

SHIFTING TO A CIRCULAR ECONOMY

A presentation to the Conference: Bringing the Action Plan to Life: Towards a Fact Based Circular Economy

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Erste Campus, Grand Hall, Vienna

September 20th, 2018

Summary of Presentation

- Rationale for resource efficiency
- Nature of a Circular Economy
- Barriers to a Circular Economy
- Policies for a Circular Economy

Rationale for increasing resource efficiency

- Assure the availability of resources for the future, in a context of growth of the human population and global economy
- Volatility of resource and commodity prices. Commodity price rises of the last decade have wiped out the price reductions of the last decade. Demand seems likely to drive prices still higher and make them more volatile.
- National resource security in the context of increasing competition for resources that may become geopolitically scarce
- Environmental impacts of resource extraction and use, including greenhouse gas emissions and other pollution, the depletion of renewable resource stocks, and land degradation and the loss of biodiversity.
- Considerable opportunities for resource efficiency to be increased with negative net costs, i.e. with overall economic benefits.

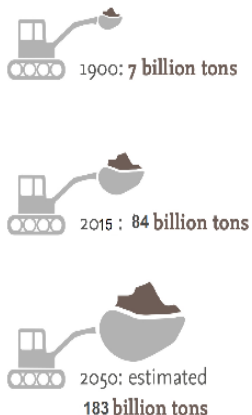




The imperative of increasing resource efficiency

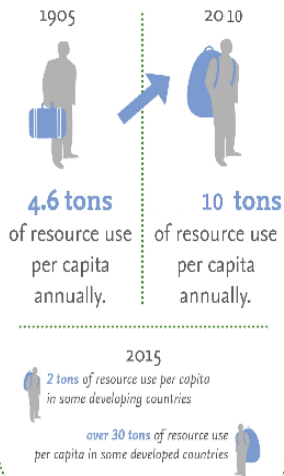
DEMAND FOR RESOURCES

Annual material* extraction rate



* Materials = fossil fuels, minerals, metals and biomass.

Increase in resource use per capita annually



Drivers for resource demand

- Growing population** from 7 billion today to 9 billion by 2050
- Economic development** and increasing global trade
- Increasing consumption of biomass**
- Growing middle-class with changing consumption patterns**

Results of resource demand

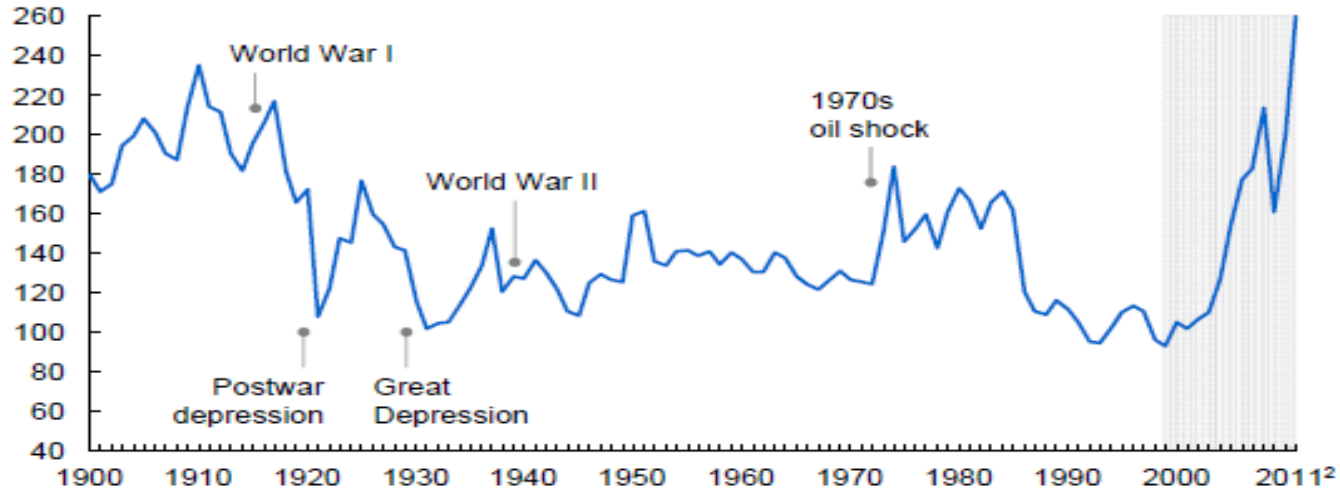
- Increasing resource extraction**
- Greenhouse gas emissions**
- Increasing resource scarcity**
- Land degradation**
- Price increases and volatility**
- Water pollution**
- Loss of biodiversity**
- Air pollution**

Impact on human health

Trends in global resource prices: upward trend this century

Commodity prices have increased sharply since 2000, erasing all the declines of the 20th century

MGI Commodity Price Index (years 1999–2001 = 100)¹



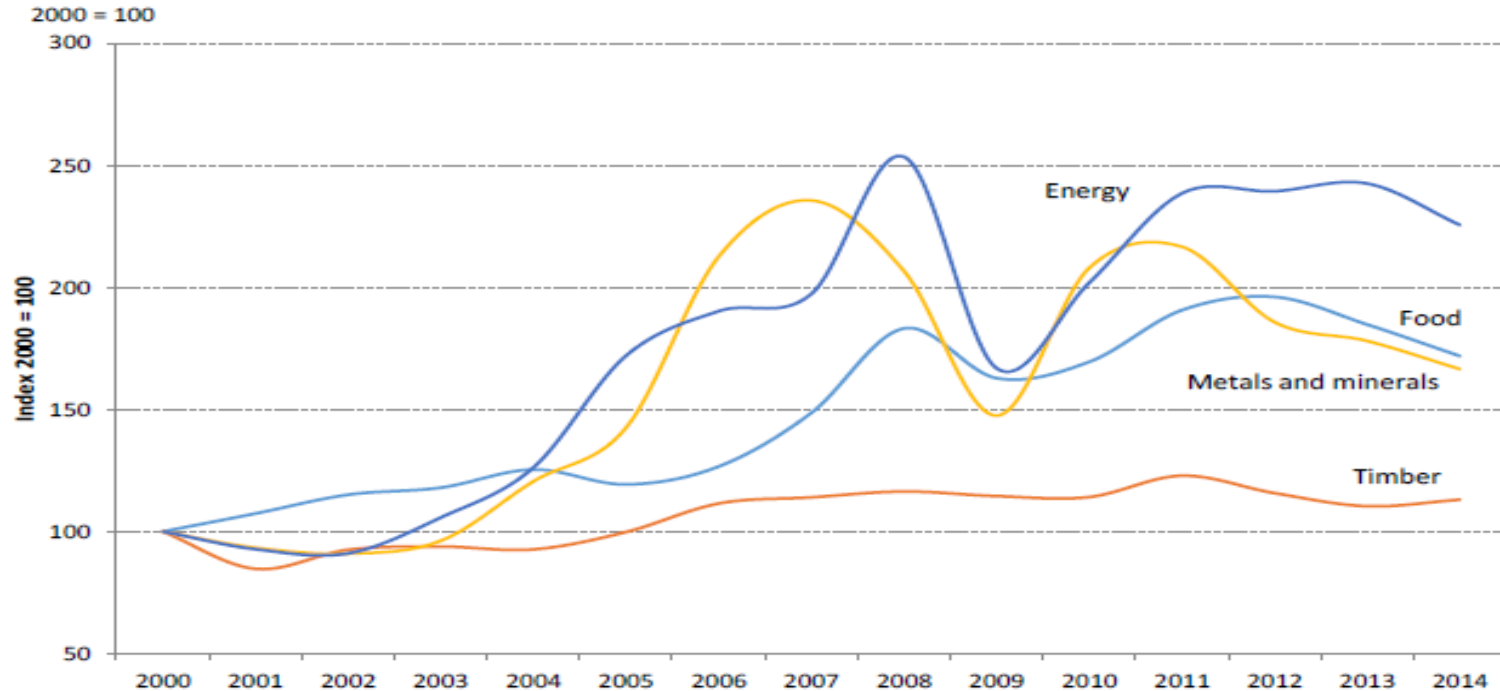
¹ See the methodology appendix for details of the MGI Commodity Price Index.

² 2011 prices are based on average of the first eight months of 2011.

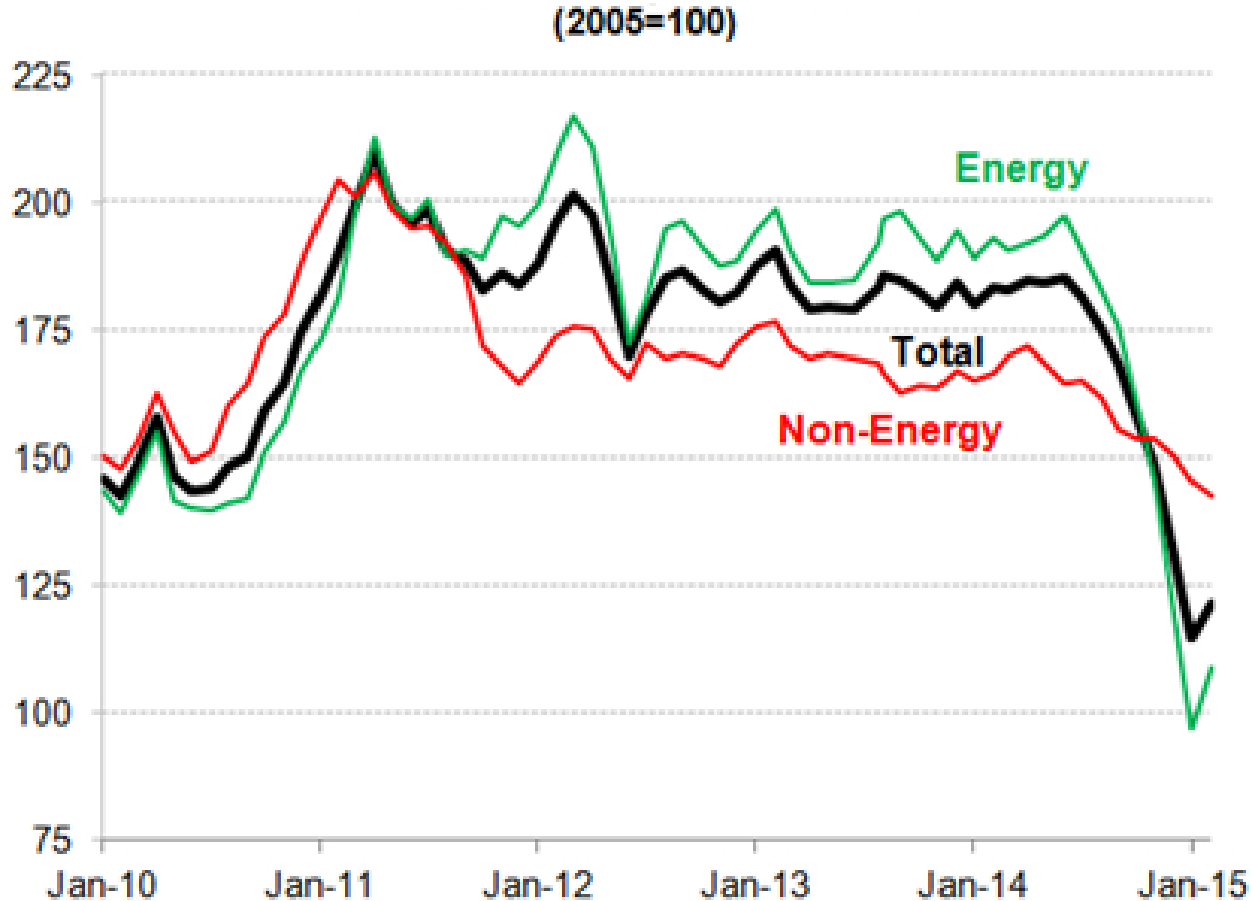
SOURCE: Grilli and Yang; Stephan Pfaffen-zeller; World Bank; International Monetary Fund (IMF); Organisation for Economic Co-operation and Development (OECD); UN Food and Agriculture Organization (FAO); UN Comtrade; McKinsey analysis

Source: McKinsey 2011, Exhibit E1, p.5

Trends in global resource prices: volatility the norm



Source: IRP 2016 Global Material Flows and Resource Productivity. Assessment Report for the UNEP International Resource Panel, Fig.5, p.29



What goes up can come down

IMF Commodity Price
Indices, 2010-2015

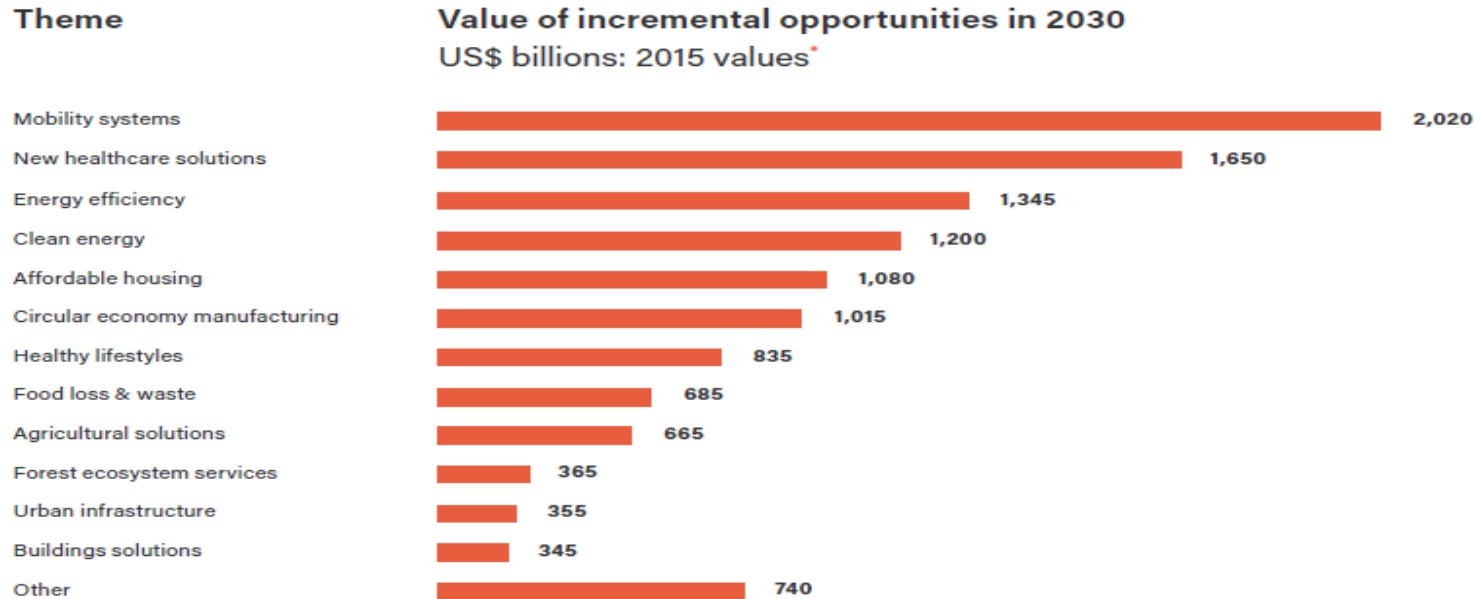
Source: IMF (2016),
<https://www.imf.org/external/np/res/commod/index.aspx>

The economic potential of resource efficiency

- Negative cost opportunities for resource efficiency:
 - Globally USD 2.9 trillion in 2030 (70% at 10% internal rate of return) (McKinsey 2011)
 - EU net benefits of €603 billion (AMEC and BIO IS for European Commission 2013)
 - UK economy £23 billion (Oakdene Hollins 2011)

(NB depends on the prices of the resources concerned and the ease with which resource efficiency can be increased by policy)

12 largest business themes in a world economy heading for the Global Goals



* Based on estimated savings or project market sizings in each area. Rounded to nearest US\$ billion.

Source: Literature search; AlphaBeta analysis

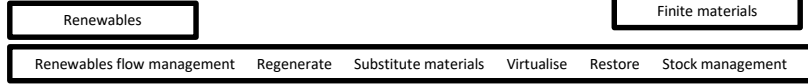
The biggest benefit areas

Source: BSDC 2017
'Better Business, Better World',
January,

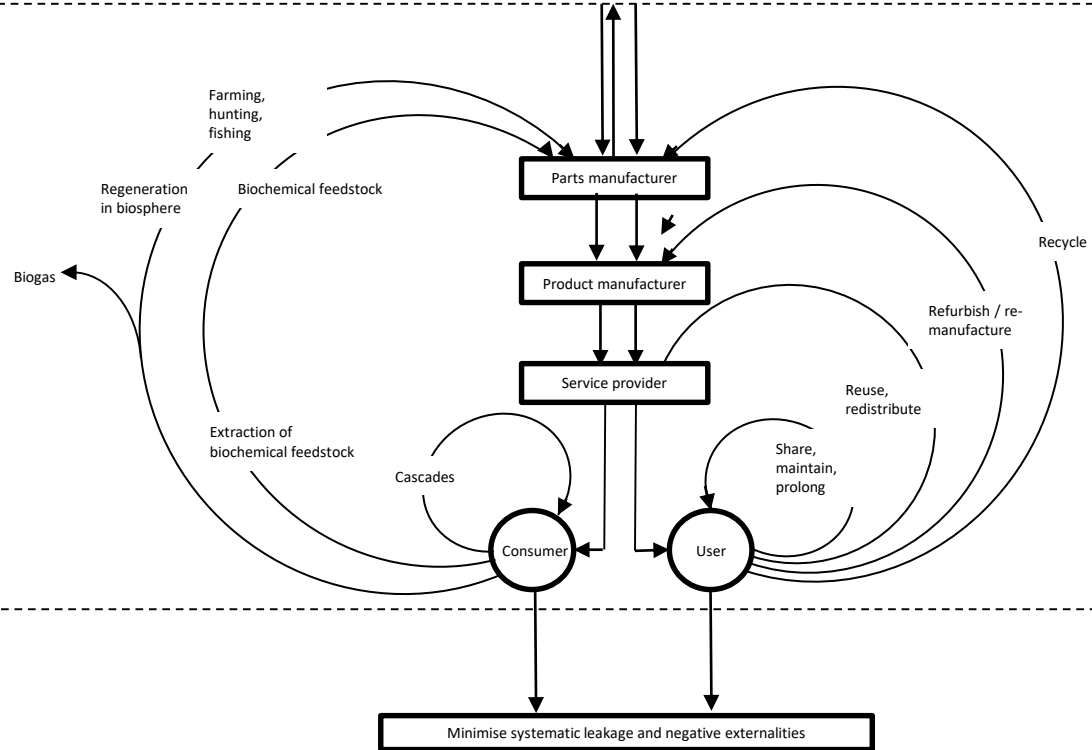
http://report.businescommission.org/uploads/BetterBiz-BetterWorld_170215_012417.pdf

Principle 1: Preserve and enhance natural capital by controlling finite stocks and balancing renewable resource flows

Nature of a Circular Economy

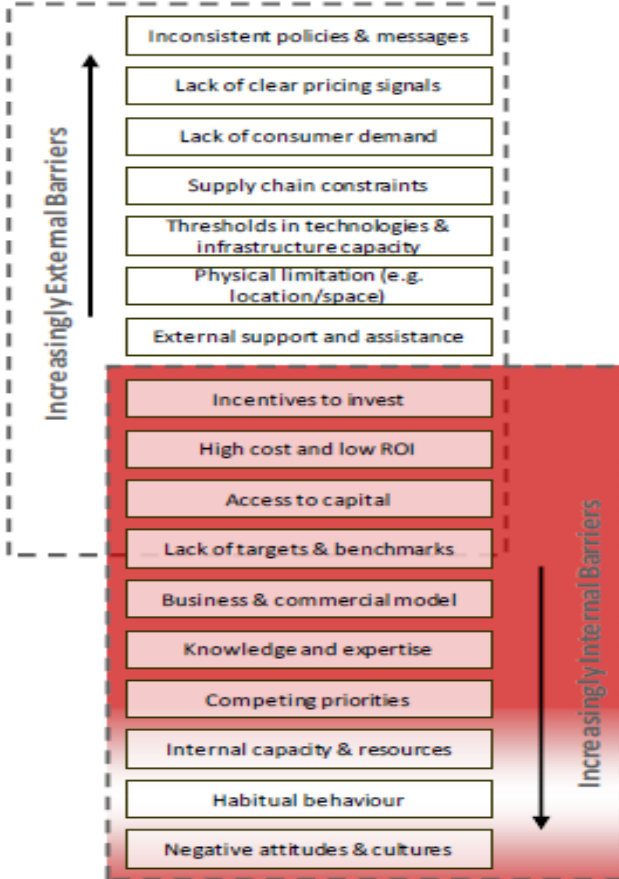


Principle 2: Optimise resource yields by circulating products, components and materials in use at the highest utility at all times in both technical and biological cycles

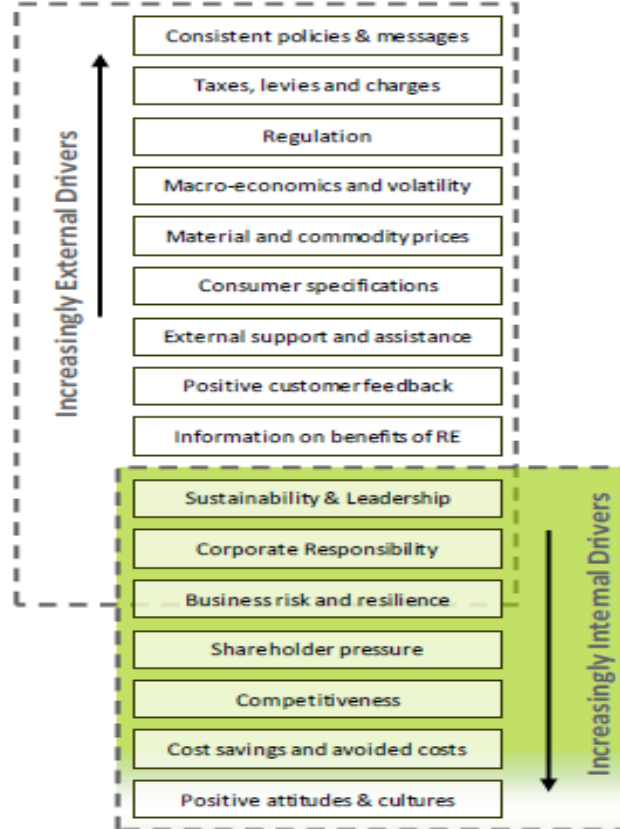


Principle 3: Foster system effectiveness by revealing and designing out negative externalities

Barriers



Drivers



Circular Economy: Barriers and Drivers

Source:
 AMEC, & BioIS. (2013). The opportunities to business of improving resource efficiency. Final Report to the European Commission. : AMEC Environment & Infrastructure and Bio Intelligence Service

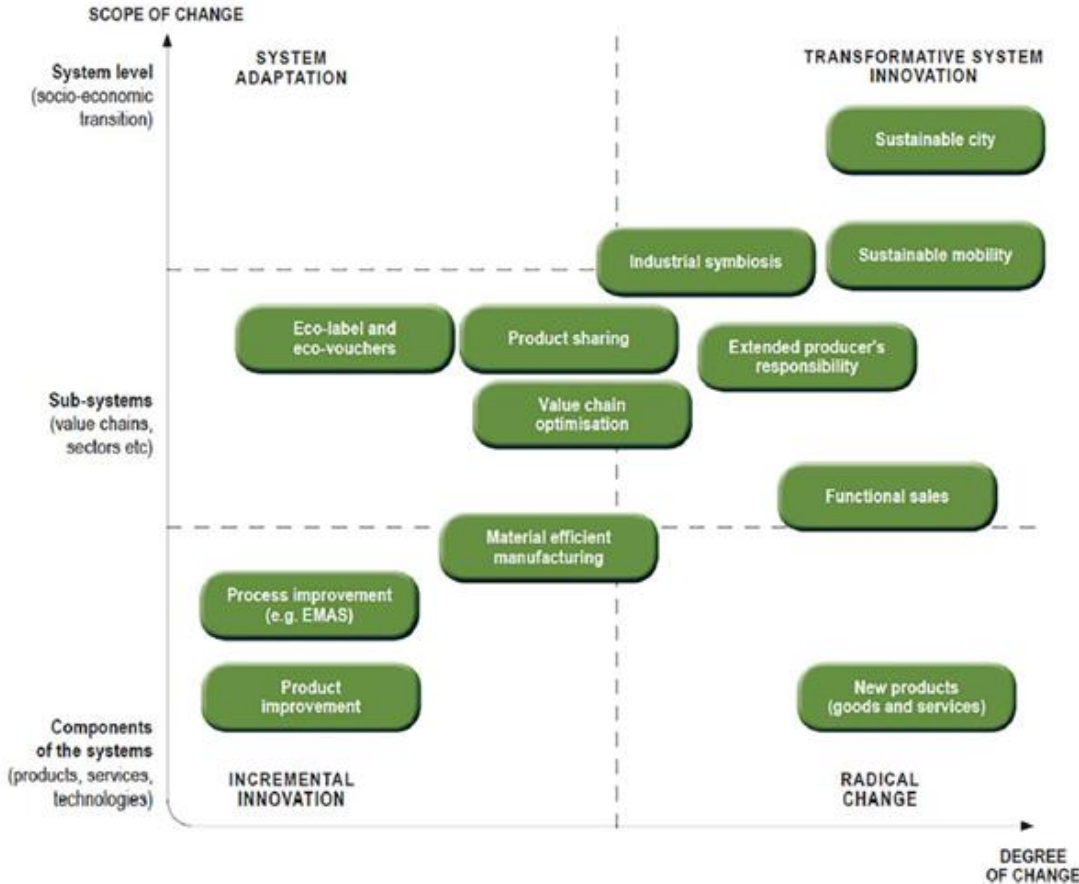
Realising the potential for resource efficiency

Conclusions from the International Resource Panel Report: *Resource Efficiency: Potential and Economic Implications*:

- There is substantial cost-effective opportunity for increased resource efficiency, BUT
- Markets will not achieve higher rates of resource efficiency by themselves
- Public policy, political will and concerted action will be needed

Policy concepts for increasing resource efficiency/productivity

- Circular economy (closing the loops, biotic/abiotic materials)
- 3Rs (reduce, re-use, recycle, plus repair, remanufacturing, recover)
- Waste hierarchy (prevention, re-use, recycling, recovery, disposal)
- Extended producer responsibility: producers have responsibility for end-of-life management (in the limit materials remain the property and responsibility of the producer)
- Industrial symbiosis: producers collaborate to use each others' by-products



The need for innovation

Tukker and Ekins 2017, 'Concepts fostering resource efficiency: a trade-off between ambitions and viability' *Ecological Economics*,

<http://dx.doi.org/10.1016/j.ecolecon.2017.08.020>,

Figure 1

Policy objectives and instruments for increasing resource productivity (1)

- Clear direction of future travel (recycling and efficiency targets; ‘zero waste’)
- Need a combination of instruments, focusing on producers, waste (materials) managers and consumers
- Product focus
 - Increase the time material products deliver their service before becoming wastes (product durability)
 - Reduce the quantity of materials required to deliver a particular service (light-weighting)
 - Increase the amount of information available about what materials are in products, and where (product passports)
 - Reduce the use of energy and materials required both to produce a product and in its use phase (eco-design, efficiency regulations)
 - Reduce the use of materials that are hazardous or difficult to recycle or dispose of (substitution)
 - Design products that are easier to recycle (eco-design)

Policy objectives and instruments for increasing resource productivity (2)

- Waste/resource management focus
 - Make it easier to recycle materials by differentiating between wastes and recyclables (definition of waste, by-products)
 - Increase the quality of collected recyclates (separate collections)
 - Create markets for recycled materials through product specifications and green public procurement (standards and regulation)
 - Zero waste to landfill
 - Ban the incineration of recyclables
 - Facilitate industrial clusters that exchange materials while they are still resources to prevent them from becoming wastes (industrial symbiosis)
- Consumer focus
 - Require separation of wastes (create recycling habits)
 - Provide facilities in buildings (make recycling easier)
 - Incentivise waste reduction and high-quality separation by consumers (e.g. landfill tax, variable waste charging, or Pay As You Throw)
 - Incentivise separation and collection systems that reduce the costs of recycling and re-use (e.g. deposit-refund schemes)

Conclusions

- Policies and policy mixes for a Circular Economy have been widely implemented in different EU Member States
- They have had substantial effect in increasing recycling rates
- Accelerating moves towards a Circular Economy will require stronger policies and innovation in technologies, policy concepts and business models



Thank you

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