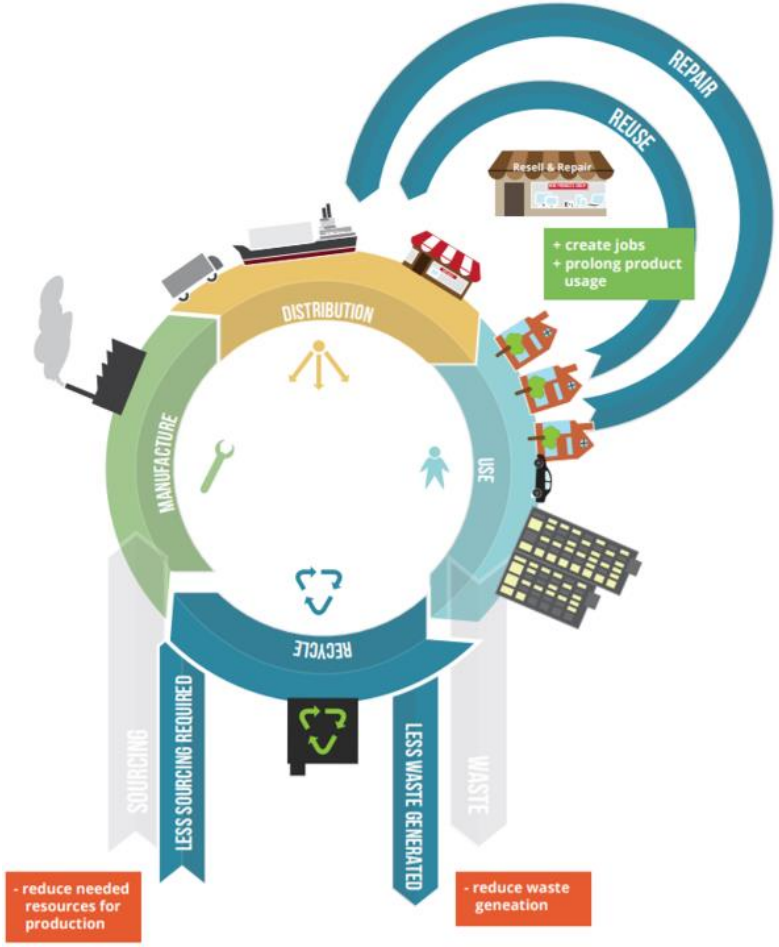
switchasia
REGIONAL POLICY ADVOCACY

Funded by the European Union

Indicators of Circular Economy and Zero-waste City

Towards United Nations Sustainable Development Goals 2030

Dec. 6, 2019, Beijing



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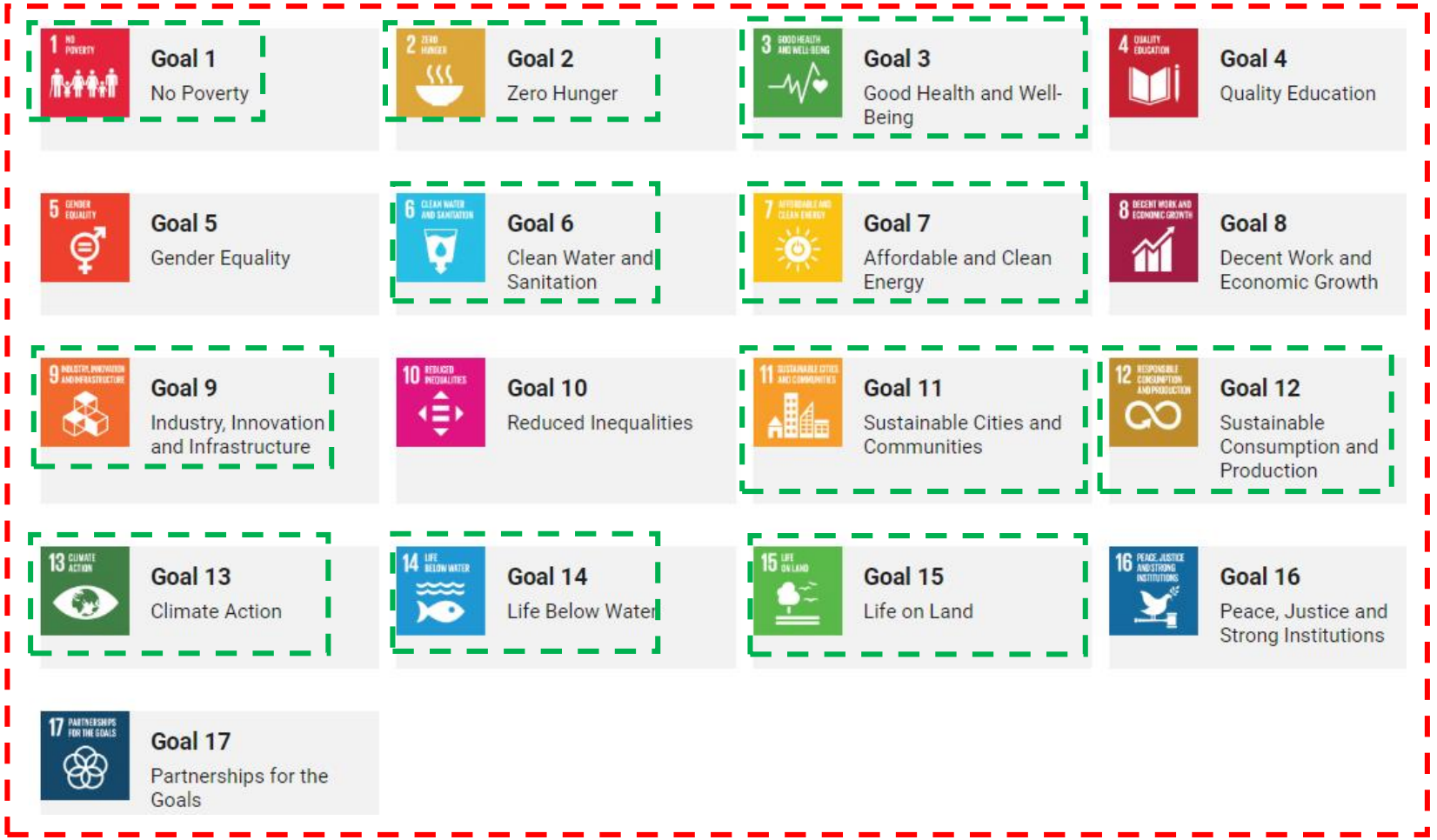
Sustainable Development Goals

Circular economy

Zero-waste city

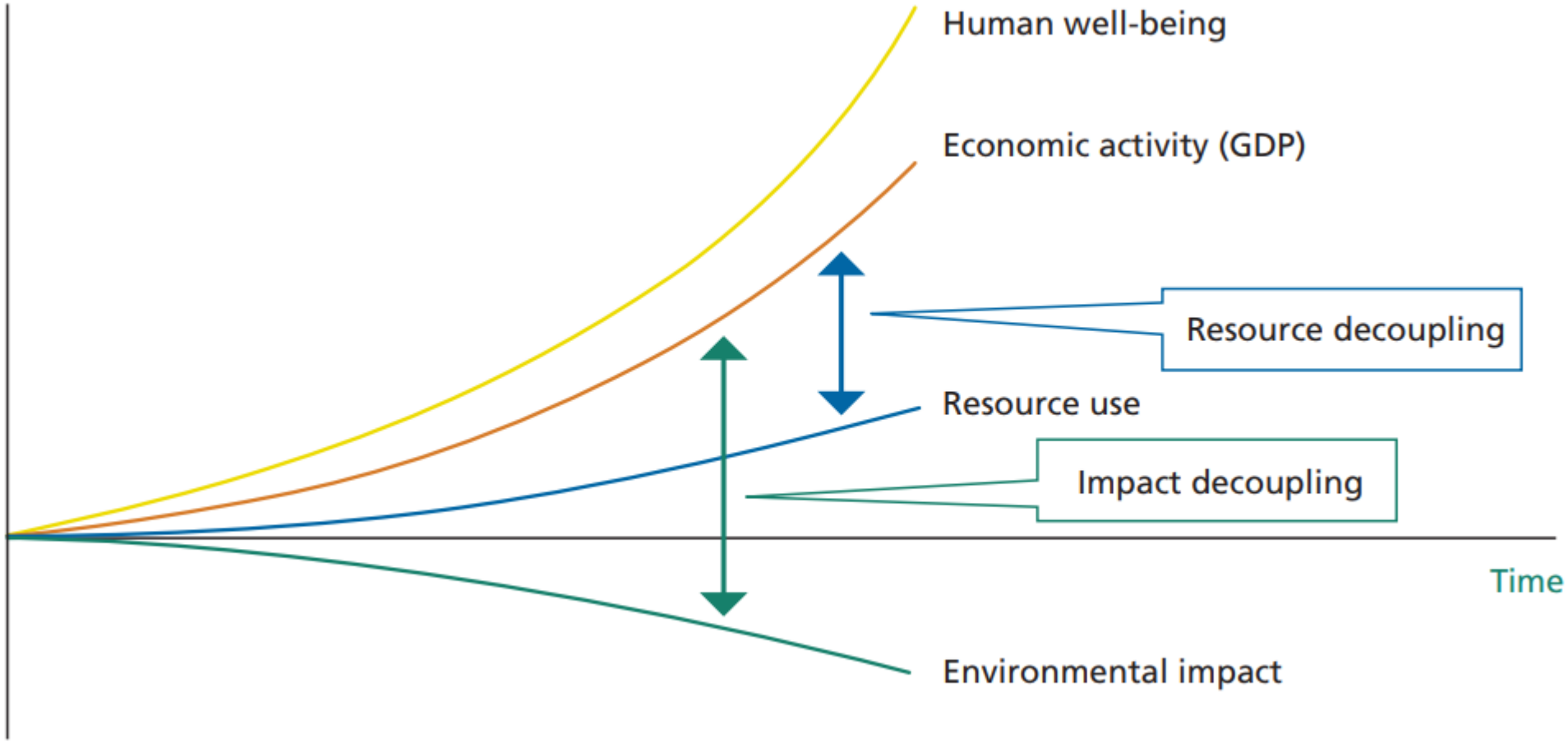


Concept and indicator of circular economy

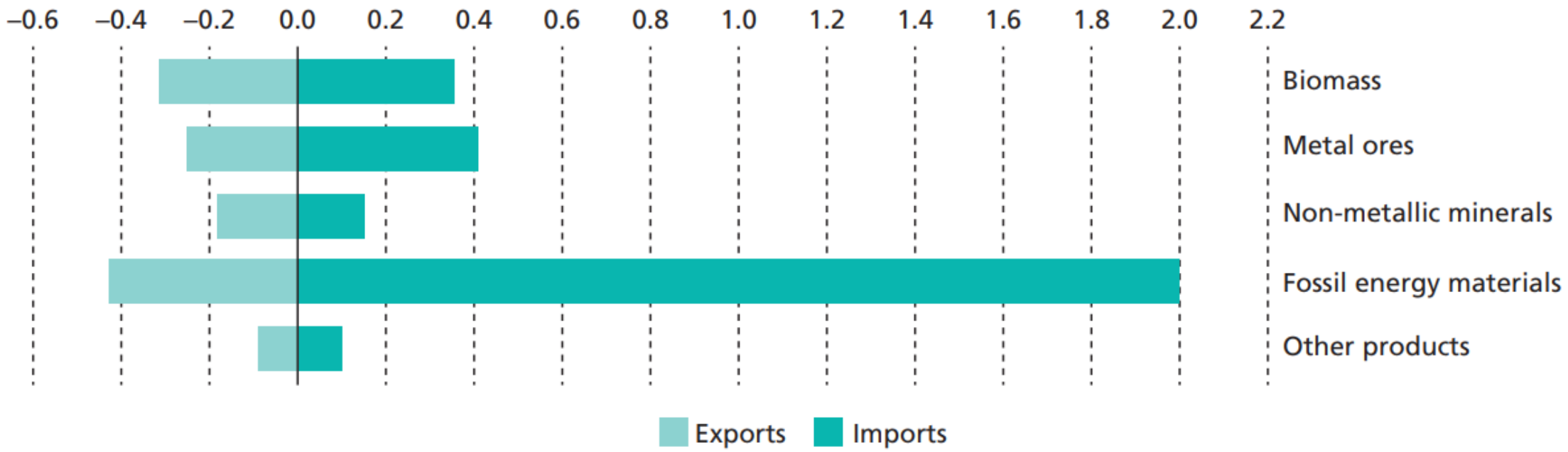
- The basic concept of a circular economy depicts a production and consumption system that relies on the recycling, re-use, repair, remanufacturing, sharing of products, changing the consumption patterns and new business models and systems.

- There is no indicator that can be a single measurement for the Circular Economy. However a number of existing indicators can help to measure performance in several areas that directly or indirectly contribute to the Circular Economy development.

Decoupling resource and impact decoupling (UNEP, 2011)



EU-28 physical imports and exports by main material category, 2014 (tonnes per capita) (Eurostat, 2015a)



Indicator of circular economy

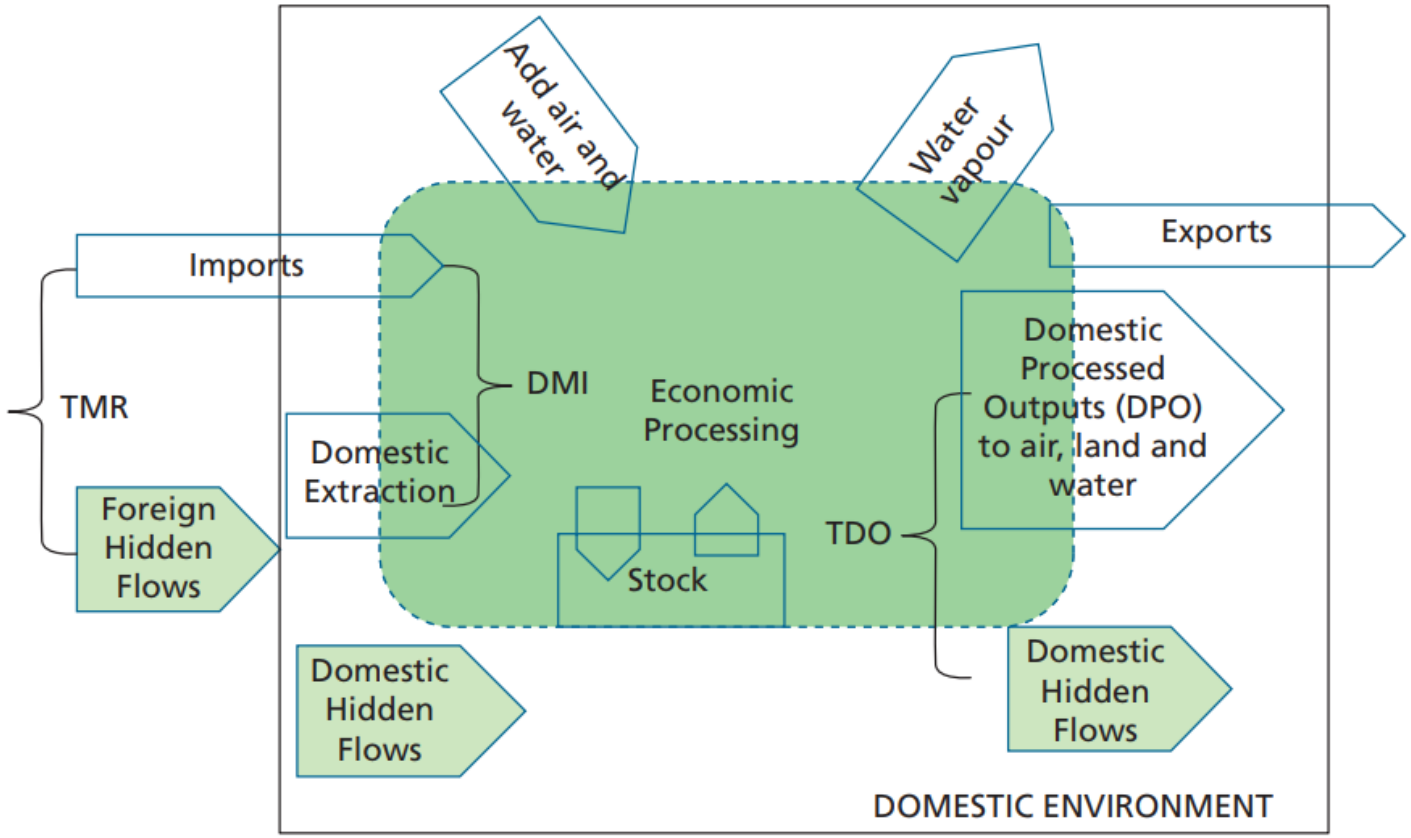
- Since resource efficiency and waste reduction are central in a circular economy, indicators on material flows are particularly relevant.
- Resource efficiency

$$\text{Resource efficiency} = \frac{\text{Economic } \textit{benefit}}{\text{Material input}}$$

- Waste recycling rate

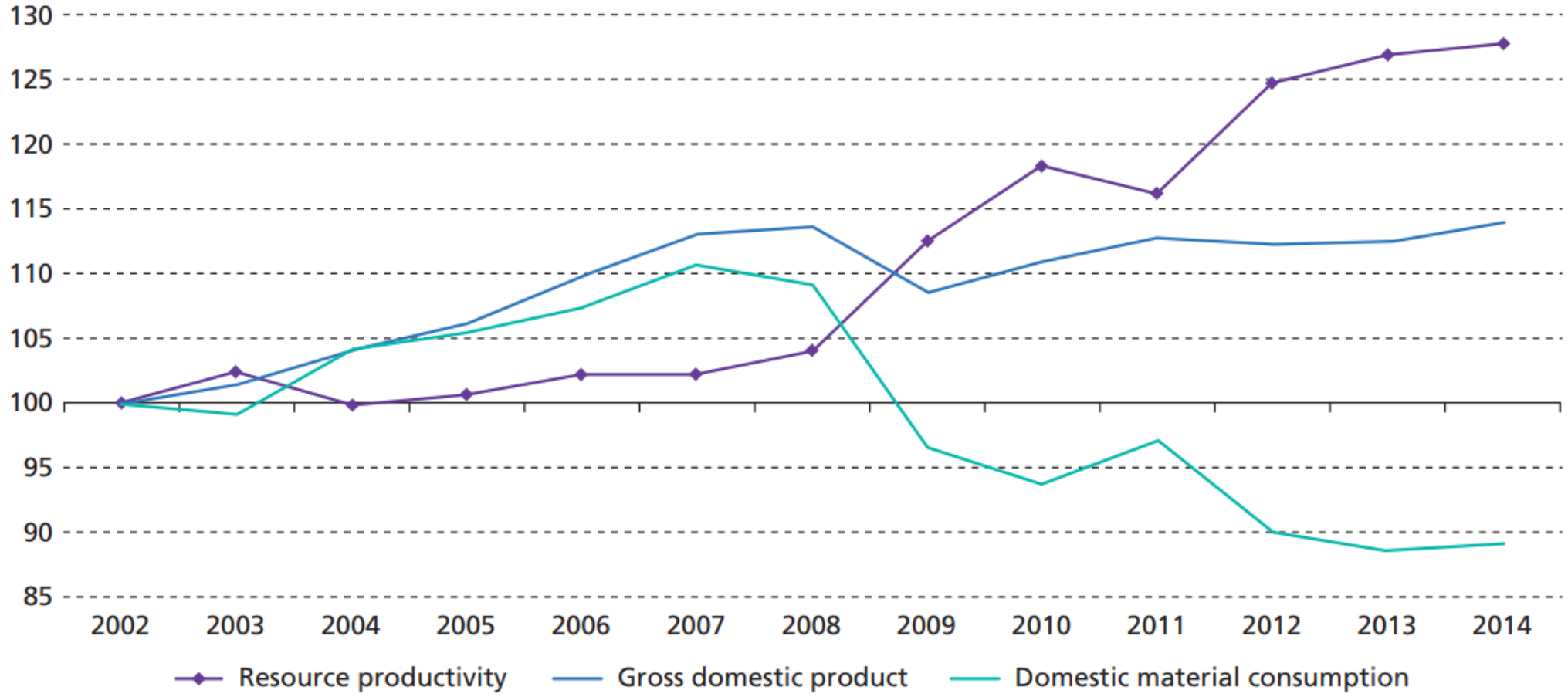
$$\text{Recycling rate} = \frac{\text{Waste recycling}}{\text{Waste generation}} \times 100\%$$

Material flows conceptual design

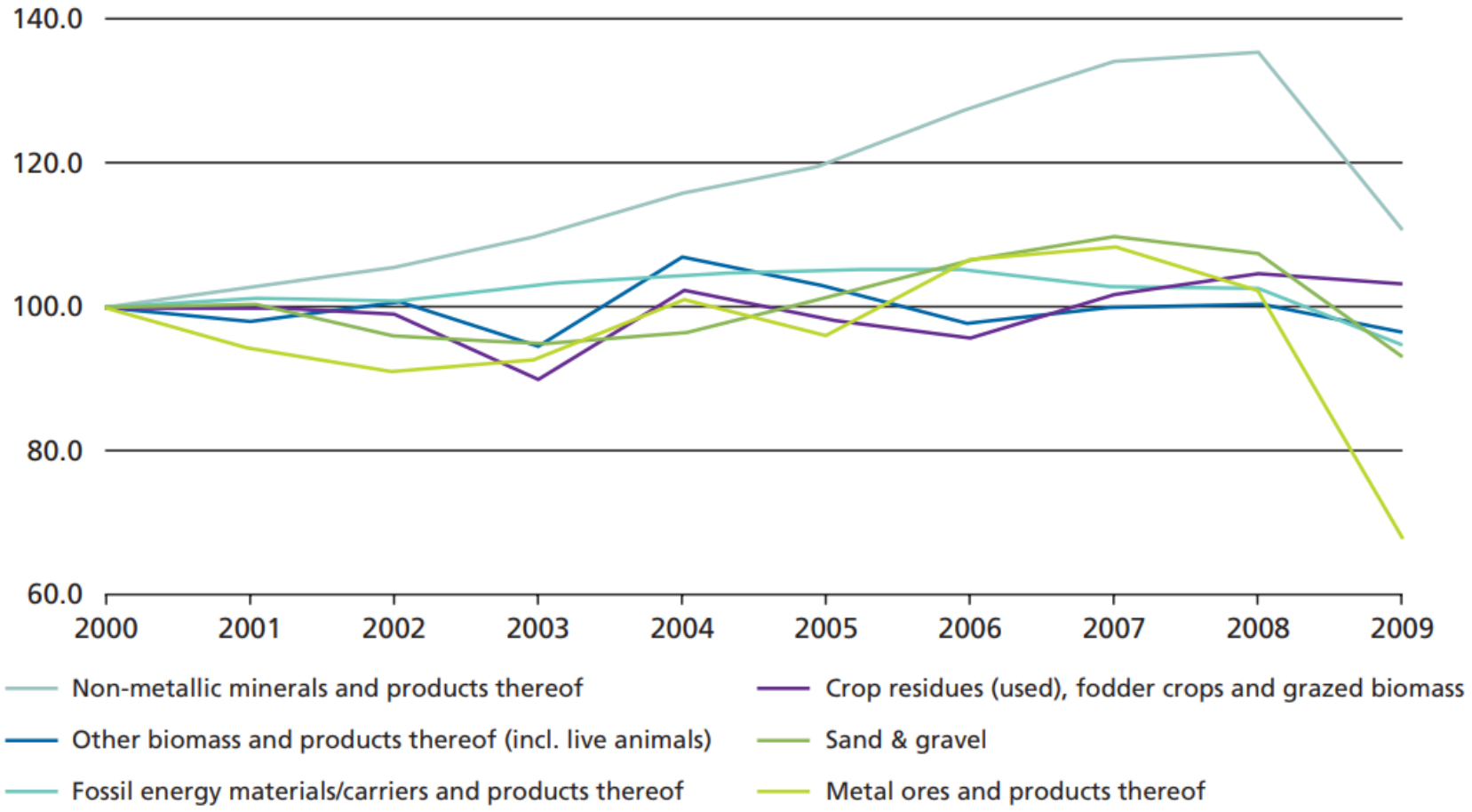


Based on Matthews et al., 2000. DMI, direct material input; TMR, total material requirement; DPO, domestic processed output; TDO, total domestic output.

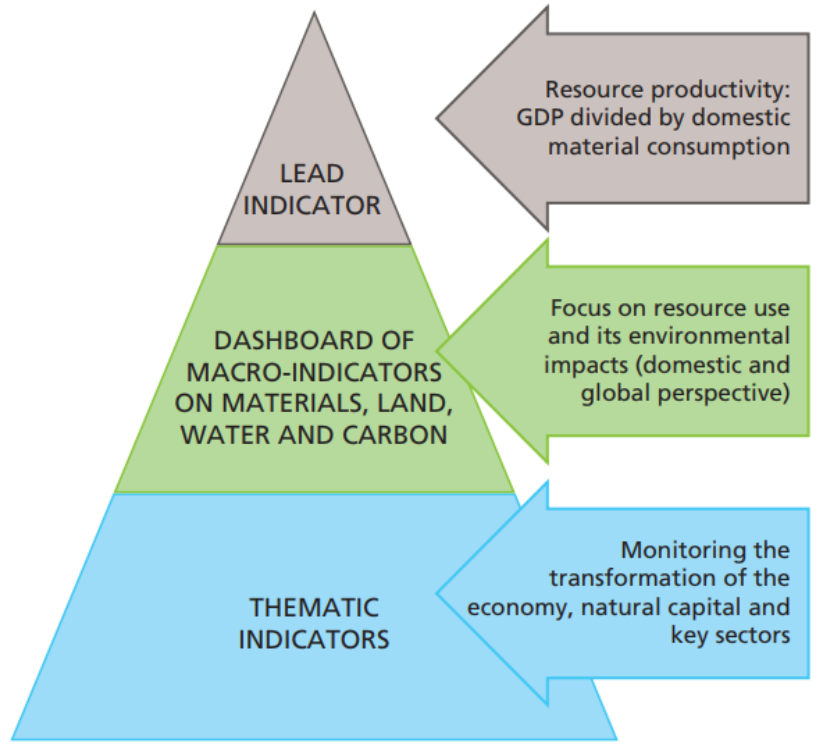
Resource productivity compared with GDP and DMC, EU-28, 2002–2014



Domestic material consumption (DMC) by main material categories, EU-27, 2000–2009 (index 2000 = 100)



Source: Eurostat



EU resource efficiency scoreboard indicators

Resource efficiency indicators in EURES

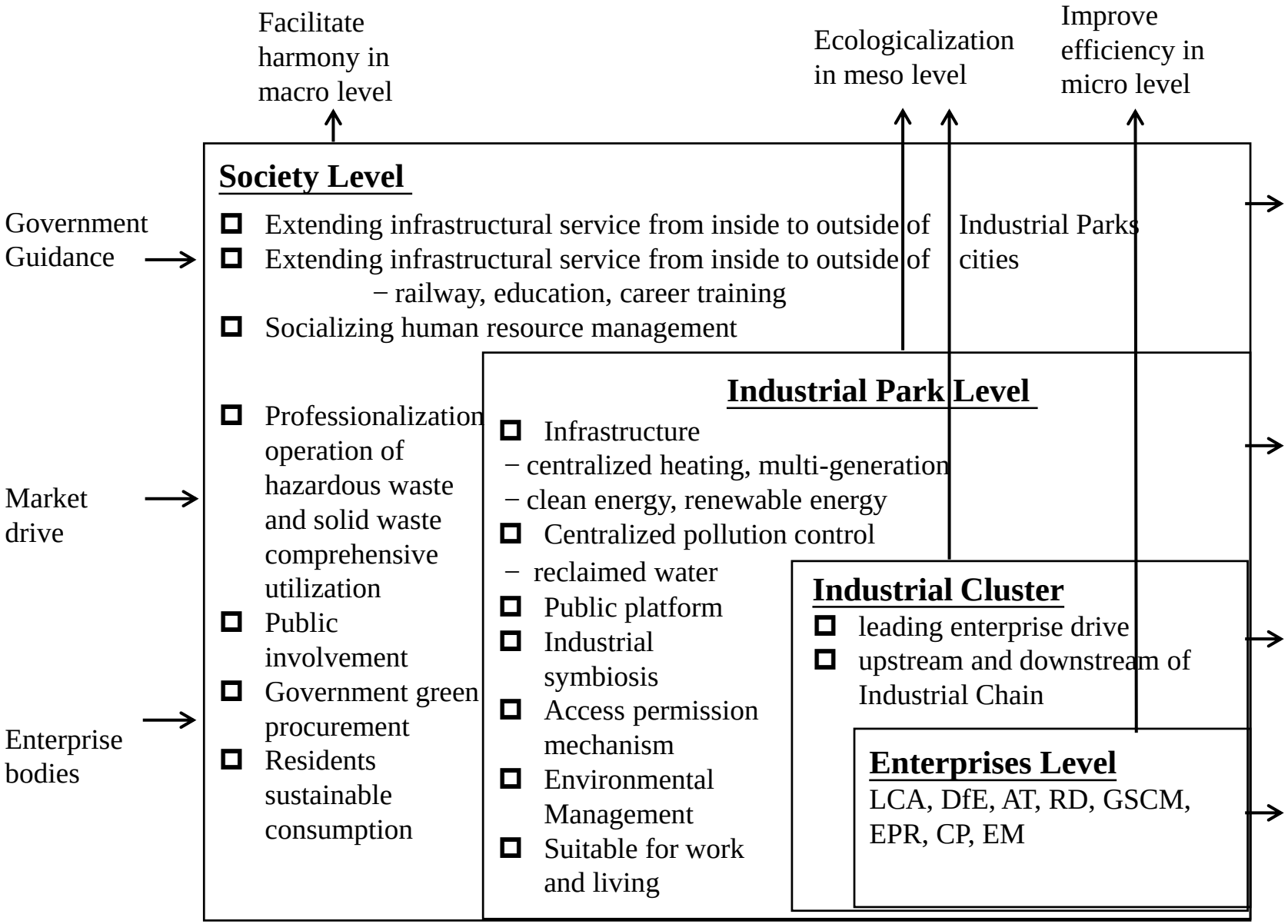
Indicator classification	Sub-theme	Indicator
Lead indicator	Resources	Resource productivity
Dashboard indicators	Land	Built-up areas
		Productivity of artificial land
	Water	Water exploitation index
		Water productivity
	Carbon	greenhouse gas emissions per capita
		Energy productivity
		Energy dependence
		Share of renewable energy
Thematic indicator 1: Transforming the economy	Waste into a resource	Generation of waste
		Landfill rate of waste
		Recycling rate of municipal waste
		Recycling rate of e-waste
	Supporting research and innovation	Eco-innovation index
	Getting the prices right	Environmental tax revenues
		Energy taxes
Thematic indicator 2: Nature and Ecosystems	Biodiversity	Common farmland bird species
		Areas under organic farming
		Landscape fragmentation
	Safeguarding clean air	Urban exposure to particulate matter (PM10 and PM25)
	Land and soils	Soil erosion
		Gross nutrient balance in agricultural land-nitrogen and phosphorus
Thematic indicator 3:	Addressing food	Daily calorific intake per capita
Key areas	Improving buildings	Household energy consumption by fuel
	Ensuring efficient mobility	Average carbon dioxide emissions per kilometre from new cars
		Pollutant emissions from transport (NO_x, PM10, volatile organic compounds)
		Modal split of passenger transport
		Modal split of freight transport

EU Directives with recovery/reuse targets

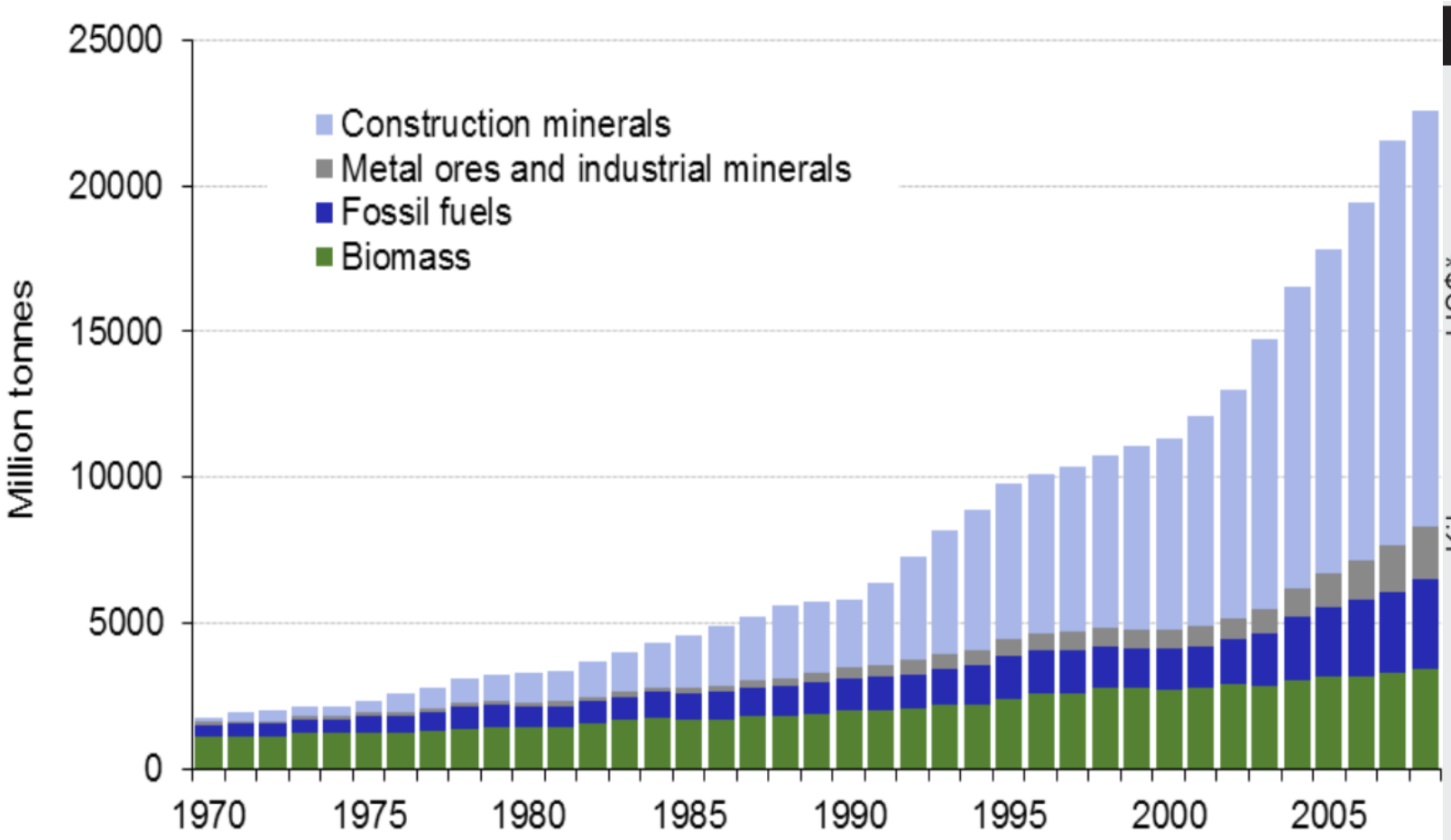
Target of recovery and reuse	1 January 2015	95
Target of reuse and recycling	1 January 2015	85
Directive 2004/12 on packaging and packaging waste		
Minimum recovery rate, including incineration with energy recovery, by weight of packaging waste	31 December 2008	60
Minimum recycling rate by weight (glass, paper and board)	31 December 2008	60
Minimum recycling rate by weight (metals)	31 December 2008	50
Minimum recycling rate by weight (material that is recycled back into plastics)	31 December 2008	22.5
Minimum recycling rate by weight (wood)	31 December 2008	15
Directive 2006/66 on batteries and accumulators and waste batteries and accumulators		
Target of collection	26 September 2016	45
Target of reuse and recycling	1 January 2015	85
Recycling rate as medium weight of batteries and accumulators in lead/acid maximising the recycling of lead	26 September 2010	65
Recycling rate as medium weight of batteries and accumulators in nickel-cadmium maximising the recycling of cadmium	26 September 2010	75
Recycling rate as medium rate of other waste of batteries and accumulators	26 September 2010	50
Directive 2008/98 on waste		
Preparing for reuse and the recycling of waste materials (such as at least paper, metal, plastic and glass) from households and from other similar waste streams	2020	50
Preparing for reuse, recycling and other material recovery, including backfilling operations using waste to substitute other materials, of non-hazardous construction and demolition waste	2020	70
Directive 2012/19 on waste electric and electronic equipment (WEEE)		
Minimum collection	1 January 2016 1 January 2019	45 65
Minimum recovery of large household appliances and automatic dispensers	14 August 2018	85
Minimum recycling of large household appliances and automatic dispensers		70
Minimum recovery of IT and telecommunications equipment or consumer equipment and photovoltaic panels		80
Minimum recycling of IT and telecommunications equipment or consumer equipment and photovoltaic panels		70
Minimum recovery of small household appliances, lighting equipment, electrical and electronic tools (with the exception of large-scale stationary industrial tools), toys, leisure and sports equipment, medical devices (with the exception of all implanted		75

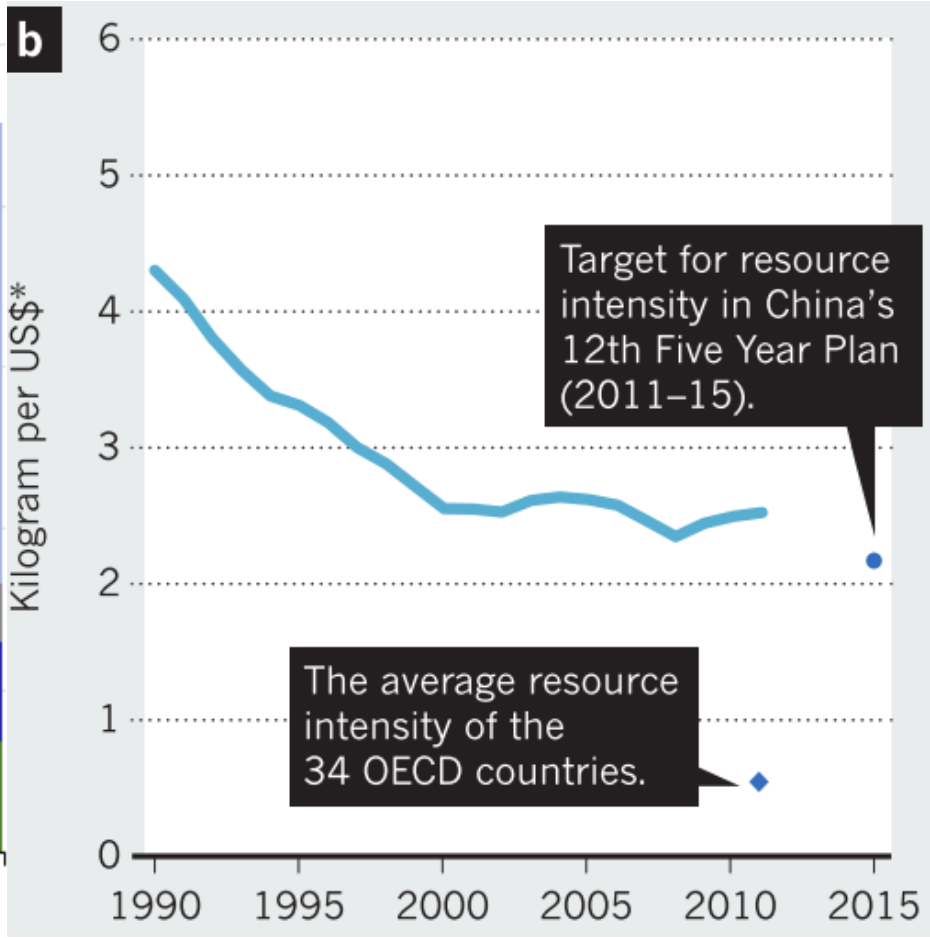
Circular Economy in China

Until 2016, 45 National Demonstration Eco-industrial Parks has been confirmed, and 63 NDEIPs was approved for construction.

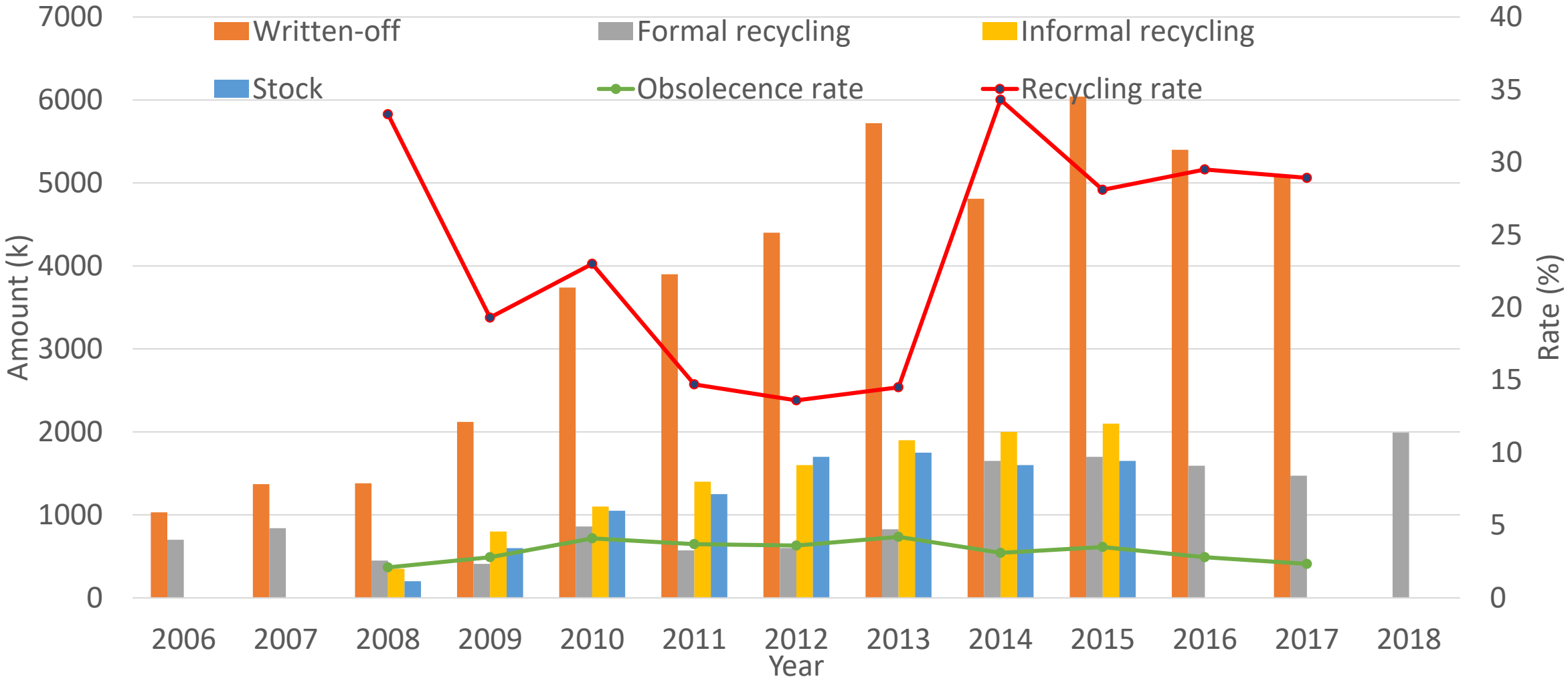


China's domestic material consumption by major material groups





Recycling rate of ELV in China



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Key notes

When you return to your home, pls send

- copy of your round trip boarding pass
- stamp page of departure and entry to China

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