



# Towards a fair allocation of raw material use for indicators of resource efficiency

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# Introduction

- Resource efficiency is a key objective of EU or global (UNEP) policies on raw materials (create more value per unit mass of raw material used)
- Policies need indicators to help monitor progress and to guide future policy changes
- Resource Productivity has been selected as a key indicator of resource efficiency



$$RP = \frac{GDP}{DMC}$$

RP = Resource Productivity

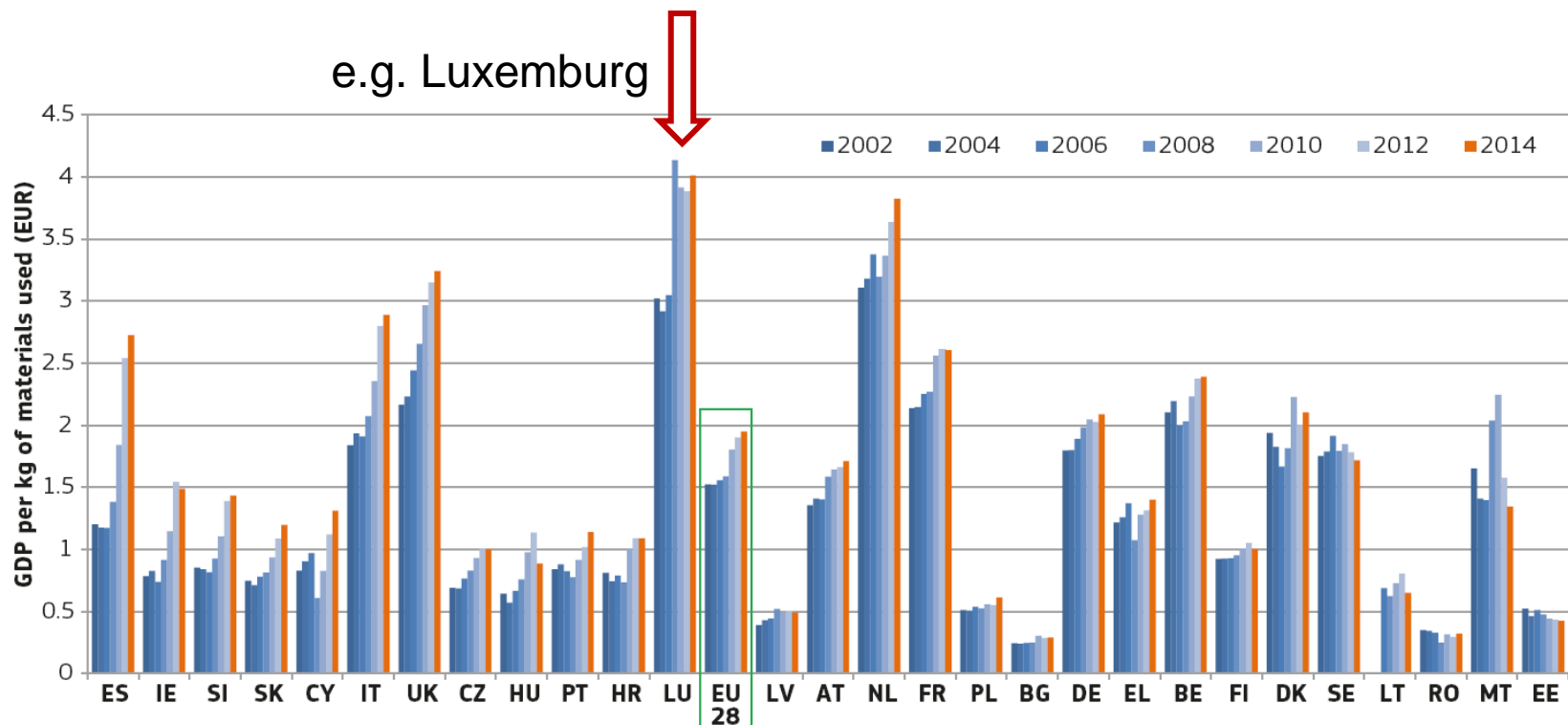
GDP = Gross Domestic Product

DMC = Domestic Material Consumption

- This presentation looks at the implications of different definitions of raw material use for estimates of Resource Productivity

## The « problem » with DMC

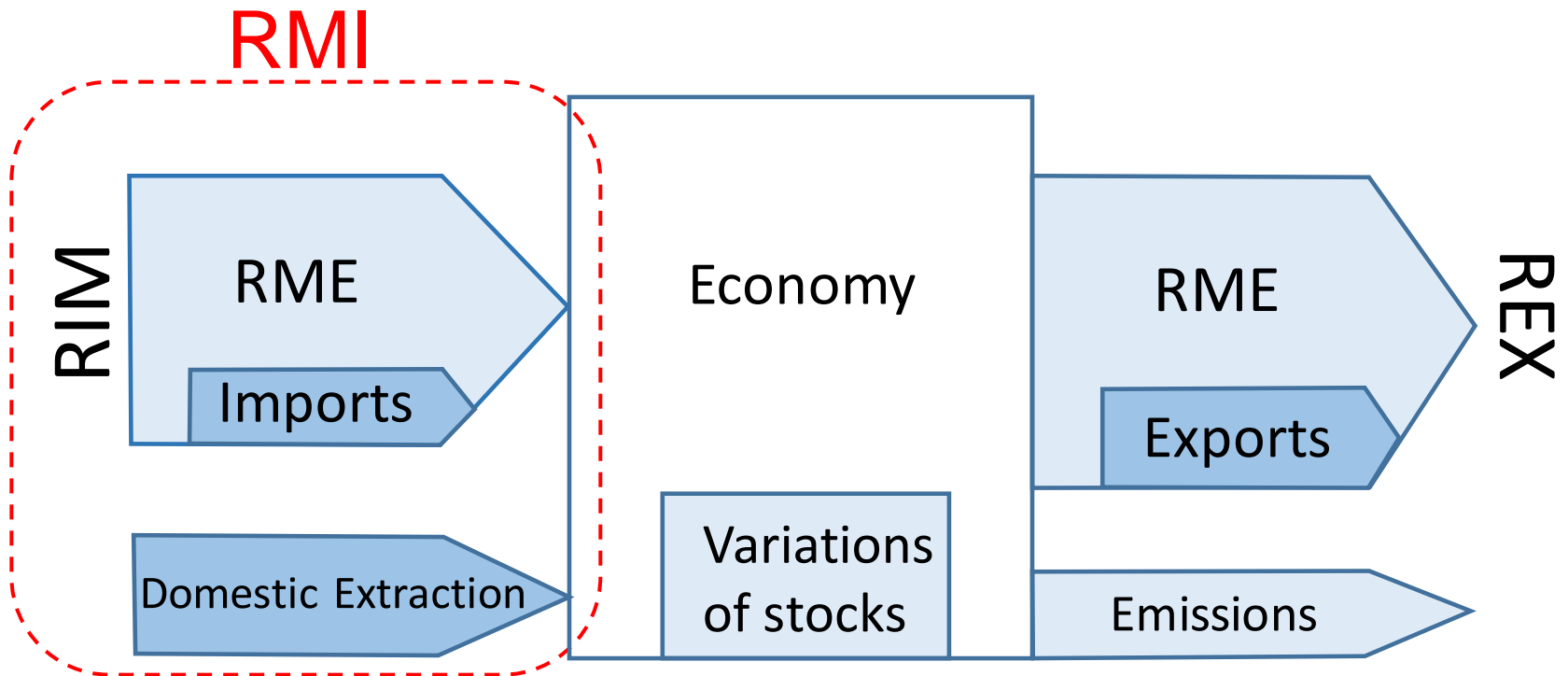
- DMC does not take into account **upstream material flows** involved in producing products (“embedded” material consumption)
- So with DMC, the countries that « look best » in terms of Resource Productivity, are those that rely the most on imports



**Source:** EU resource efficiency scoreboard 2015 (European Commission)

## The « RME » solution

- EUROSTAT, UNEP, etc. are well aware of this problem and a number of research groups have defined indicators and generated data based on so-called “Raw Material Equivalents” (RME)



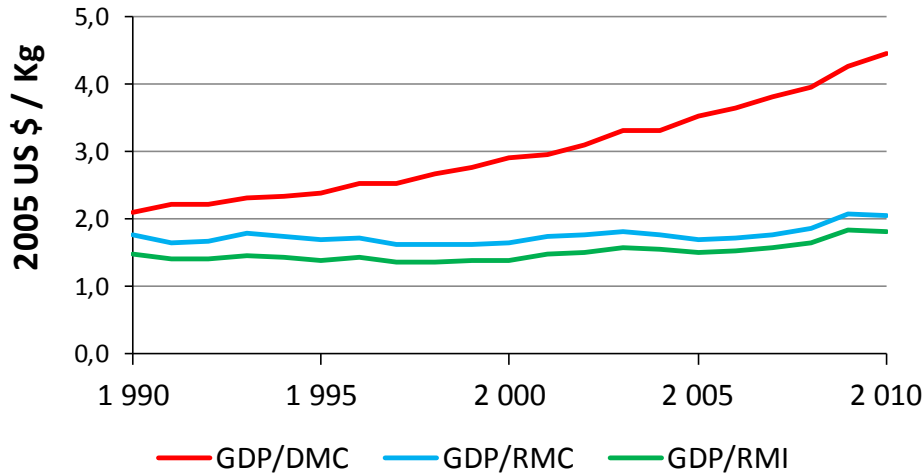
Domestic Material Consumption (DMC) = Domestic Extraction + Imports – Exports

Raw Material Consumption (RMC) = Domestic Extraction + RIM – REX

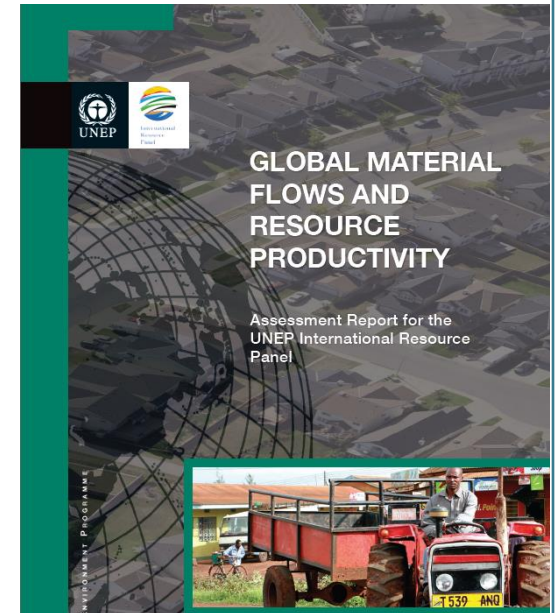
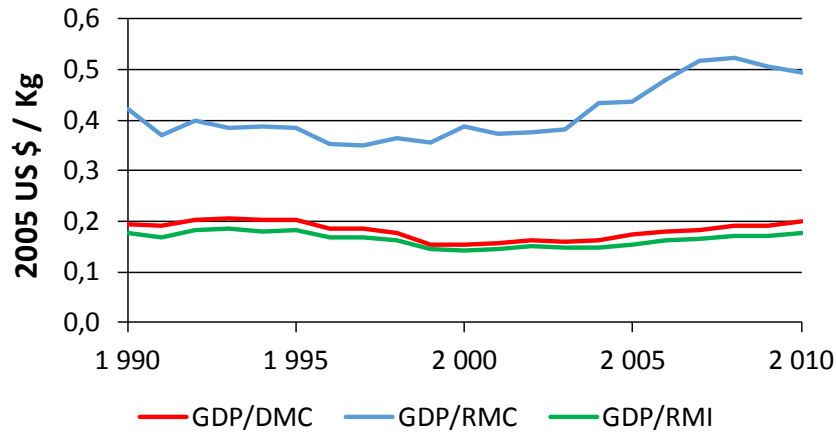
Raw Material Input (RMI) = Domestic Extraction + RIM

# Comparing Resources Productivities

## United Kingdom

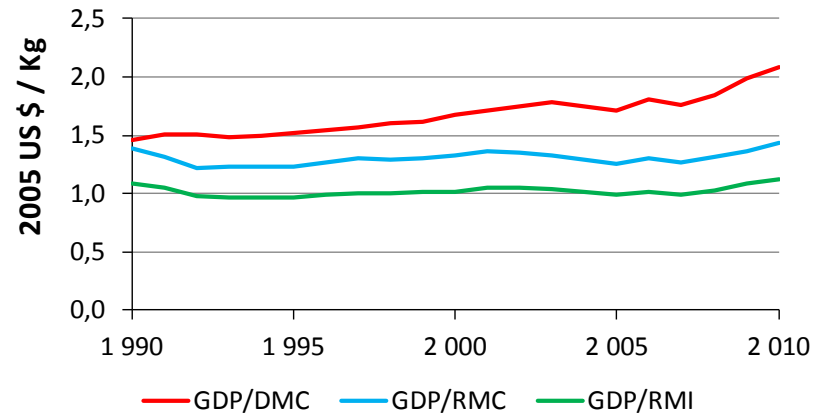


## Chile



<http://uneplive.unep.org/material#>

## EU-28



## Conclusions

- Calculating Resource Productivity based on Domestic Material Consumption (DMC) tends to favour countries that rely extensively on imports for their raw materials (not very “fair” or even meaningful), as DMC leaves the upstream material consumption to the exporting countries.
- Raw Material Consumption (RMC) accounts for upstream material flows involved in producing products. It is a much “fairer” indicator of material consumption for defining resource productivity. However, RMC tends to favour countries that are net exporters of raw materials, because they “get rid” of their domestic extraction in their RME-extended Exports
- As an alternative, we recommend using Raw Material Input (RMI) which is a measure of the quantities of raw materials used directly or indirectly by a country to create value (as reflected by GDP)
- Note that the German Resource Efficiency Programme (FME, 2016) has selected RMI as a basis for calculating Resource Productivity