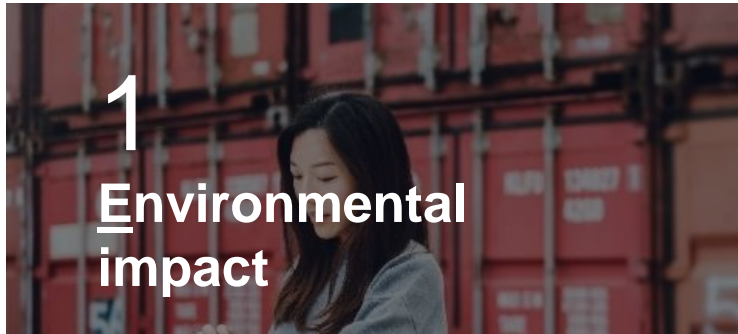

Sustaining values

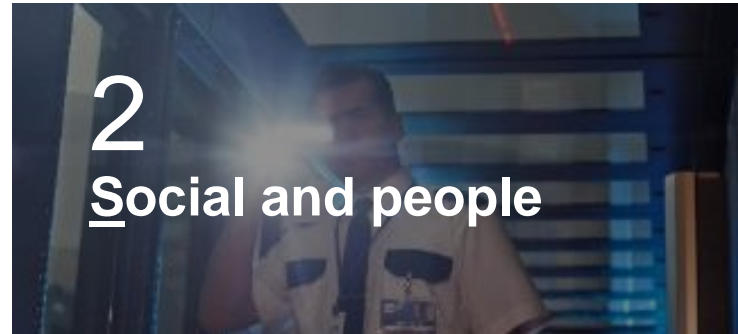
The sustainability agenda of
Industrial Manufacturing
(IM) companies



Many manufacturing companies are sitting on a sustainability time bomb



- **Bulk** of greenhouse gas emissions originates from industrial production (~40%)
 - M&E machinery **locks in carbon footprint** due to long product life
 - **Decarbonization** required along entire value chain and life cycle
- Machinery key enabler for **circularity** and reduce resource consumption



- **Low diversity and inclusion** in traditionally male driven industry
- **Skill shortage** requires an attractive/sustainable employer brand
- **Health** and **safety** regulations in the global value chain
- **Labor practices** and **human rights** along entire value chain



- **Regulation** exerts pressure for sustainability (e.g., CSR guideline, EU taxonomy, “Lieferkettengesetz”)
- Importance of **data protection** and **cyber security** (digital business models)
- Selected customer **markets** seen as **critical** (e.g. Defense, Tobacco)

Pressure from customers, financial institutions and competitors towards sustainability is growing

IM companies have started to push the sustainability agenda, however they lack behind other industries



Thyssenkrupp

Cummins Inc.

Krones AG

SIG Combibloc

ABB

Trumpf

Atlantic Packaging

Target Set

Company developed and set science based target with clear milestones and continuous tacking

Target committed

Company indicates to work towards setting a science-based target

Icebug

The outdoor footwear company Icebug has been **climate-positive since February 2019** and offsets more emissions than it produces

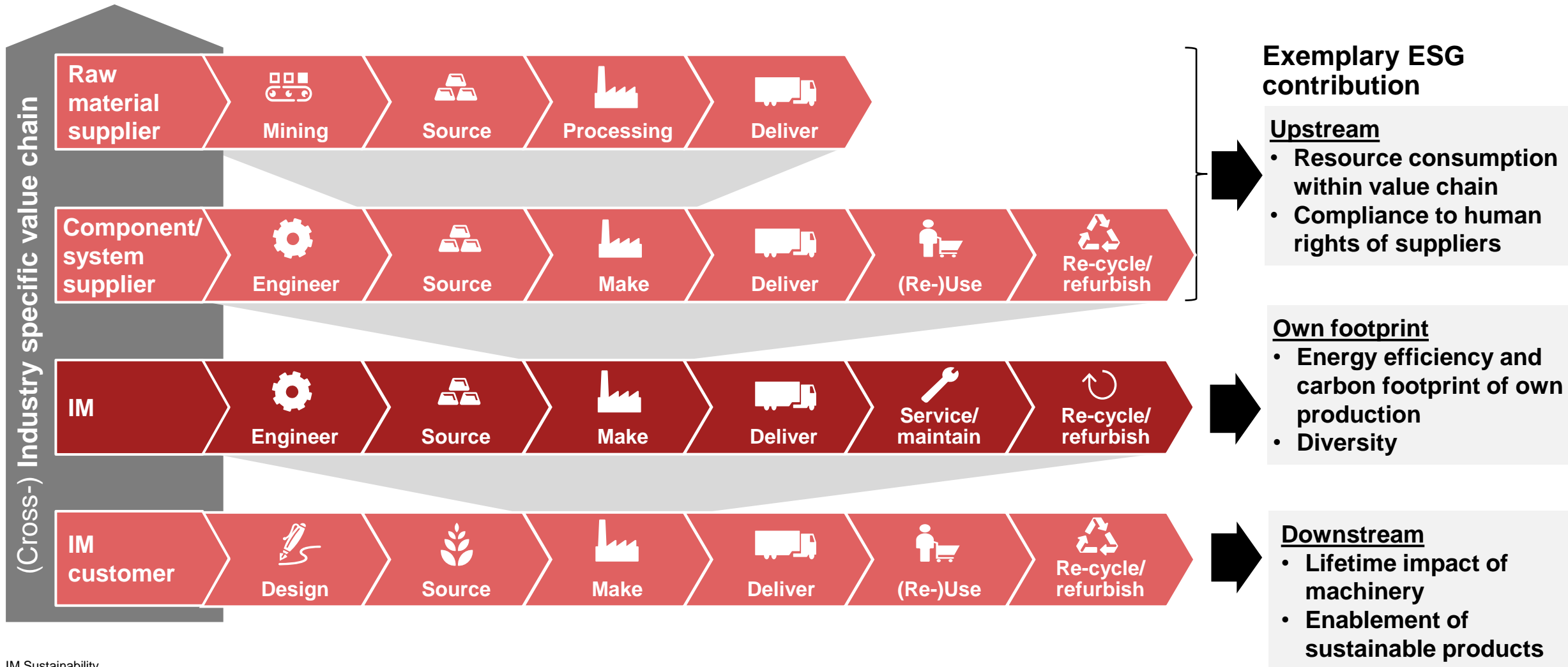
Microsoft

Microsoft has set itself the goal of becoming **CO₂ negative by 2030**. This includes the use of electric vehicles, planting new trees, carbon capture and storage and direct air capture

AstraZeneca





AstraZeneca plans to be "CO₂ negative" across the entire value chain by 2030 by **removing more carbon from the atmosphere** than its **65,000 employees** and its extensive **network of subsidiaries** and **production facilities** emit

IM companies have to take an holistic value chain view to understand the full ESG impact of their products and services



IM have significant environmental impact not only within their own but even more on the customers value chain

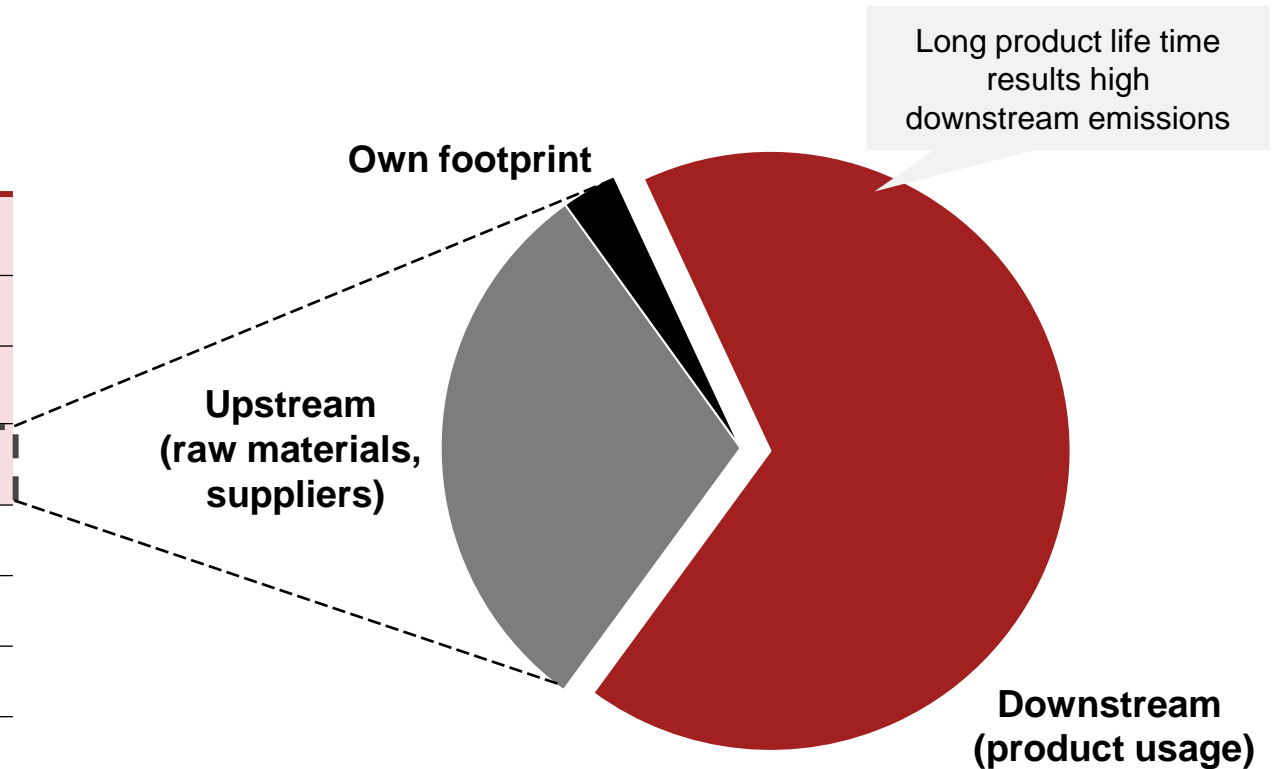
Environmental impact of industrial value chains (incl. upstream and own footprint excl. downstream)

Selected industries				
	Air pollution g/EUR	Water use l/EUR	Land use m ² /EUR	Greenhouse gas kg/EUR
Metal production and processing	0,9	3,4	0,0	0,7
Paper industry	1,0	8,5	0,1	0,4
Electrotechnical industry	0,5	3,0	0,1	0,3
Mechanical and engineering	0,5	2,8	0,0	0,2
Chemicals	0,7	9,5	0,2	0,4
Automotive	0,6	4,1	0,1	0,3
Food retail	1,6	46,6	1,2	0,6
Clothing retail	0,8	13,6	0,3	0,3

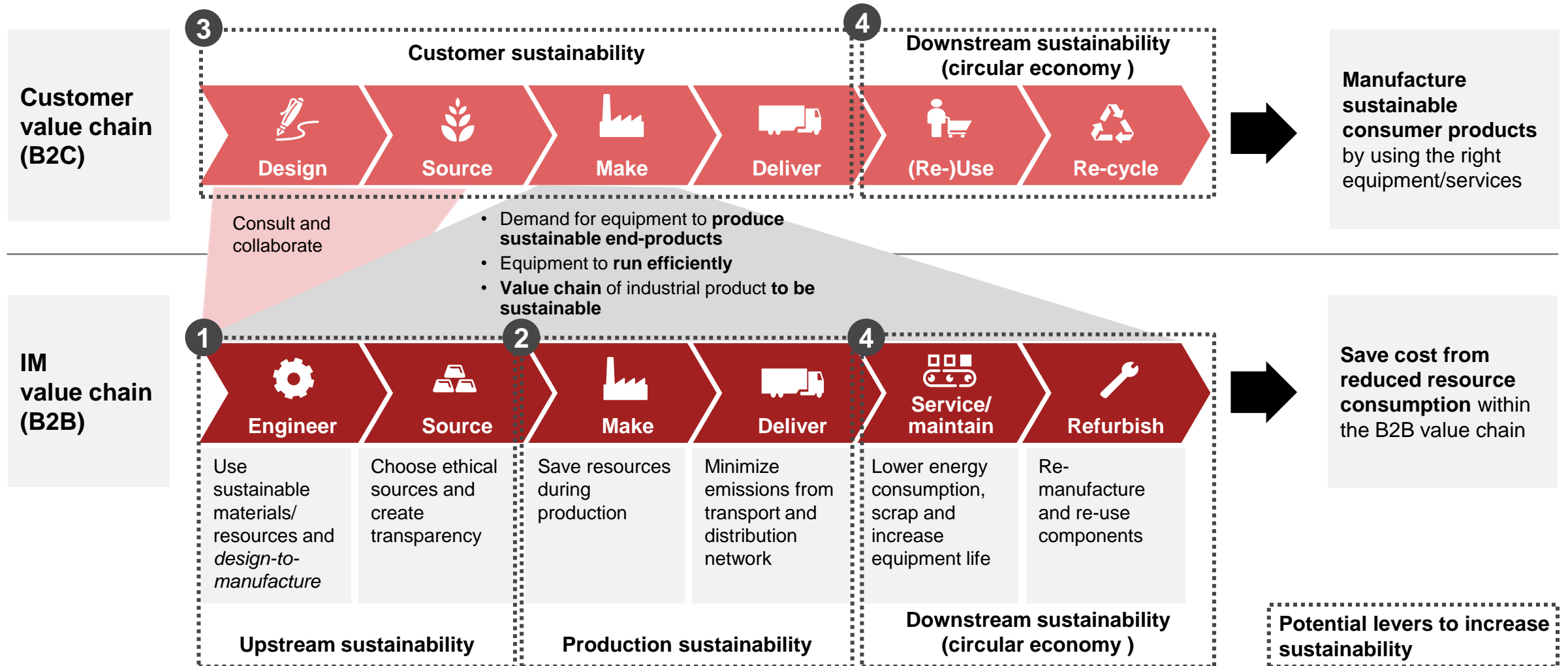
[per euro of industry turnover]

 Industrial production

Example Mechanical & Engineering: 2/3 of total M&E GHG emissions arise downstream during machinery usage

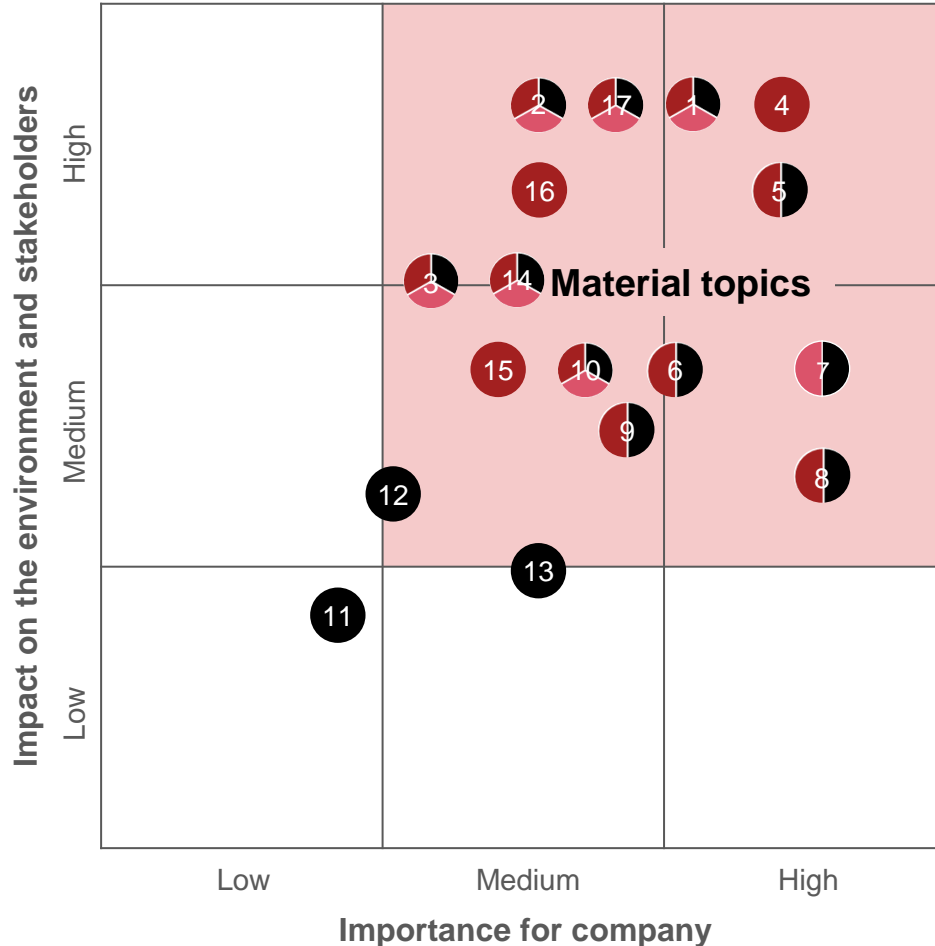


As a consequence IMs have to include multiple levers across value chains to improve their sustainability footprint



A materiality assessment helps to identify the right focus

Materiality assessment – client example



Environment

- 1 Greenhouse gas emissions
- 2 Climate change mitigation/adaptation
- 3 Avoid loss of biodiversity
- 4 Material sourcing efficiency
- 5 Waste management
- 6 Avoidance of hazardous substances



Human capital

- 7 Occupational health and safety
- 8 Good working conditions and social protection
- 9 Equal opportunities and non-discrimination



Social capital

- 10 Data protection
- 11 Respect for property rights
- 12 Fair competition
- 13 Engagement with local communities
- 14 Ban on child and forced labor
- 15 Supplier's respect for human rights
- 16 Supplier's observance of labor rights



Leadership and governance

- 17 Fight against corruption

● Upstream ● M&E's production ● Downstream

Example 1: A site specific roadmap paves the way to net zero production

Production sustainability – client example net zero roadmap

Assessment and calculation of the carbon footprint

Scope 1

Direct CO₂ emissions

Heat generation from oil and gas; fuel combustion of company cars etc.

Scope 2

Indirect CO₂ emissions from purchased electricity, district heat and cooling

Electricity consumption of own (electric) vehicles and office/production space etc.

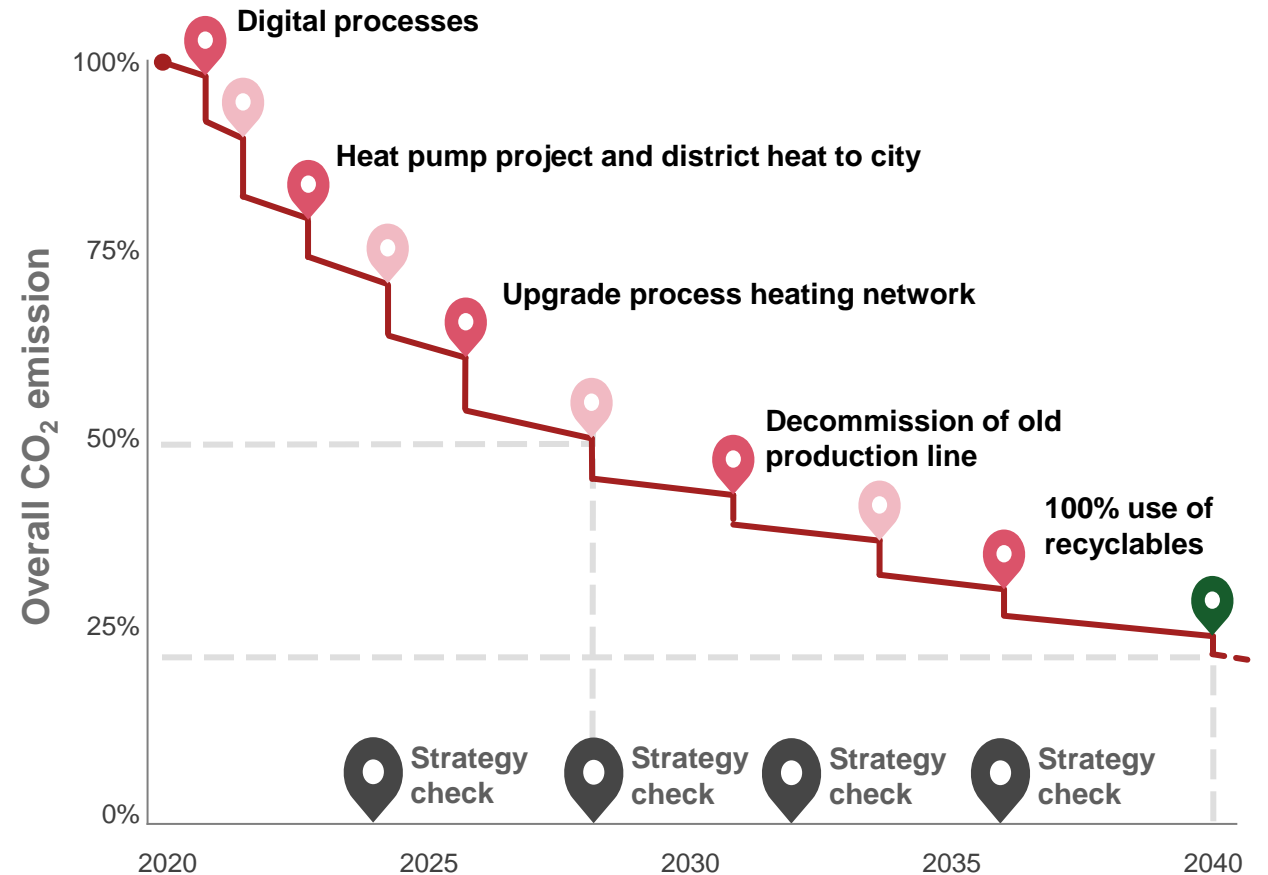
Scope 3

Indirect upstream and downstream emissions

Business travel; waste; downstream/upstream emissions of fuel/electricity; employee commuting etc.



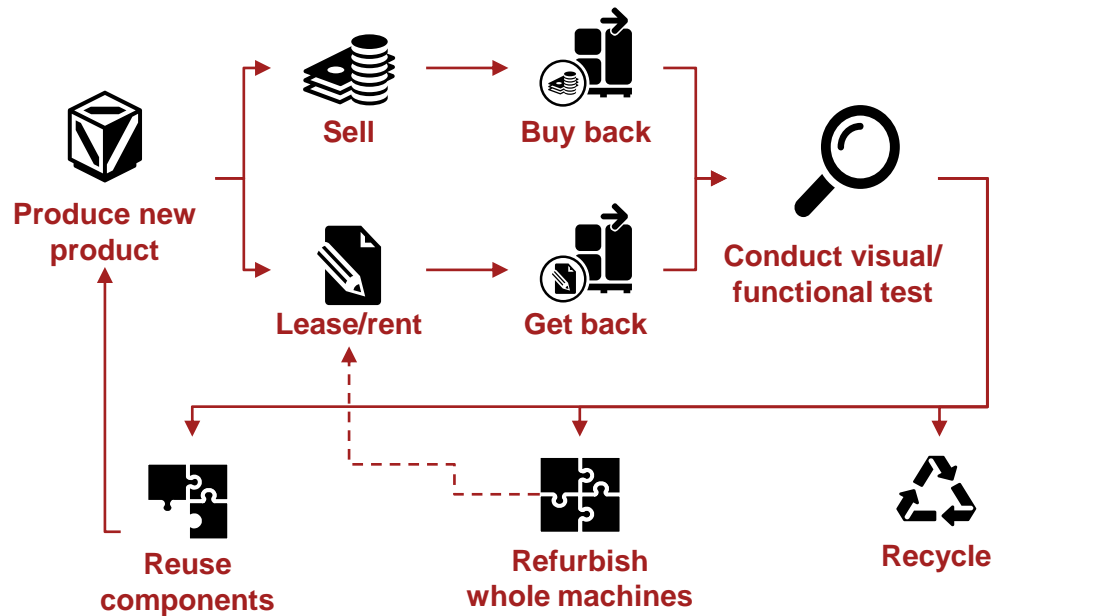
Transition roadmap for continuous decarbonization



Example 2: Circularity reduces the environmental footprint plus can lead to significant material cost savings

Circular Economy – client example machinery producer

Circular Economy production concept

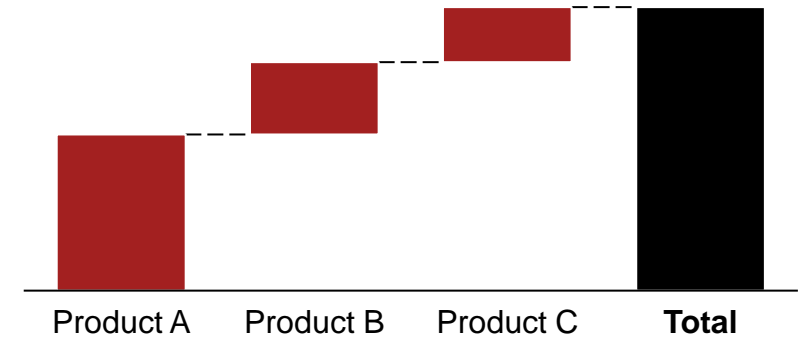


- ✓ Disassemble
- ✓ Recycle consumables
- ✓ Systematically check valuable components for re-usability
- ✓ Clean components
- ✓ Send back to production
- ✓ Clean
- ✓ Exchange components
- ✓ Conduct functional test
- ✓ Package
- ✓ Lease/rent products
- ✓ Send not usable old products to recycling company

Results achieved

Annual rebuild savings [% of total material costs]

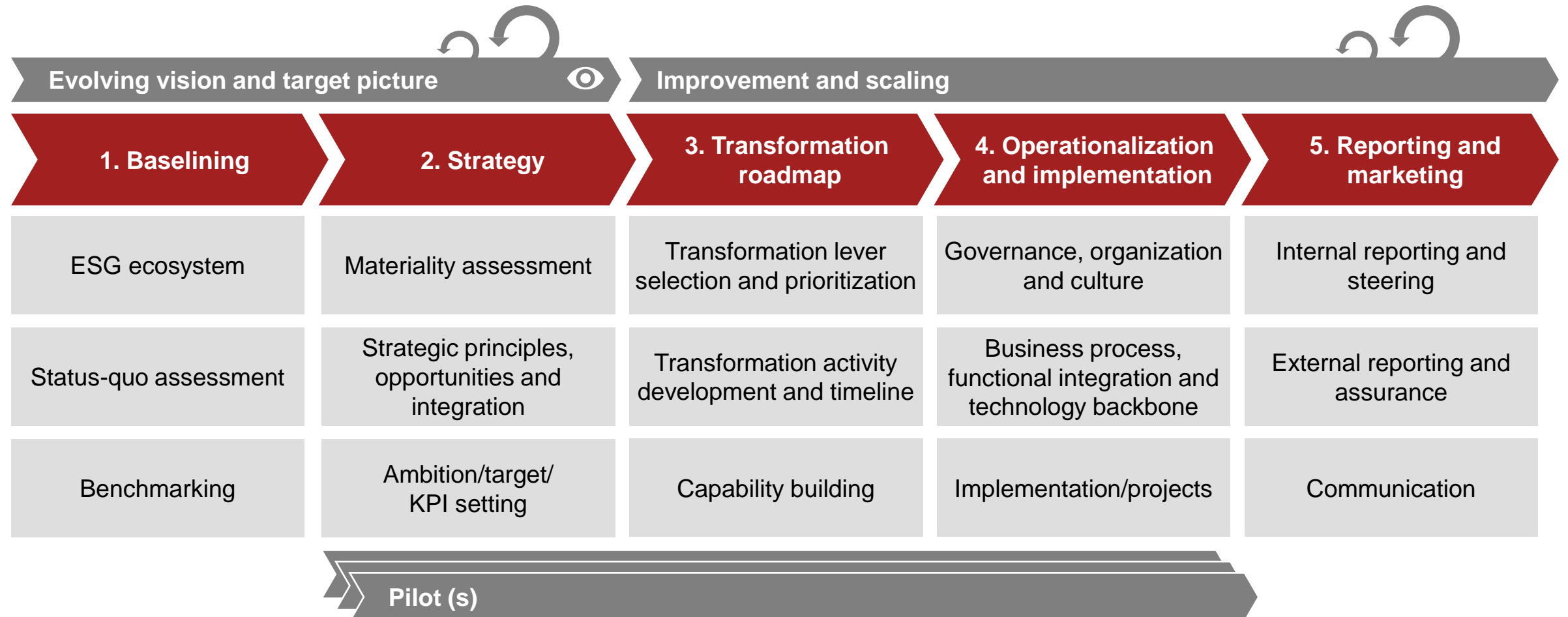
Components re-used	55%	35%	30%
Savings per product	60%	30%	60%



- **Positive CO₂ impact** by reusing components and systems
- **Top-line potential** by introducing **green-label** on market
- **Strengthened of cross-functional communication** between Sales, Operations and R&D

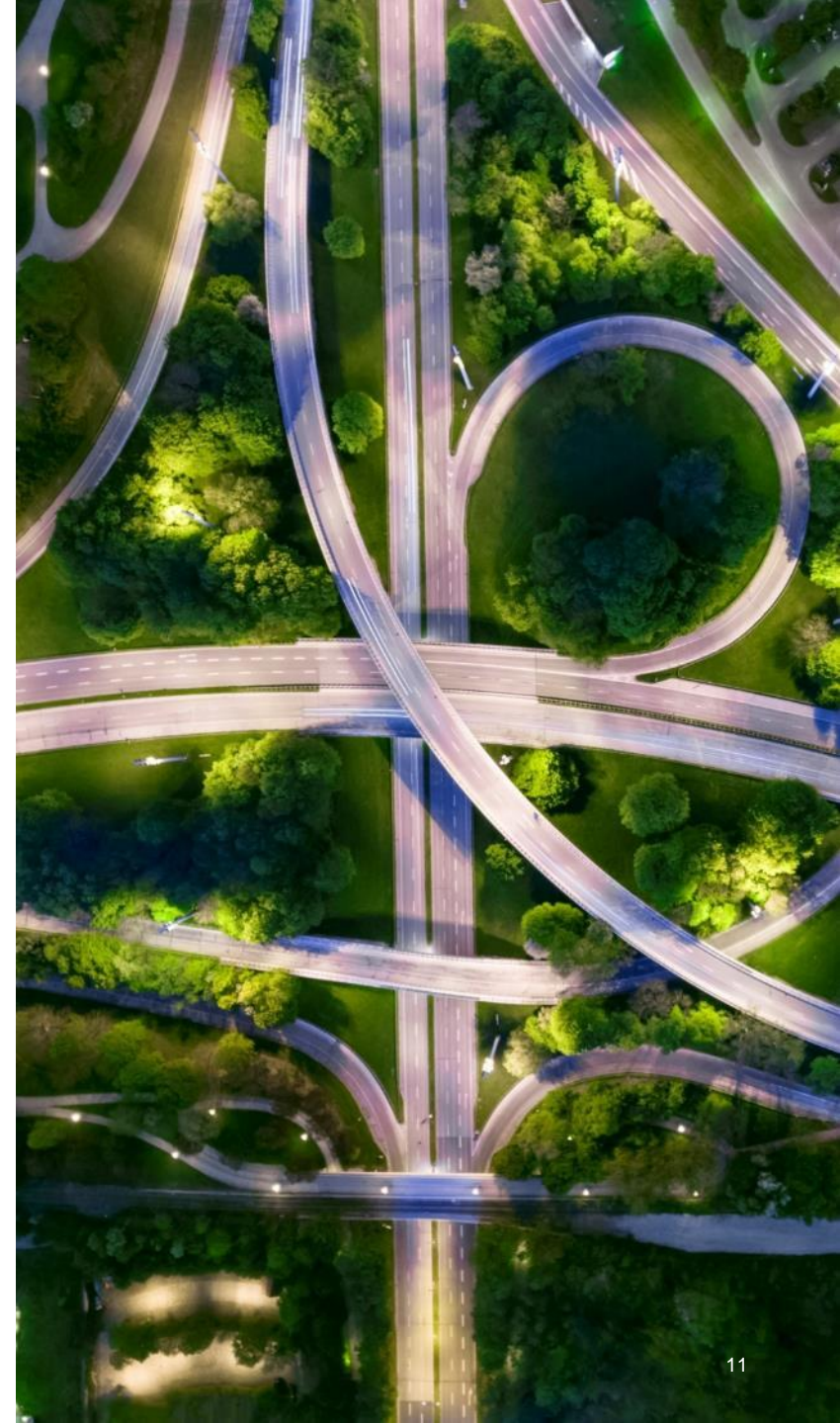
The ESG journey should start with a pragmatic baselining and setting the strategy with the right and measurable focus

Sustainability journey



ESG transformation starts with a few key questions

- How **transparent** is our **ESG footprint** today?
- What are **material ESG topics** for your business?
- Are you aware of **ESG opportunities and risks** for your business?
- Do you consider ESG to create a **competitive edge**?
- What is your **ambition for “doing good” and “doing well”**?
- Is **ESG** an integral **part of your strategy**?
- Do you have a clear **roadmap** and the **right initiatives** in place to achieve your sustainability goals?
- Are you **ahead of ESG regulation**?
- How do you **report on ESG**? Do you anticipate upcoming reporting obligations?



Please contact our team to learn more



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