



CIRCULAR ECONOMY TRANSITION – OPPORTUNITIES AND CHALLENGES

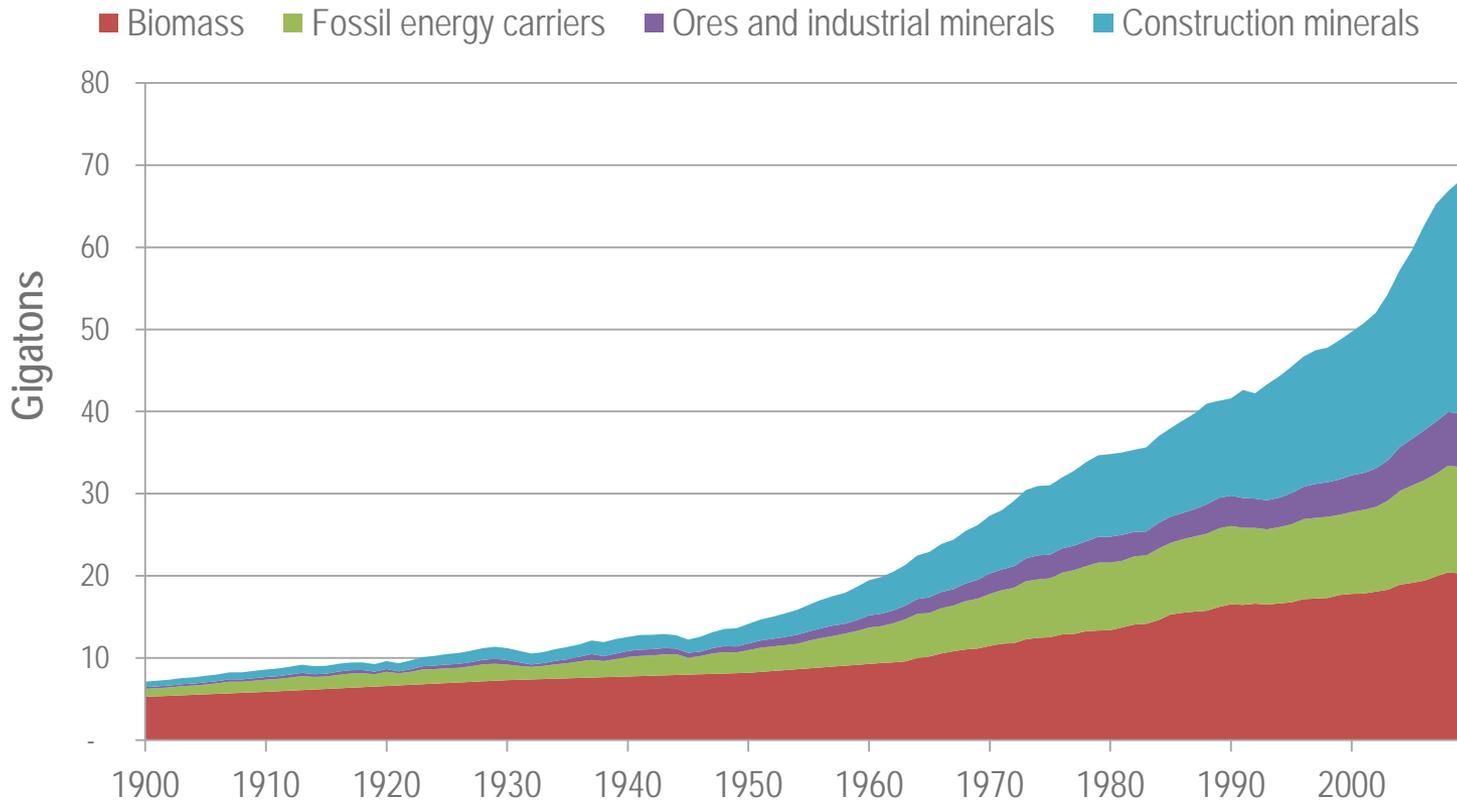
Peter Börkey, OECD Environment Directorate

10th Session Team of Specialists on Innovation and
Competitiveness Policies, 19-20 October 2017, Geneva



Unprecedented growth in global material extraction

Global material extraction 1900-2009



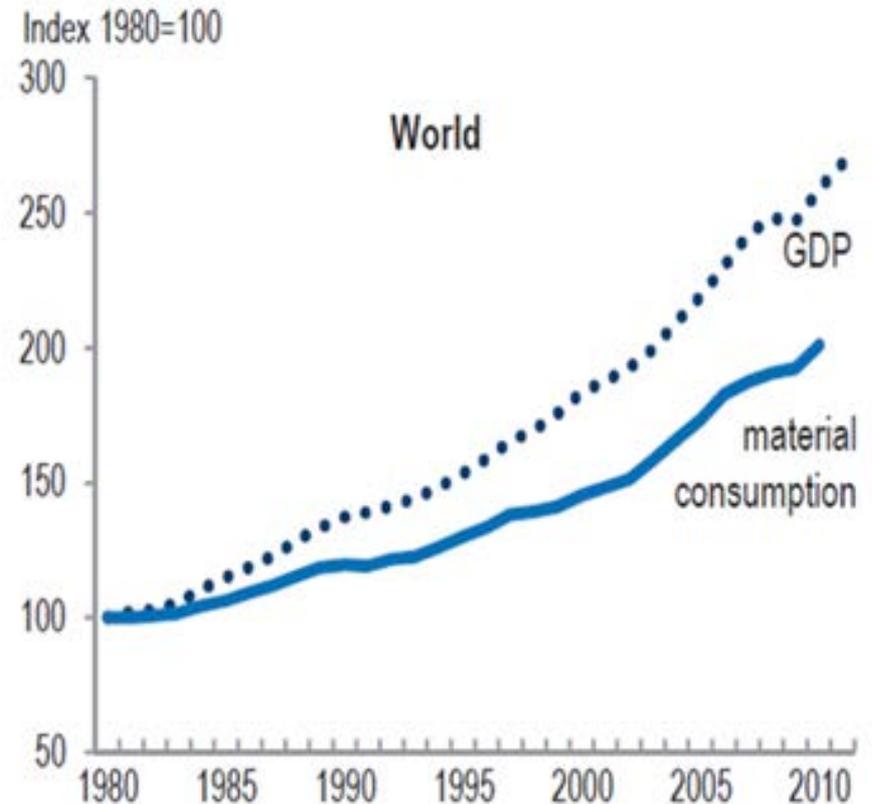
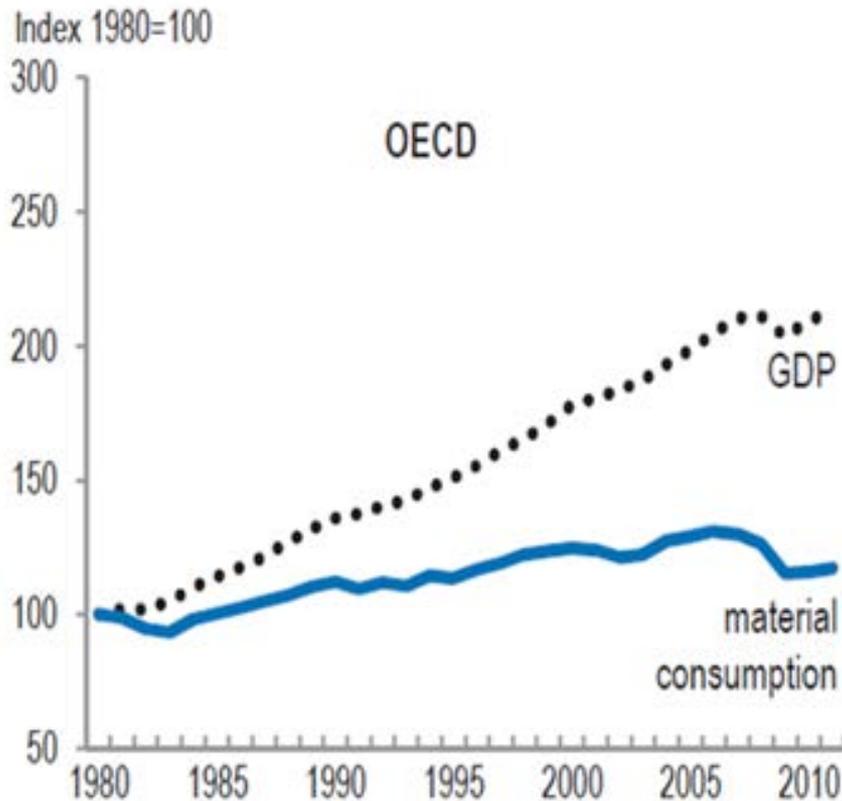
Source: Krausmann et al. (2009).

.... And further doubling projected by 2050



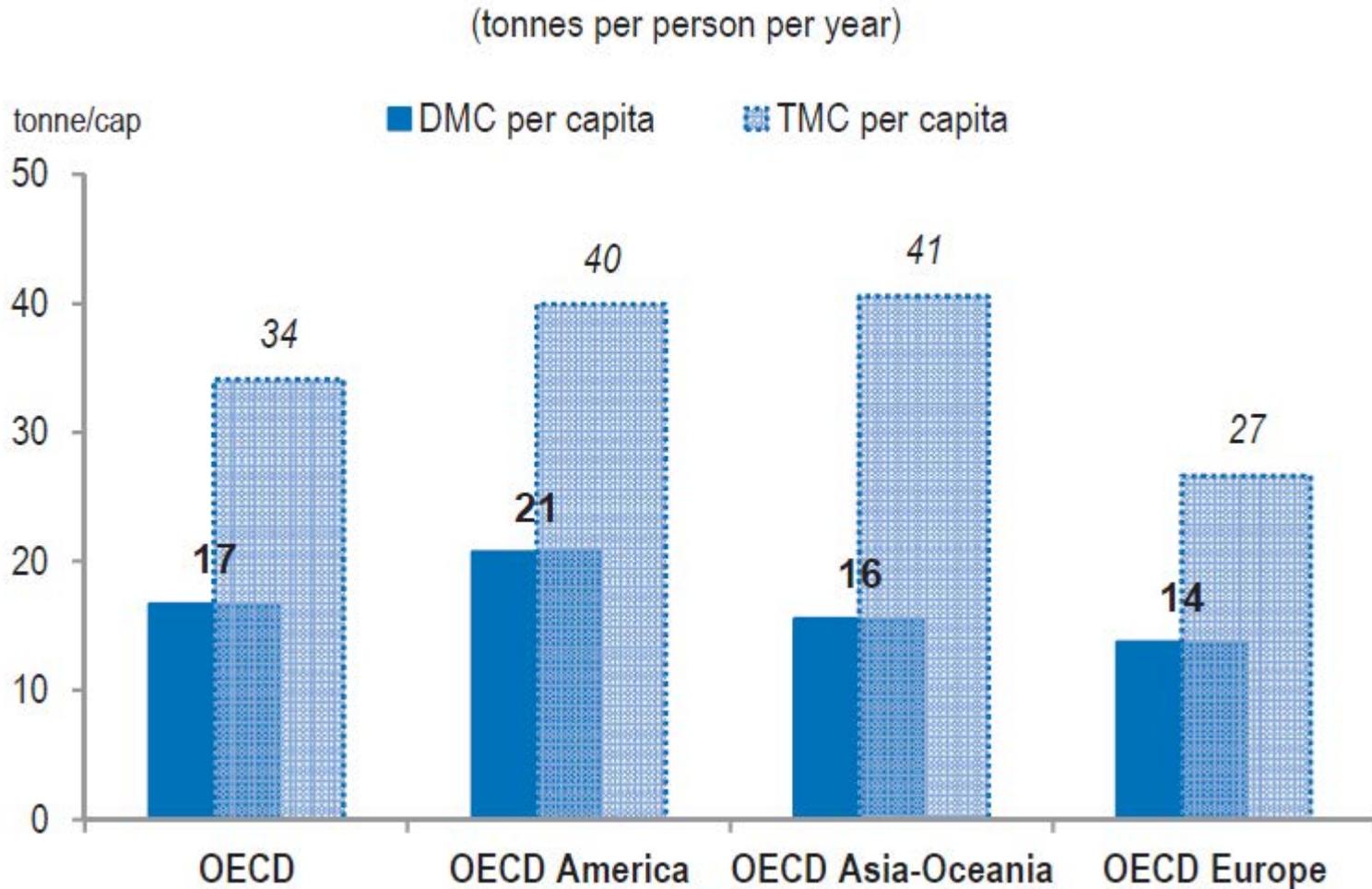
Some progress on decoupling materials consumption from economic activity

Decoupling trends, OECD and world, 1980-2010





but hidden flows further alter the picture

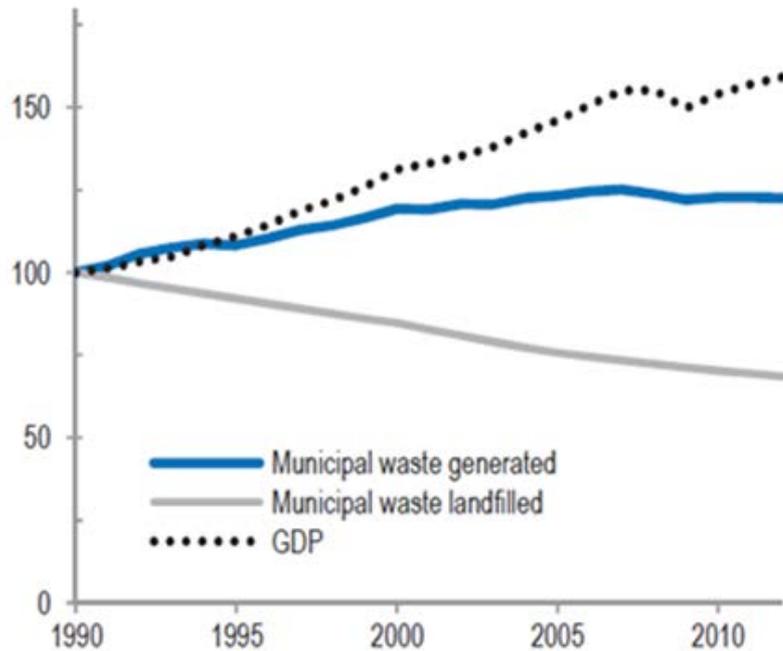




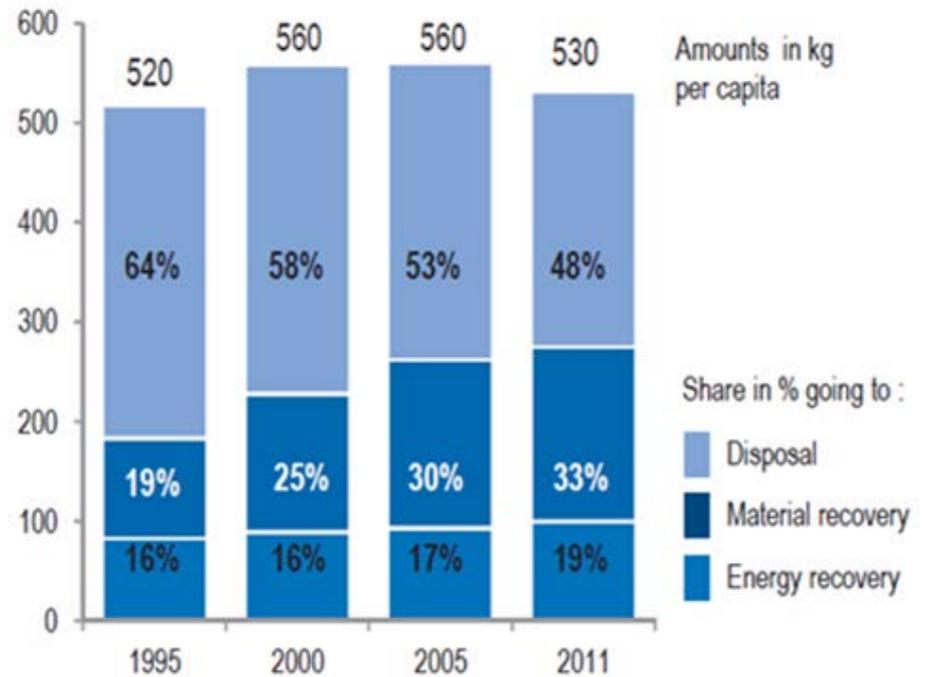
Decoupling downstream

Trends in municipal waste, OECD

Decoupling trends, municipal waste generation versus GDP, OECD, 1990-2012

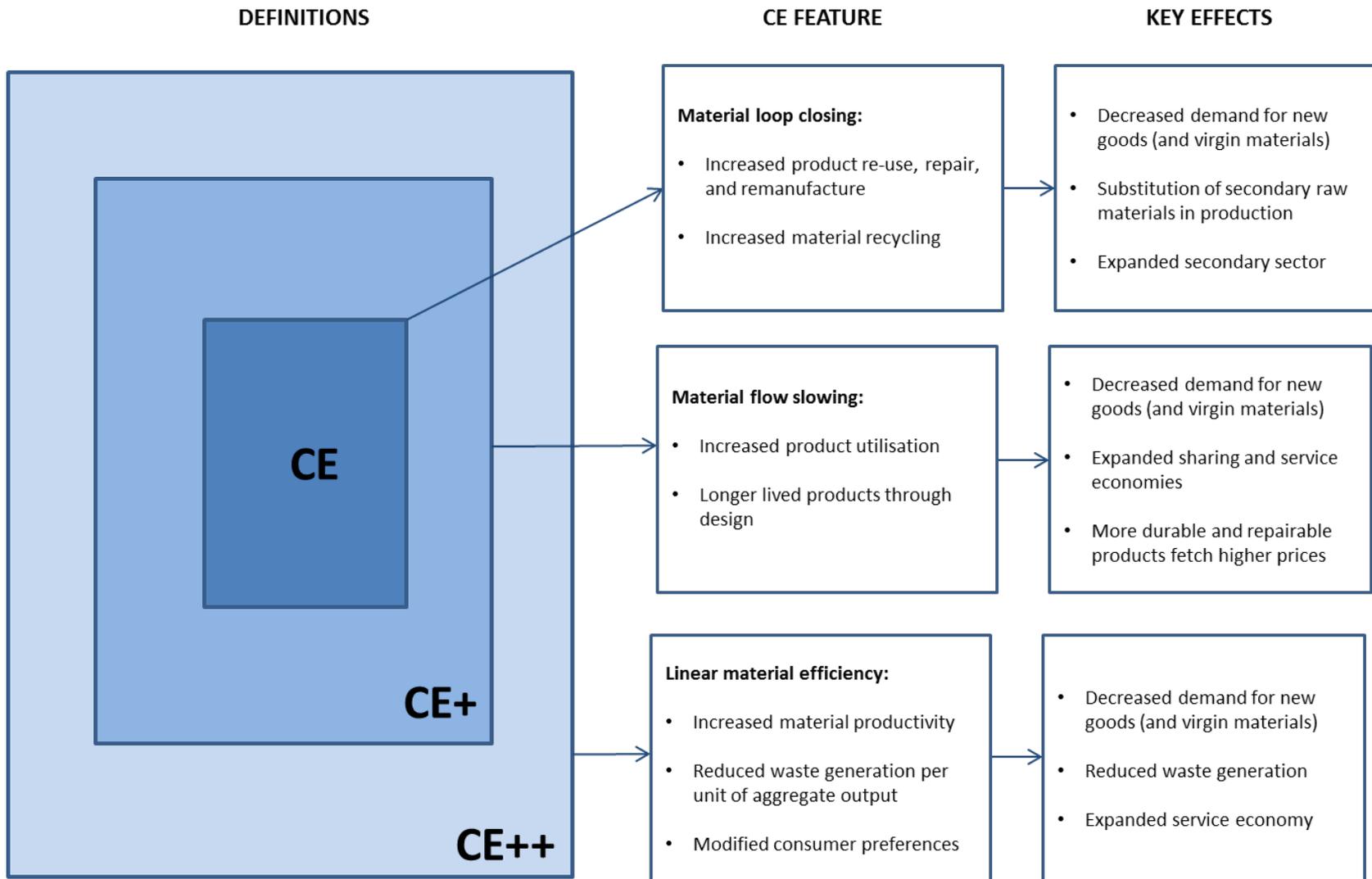


Municipal waste management, recovery and disposal rates, OECD, 1995-2011





How can the circular economy help?





The transition to a circular economy: growing international momentum

- **Emerging national and regional level initiatives on resource efficiency and circular economy**
 - Japan (Fundamental Law for Sound Material-Cycle Society)
 - EU Circular Economy Package
 - China, Finland, France, and the Netherlands (circular economy roadmaps)
 - United States (Sustainable Materials Management Action Plan)

- **Momentum at the international level**

- 2008: OECD Council Recommendation on Resource Productivity; G8 Kobe 3R Action Plan
- 2015: G7 Alliance on Resource Efficiency
- 2016: G7 Toyama Framework on Materials Cycles
- 2017: G7 5-year Bologna Roadmap
- 2017: Launch of the G20 Resource Efficiency Dialogue

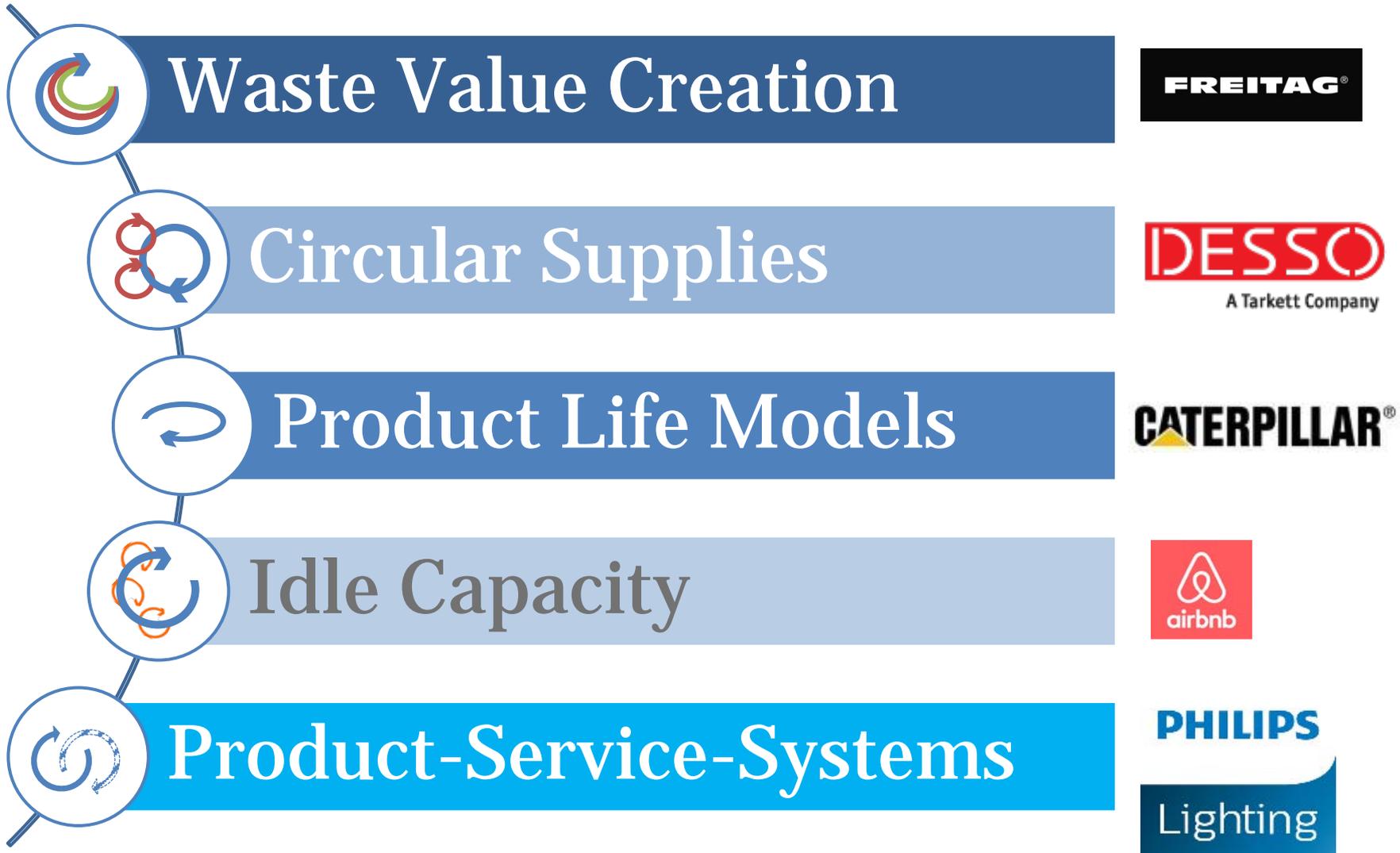


G7 TOYAMA ENVIRONMENT MINISTERS' MEETING
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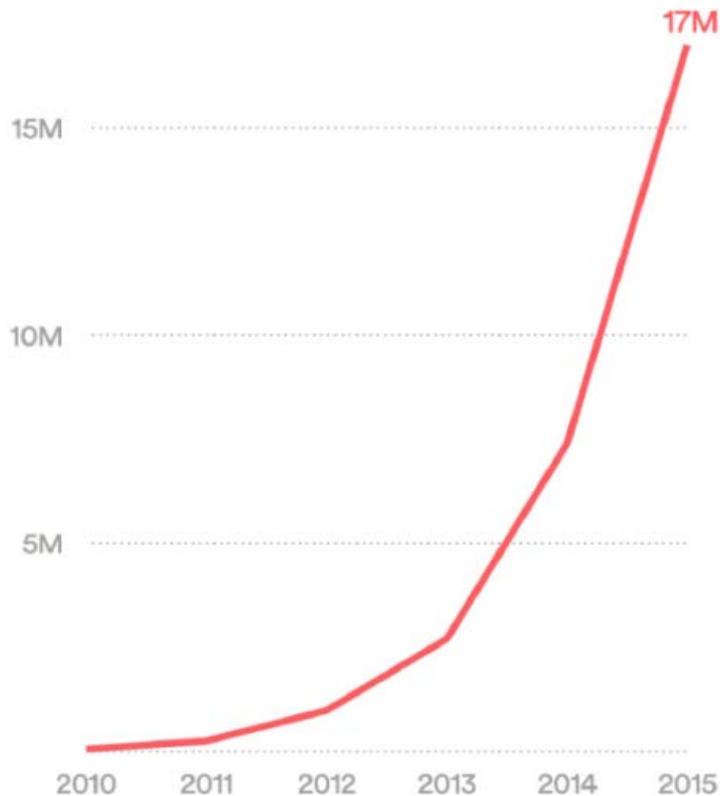
Five Circular Business Model Types





How scalable are circular business models?

**Airbnb total guests
summertime 2010-2015**



- What about other types of business models ?
- What can we say about the environmental consequences of circular business models?



And how can we assess environmental implications ?

Closing loops

Slowing loops

Narrowing
Resource Flows

First order effect

- Material
- Energy
- Waste

Second order effect

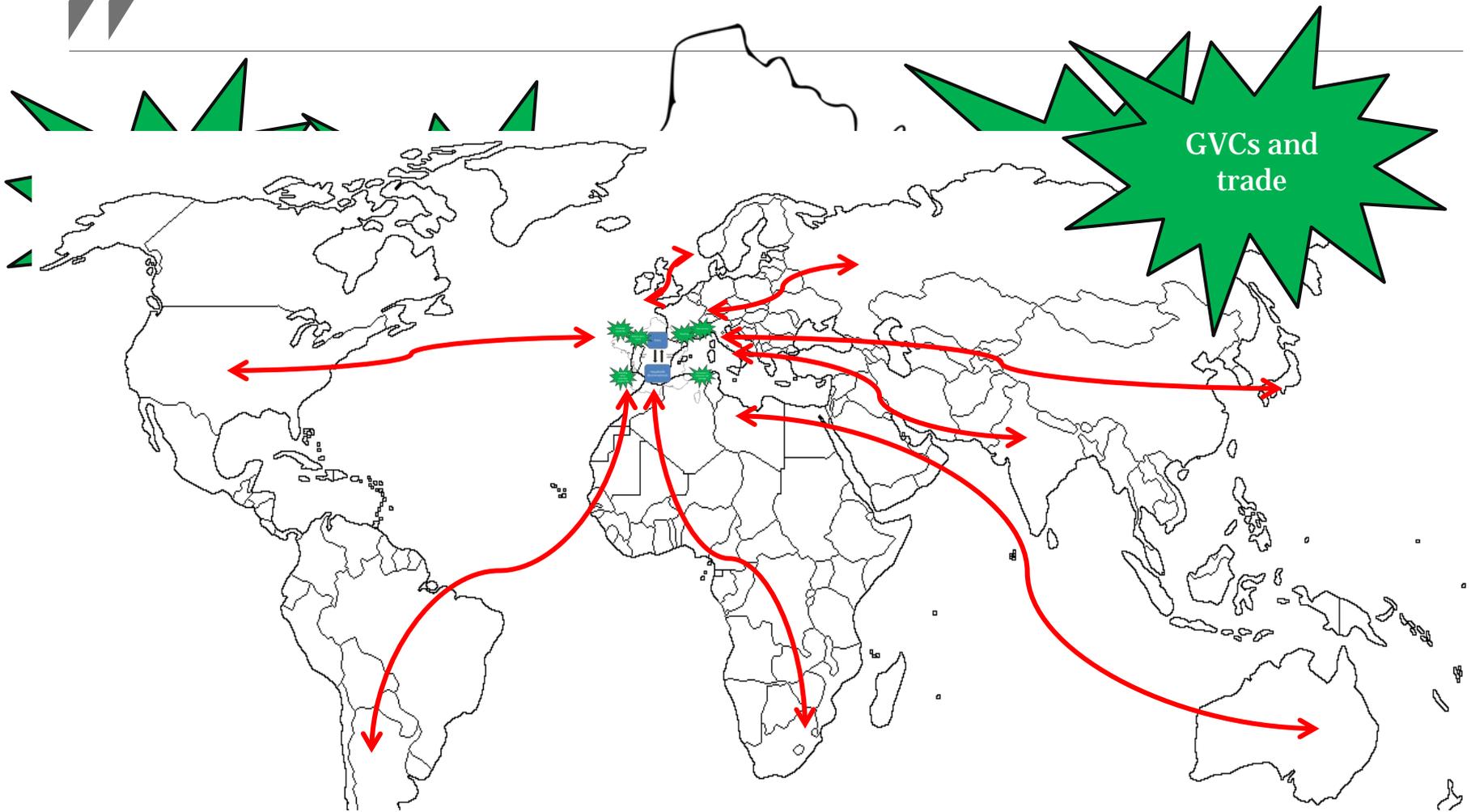
- Lock-in
- Direct-Rebound
- Indirect-Rebound

Third order effect

- Competing for finite resources
- Competing for finite capacity



The macroeconomic complexity of a circular transition



Requires global environment-economy modelling...



Unpacking the macroeconomic implications

- CE transition will involve structural changes in production and consumption
- Which, in tandem with other trends - digitalisation, technological change, increasingly interconnected global value chains – will
 - Lead to impacts on the size and distribution of GDP
 - Changes in employment and skills requirements (job opportunities, as well as potential dislocations)
 - Spill over effects , via relative prices, trade ...
- Requires quantitative modelling approaches