Kunnskap for en bedre verden

Circular economy measures for low-carbon lifestyles

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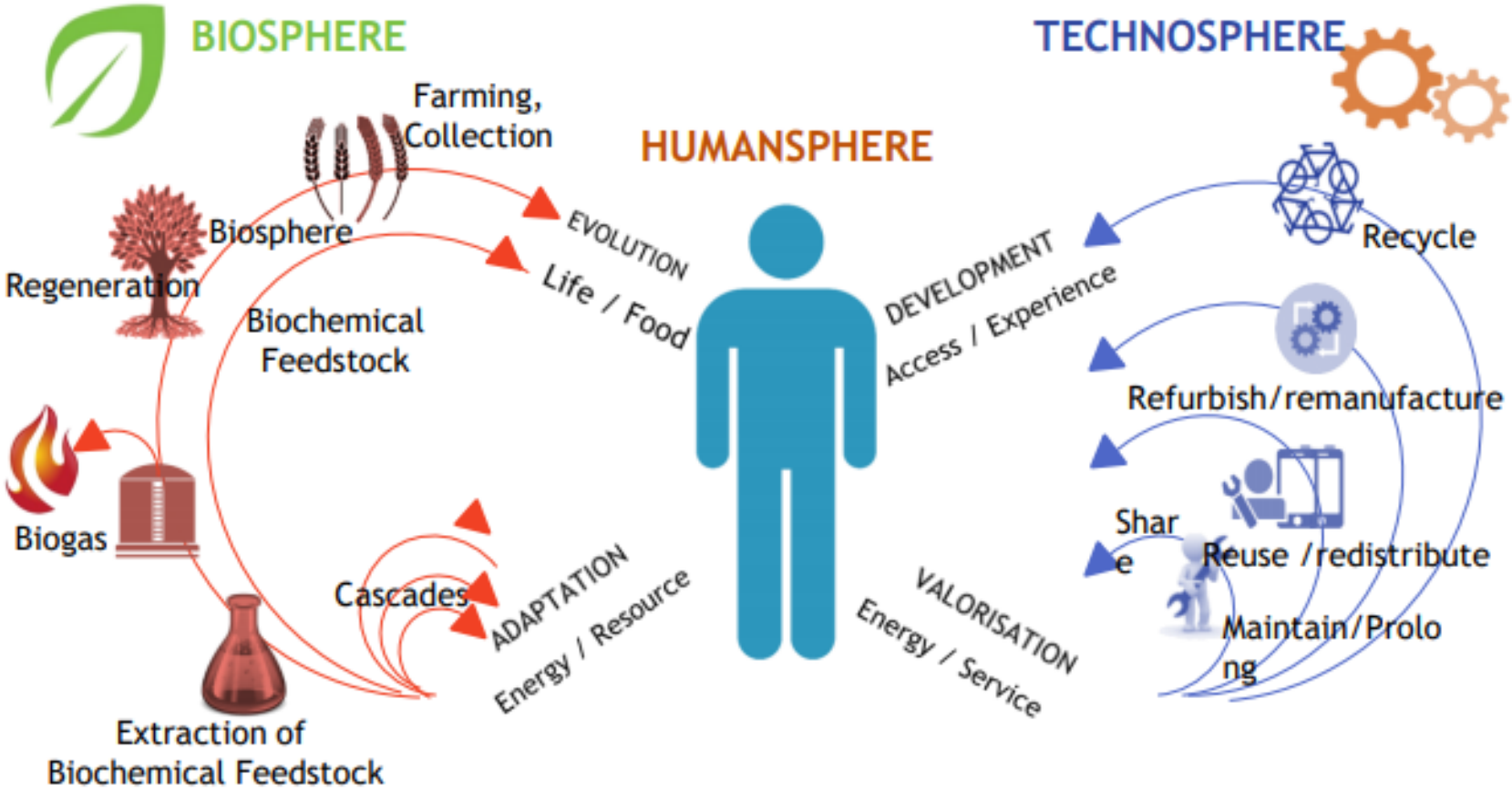
Circular economy measures for low-carbon lifestyles

- Assess the success of CE initiatives?
- Focus on service delivery/needs fulfillment
- Consider the full life-cycle & the societal impacts

ADAPTED "BUTTERFLY DIAGRAM"
INTEGRATING HUMAN FLOWS



The Golden Rule of priorities:

Natural Capital → Human Capital → Remanufactured Capital

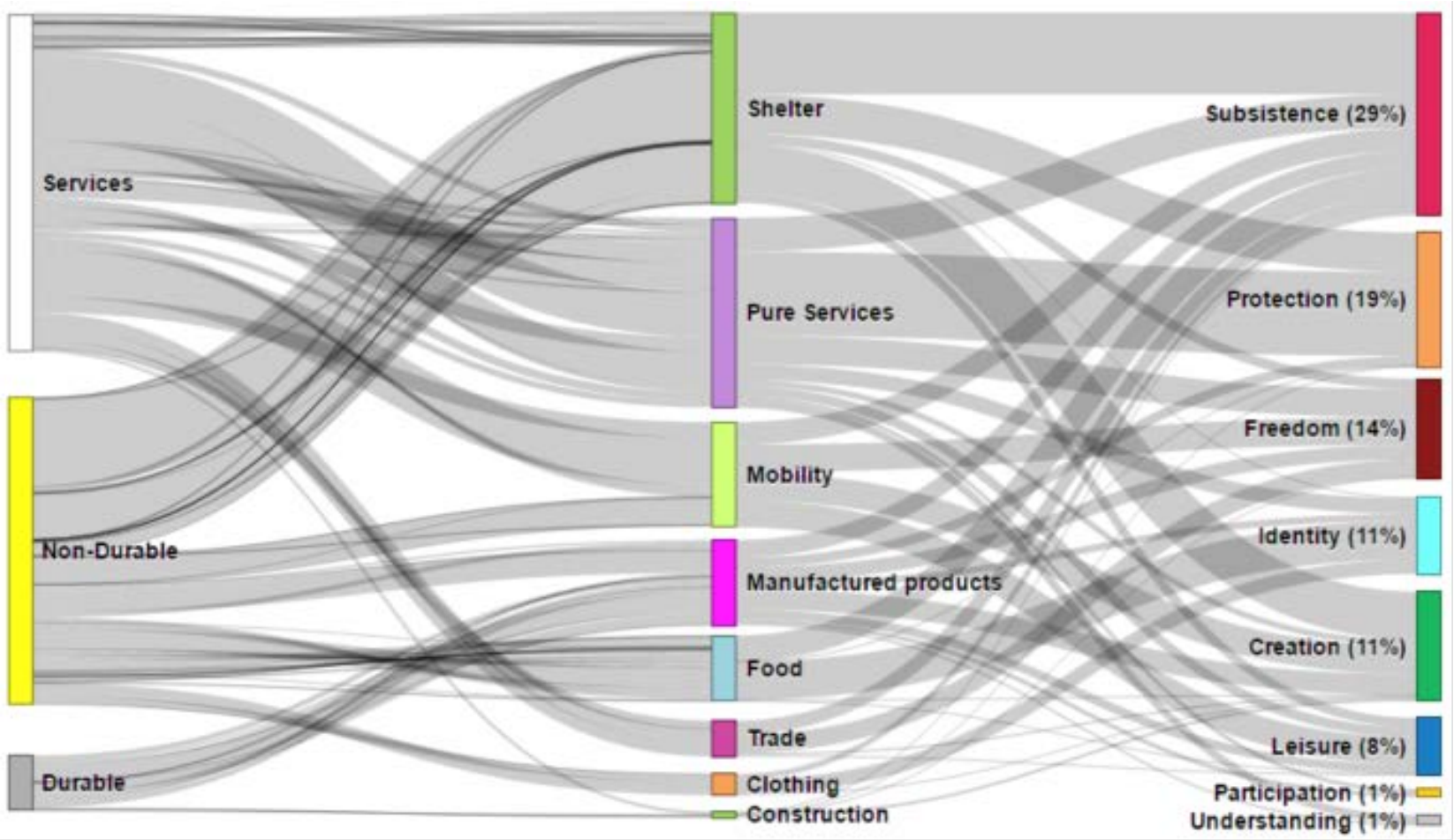
Source: A. Lemille, adapted from the "Butterfly Diagram" of the Ellen MacArthur Foundation

STRATEGIES

Needs are fixed and non-negotiable. Strategies to create satisfiers are negotiable and flexible. They can be sustainable or unsustainable.

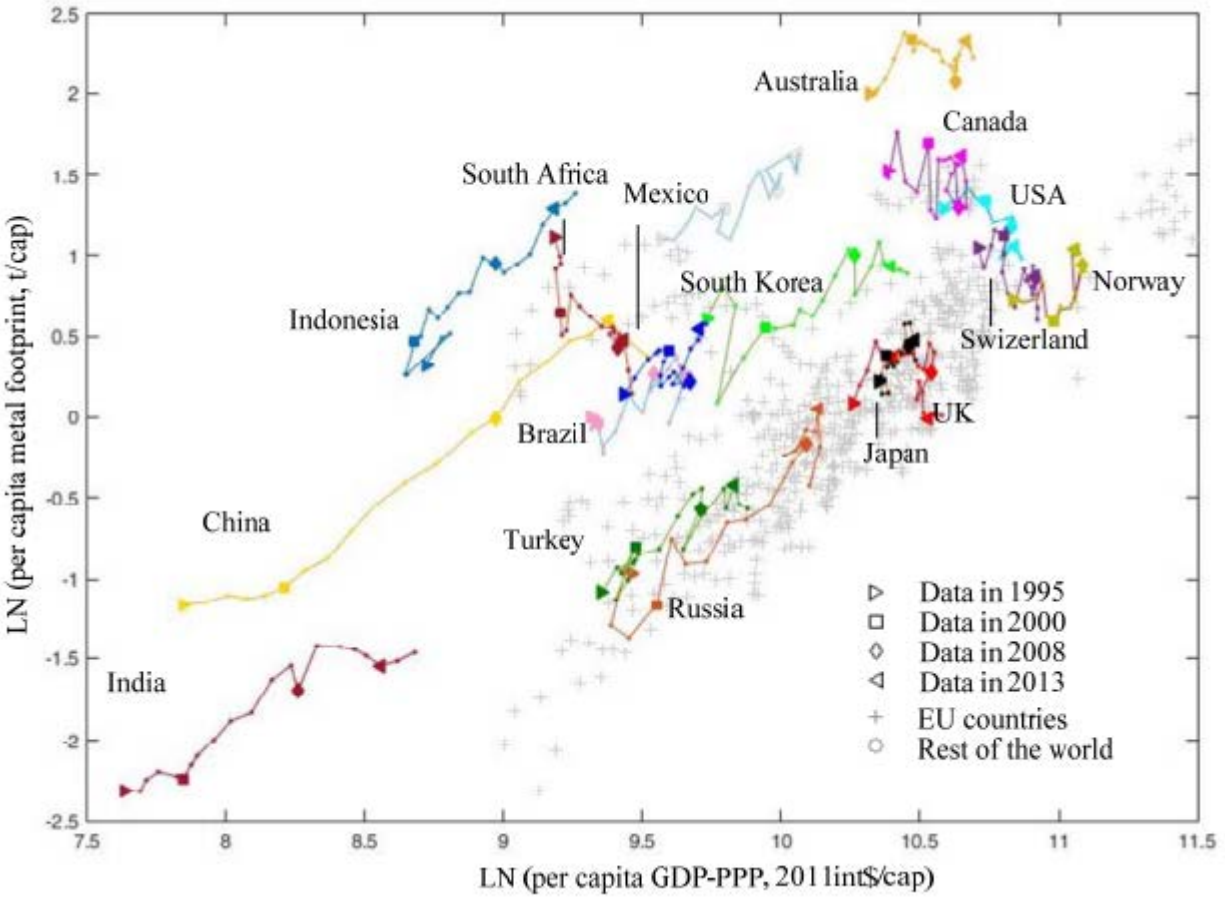
(Vita et al , 2018)

Impacts of Human needs



Impacts from different sectors to needs, Source: Vita et al 2018
See collaboration done with Ecofys on Circular Economy report, with the same for material resources

Metal footprint elasticity: 1.9



- Country patterns of per-capita metal footprint in the course of economic growth (GDP-PPP in 2011 int$/cap).
- Source: Zheng, et al, Nature Geoscience 11 (4), 269

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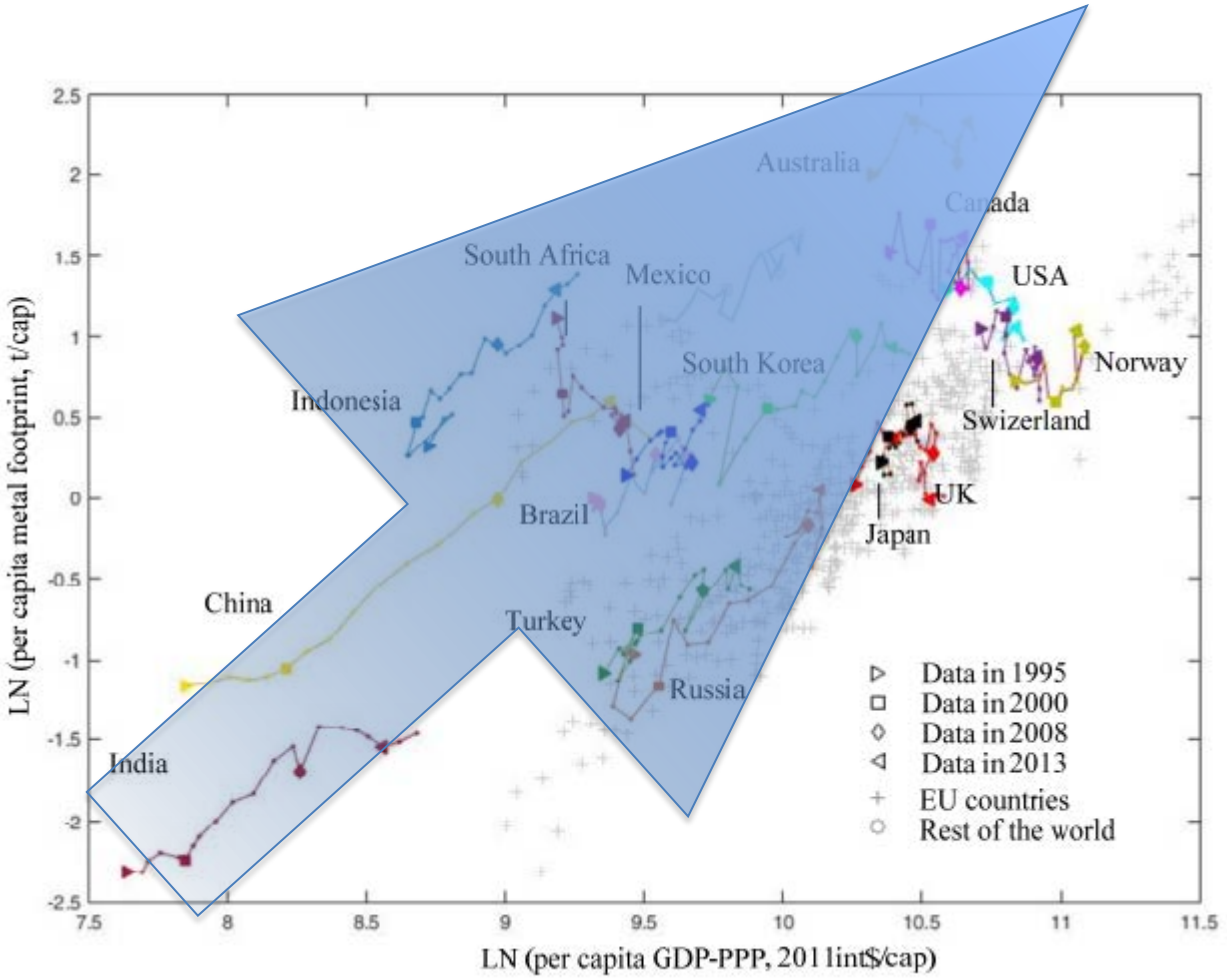

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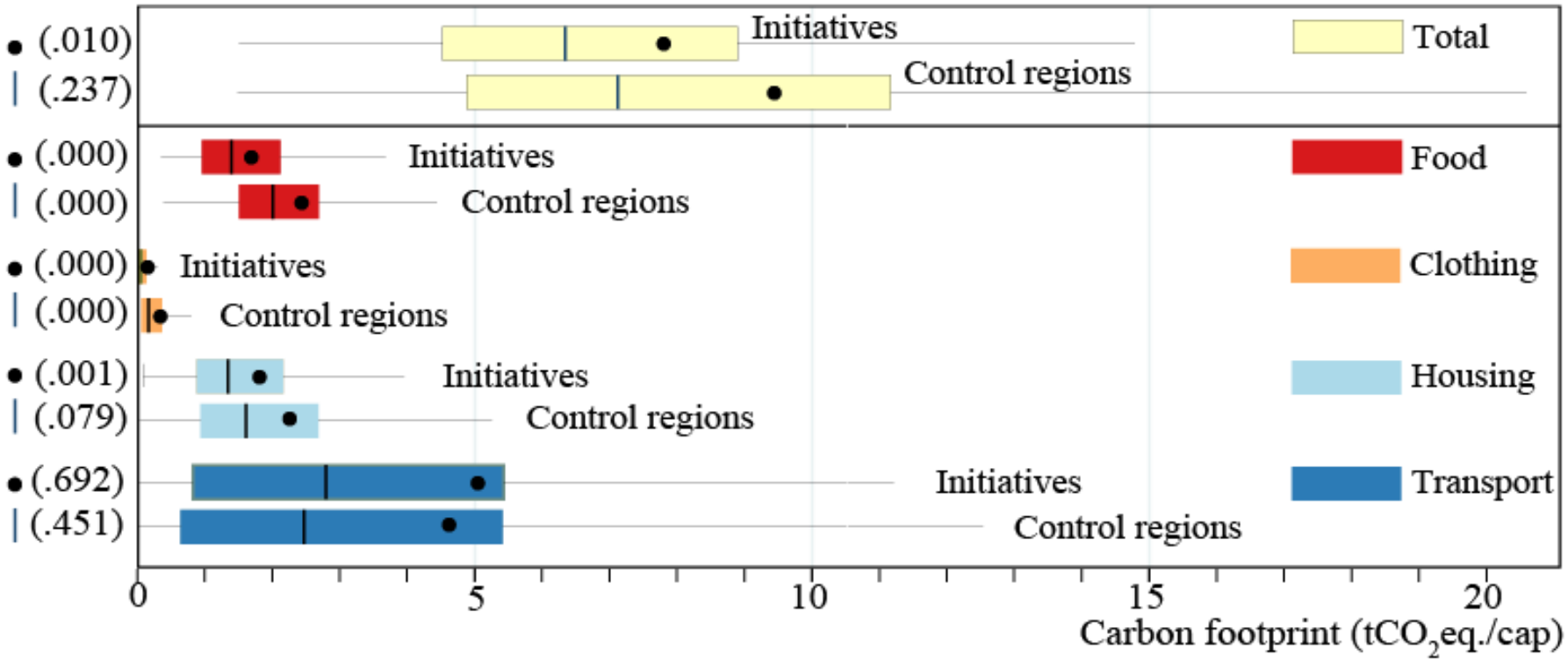
Which domains do consumers have agency over?

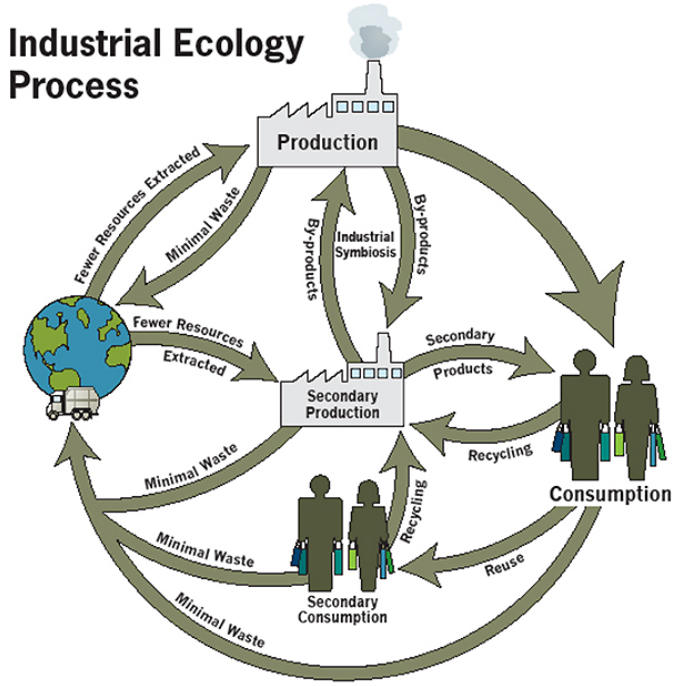
- First movers can change the dominant regime
- But «lock-in» in housing and transport needs structural solutions



If we develop CE measures targeting these domains

What are the impacts?

Industrial Ecology: "the systematic examination of local, regional and global material and energy uses and flows in products, processes, industrial sectors and economies"



Quote from Queens University, Belfast, Graphic by King Country, WA, USA, Dept of Nat Res and Parks

Measuring CircEcon impacts on Sustainable Consumption

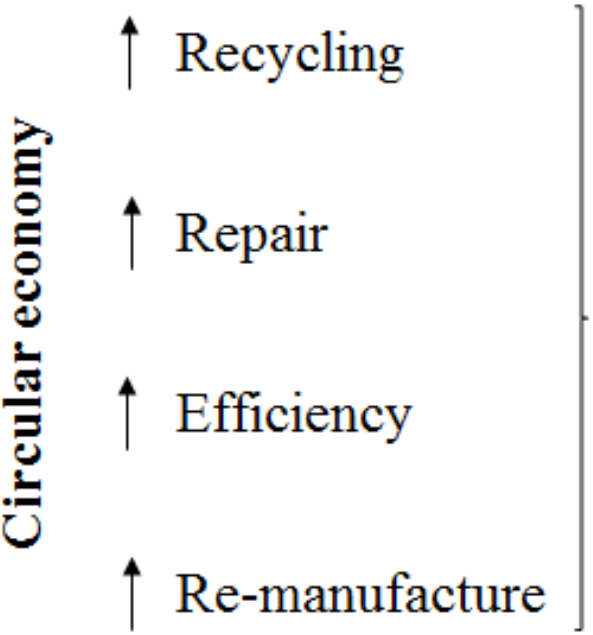
- Life-cycle assessment, Input-output analysis, Material Flow analysis
- Explicit consideration of regional differences and trade
- Capture: environmental, social and value creation in assessing the impact of circular economy measures.
- Gives insights into trade-offs
  - Between indicators
  - Between micro decisions and societial impacts

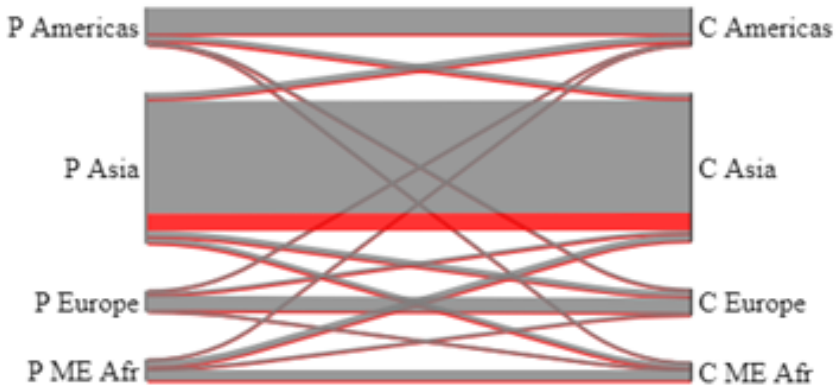
CircEcon Modelling – Global IO analysis

Increase in recycling of secondary materials

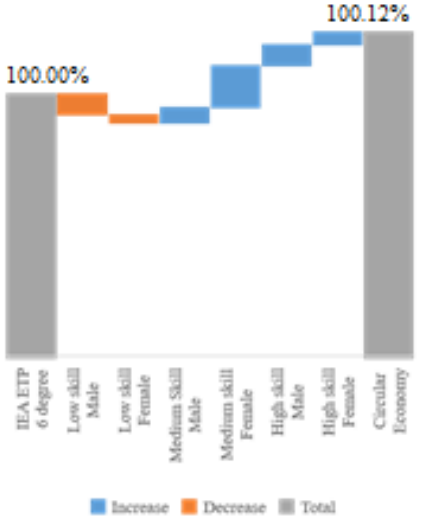
Increase in material efficiency (1%p.a.)

Switch from additional material purchases to product services





Lower material extraction and materials embodied in trade in red



Positive effect on global employment

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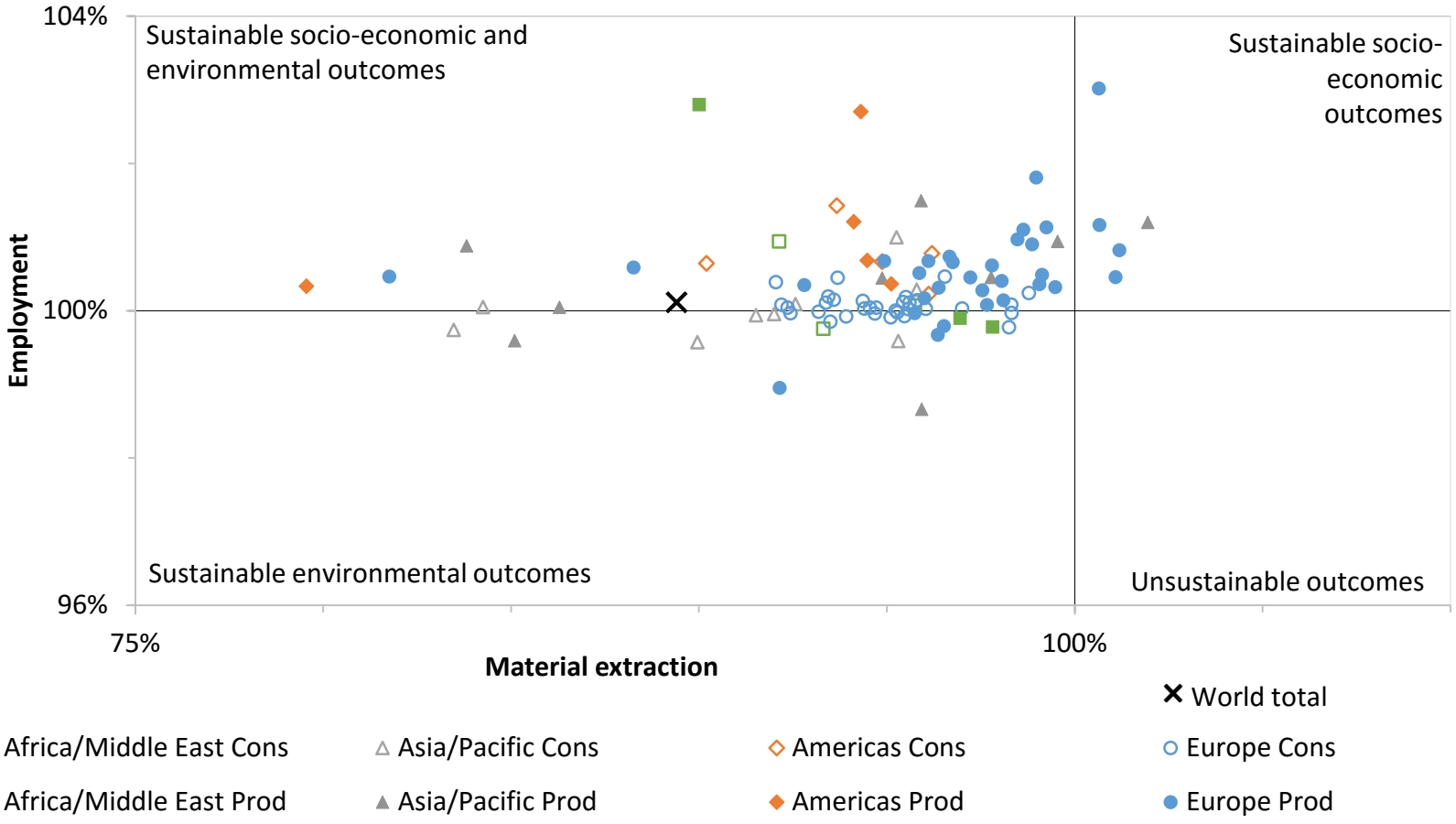
Circular economy vs. baseline in 2030



Modelling future sustainable consumption

- 63.5% of Norway's economy is services.
- In a Circular Economy, we want to
  - Replace linear purchasing of goods with service provision to fulfill human needs.

  = More services
- Can we develop our models to better capture the interaction between service provision, planners and consumers?

- What vision of Norway do we have in 2050, and what initiatives and measures will take us there?

- How can we use life-cycle based techniques and systems modelling to capture the trade-offs of the transition to a CircEcon?

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