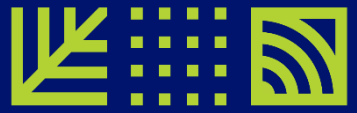
SYSTEMIQ

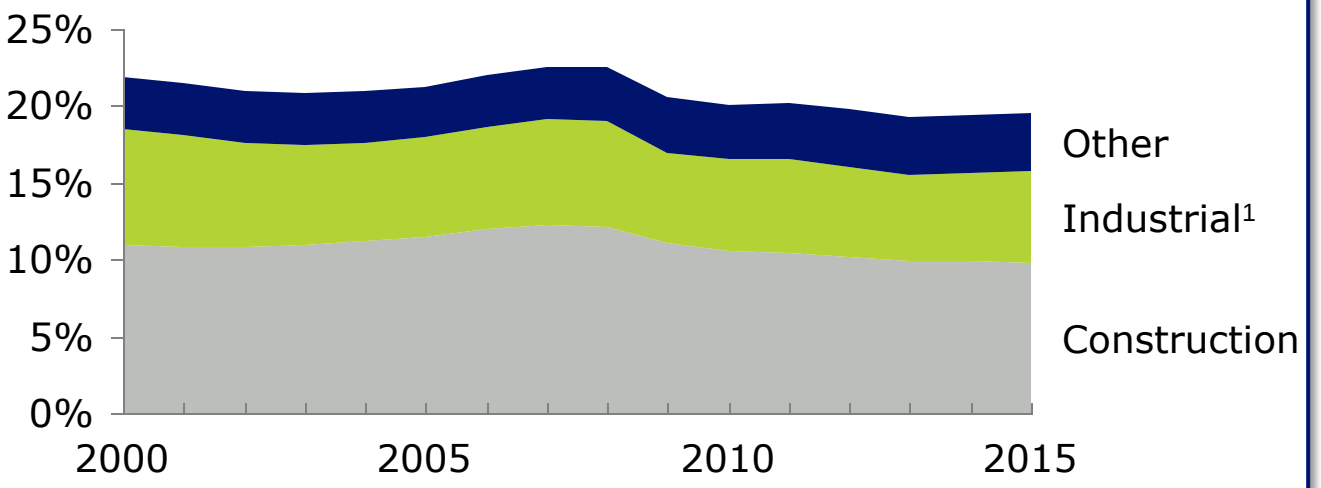
"Achieving Growth Within"
Investing in the EU Circular Economy

Brussels, Feb 28, 2017

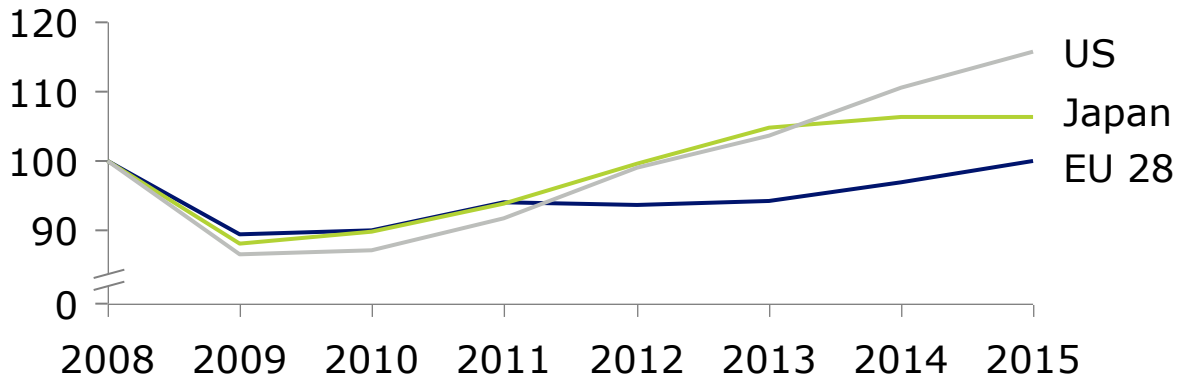


Historical investment levels, as well as return on investments

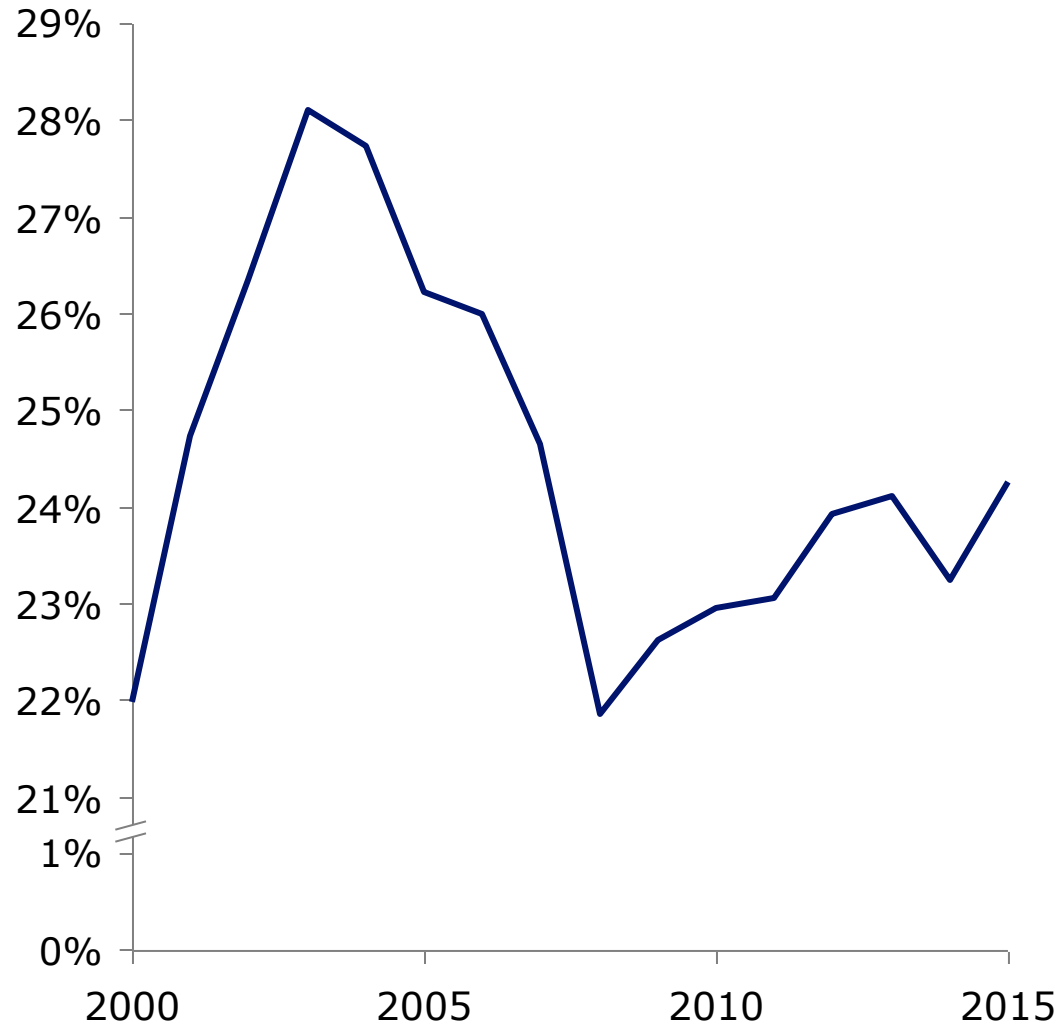
EU-28 investments as share of GPD



EU-28 investments since financial crisis versus Japan and US, 2008=100



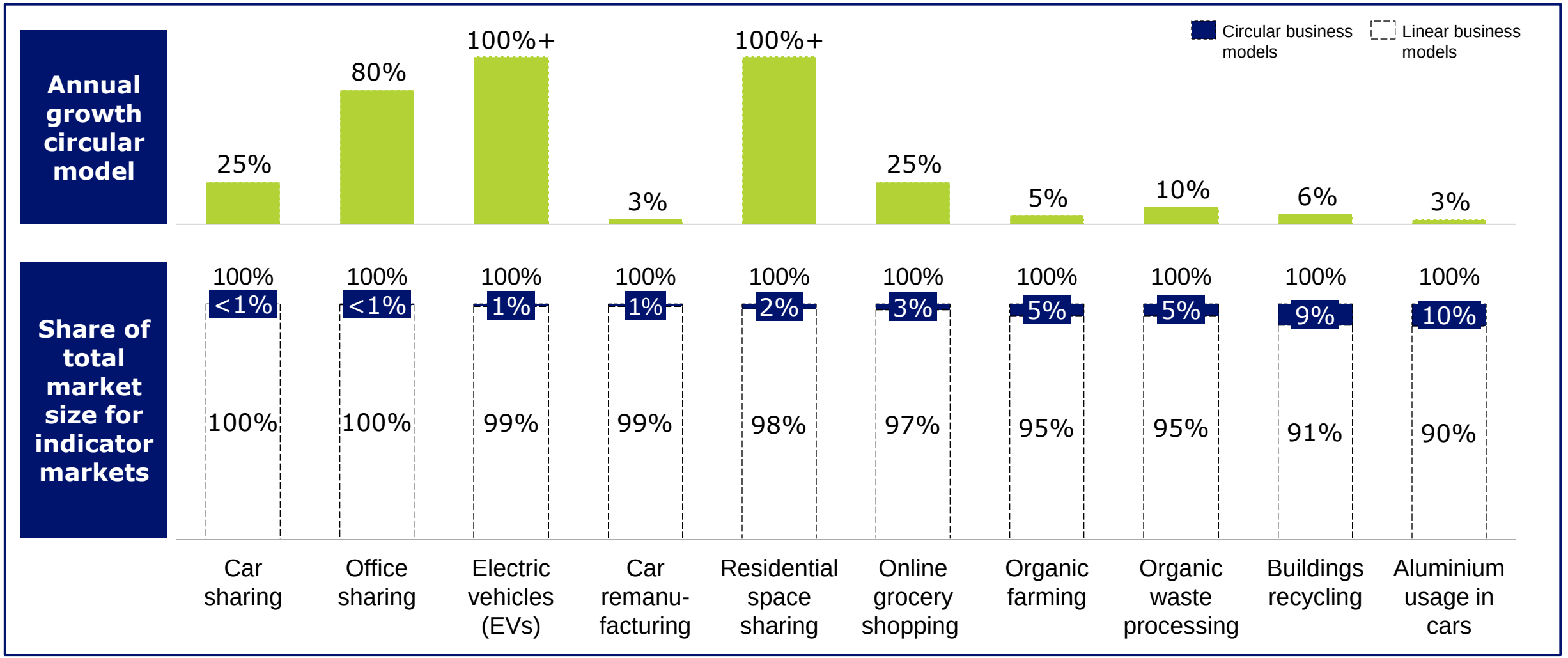
Euro area return on capital employed before tax[2]



1 Using investments in Machinery and Equipment as a proxy for Industrial investments
2 Return on capital employed for non-financial corporations; EU-28 data unavailable

Source: Eurostat; OECD; SYSTEMIQ

Circular economy investment levels assessment



Source: ACEA; McKinsey&Company; Oakdene Hollins; Airbnb; Planet Retail; BCG; Wards Auto; Volkswagen; Reuters; European Commission; OWS; Eurostat COFOG and SBS; SYSTEMIQ

Investment theme feasibility framework

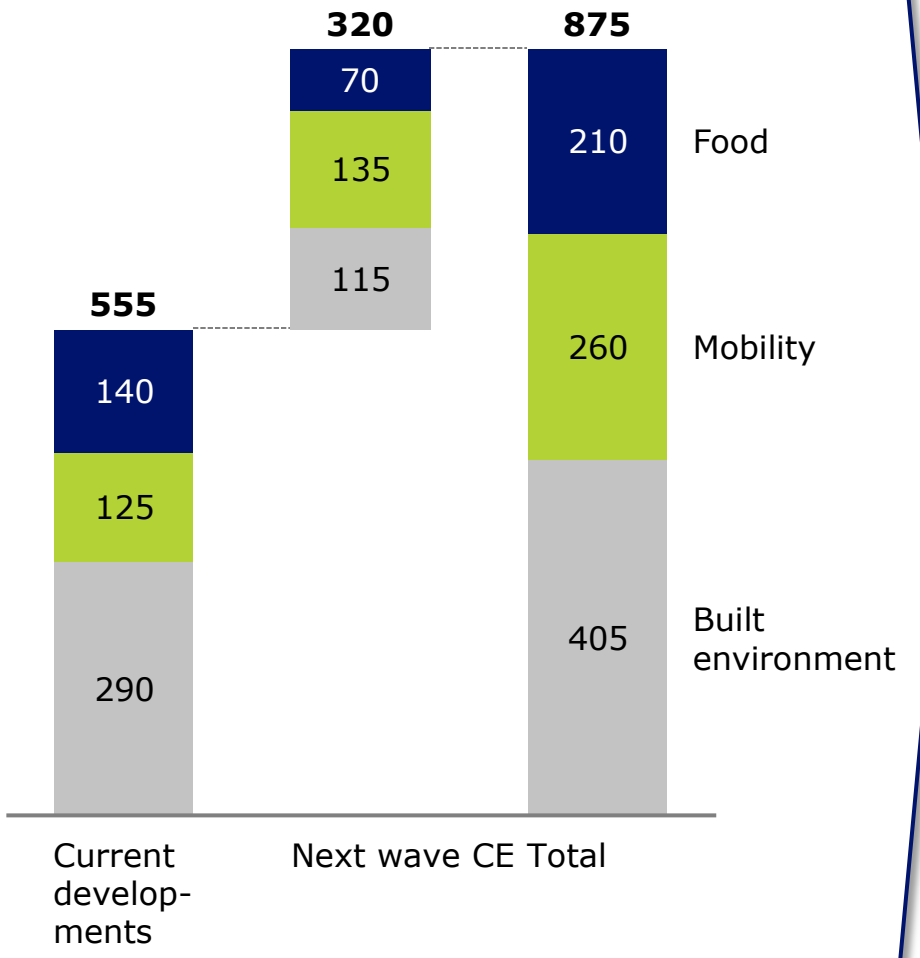
Increasing level of risk reduction required before opportunity becomes investable at scale

	A	B	C
Description	▪ Businesses and projects that currently receive substantial investments and are the main driver of the CE transition	▪ Businesses and projects that receive limited investments today as these are just outside the private capital investment space ▪ These opportunities require 1–2 interventions to become investable	▪ Businesses and projects that receive no/ very limited investments today as these require substantial risk reductions to become attractive at scale
Intervention required to make investment-ready	▪ None	▪ Maximum one additional government support scheme, and/ or; ▪ Maximum one new value chain collaboration initiative	▪ Multiple government support schemes or; ▪ Using unproven technology or; ▪ Consumer/government acceptance deemed highly unlikely in the near term
Risk/ return profile	▪ Low	▪ Medium-high	▪ High; mainly outside of private capital
	Opportunities in the 'current developments' scenario in 'Growth Within'	**Next-wave CE opportunities** *Opportunities in the 'circular' scenario in 'Growth Within'*	**Circular economy transition accelerated**

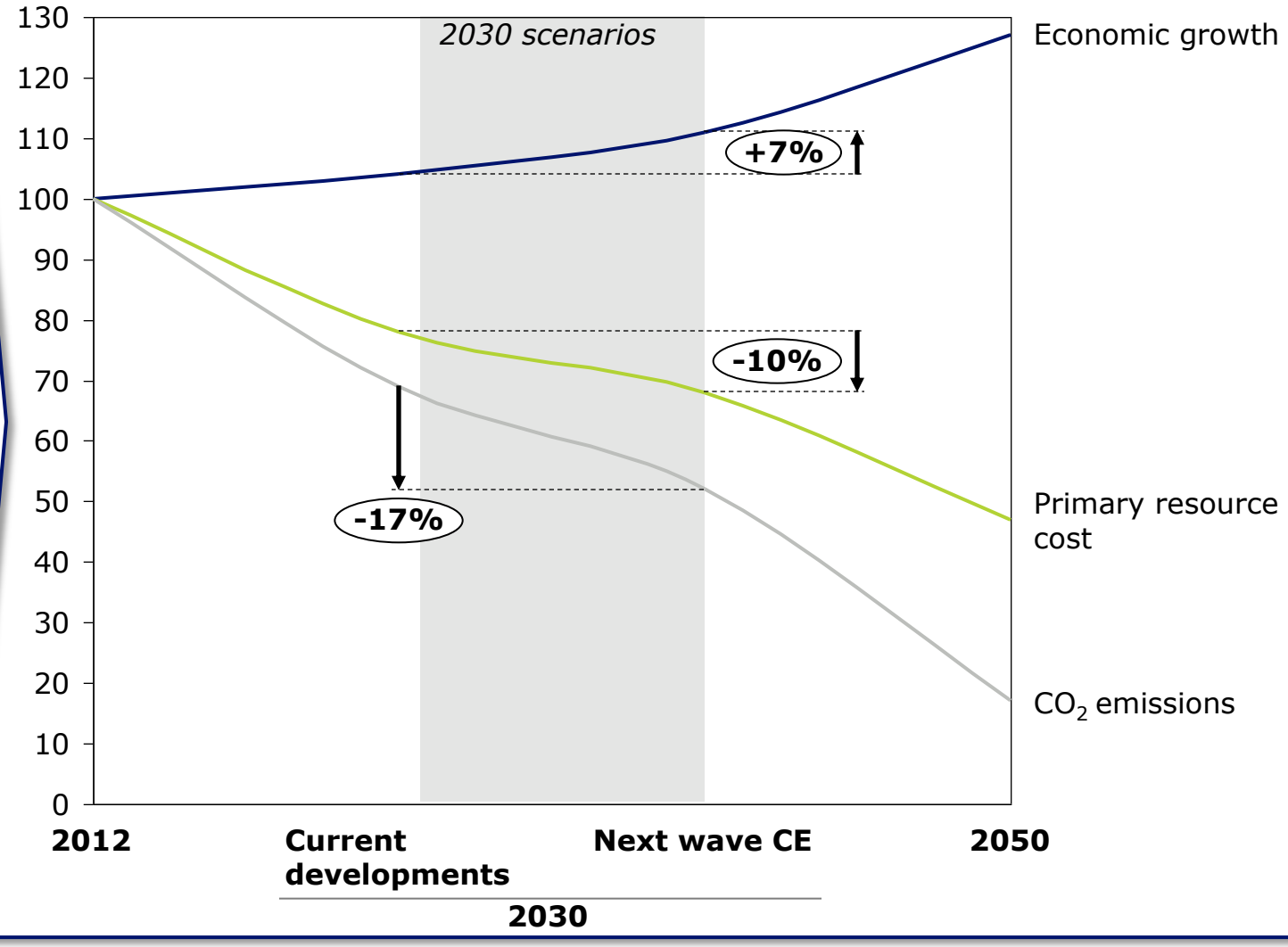
Source: SYSTEMIQ

Investments required to achieve circular economy benefits

Total investments identified in the EU circular economy until 2025, € billion



Values indexed, 2012 = 100, values across mobility, food, built environment value chains based on *'Growth Within'*[1]



1 100% of '*Growth Within'* impact assumed to be achieved, even though some levers – most notably dietary shift - are not driven by direct investments.

Source: *'Growth Within'*; SYSTEMIQ

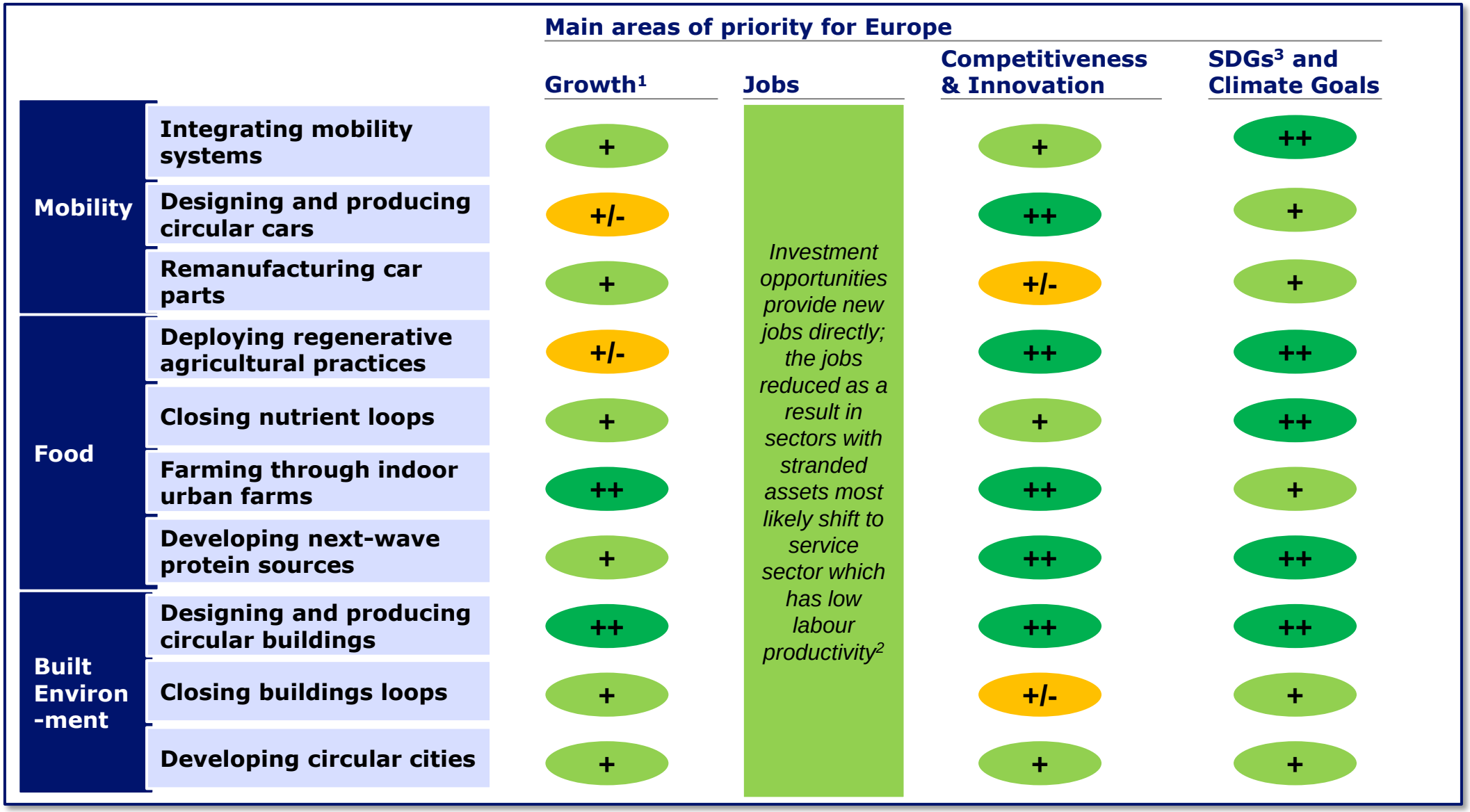
Description of next-wave circular economy investment themes

		Description	Investments up to 2025[1] € billion	Case examples
Mobility	Integrating mobility systems	▪ Fully integrate the public transport system with shared vehicles	100	DriveNow, switchh
	Designing and producing circular cars	▪ Design and produce clean cars made for looping with durable materials	35	BMW, ZOX, UBER
	Remanufacturing car parts	▪ Rollout remanufacturing of car parts at scale	1	RENAULT, AUTOCRAFT, Li
Food	Deploying regenerative agricultural practices	▪ Shift towards an EU agricultural system that regenerates the soil and revitalises ecosystems	15	SLM, MilkFlex
	Closing nutrient loops	▪ Scale nutrient and energy recovery from various waste streams using anaerobic digestion or biorefineries	10	HARVEST, CSS
	Farming through indoor urban farms	▪ Scale hydroponic, aquaponics, and aeroponic farms in urban areas	45	AeroFarms, AGRICOOL
	Developing next-wave protein sources	▪ Develop new and efficient sources of protein from vegetables, bacteria, algae or insects	2	BEYOND MEAT, innovaFEED
Built Environ-ment	Designing and producing circular buildings	▪ Design and produce multi-usage highly modular and energy-positive buildings made of durable non-toxic materials	105	LIVING BUILDING CHALLENGE, PARK 20|20, Ministry of Environment and Food of Denmark Environmental Protection Agency
	Closing buildings loops	▪ Ramp-up recycling and re-use of building materials	2	GYPSUM RECYCLING, danogips
	Developing circular cities	▪ Integrate circularity into urban developments through innovative business models	10	EcoDistricts

1 Total not adding exactly to €320 billion due to rounding

Source: SYSTEMIQ

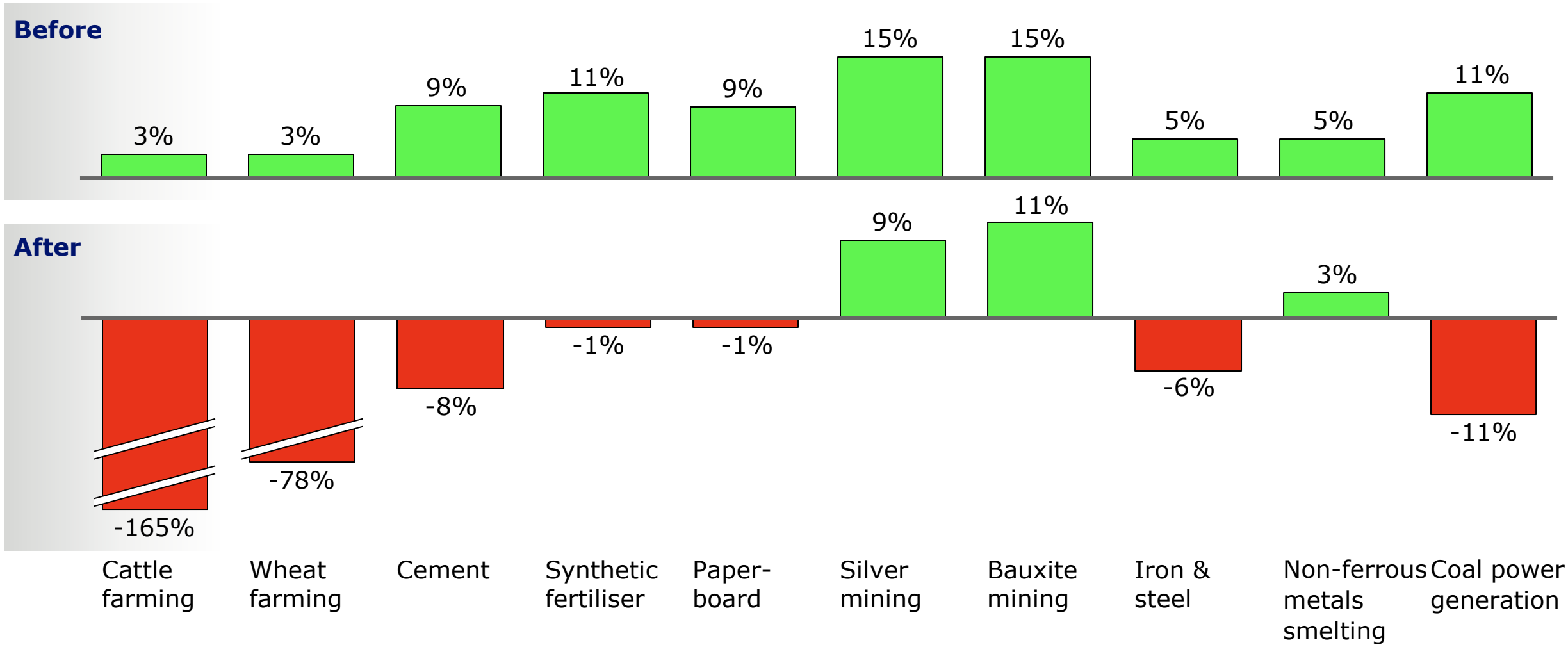
Circular economy investments impact assessment on the EU's priority areas



1 Taking into account both short-term and long-term growth impact.
2 Based on analysis done for *Growth Within*
3 Sustainable Development Goals, mainly 2. good health and well-being; 7. affordable and clean energy; 8. Decent work and economic growth; 9. Industry, innovation and infrastructure; 11. Sustainable cities and infrastructure, and; 12. Responsible consumption and production
Source: SYSTEMIQ.

Impact of natural capital costs on profitability

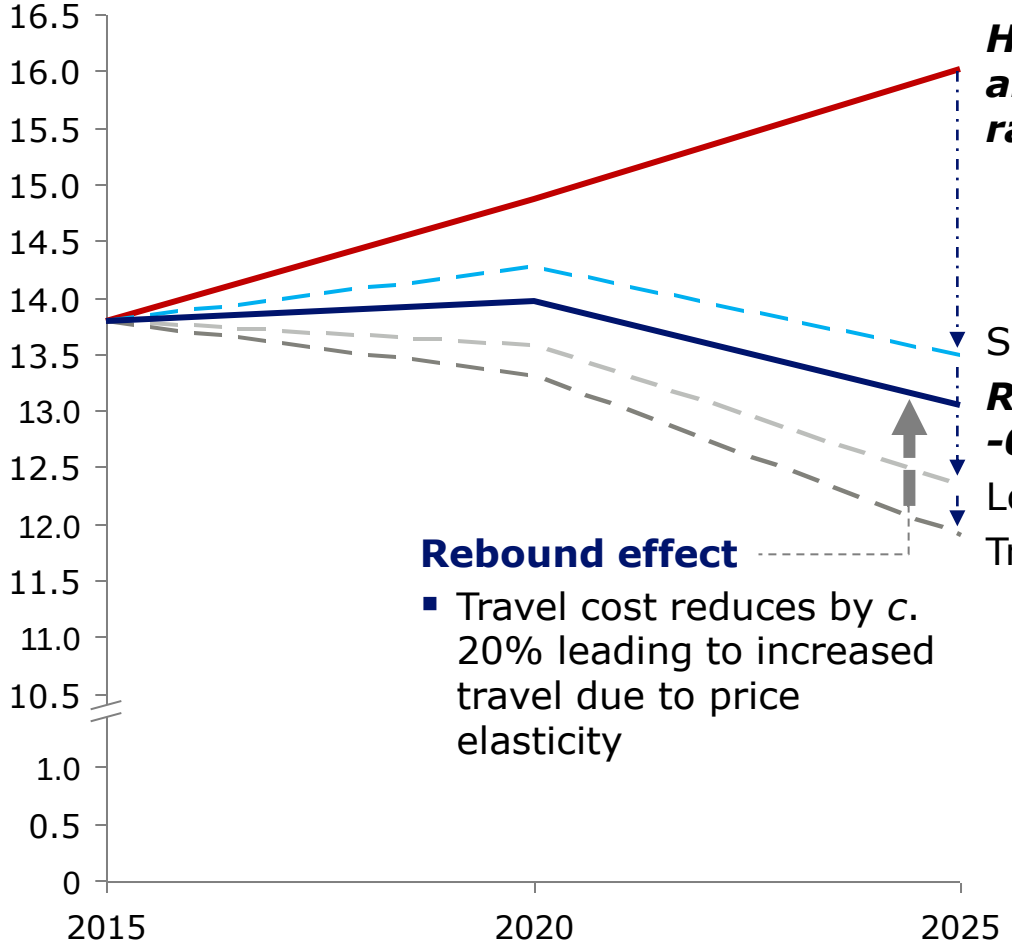
Profit margin (EBIT) before and after natural capital costs, based on top two companies in each Morgan Stanley Composite Index category, 2012



Source: Adapted from: Trucost and TEEB (2013)

Potential impact of circular economy transition on car product demand

Estimates of the impact of circular economy scenario on EU car demand until 2025, based on *Growth Within'*



Assumptions

Sharing

- 1 shared car replaces 8 owned cars

Longer lifetime

- Electric vehicles can last up to 50% longer than ICE
- Use of durable materials for the main body can further enhance lifetime by *c.* 100%

Travel virtualisation

- Increase in remote working leading to reduction in passenger km of 7%

1 Average pre-crisis annual growth rate between 1990-2007 for EU-15 + EFTA.

Source: *'Growth Within'*; ACEA; SYSTEMIQ.

Key take-aways

- Significant investment potential in the EU towards the Circular Economy identified of **€320 billion up to 2025** across 10 investment themes

- Realising these investments requires public sector support in specific areas, however many of the **underlying business models are positive**

- Remaining exposed to linear business models could lead to **stranded assets** due to risks specific to Circular Economy