

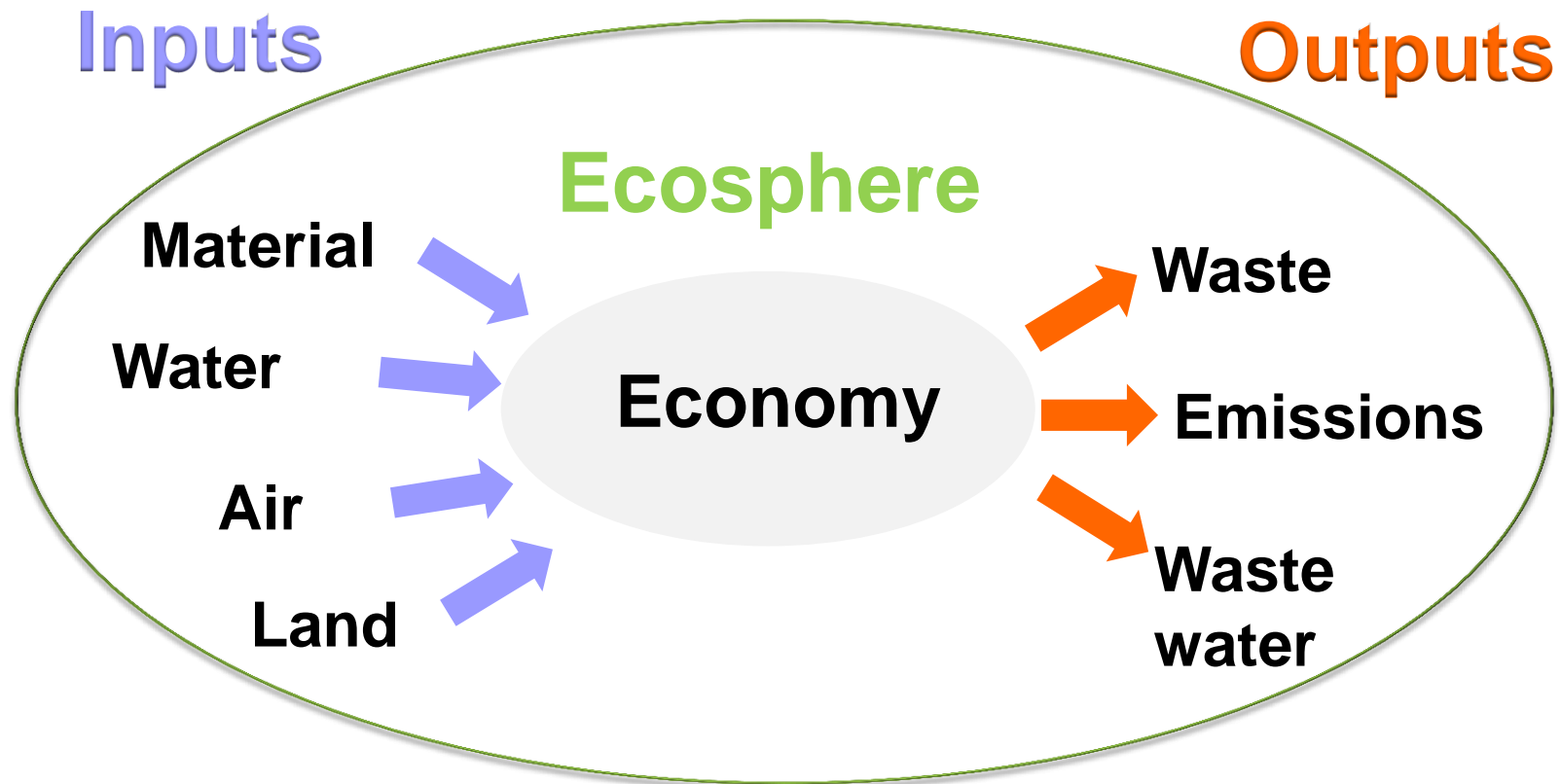
# Enhancing resource efficiency – a research perspective

**NETGREEN Thematic Policy Workshop  
11.03.15**

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Vienna University of Economics and Business**

- Why measuring resource use and efficiency?
- Four categories to measure resource use and efficiency
- Overview of state of the art of indicator
- Conclusions

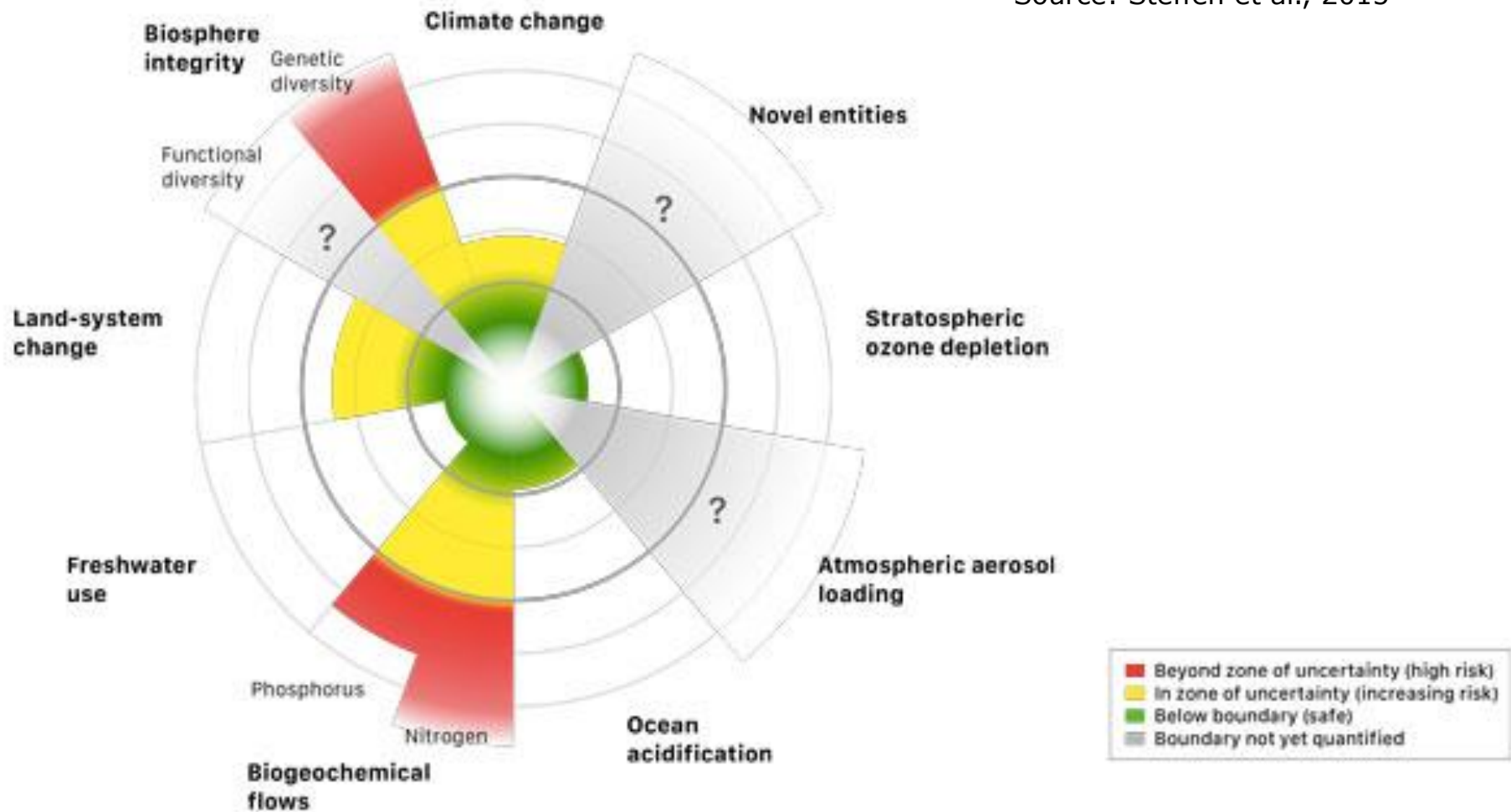
# Societal metabolism



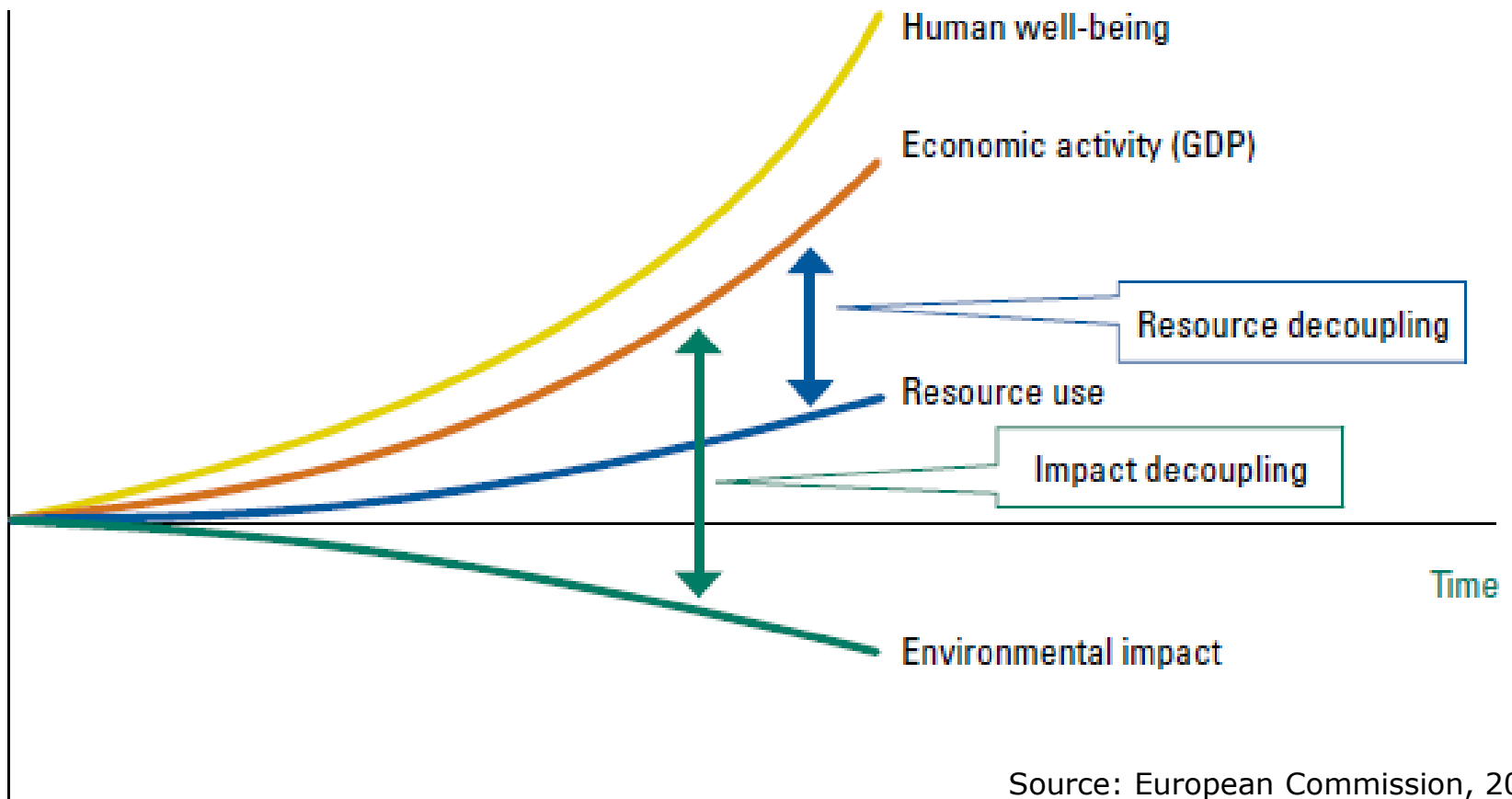
Environmental problems are the result of the quality and quantity of the societal metabolism.

# Societal metabolism

Source: Steffen et al., 2015



# Why resource efficiency?



# Main categories of resource use

**Abiotic materials (incl. fossil fuels)**

**Biotic materials**

**Water**

**Land area**

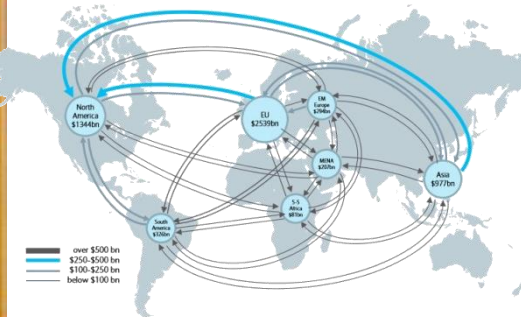
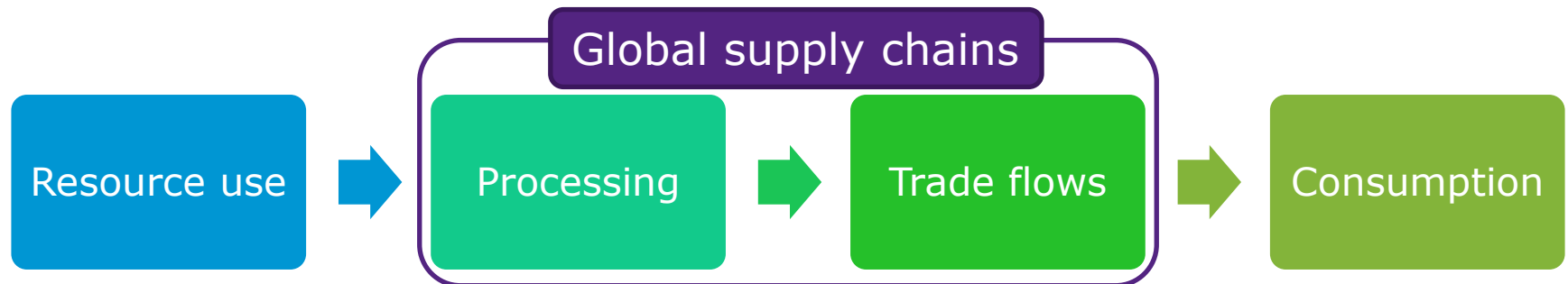
**Greenhouse gas emissions**

→ Taken up into the EC's „Roadmap for a resource efficient Europe“

# Territorial vs footprint-type indicators

	<b>Territorial Indicators (Production)</b>	<b>Footprint Indicators (Consumption)</b>
<b>Examples</b>	Water abstraction GHG Emissionen	Water Footprint Carbon Footprint
<b>Advantages</b>		
<b>Dis-advantages</b>		

# Including indirect flows



virtual resource flows



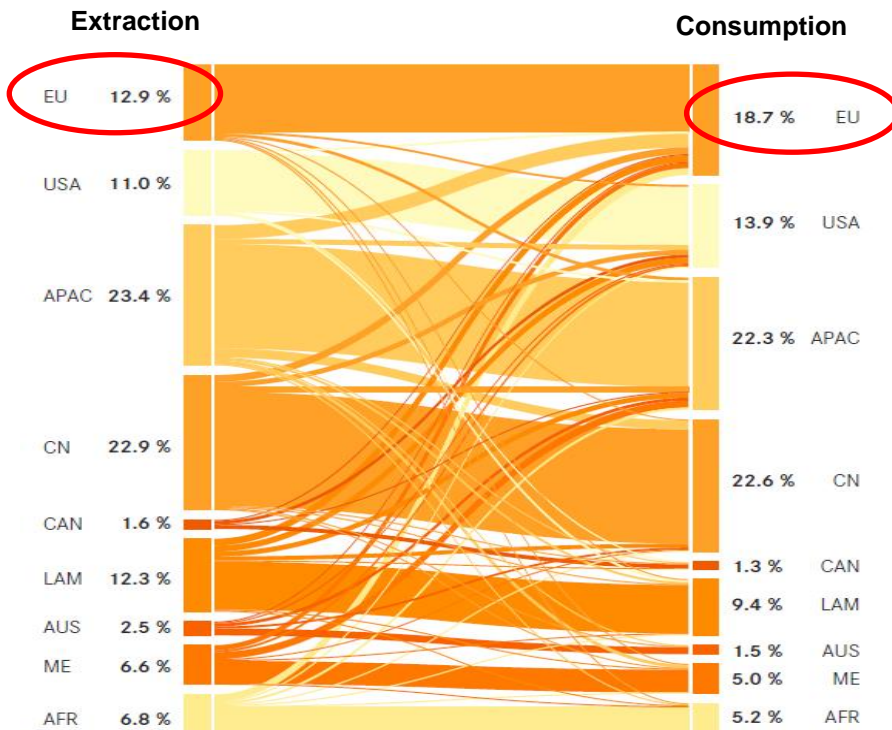


# Territorial vs footprint-type indicators

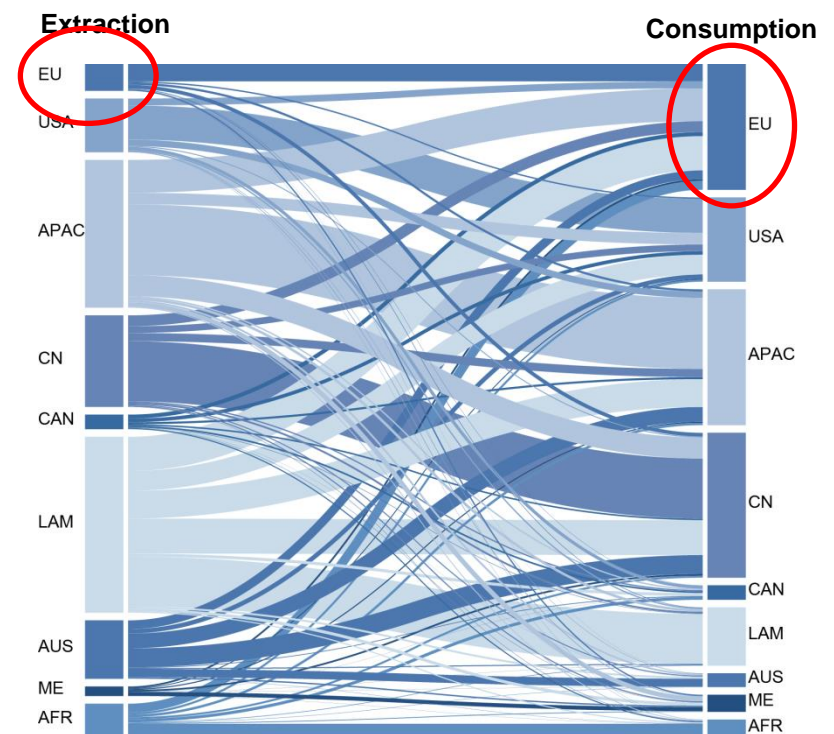
	<b>Territorial Indicators (Production)</b>	<b>Footprint Indicators (Consumption)</b>
<b>Examples</b>	Water abstraction GHG Emissionen	Water Footprint Carbon Footprint
<b>Advantages</b>	Solid data basis & data quality → high acceptance among statistical offices & policy makers	Illustrate global dimension → robust against outsourcing → increasing demand for solid results
<b>Dis-advantages</b>	Illustrate only national dimension → not robust against outsourcing	Data only via modelling approaches, little control of data quality → low acceptance among statistical offices & policy makers

# Four categories: materials

**All materials**  
(66 billion tonnes)



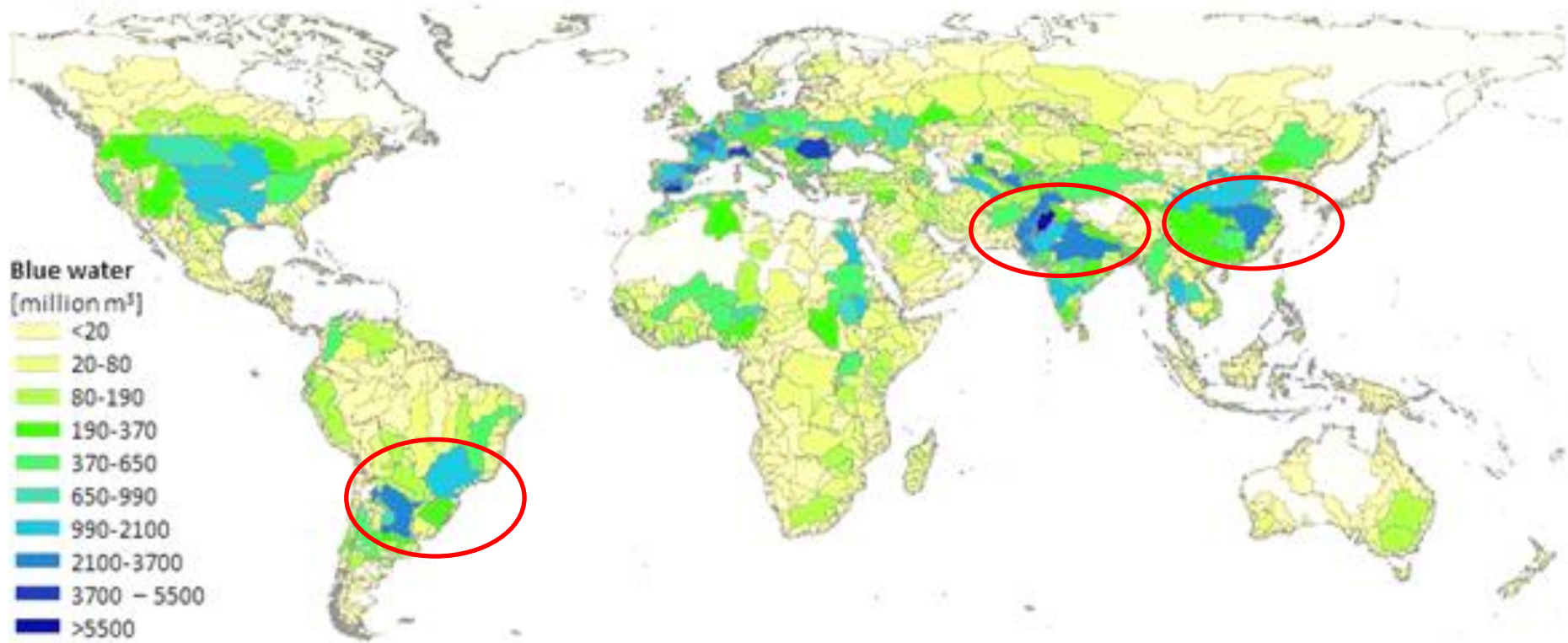
**Metals**  
(6,7 billion tonnes)



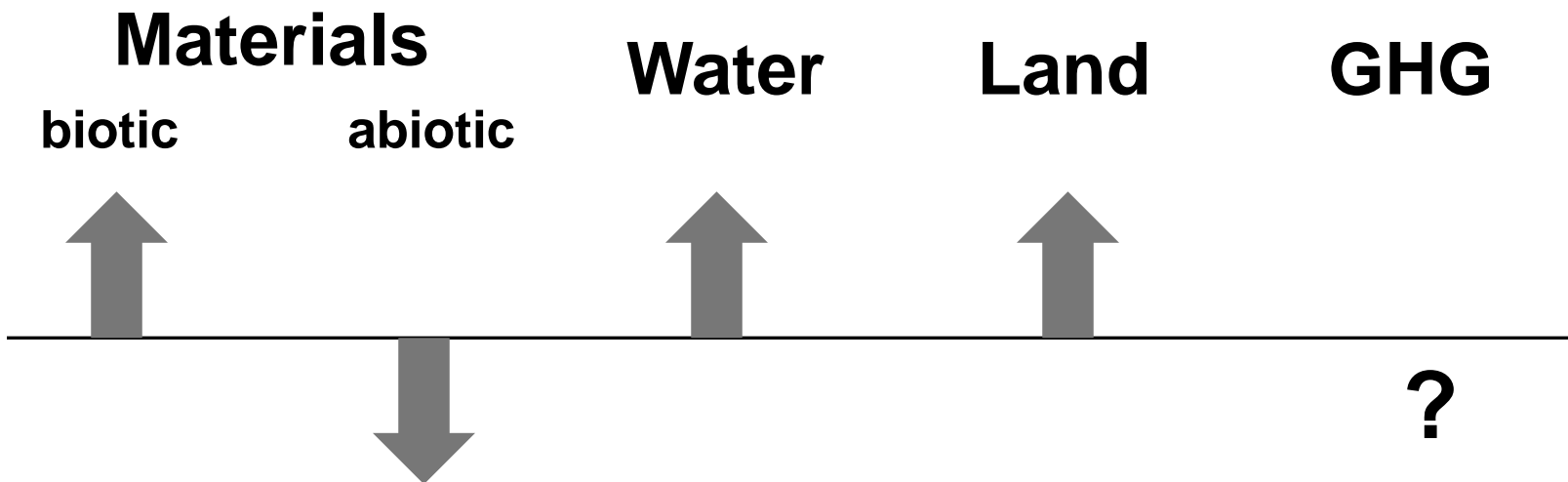
EU ... Europe; USA ... United States of America; APAC ... Asia/Pacific; CN ... China; CAN ... Canada;  
LAM ... Latin America; AUS ... Australia; ME ... Middle East; AFR ... Africa

# Four categories: water

Blue water consumption induced by EU27 final consumption in the year 2007



# Detecting trade-offs



# Conclusions

- “You can’t manage what you can’t measure.”
- Methodologies are at hand or in development to be applied on the national as well as global level for the four main categories.
- In some cases methodological harmonisation and data availability have to be improved.
- Research is ongoing on how to combine amounts of resources used with related environmental impacts.



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**Thank you for  
your attention!**