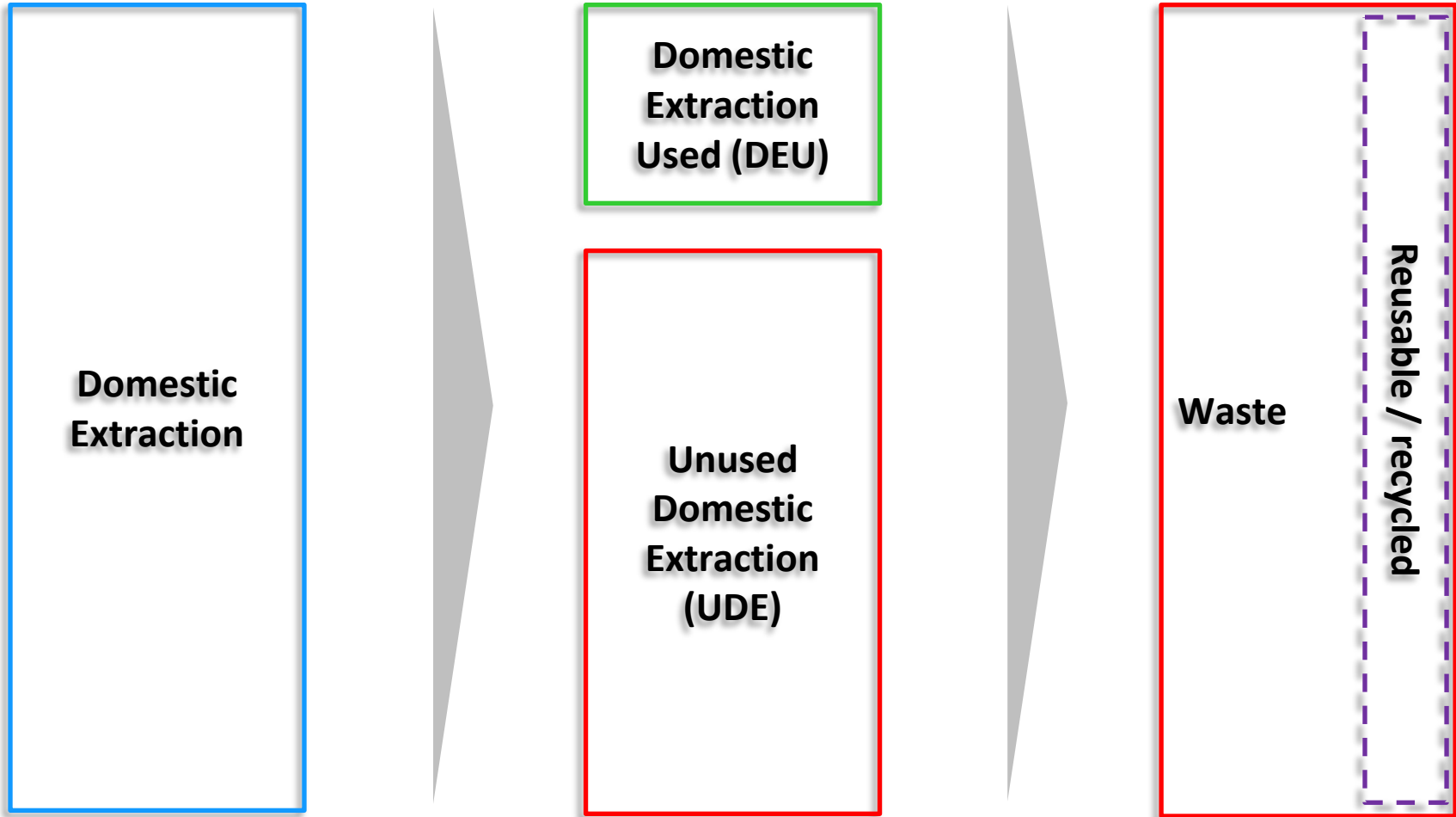
Source: OECD/IEA data, OECD Materials Report



62 Gt of material resources extracted in 2008



Source: OECD Material Flow Analysis Data, SERI



**Domestic
Extraction**

**Domestic
Extraction
Used (DEU)**

**Unused
Domestic
Extraction
(UDE)**

Waste

**Reusable /
recycled**

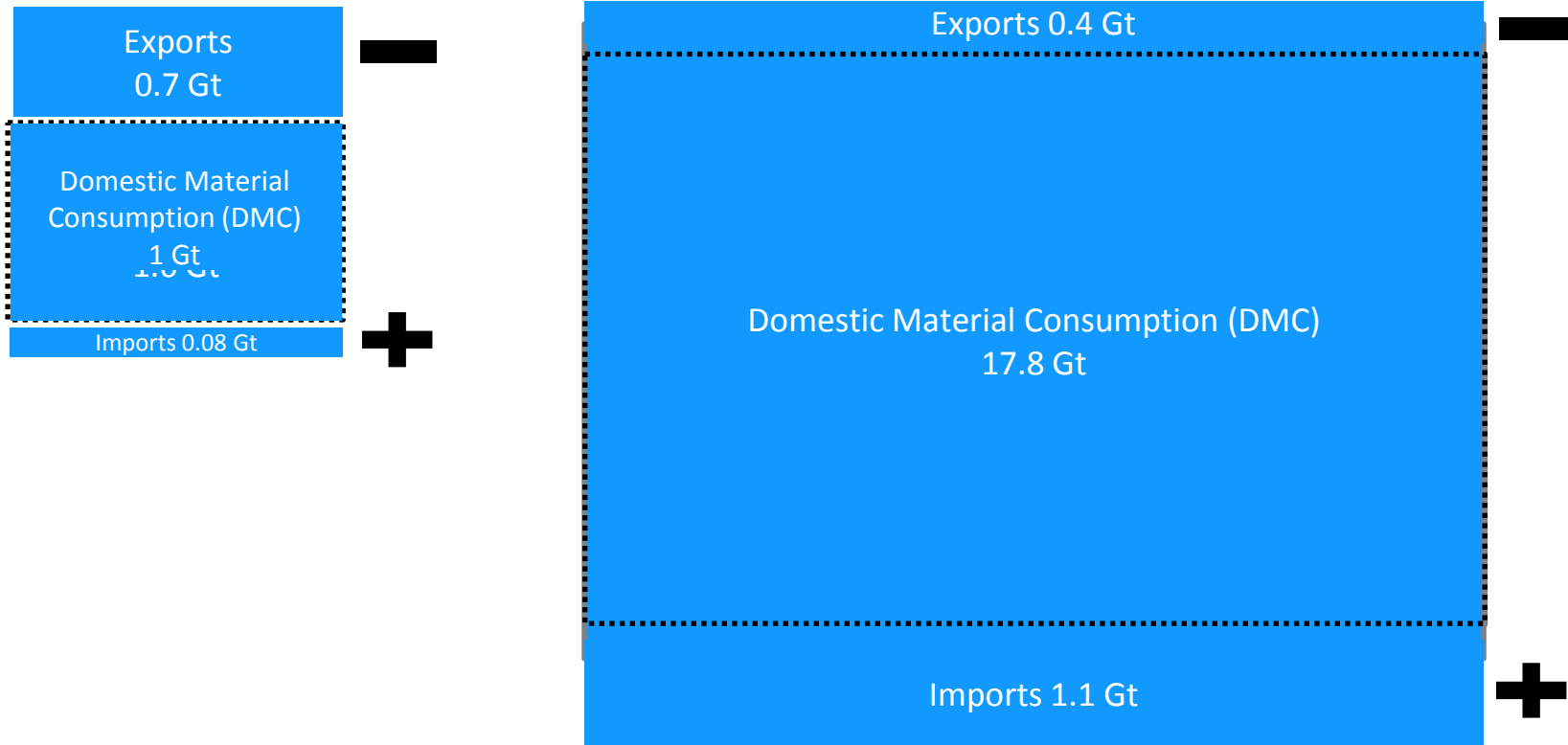
But nations trade; from DEU to DMC



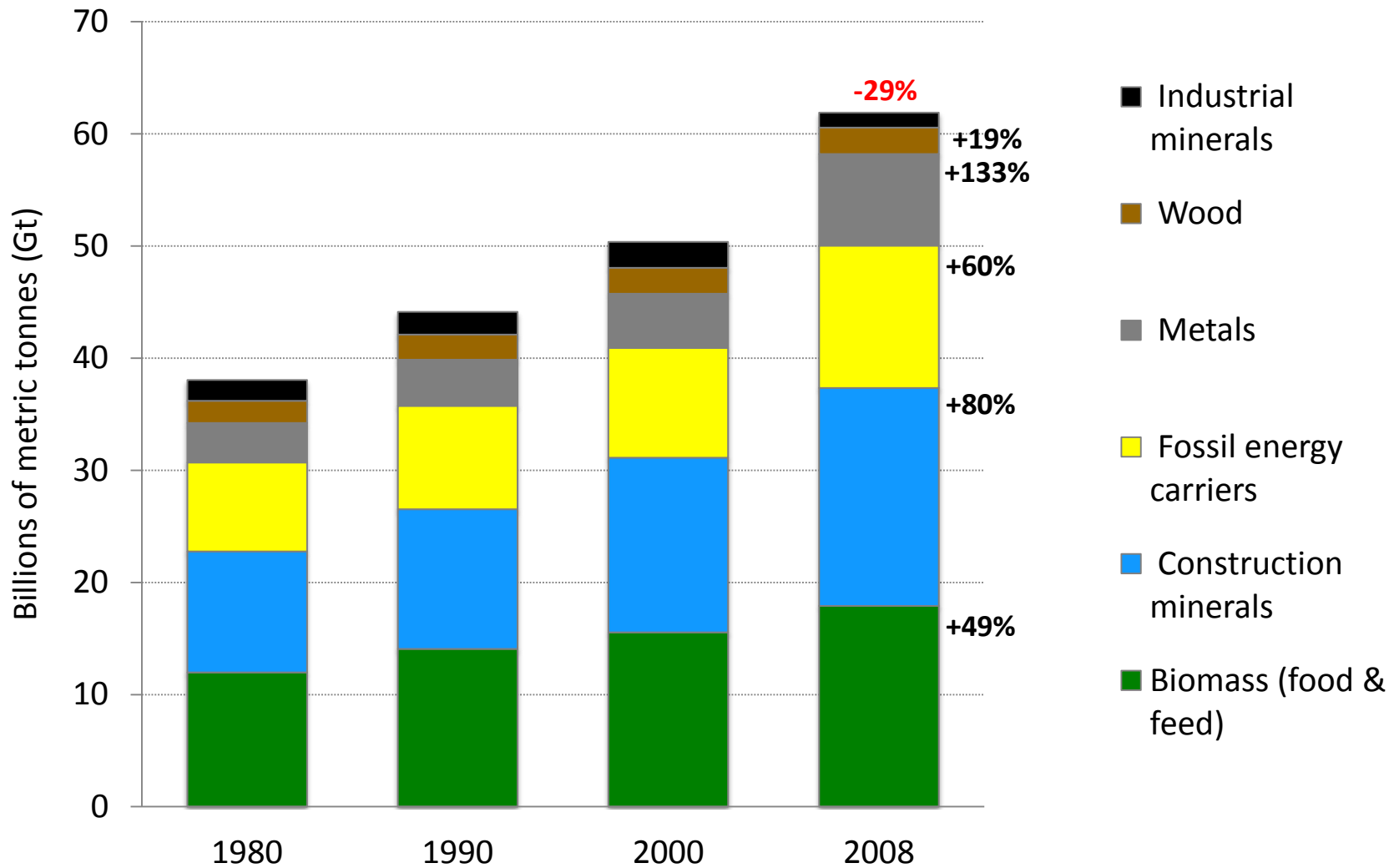
Australia



China

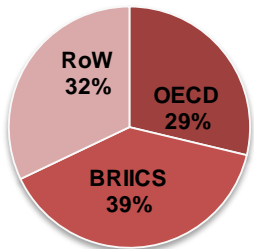


Source: OECD computations based on UN COMTRADE data.



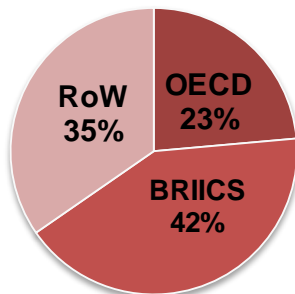
Source: OECD Material Flow database and SERI (Sustainable Europe Research Institute)

Biomass
16.3 billion tonnes



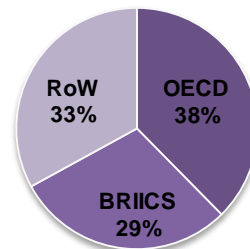
1990

Biomass
20.2 billion tonnes



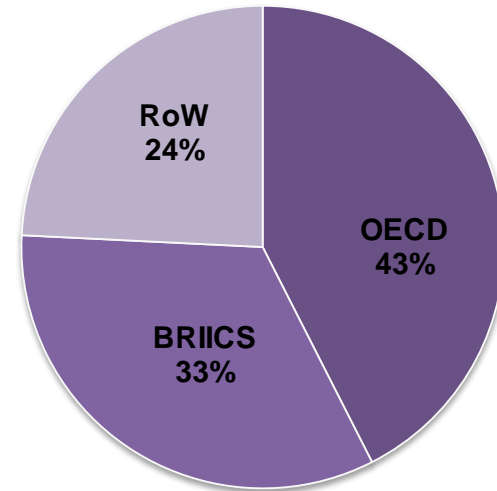
2008

Metals
4.1 billion tonnes



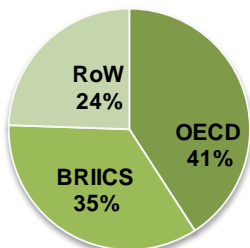
1990

Metals
8.2 billion tonnes

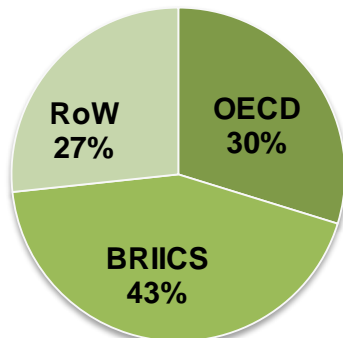


2008

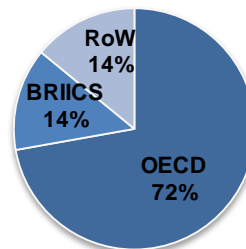
Fossil fuels
9.2 billion tonnes



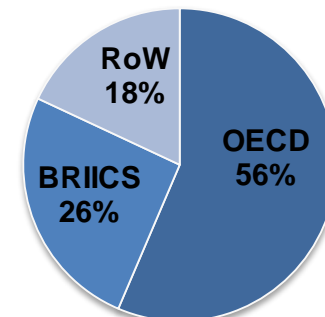
Fossil fuels
12.7 billion tonnes



Minerals
14.5 billion tonnes

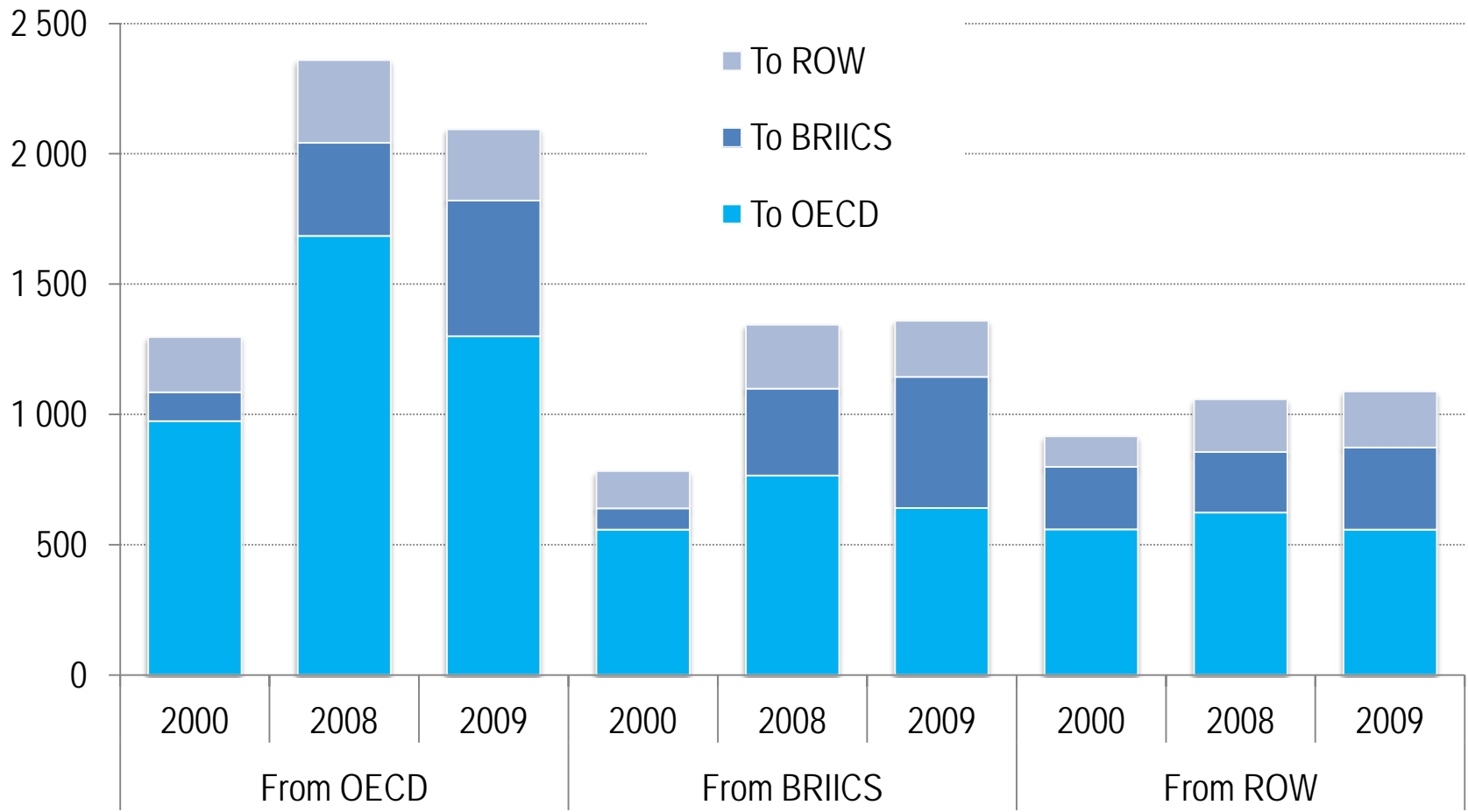


Minerals
20.8 billion tonnes



Source: OECD Material Flow database and SERI (Sustainable Europe Research Institute)

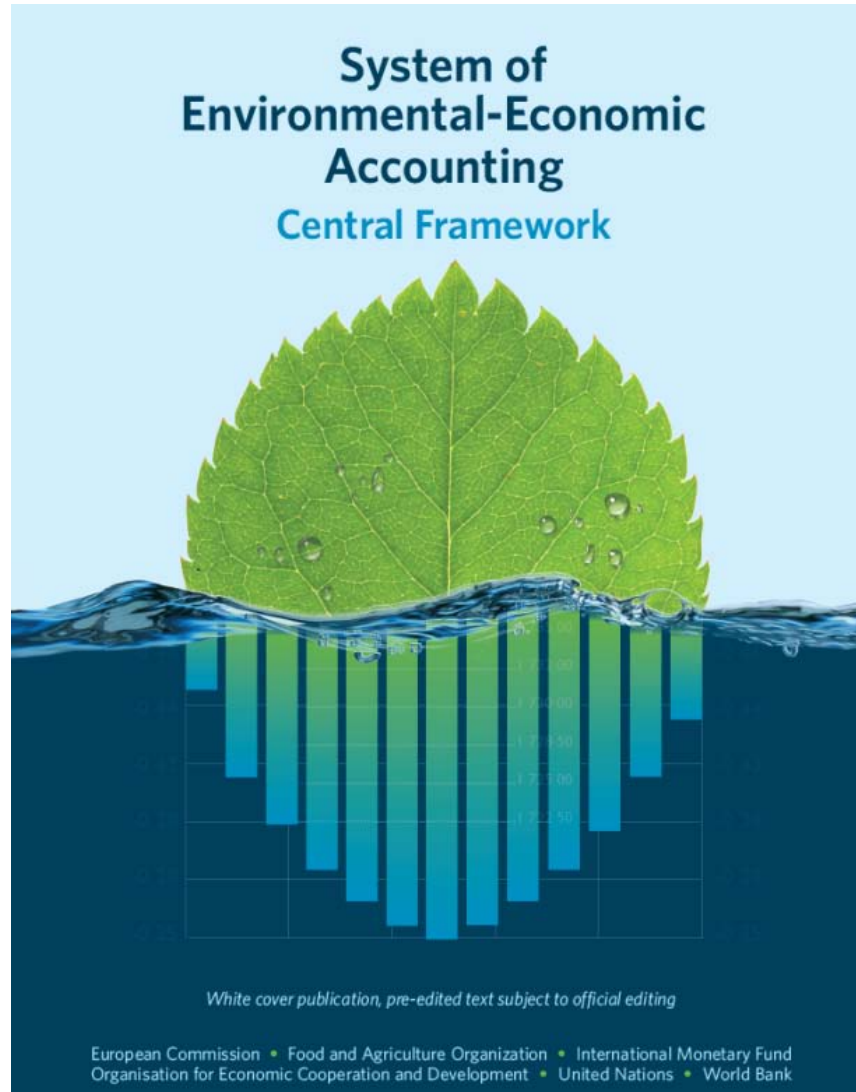
Total material exports, Million tonnes

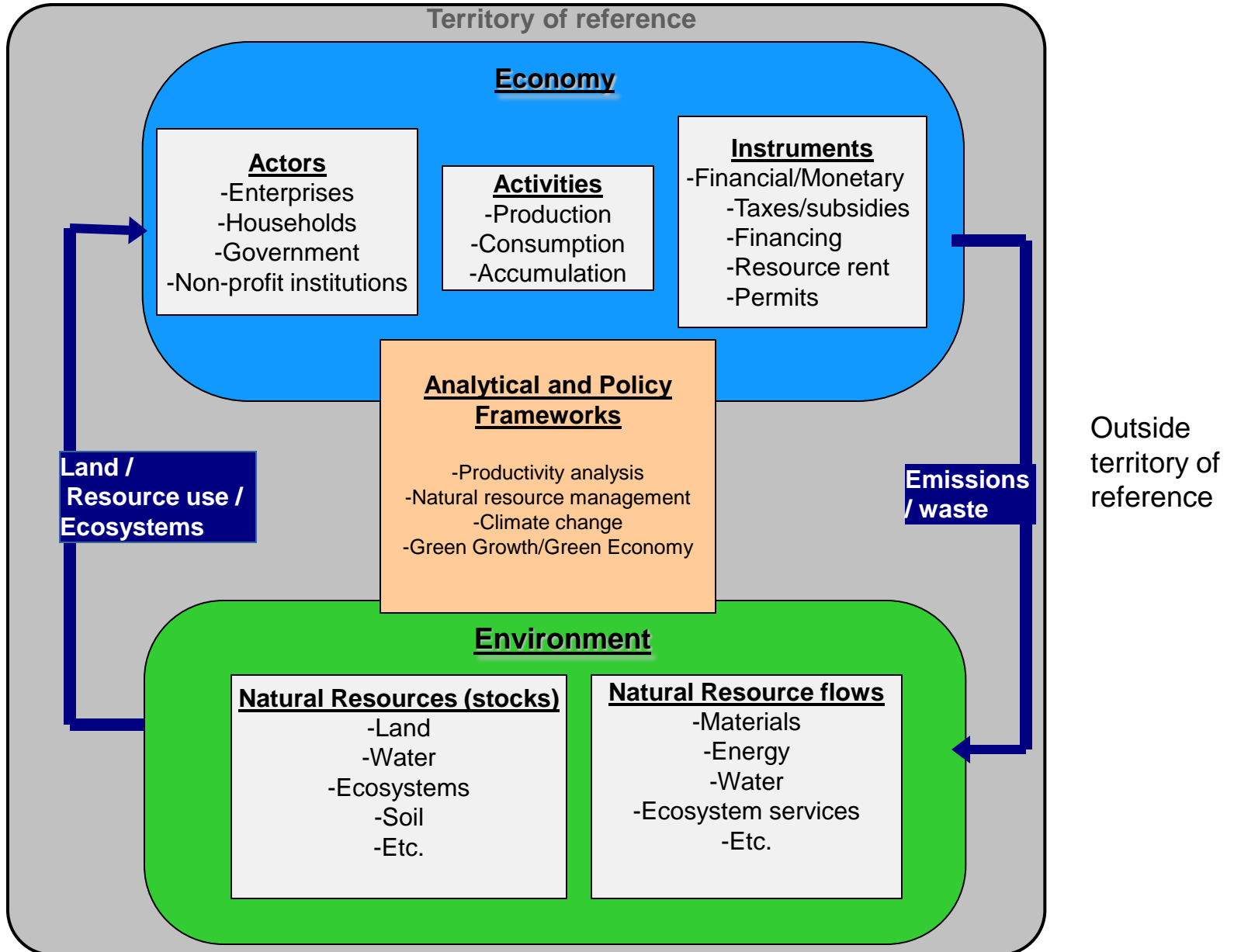


Source: OECD Material Flow database and SERI (Sustainable Europe Research Institute)



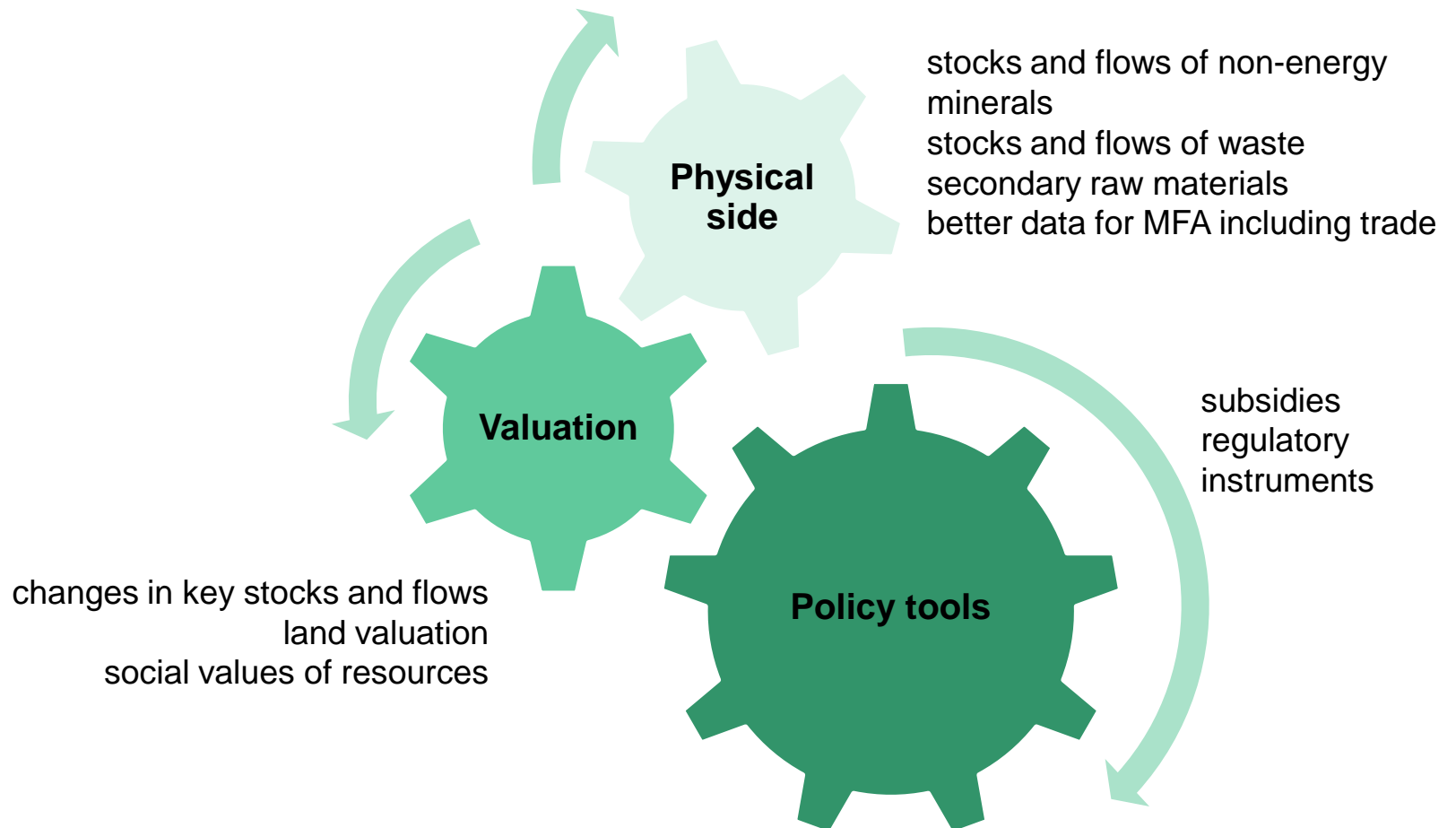
The System of Environmental-Economic Accounting (SEEA) – A framework for measuring interactions between the environment and the economy



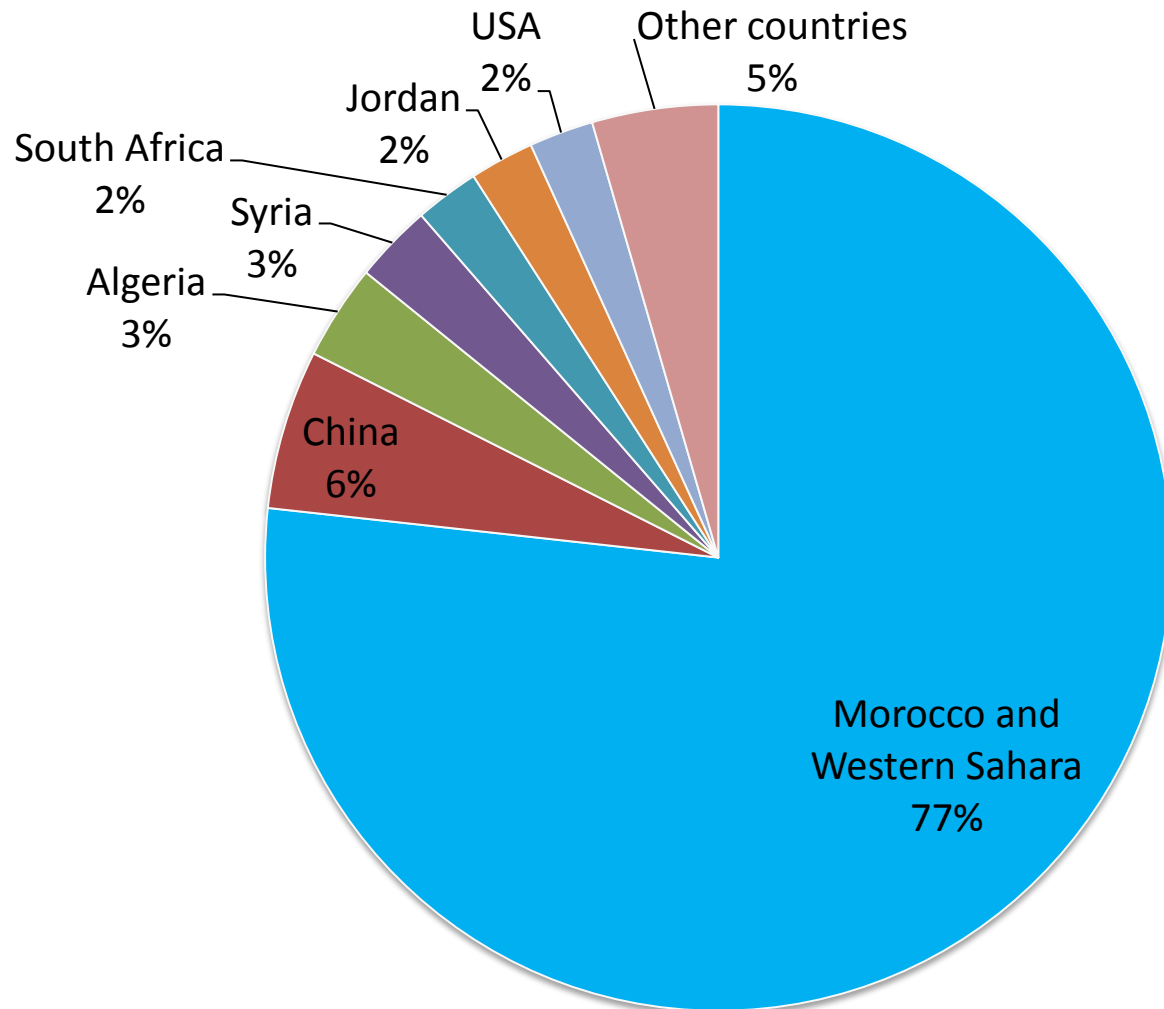


SEEA Central Framework was **adopted** as the international statistical standard in 2012;
Efforts are needed to **implement** it to ensure consistency and comparability of measures.

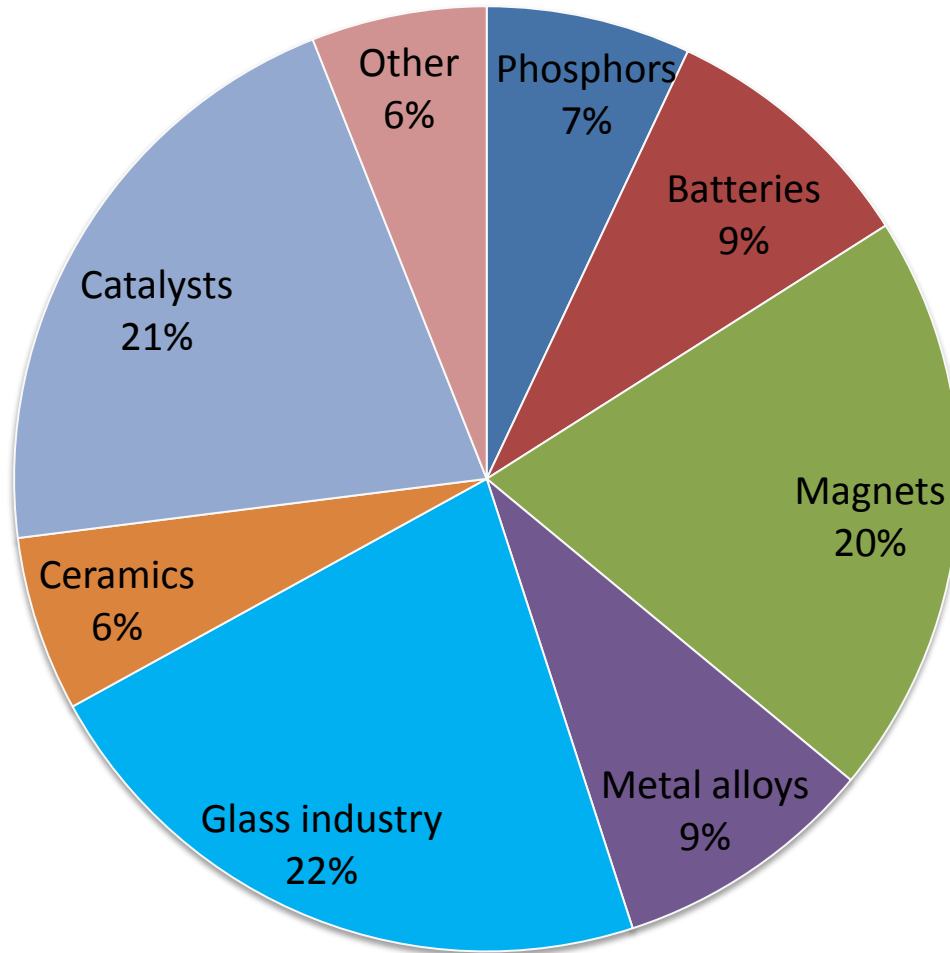
More and **improved** data are needed on...



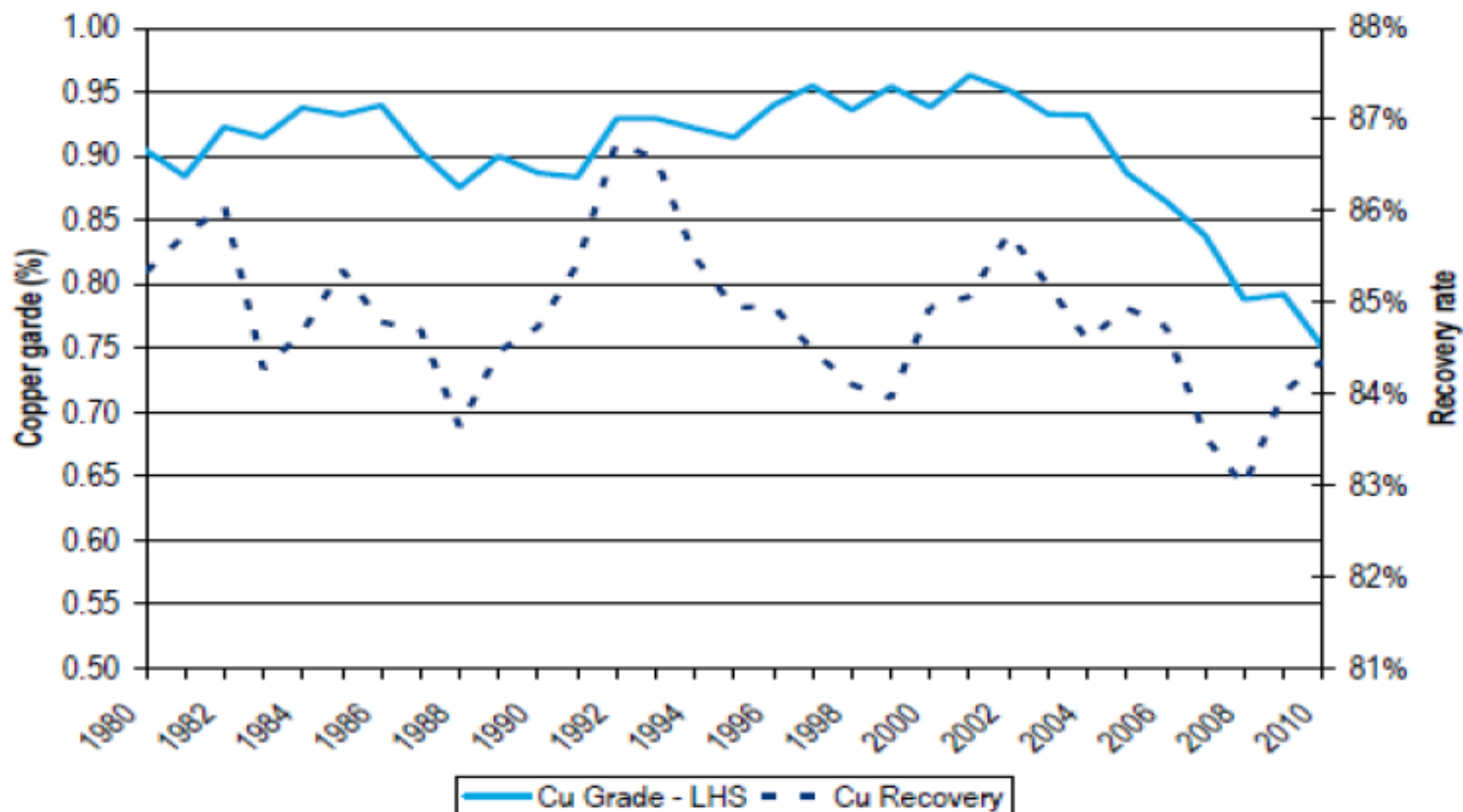
Global distribution of phosphate rock reserves, 2010



Source: U.S. Geological Survey.

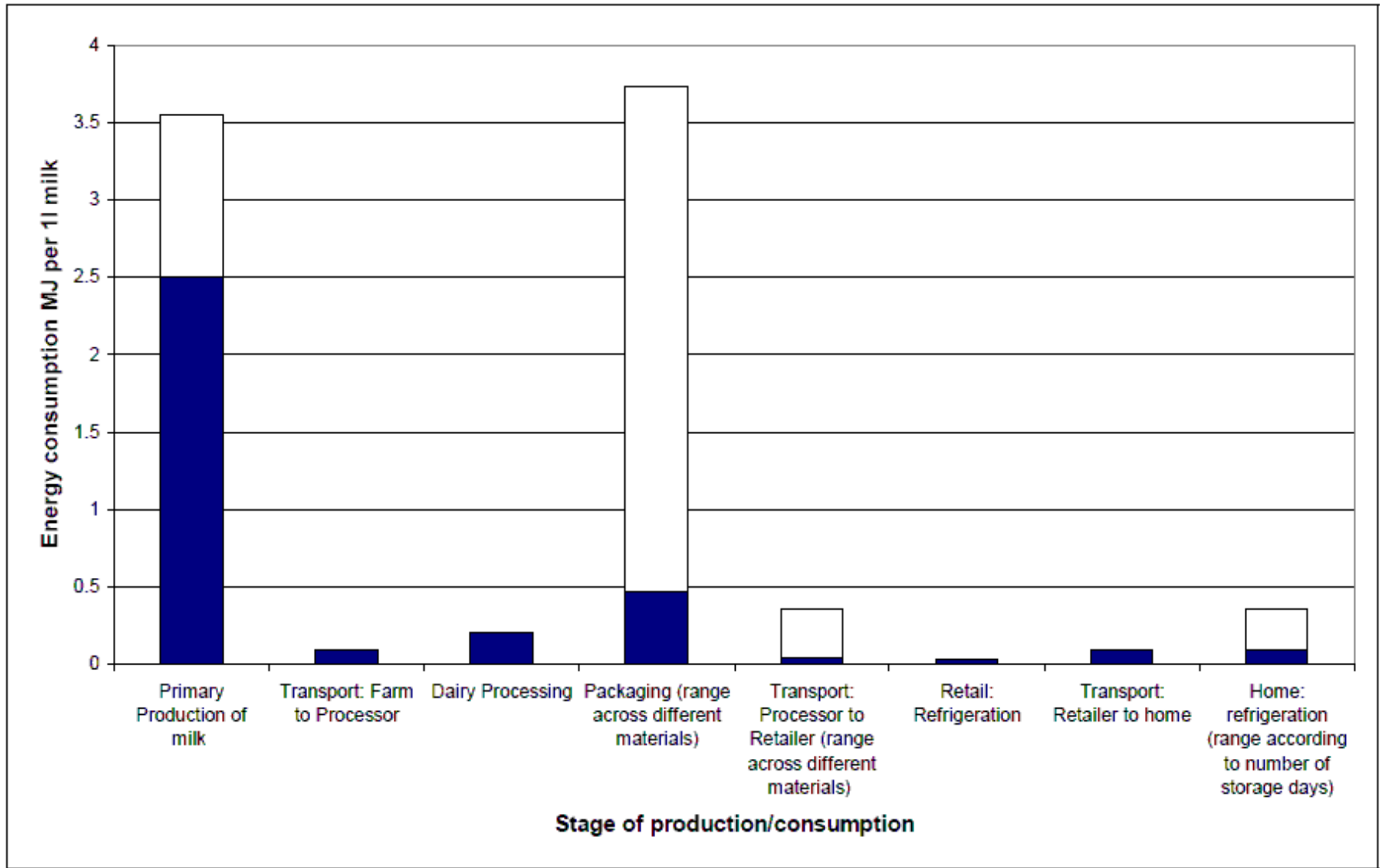


Source: Adapted from BGS (2010) and Goonan (2011).



Source: Citi 19 May 2011

Energy consumption across the conventional milk production and consumption system



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Thank you