January 14th, 2019

Circular Entrepreneurship in Waste Management, Cairo

Europe´s challenging transformation towards a Circular Economy: Opportunities and lessons learnt for Egypt

Dr. Henning Wilts

Director Circular Economy at the
Wuppertal Institute for Climate, Environment and Energy

Wuppertal Institute
Locations

Headquarters in Wuppertal

Berlin Office

Mission of the Wuppertal Institute

Research for a sustainable development

Wuppertal Institut

- The Wuppertal Institute undertakes research and develops models, strategies, and instruments for transitions to a sustainable development at local, national, and international level

- Sustainability research at the Wuppertal Institute focuses on the resources, climate, and energy related challenges and their relation to economy and society

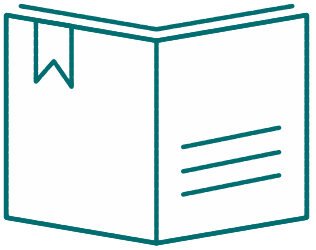
- Special emphasis is put on analysing and stimulating innovations that decouple economic growth and wealth from natural resource use

The Team
In figures (2016)

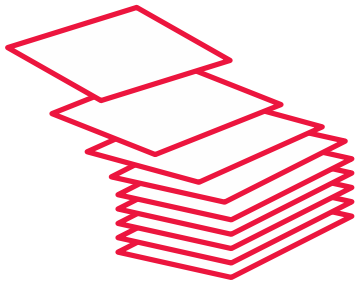
Wuppertal Institut

92 user-oriented publications

54 peer-reviewed articles



397 lectures



158 national and international projects

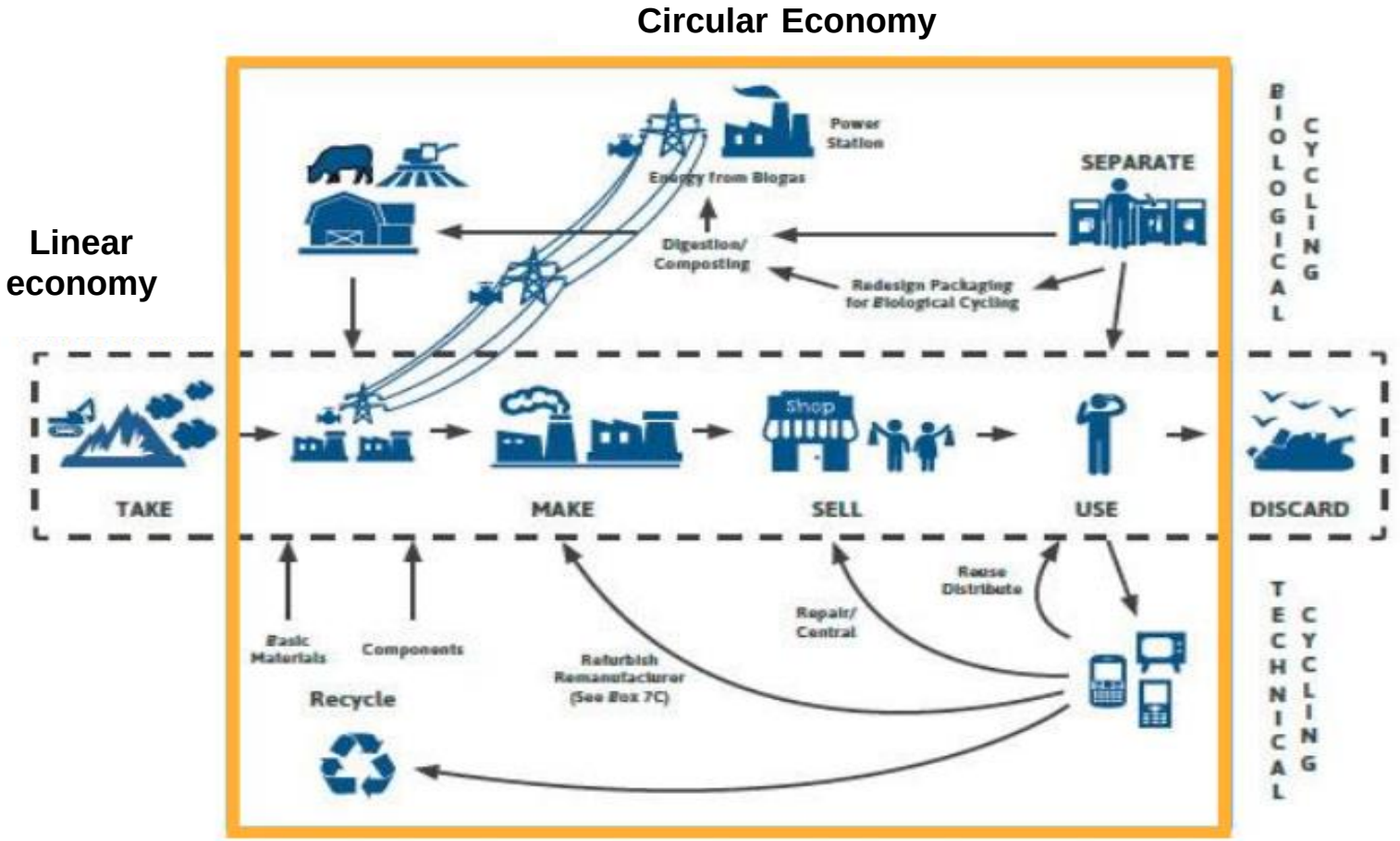
Research at the Wuppertal Institute

Along the transition cycle

Circular Economy
Potential benefits and challenges

From a linear towards a circular economy

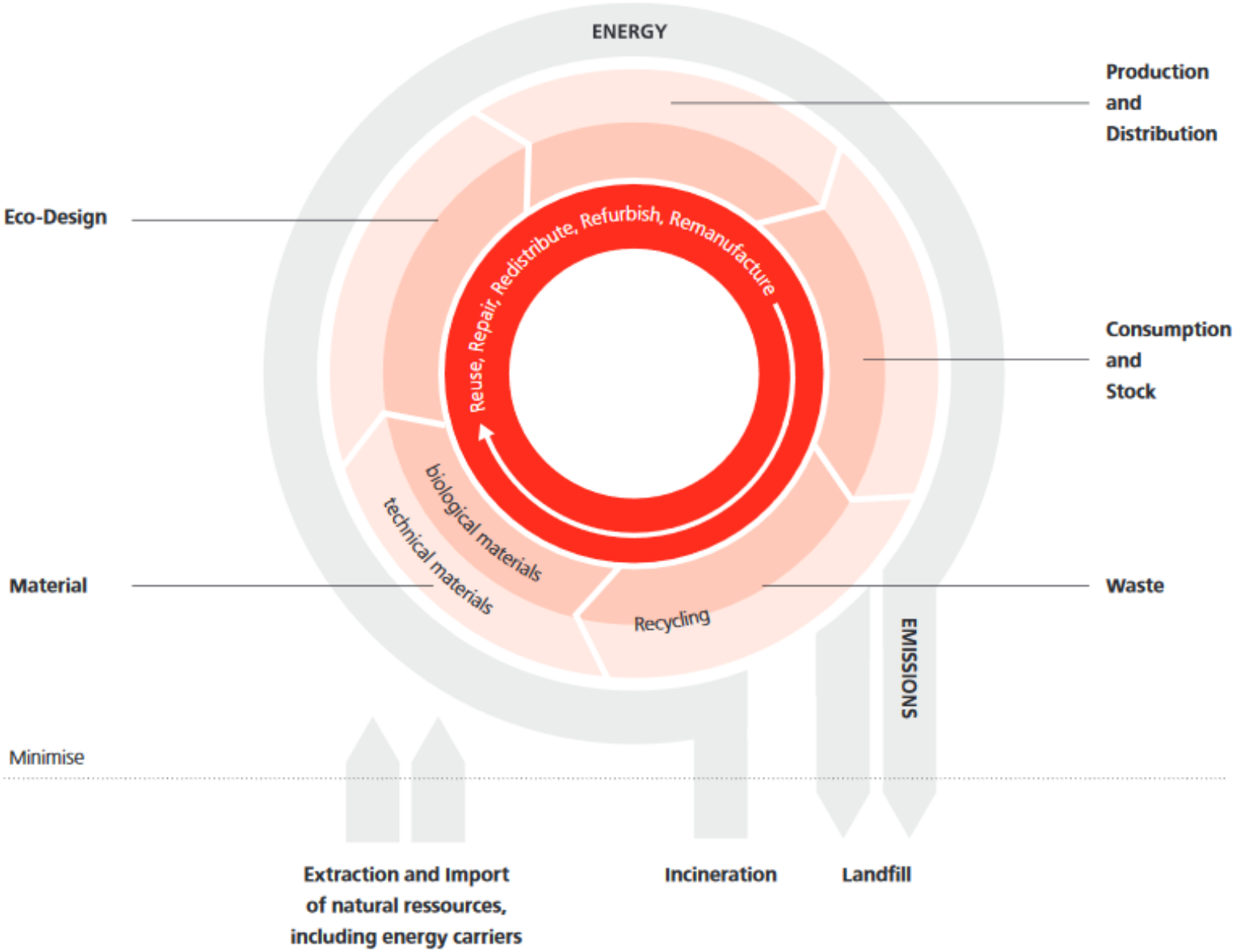
Wuppertal Institut



Definition Circular Economy from the CE AP

„The transition to a more circular economy, where the value of products, materials and resources is maintained in the economy for as long as possible, and the generation of waste minimised (...)“

The CE concept



Source: EEA 2015.

Circular Economy as emerging policy field

Wuppertal Institut

Circular Economy

European Commission

"…much brighter future for the European economy (…)", "prospect of sustainable growth that will last (…)"

ProgRess II

„Closing material cycles and preventing waste are key in attaining sustainable resource use."

SDG 12.5 for waste reduction

"By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse"

The Circular Economy provides three different types of dividends:

Economic Dividend

Innovation and reduced material and energy costs can generate competitive advantages for companies and regions

Ecological Dividend

Reduced consumption of resources and recycled waste in production reduce the environmental impact locally

Social Dividend

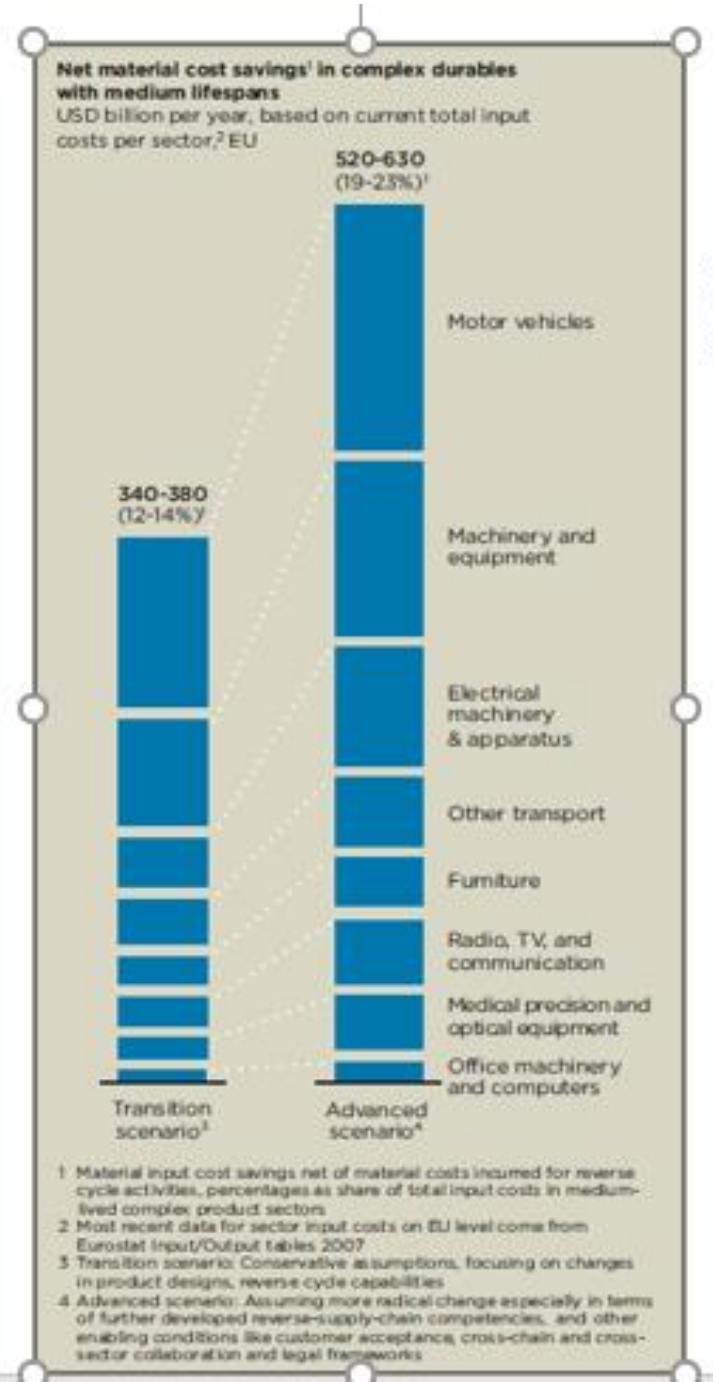
As a result of integrated product cycles, it is possible to reduce negative environmental impacts on the population and decouple economic growth from the use of resources

Europe on its way towards a Circular Economy: the potential benefits

High expectations:

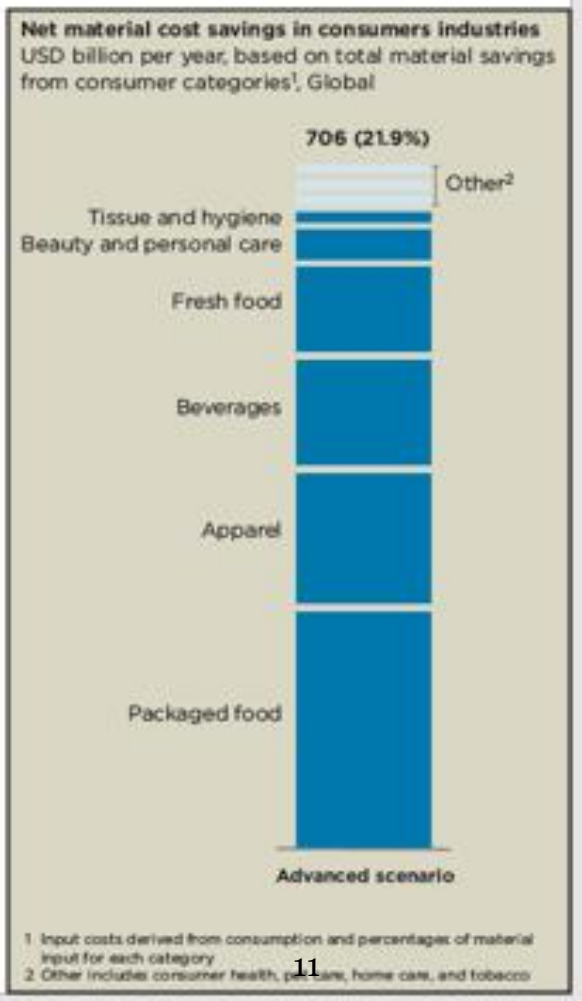
Significant impact on innovation, capital productivity and reduced reliance on raw material imports

Estimated annual net material cost saving potentials of up to USD 706 billion (EMF)

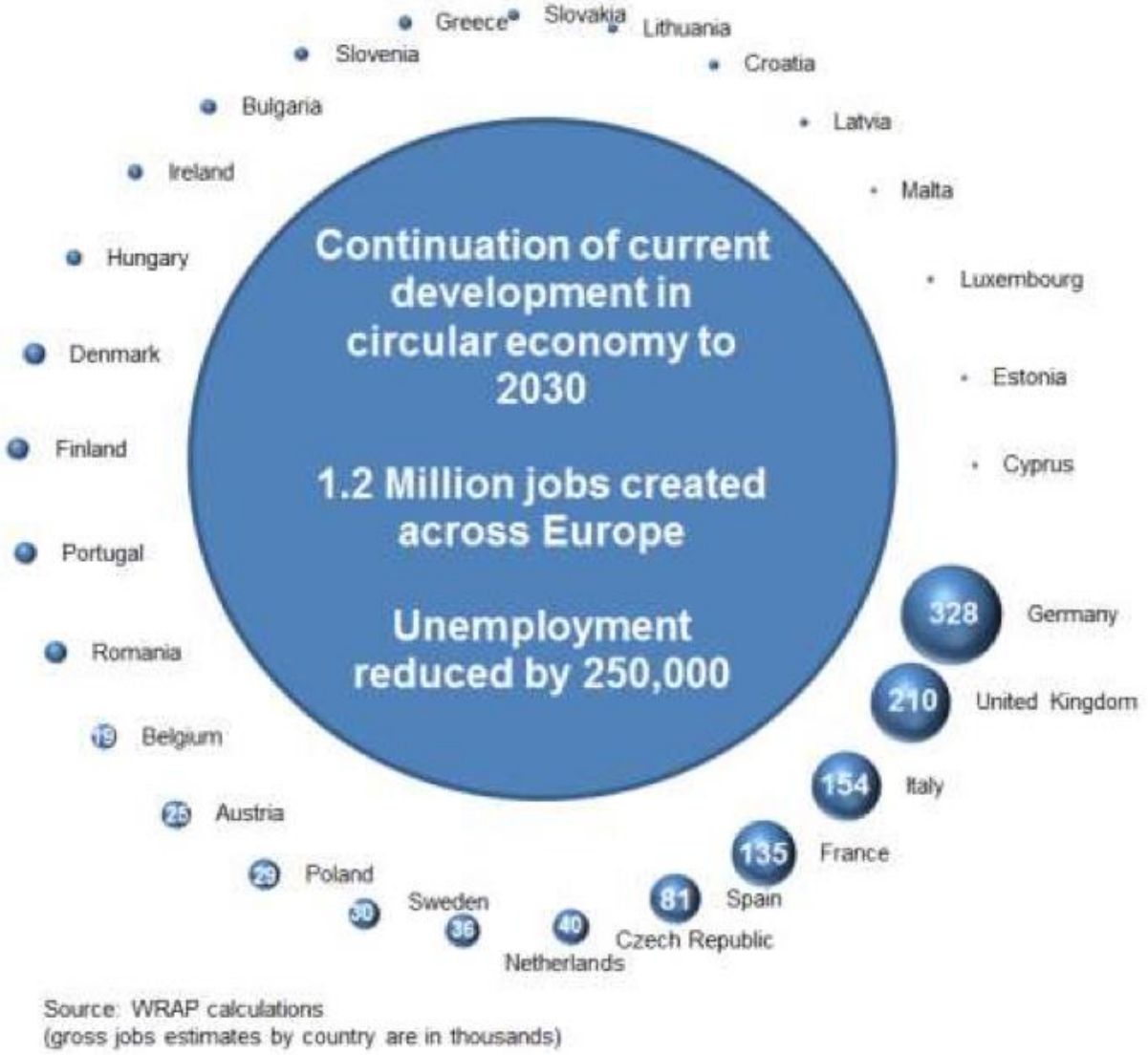


Adoption of circular setup in relevant medium-lived complex product sectors
Source: EMF 2012

Adoption of circular setup in relevant fast-moving consumer goods sectors
Source: EMF 2013

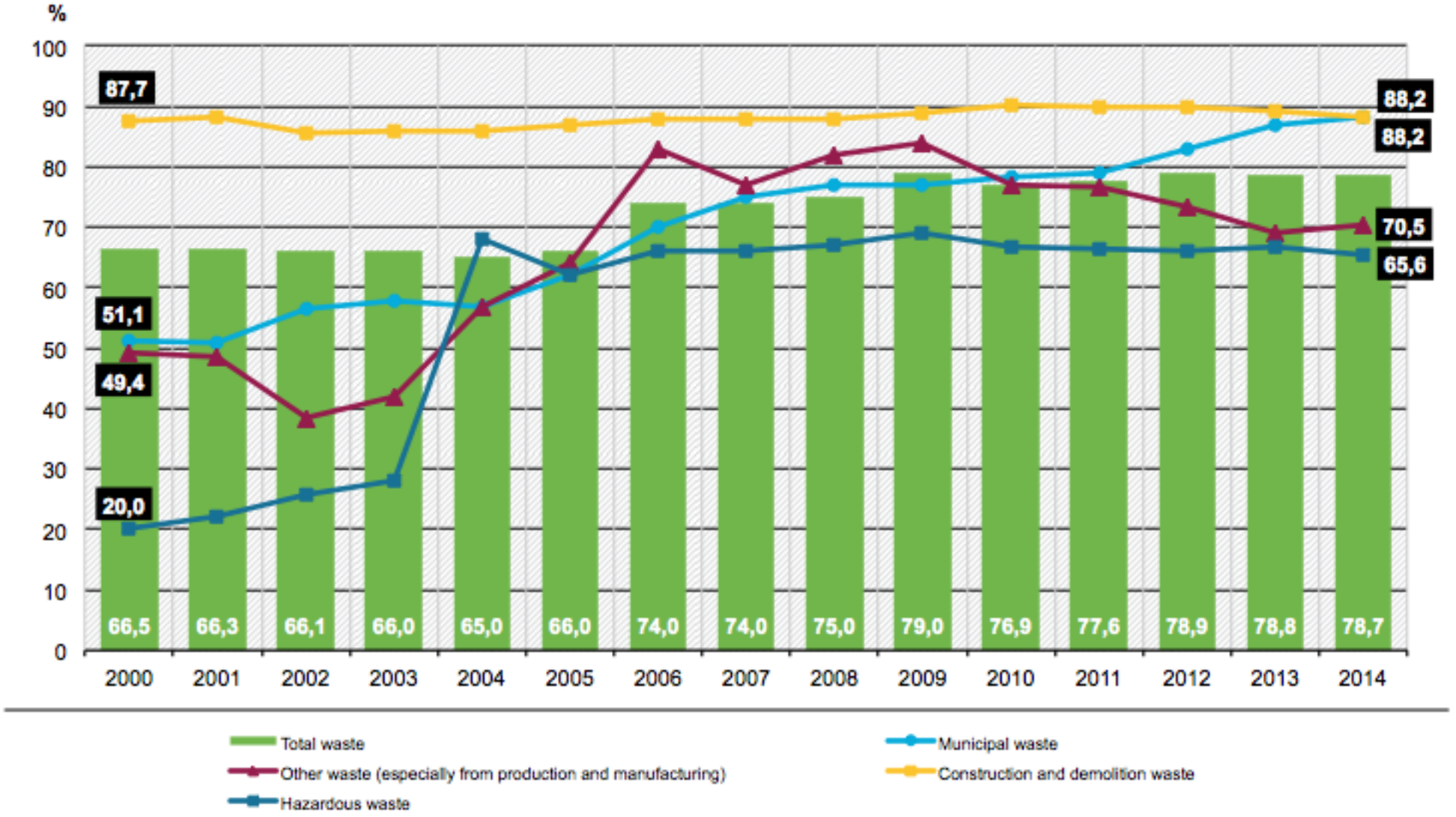


Potential employment effects of a more circular economy



Source: WRAP calculations
(gross jobs estimates by country are in thousands)

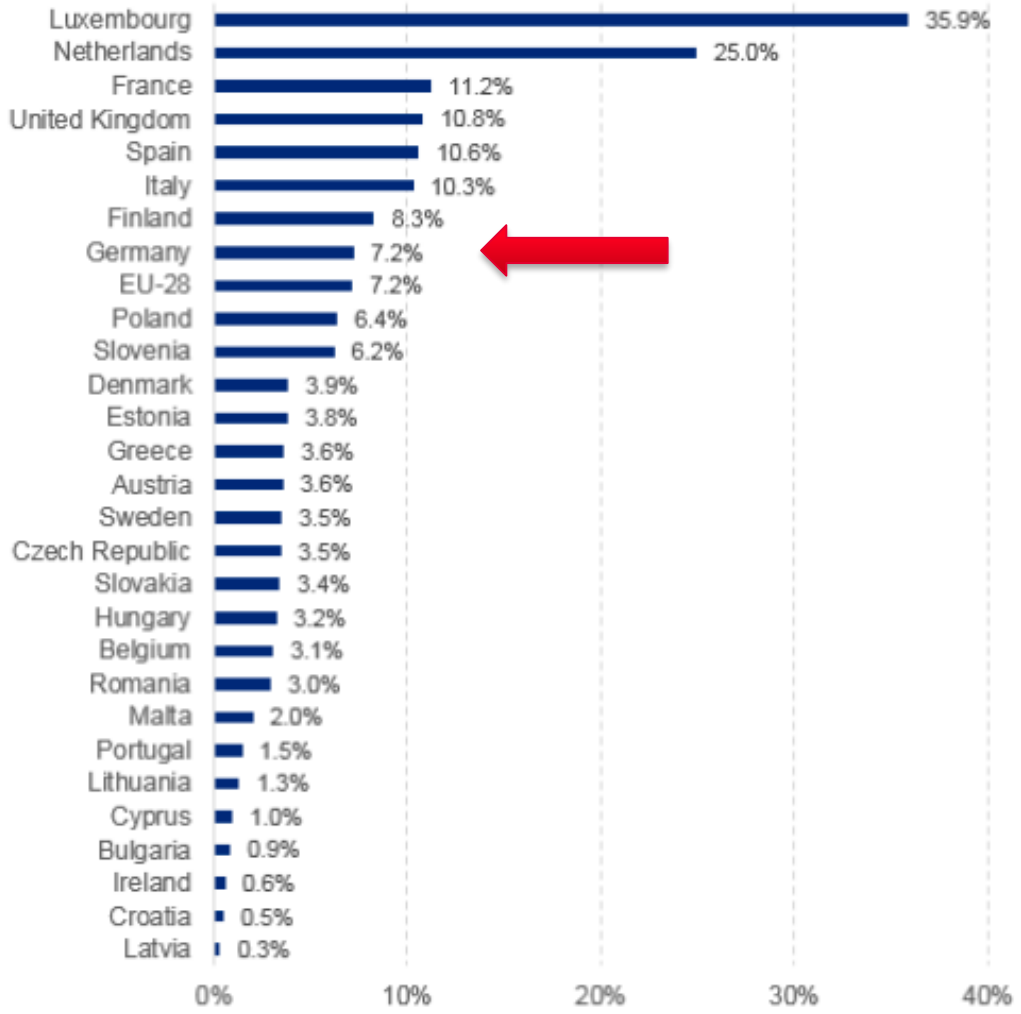
Recycling rates for relevant waste streams in Germany



End-of-pipe instead of closed loops

Wuppertal Institut

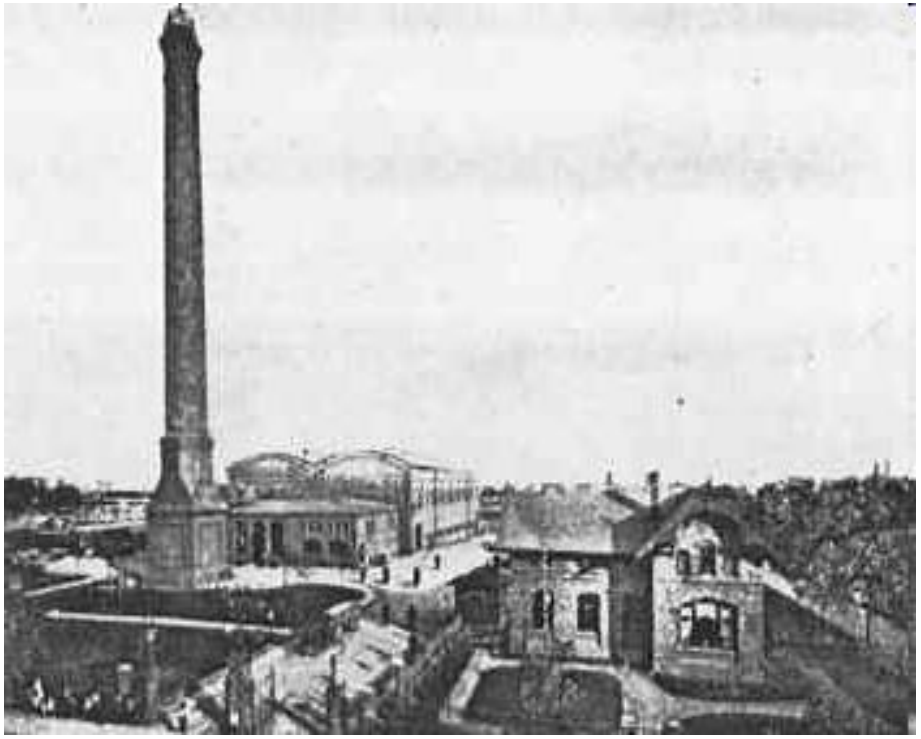
Figure 4-3 Share of DMC recycled in 2012 per MS (in %)



Source: own calculation based on data from Eurostat.

Wilts et al. 2016 – EcoInnovation Observatory 2016

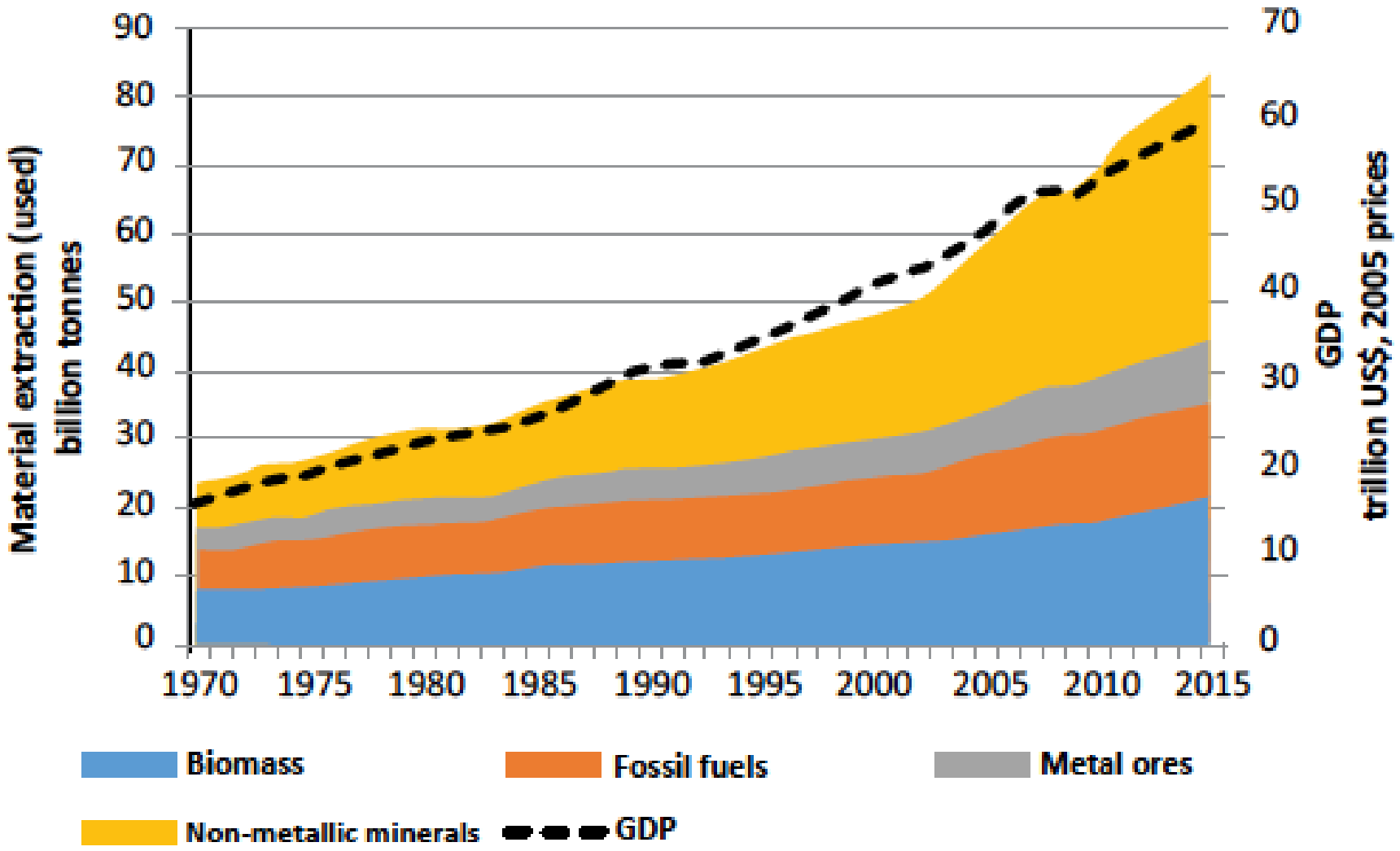
Waste Management Industry vs Circular Economy



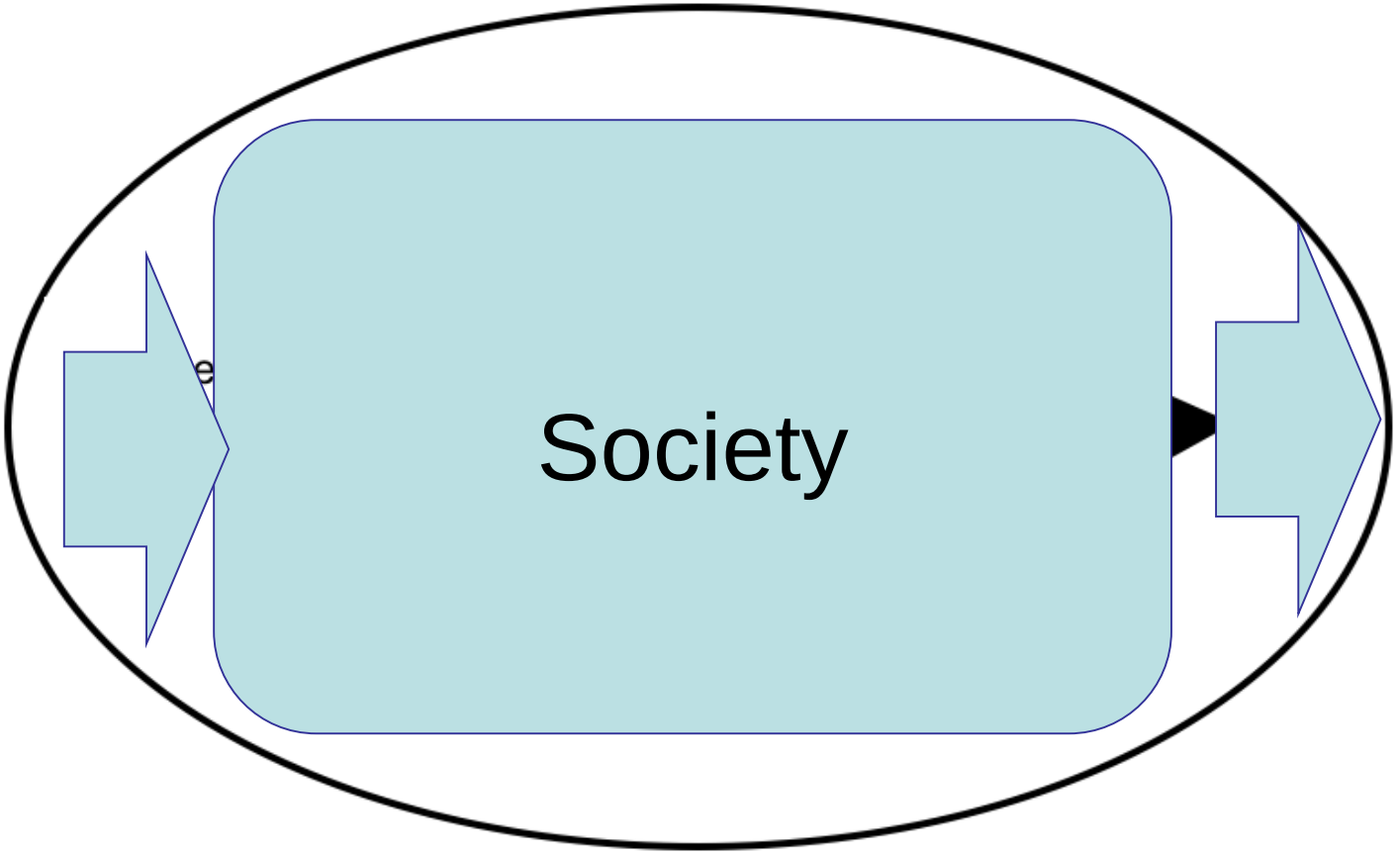
Waste Incineration Plant, Hamburg 1896

Cloaca Maxima, Rome

Global material extraction

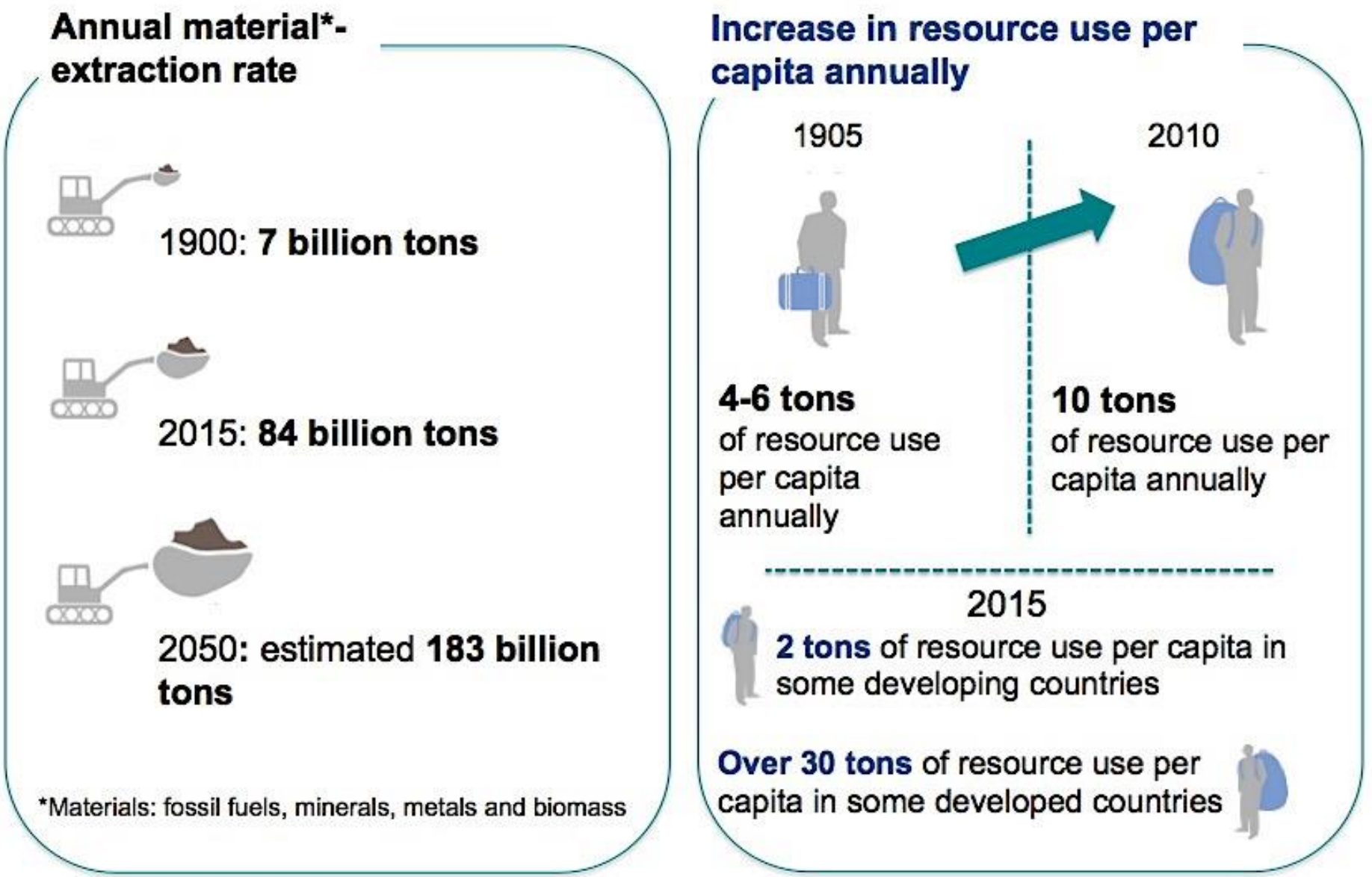


Empty world vs full world (Herman Daly)



Extraction rates and increase in resource use

Wuppertal Institut



Wuppertal Institut

The key elements of the European Commission´s CE Action Plan

Communication

Closing the loop
An EU action plan
for the Circular
Economy

+

Proposal for review of waste directives:

- Waste Framework Directive
- Landfill Directive
- Packaging waste Directive
- WEEE Directive
- End-of-life vehicles Directive
- Batteries and accumulators Directive

Policy instruments to support the Circular Economy

Wuppertal Institut

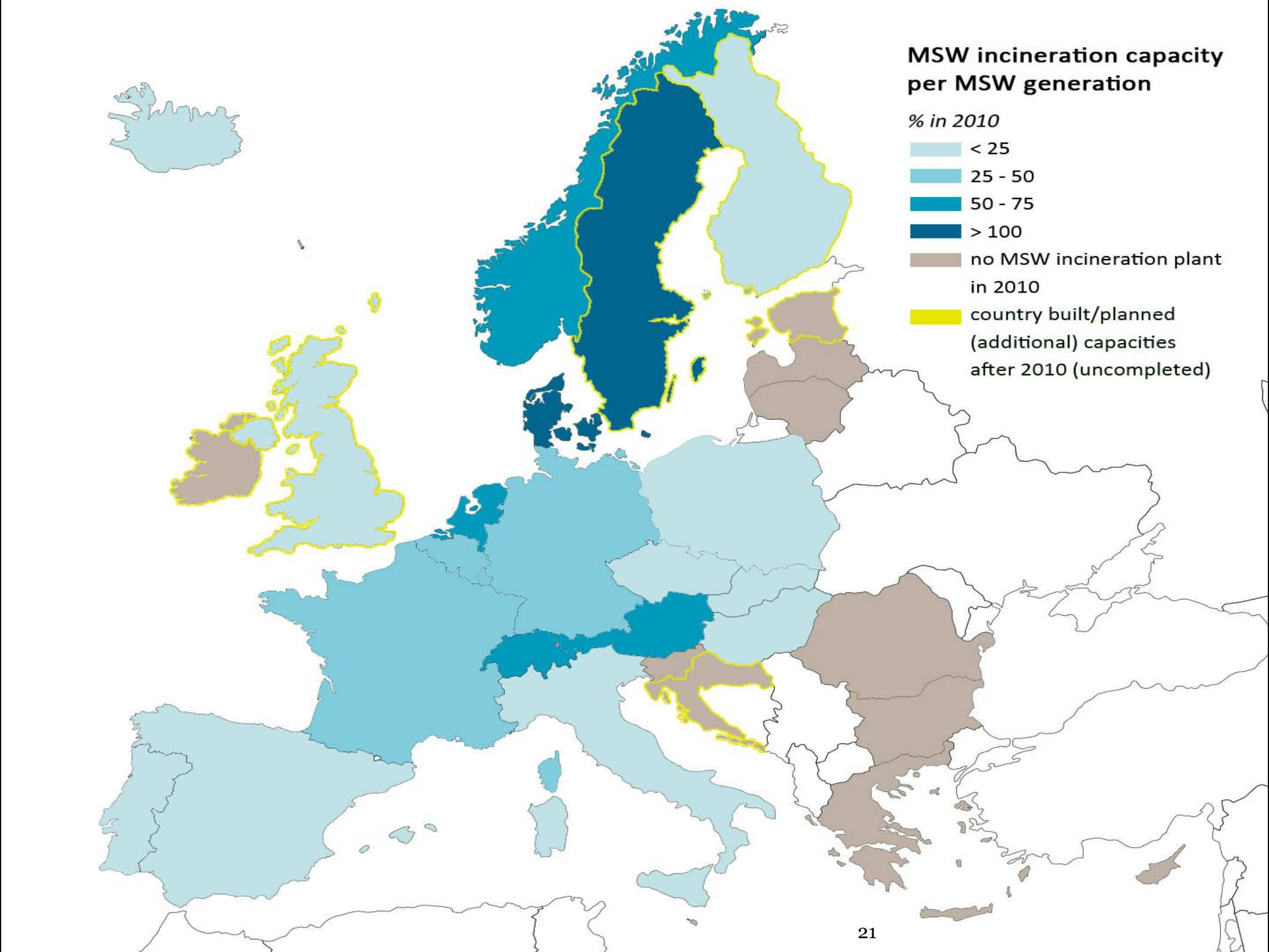
Production oriented policy instruments

- **Support for Ecodesign of products**
- **Extended Producer Responsibility**

Consumption oriented policy instruments

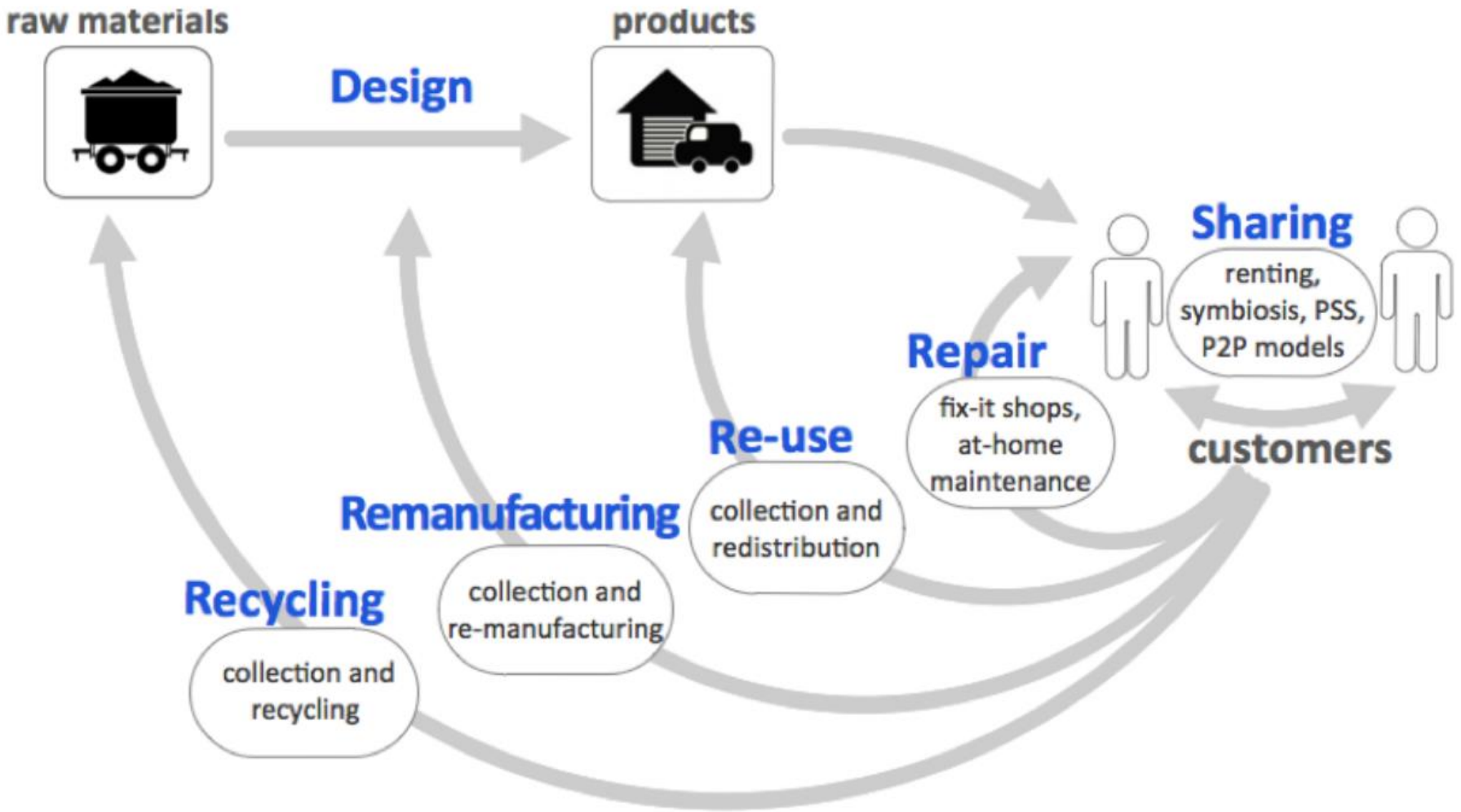
- **Strengthening reuse and remanufacturing**
- **Green Public Procurement**

"Shifting the focus of waste management funds from waste incineration to closing material loops will financially push the implementation of the circular economy." **(European Commission 2015).**


MSW incineration capacity per MSW generation
% in 2010
< 25
25 - 50
50 - 75
> 100
no MSW incineration plant in 2010
country built/planned (additional) capacities after 2010 (uncompleted)

Circular business models –
Key outcomes of the EU EcoInnovation Report 2018

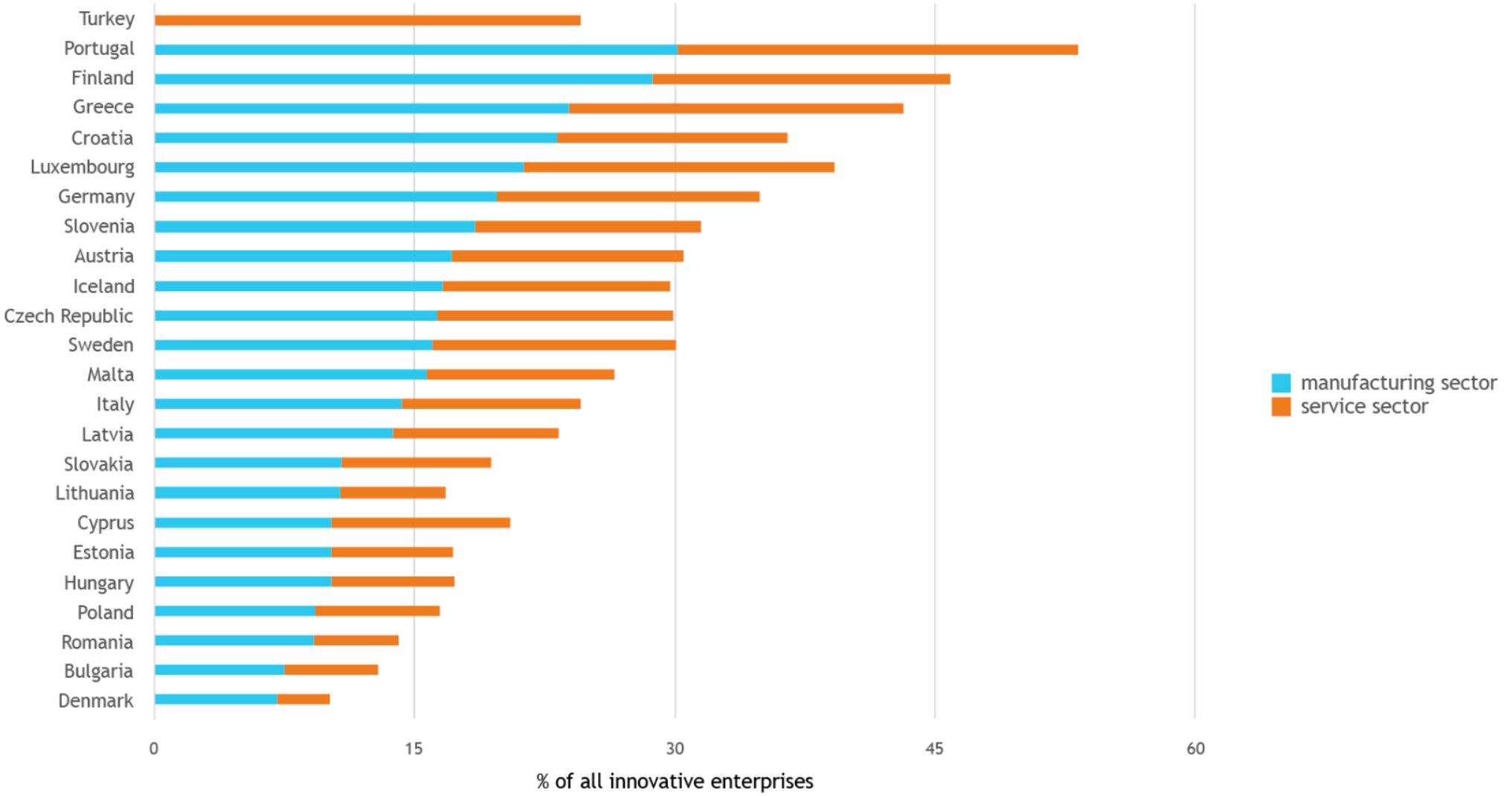
Wuppertal Institut



Increasing demand for innovative entrepreneurs!

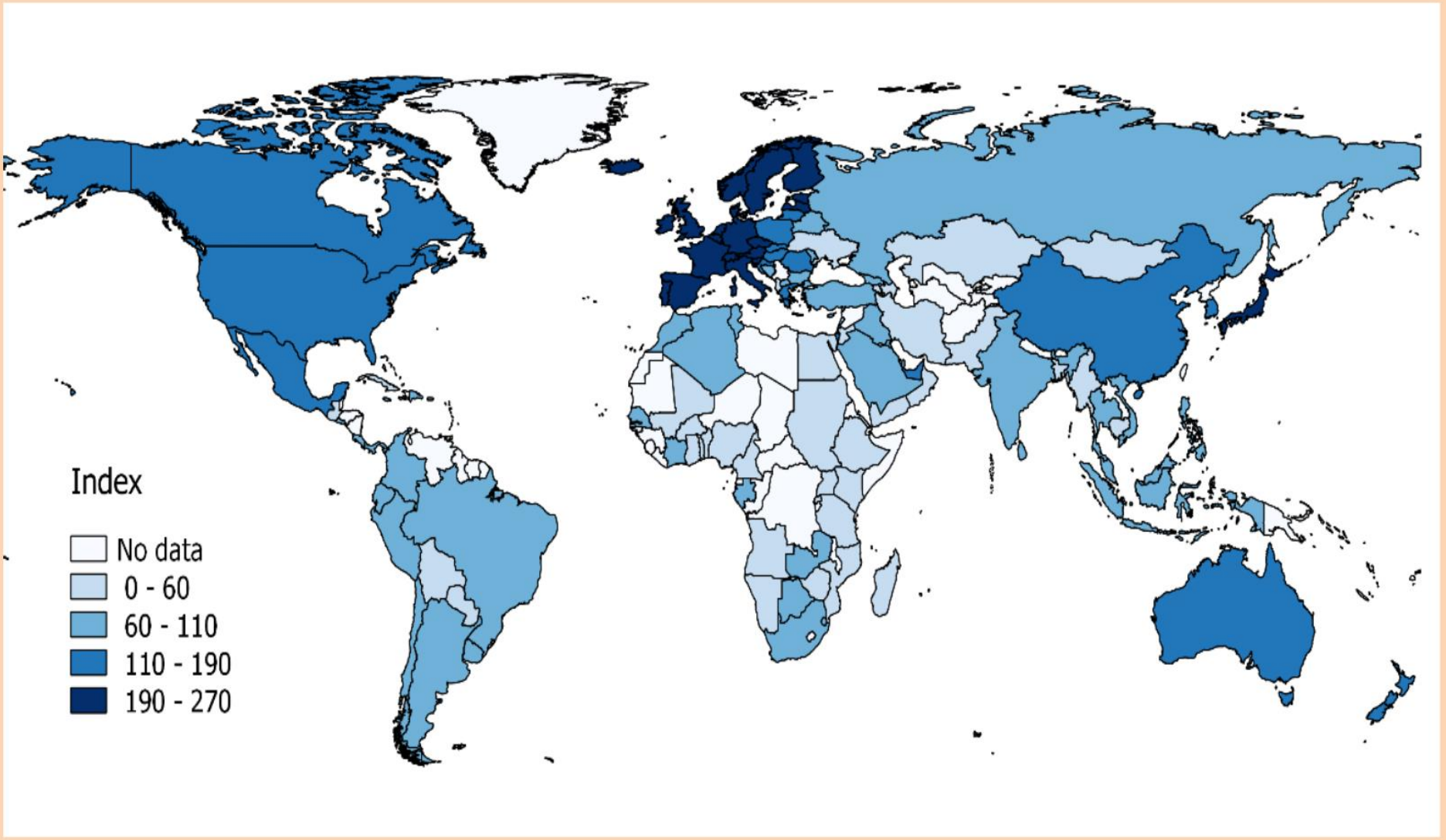
Wuppertal Institut

Figure 2.2 Share of enterprises that facilitated recycling of products after use (CIS-2014)



Where does innovation happen?

Figure 3.3 Global Eco-Innovation Index 2017



Wuppertal Institut

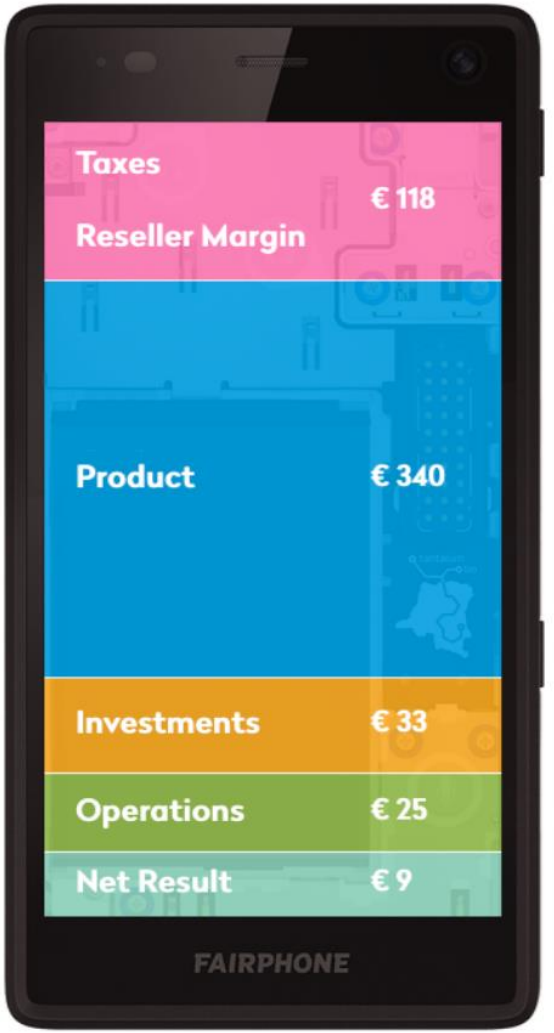
In 2017 74 Community RePaint schemes

Collected over **432,000** litres and **redistributed** over **300,000** litres of paint, which included over **50,000** litres of remanufactured paint

Adding colour to the lives of over **316,000** people through individual sales and improving the appearance of places across the UK

All thanks to **154** **employees** **14** **trainees** and **146** **volunteers**

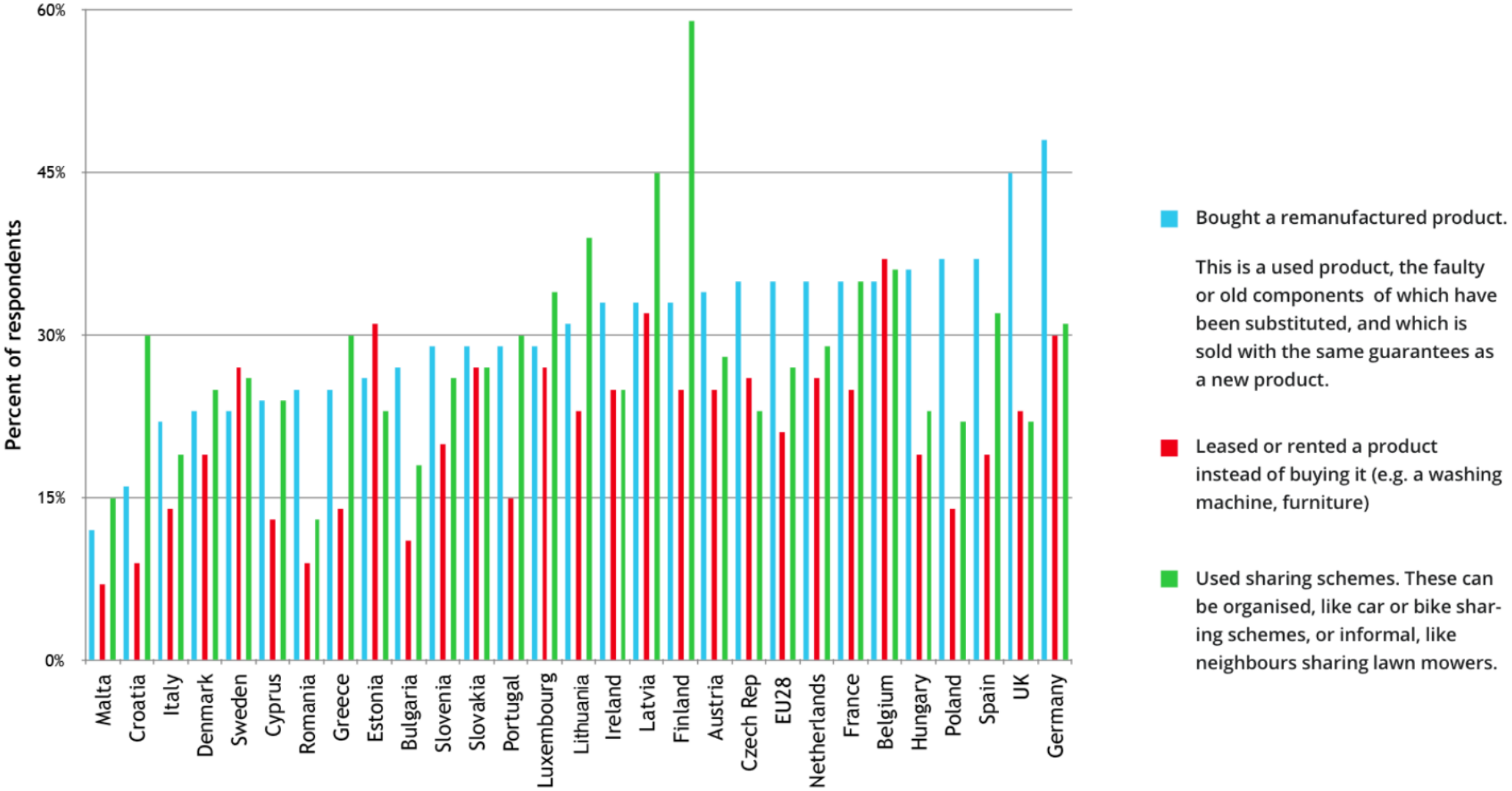
Let´s share + FairPhone



Products – owning or using?

Wuppertal Institut

Figure 2.6 Percentage of citizens who have chosen alternatives to buying a new product, 2013



Degree of change	Doing better (Environmental technologies)	Doing more with less (Resource efficiency)	Doing better with less (Sustainable production and consumption)
Product eco-innovation	Clean-up the environment, typically end-of-pipe type innovations	Focus on improving products and processes	Focus on providing radically new products and services
Circular economy examples	e.g. new recycling technologies	e.g. repair services and products from recycled materials	e.g. closed loop product service systems
Business implications	Integrating environmental management into business models	Adapting and improving business models	New business models

Wuppertal Institut

SUSTAINABLE DEVELOPMENT GOAL 12

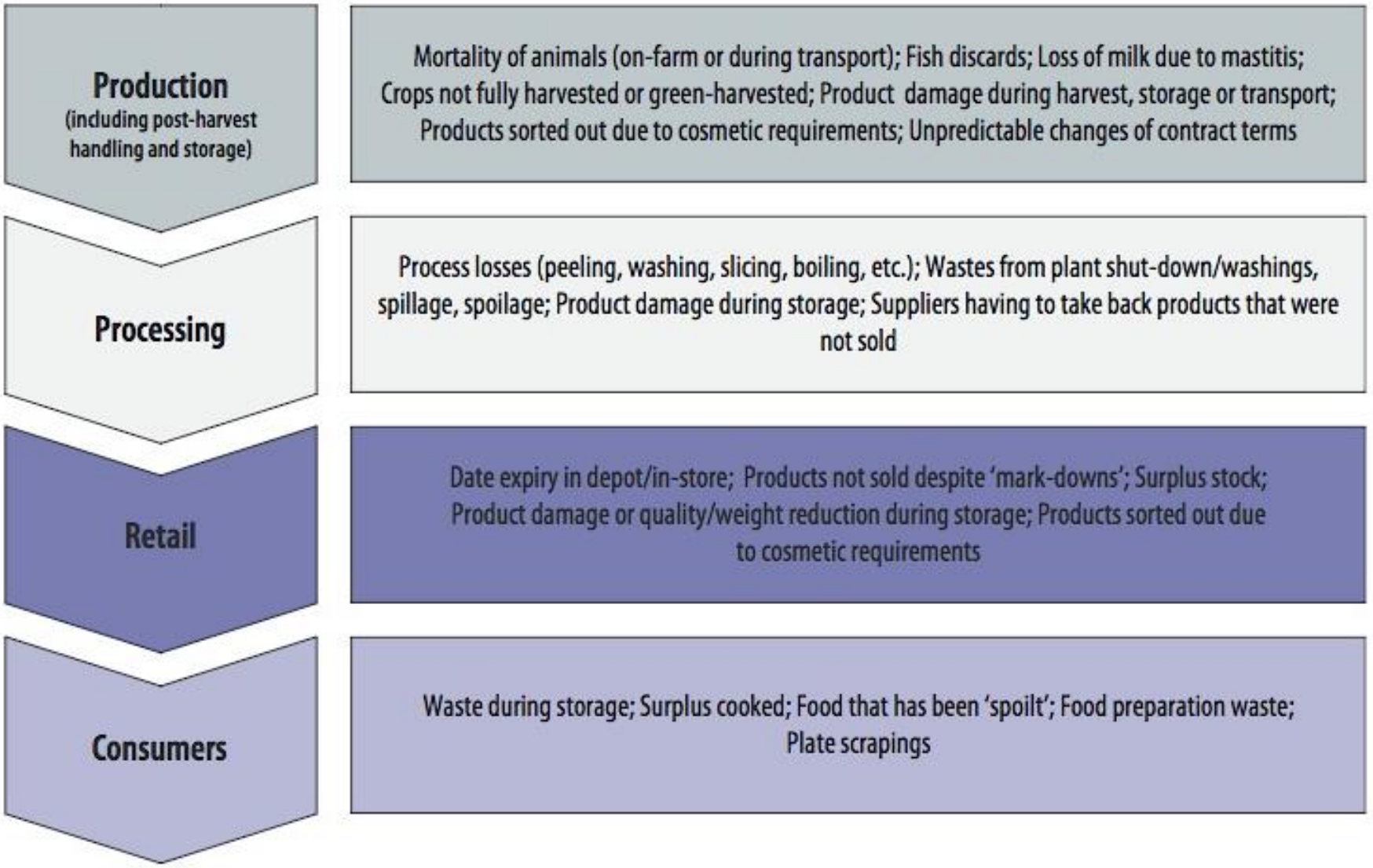
Ensure sustainable consumption and production patterns

SDG Food Waste Prevention

Target 12.3: By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses.

- **85% of all OECD countries indicated food waste as priority waste stream for waste prevention (OECD 2017)**
- **Countries also highlighted the need for improved effectivness and efficiency assessments for waste prevention measures**

Food waste generation

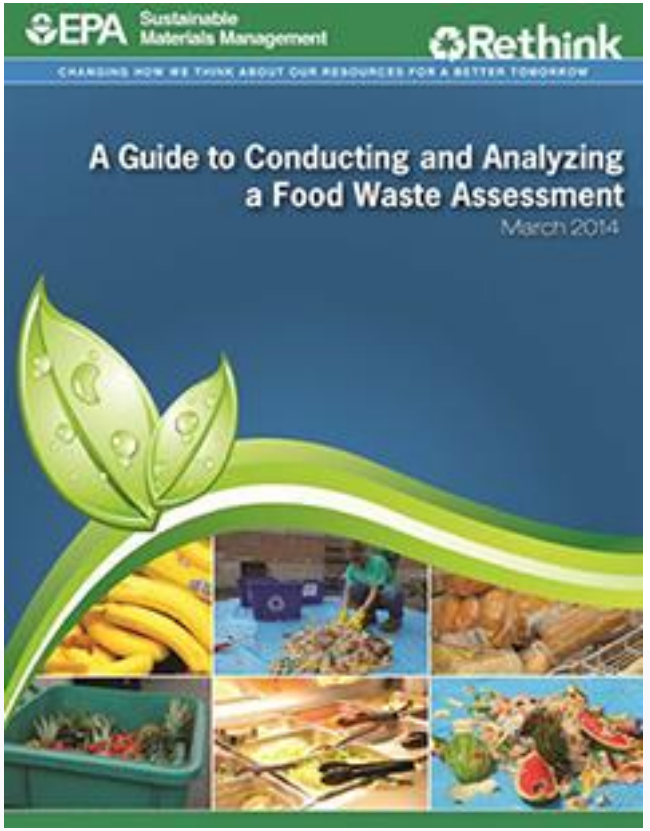


Source: European Court of Auditors.

EU Platform on Food Losses and Food Waste

Aims to support public entities and actors in the food value chain in:

- defining measures needed to prevent food waste
- sharing best practice
- evaluating progress made over time



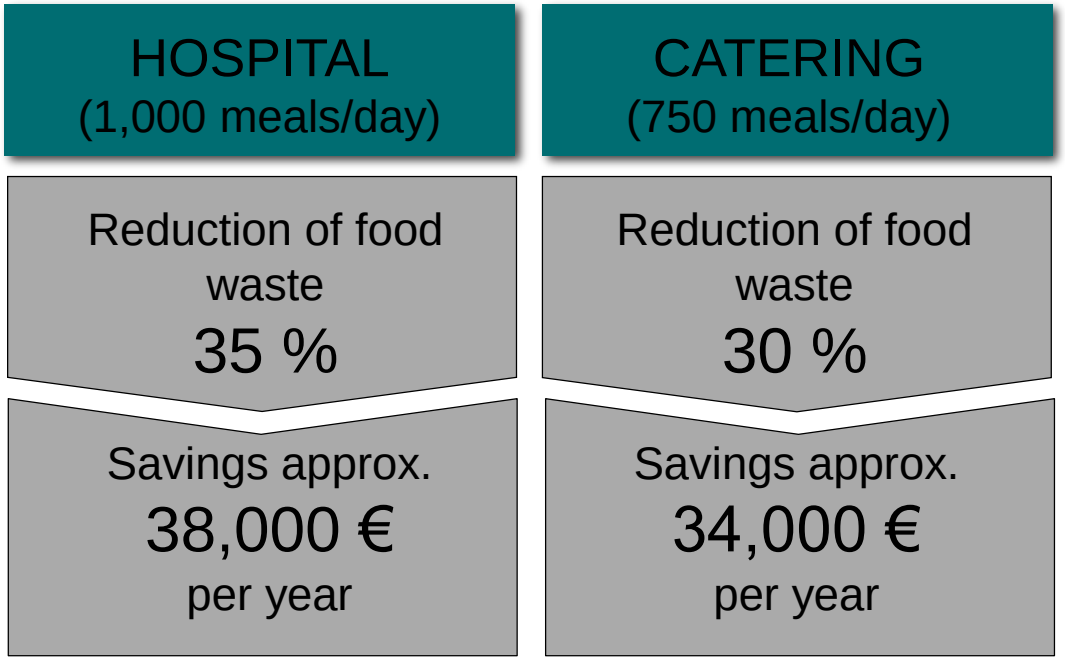
Food Waste Warriors

There are many people, groups and businesses around New Zealand doing great work to reduce food waste. Some collect surplus food and supply it to those who need it, while others are creating unique products from food that would have gone to waste.

Wuppertal Institut

The initiative "United Against Waste" developed a tool that aims to help companies assessing the benefits of specific food waste prevention measures in their processes. Companies in the catering sector with 750 meals per day have shown saving potentials of up to 34.000 Euro.

Potential Savings

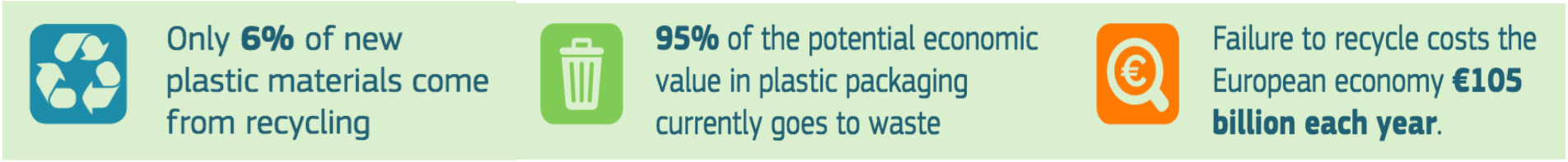


Quelle: http://www.united-against-waste.de/loesungen/abfall-analyse-tool

Circular failure: the case of plastics

Global production of plastics has increased twentyfold since the 1960s, reaching 322 million tonnes in 2015. It is expected to double again over the next 20 years. Plastic production and the incineration of plastic waste globally give rise to approximately 400 million tons of CO_2 per year.

In Europe, at present, less than 30% of plastic waste is collected for recycling and secondary plastics cover only 6 % of the European demand for plastics.

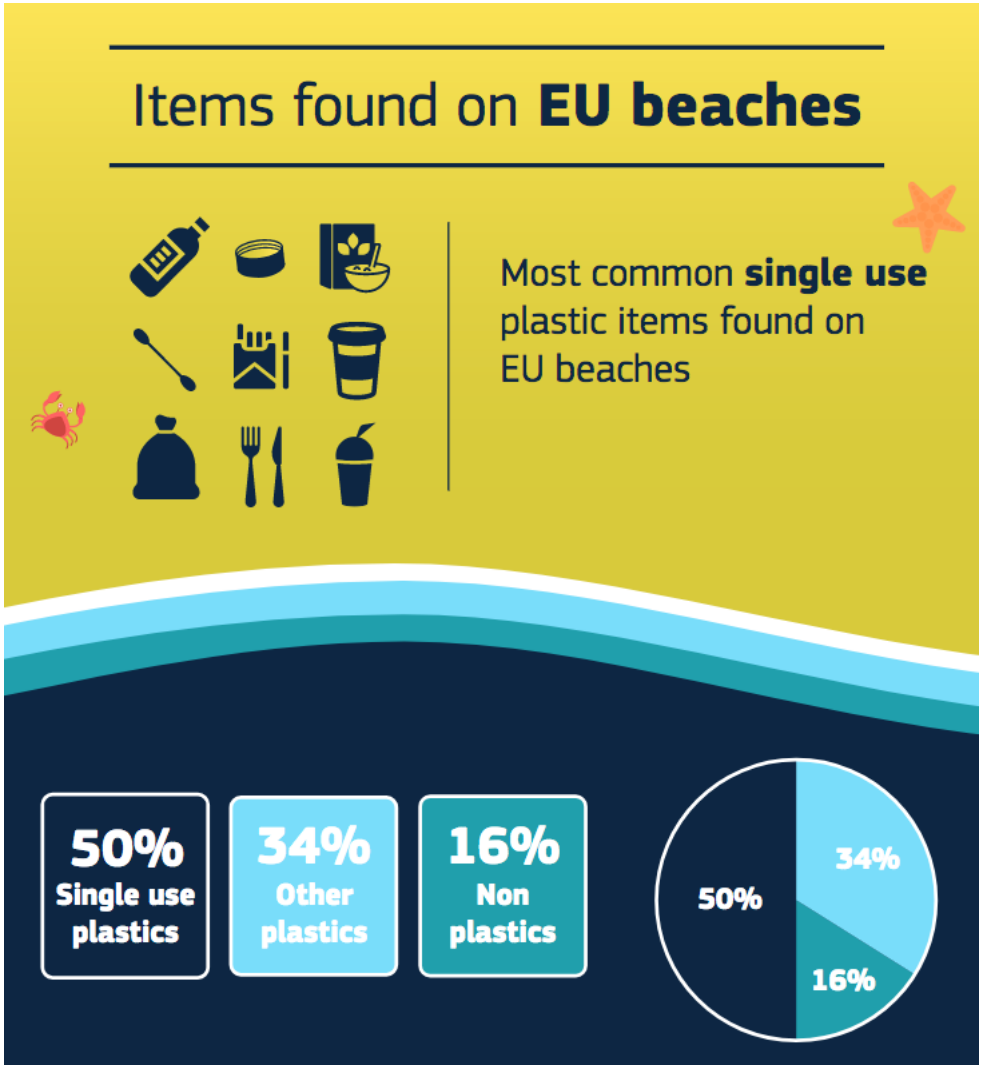


Source: European Commission 2018

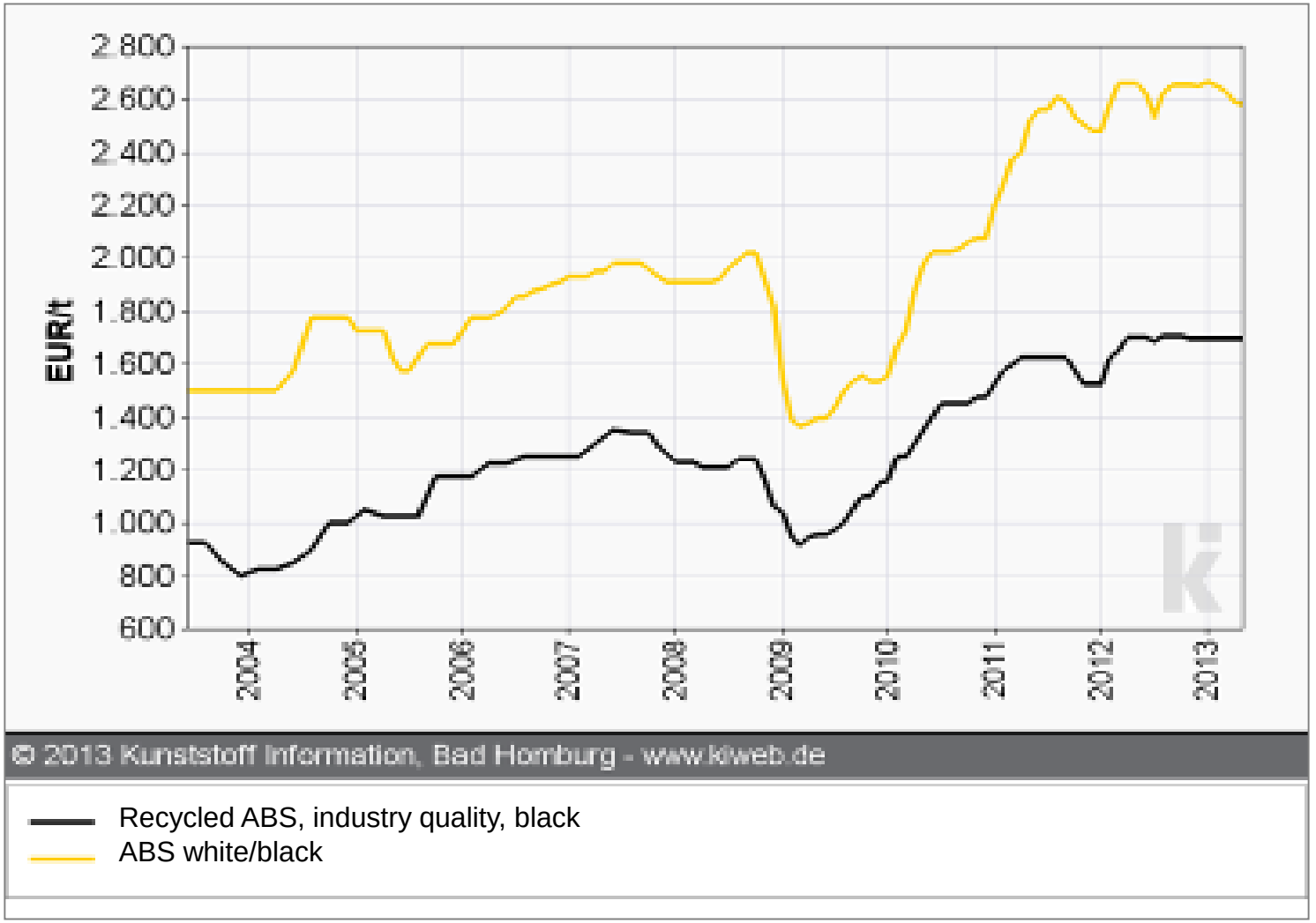

European Commission
A EUROPEAN STRATEGY
FOR PLASTICS
IN A CIRCULAR ECONOMY

Plastics in a circular economy

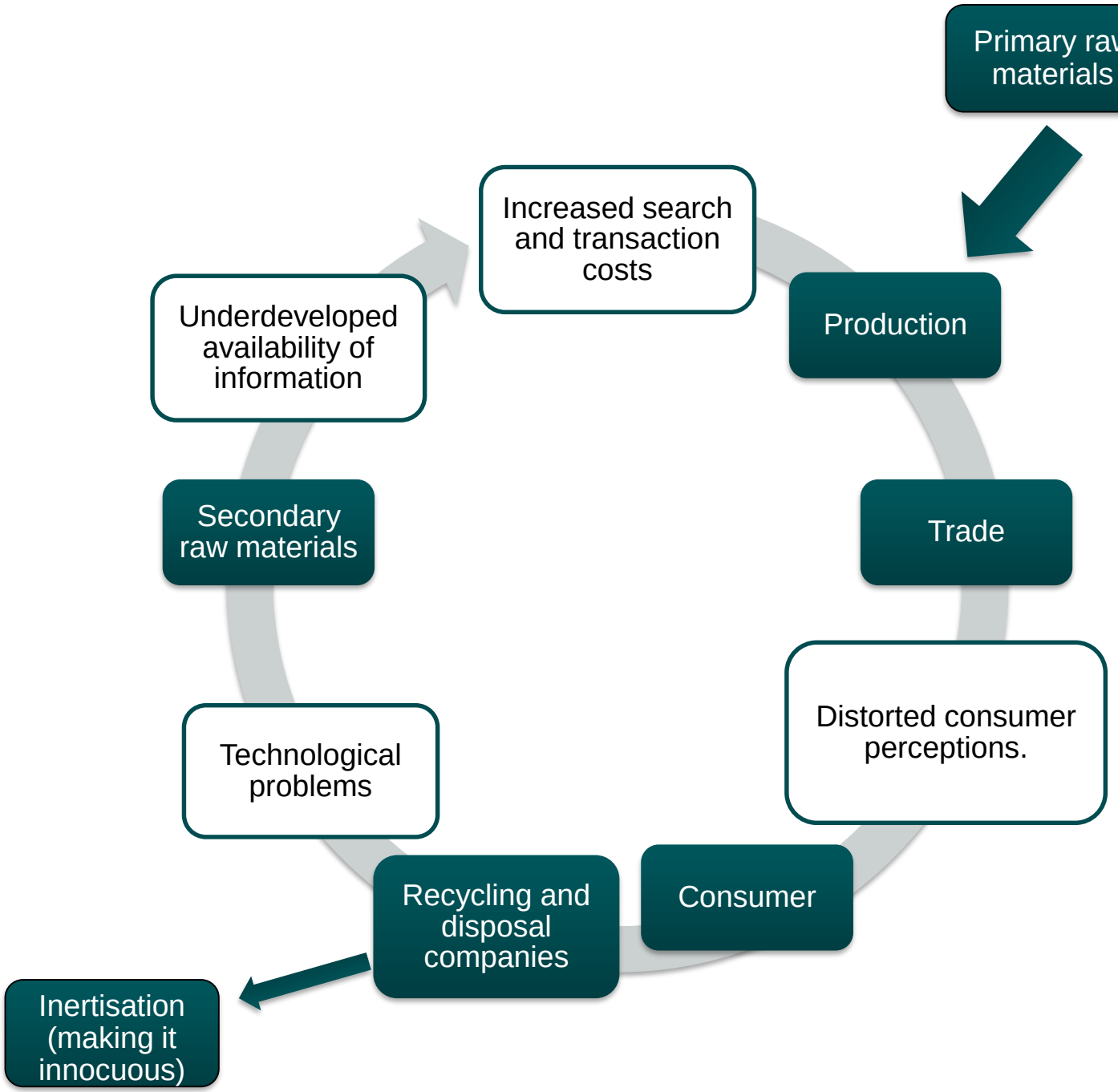
- **Ban for certain plastic single use products like straws**
- **Labelling regarding impacts on marine biodiversity etc**
- **Obligation for member states to develop EPR schemes for products like PET bottles (mandatory collection rate of 90% until 2029)**
- **!! Development of standards for recycled materials: Mandatory recycled content of 25%**



Barriers for the uptake of recycled materials

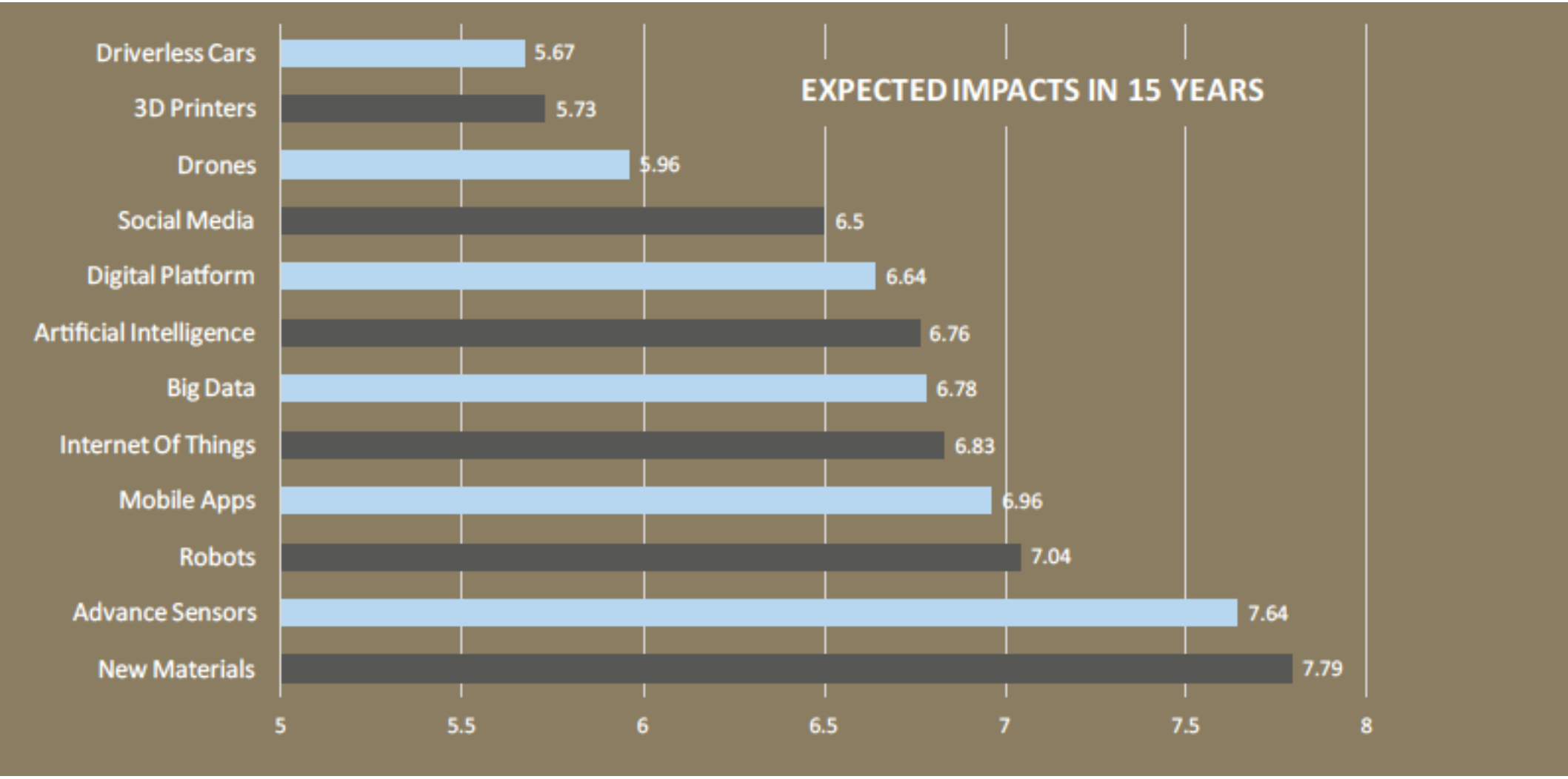


Barriers in the circular economy

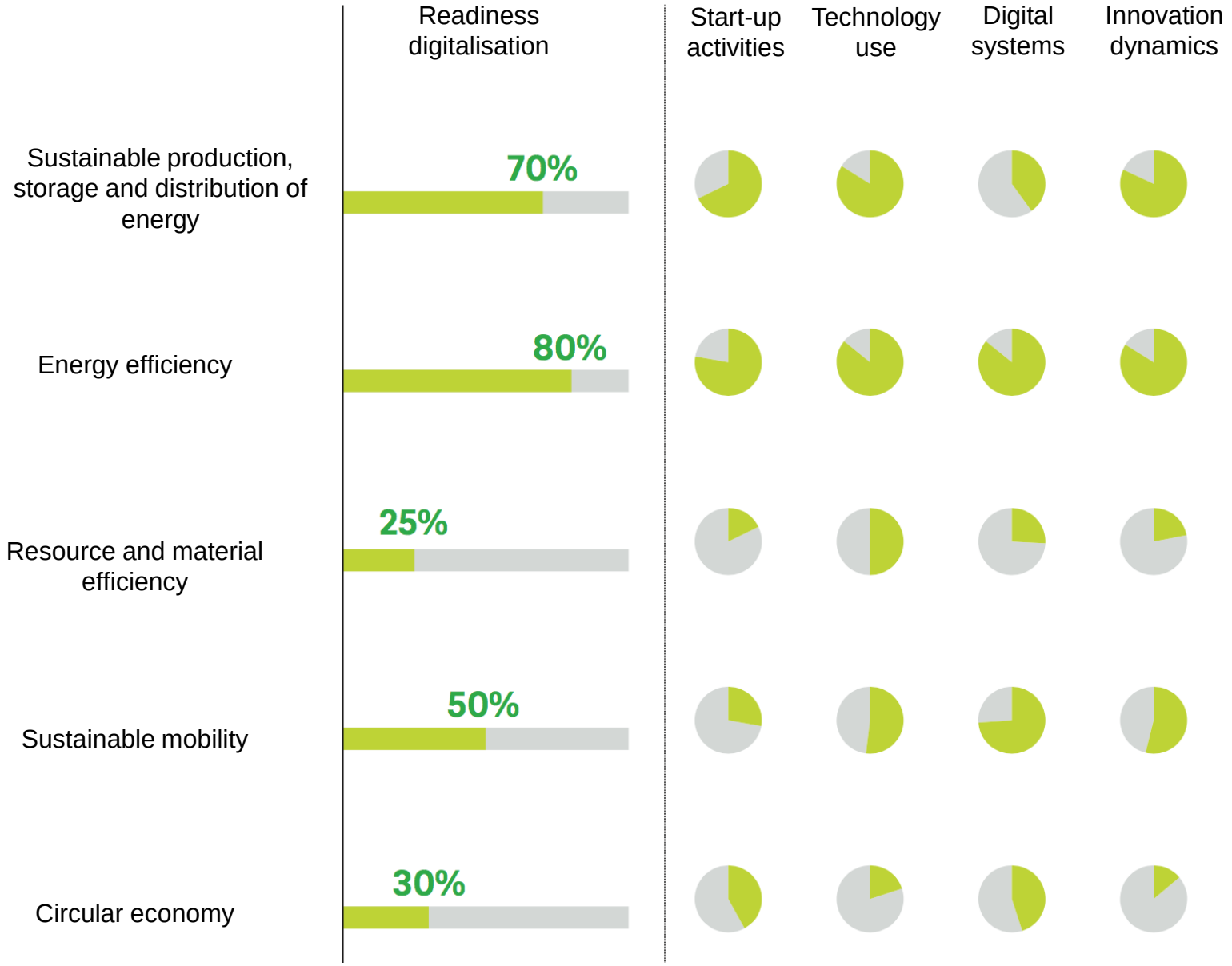


ISWA – future challenges for waste management

Technologies with relevance for future WM



Status quo – untapped potentials for the CE



Blockchain as enabler for a circular business model: deposit schemes for PET bottles

1. **The process starts at the point of sale, where a deposit label is activated on the smartphone of the consumer once the plastic bottle is bought.**
2. **The deposit charged in this way is transferred through the blockchain to a deposit pool.**
3. **The deposit is payed back when the consumer brings the plastic bottle back to the retailer or to another drop-off point. Once the old device is recorded at the drop-off point, the consumer gets back the deposit transferred to her or his smartphone.**

➢ **In this way, the innovation makes payments at the point of sale respectively at the drop-off point unnecessary.**

Feasibility study within ClimateKIC

Blockchain approach will make deposit scheme for densely populated, optimally isolated regions (e.g. touristic island destinations) economically viable

- **Access to separately collected, homogenous materials with positive market value with a collection rate of 80%**
- **Cost savings from reduced littering**
- **Access to data on the life cycle of products**
- **Dynamic incentive for actual design for recycling by individual producer responsbility**

Total cost saving potential: 2-4 billion USD
(European Commission 2018)

Key research challenges

Wuppertal Institut

Circular Economy…

- **As contribution to an increased resource efficiency and climate protection: recycling not as an end in itself**
- **As a life-cycle approach: recyclable products alone do not guarantee a closed-loop circulation, consider rebound effects**
- **As a transformation and innovation agenda: instead of technical improvements, a comprehensive change of production and consumption patterns is necessary**

Thank you very much
for your attention!

Dr. Henning Wilts
Director Circular Economy
at the Wuppertal Institute for Climate, Environment and Energy

henningwi@wupperinst.org
0202 2492 290