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Net Zero & Circularity

as drivers of **Competitive & Resilient Manufacturing**

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Energy & resource economics
Legislative landscape
Customer demand
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Energy & resource economics

Fossil fuel peak before 2030 in all IEA 2050 energy scenarios

91% of new **renewable projects cheaper** than fossil alternatives

80% of **EU material demand** could come from end-of-life sources by 2040

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EU **competitiveness & resilience** dependent on decarbonization & circularity

Pushing **transparency** on company & product level

Driving more circular & low carbon **products & procurement**

Customer demand

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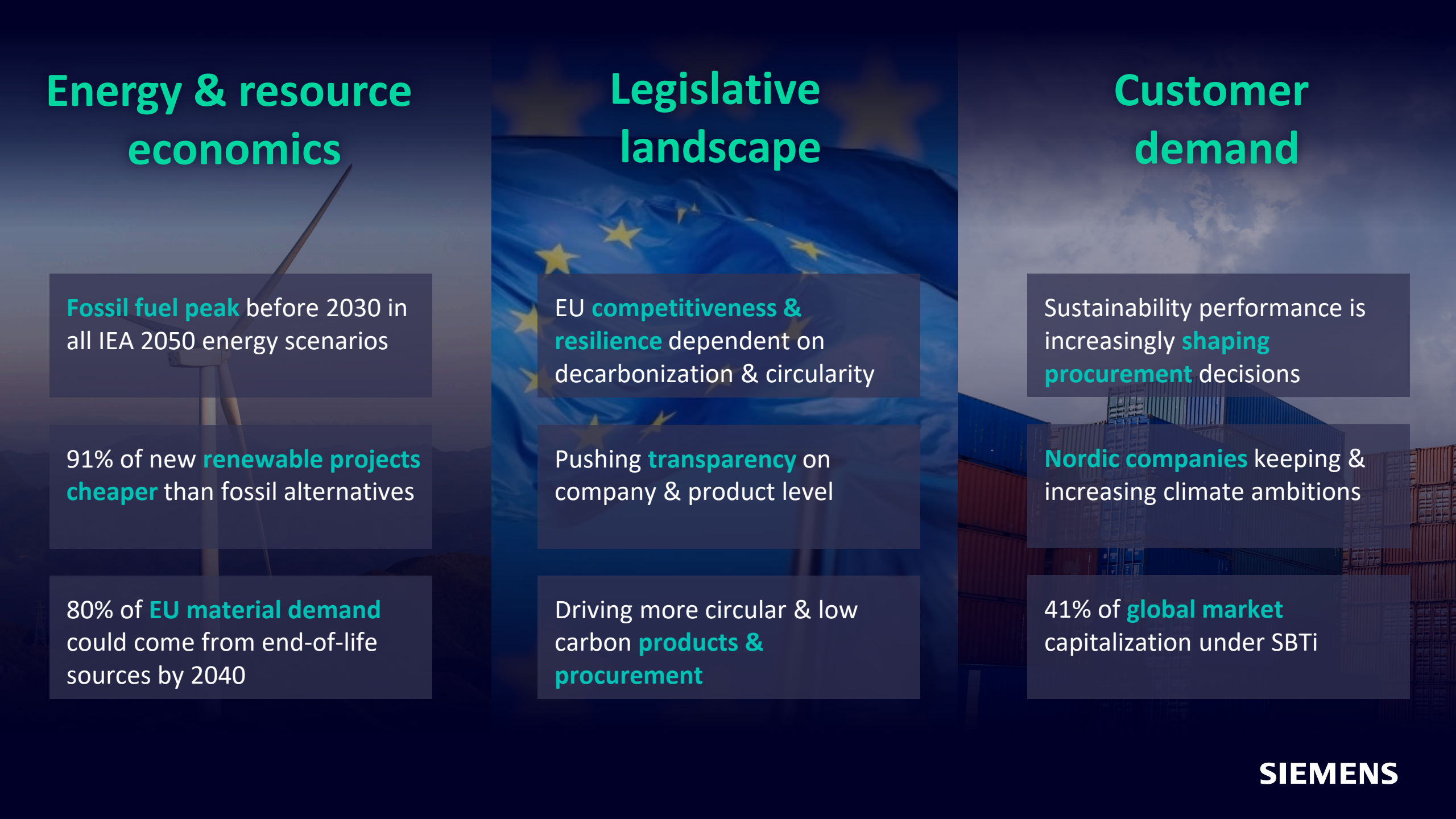

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Customer demand

Sustainability performance is increasingly **shaping procurement** decisions

Nordic companies keeping & increasing climate ambitions

41% of **global market** capitalization under SBTi

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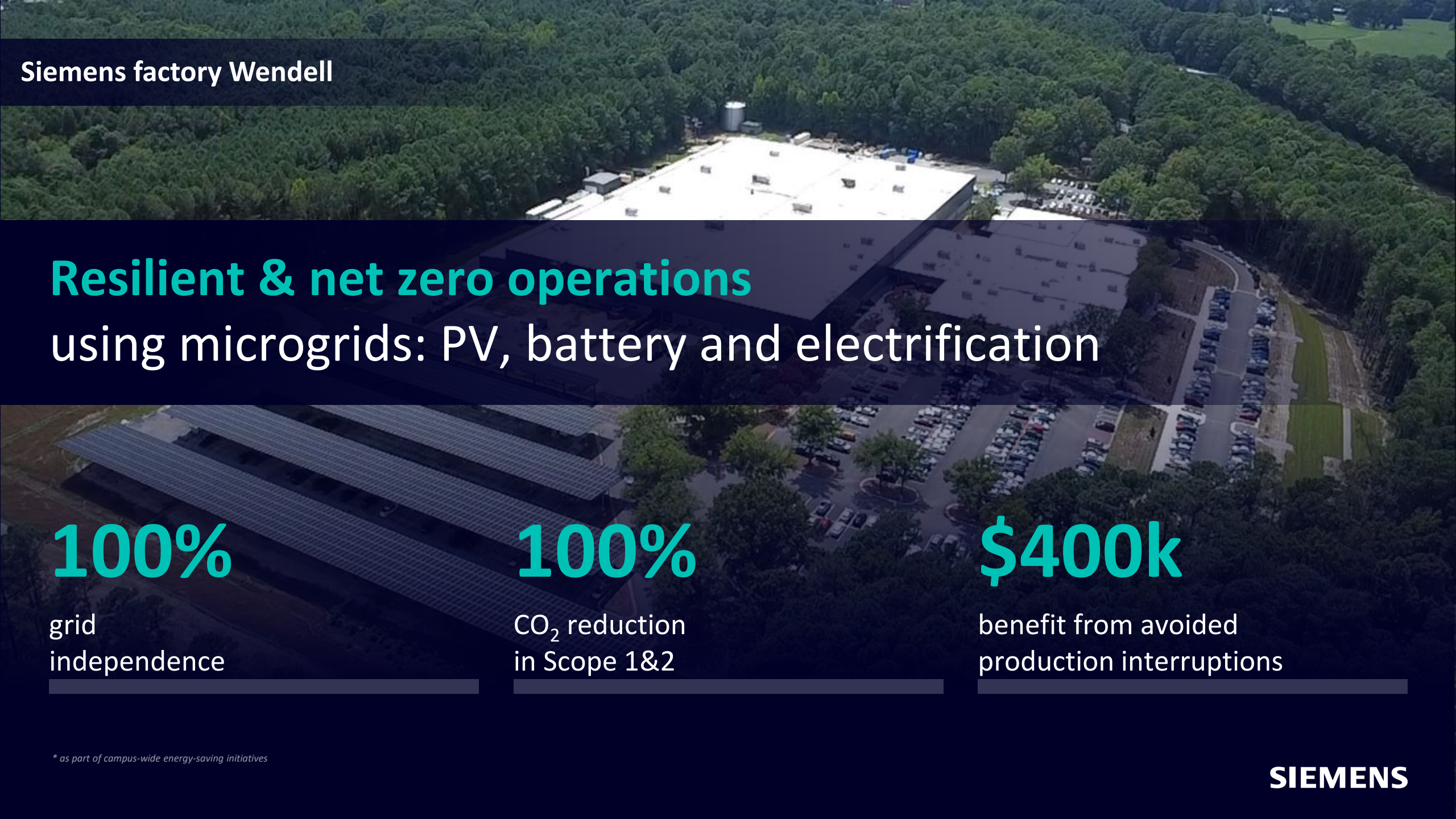
IMPLICATIONS

What does this mean for **manufacturing**?



Siemens factory Wendell

Resilient & net zero operations

using microgrids: PV, battery and electrification

100%

grid independence

100%

CO_2 reduction in Scope 1&2

$400k

benefit from avoided production interruptions

** as part of campus-wide energy-saving initiatives*

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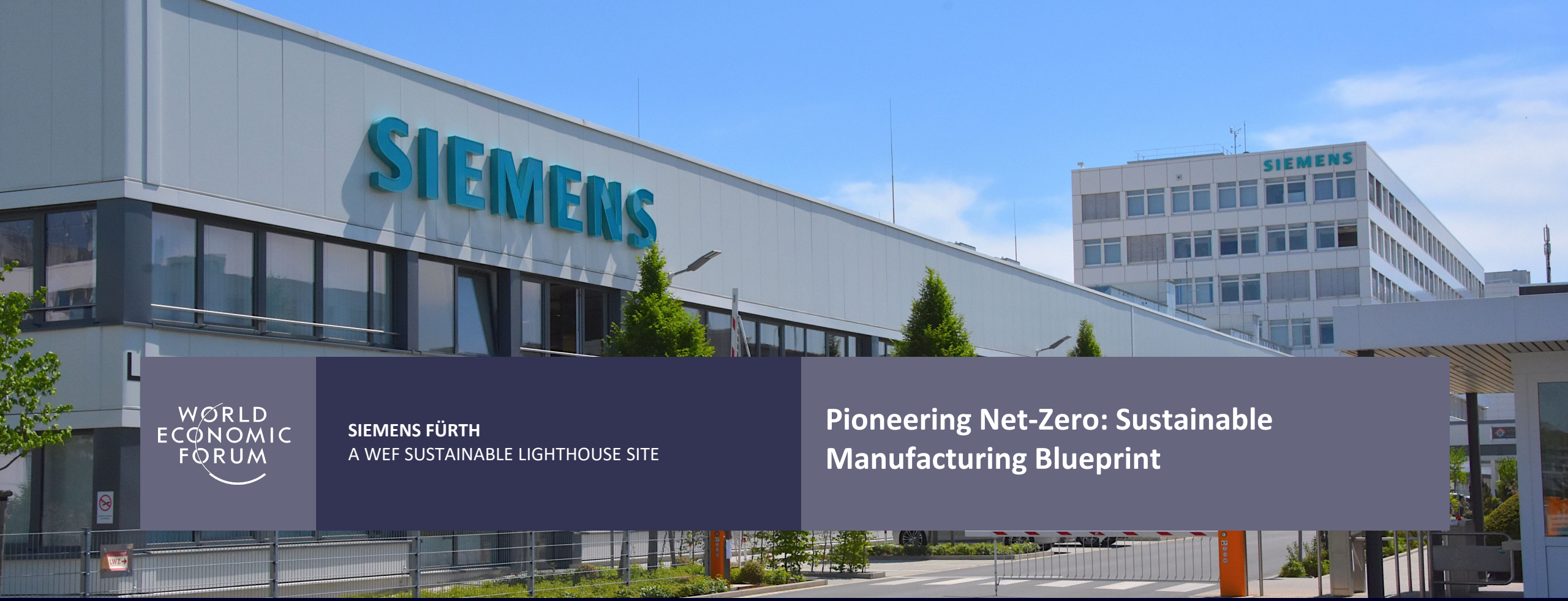

WORLD ECONOMIC FORUM

SIEMENS FÜRTH
A WEF SUSTAINABLE LIGHTHOUSE SITE

Pioneering Net-Zero: Sustainable Manufacturing Blueprint

4,400
Photovoltaic modules installed (generating up to 1.800kWp)

1,425 MWh
Annual energy savings (equivalent to 3,000 households)

>70%
Reduction in CO2e emissions per product (2019-2023)

47%
Decrease in industrial Waste per volume

145%
Output increase (2019-2023)

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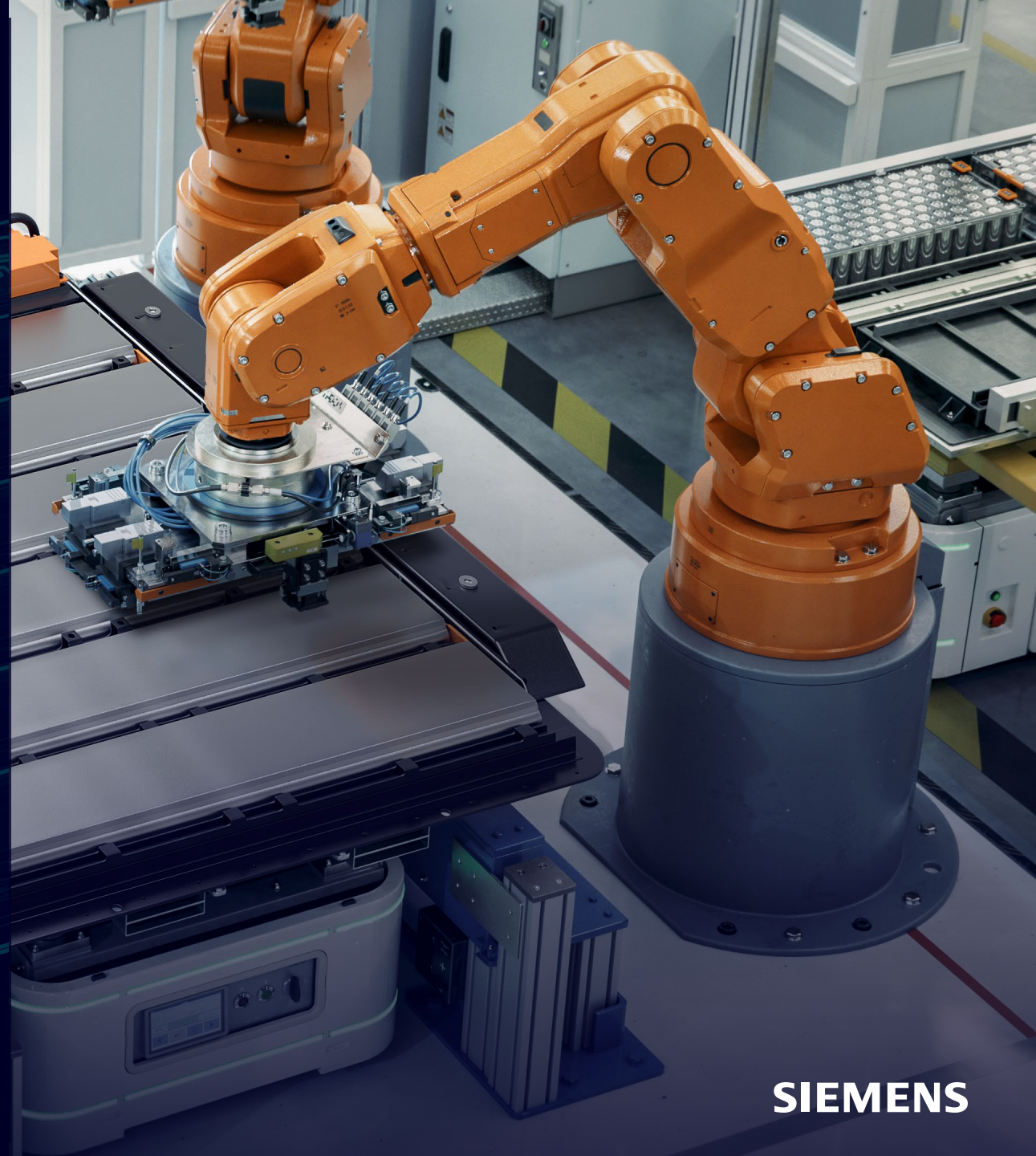
IMPLICATIONS

What does this mean for **product design**?



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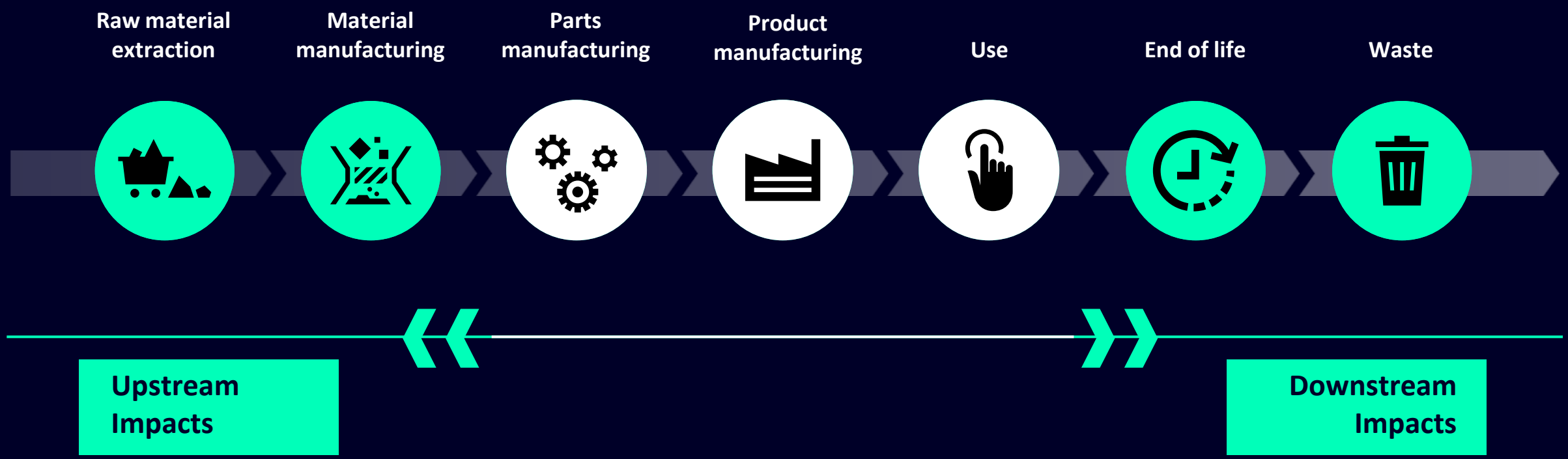
Raw material extraction
Material manufacturing
Parts manufacturing
Product manufacturing
Use
End of life
Waste
Upstream Impacts
Downstream Impacts

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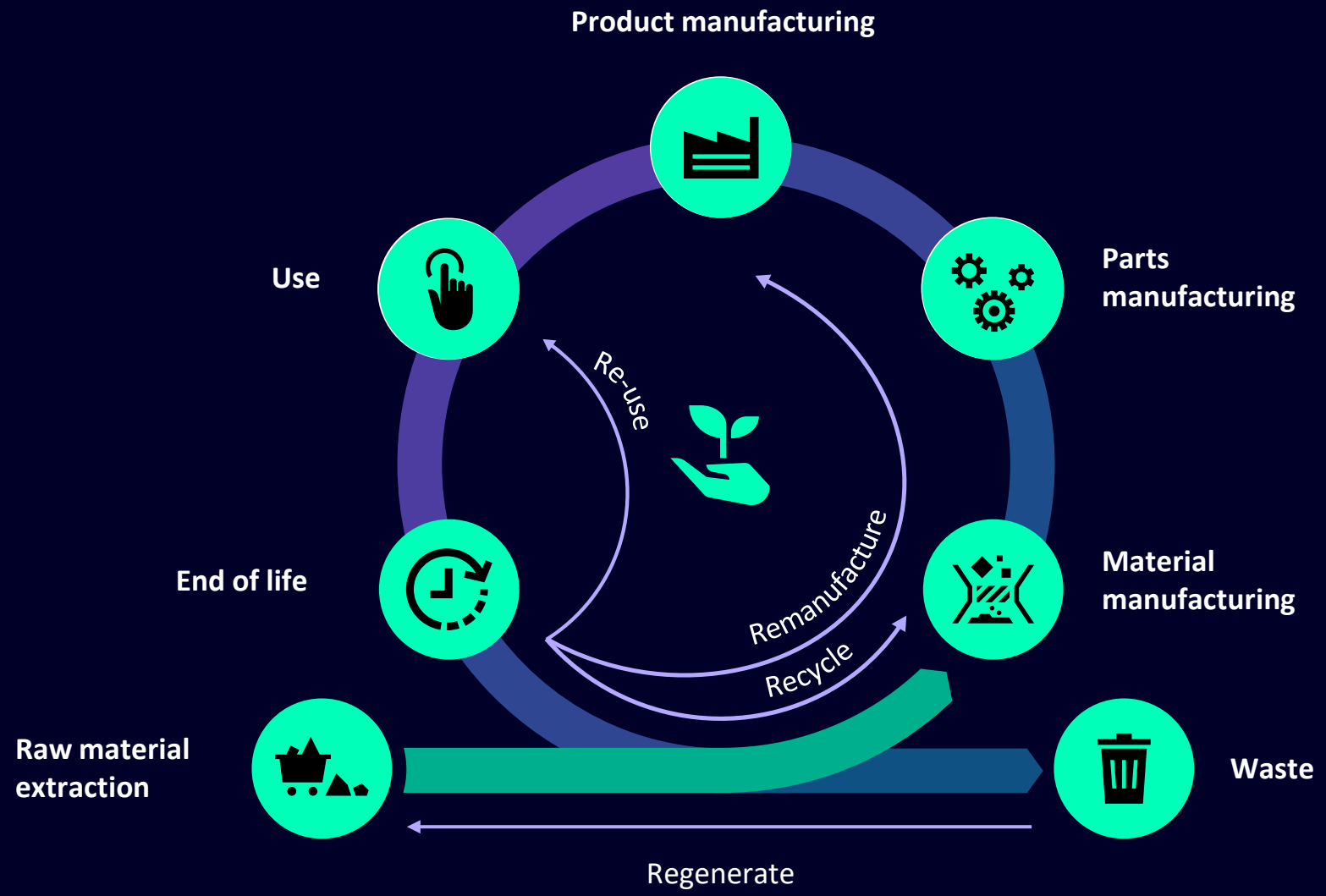
Product manufacturing
Parts manufacturing
Material manufacturing
Waste
Regenerate
Raw material extraction
End of life
Use
Re-use
Remanufacture
Recycle

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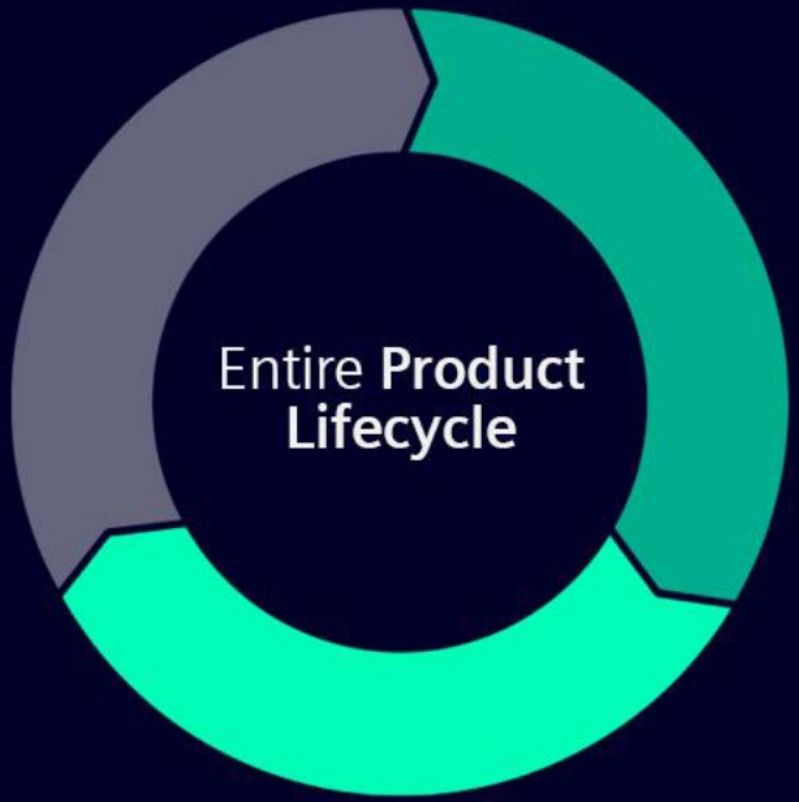
Siemens Robust Eco Design

To cover 100% of portfolio by 2030

Sustainable materials

Optimal use

Value recovery & circularity



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Siemens Robust Eco Design

To cover 100% of portfolio by 2030

Sustainable materials

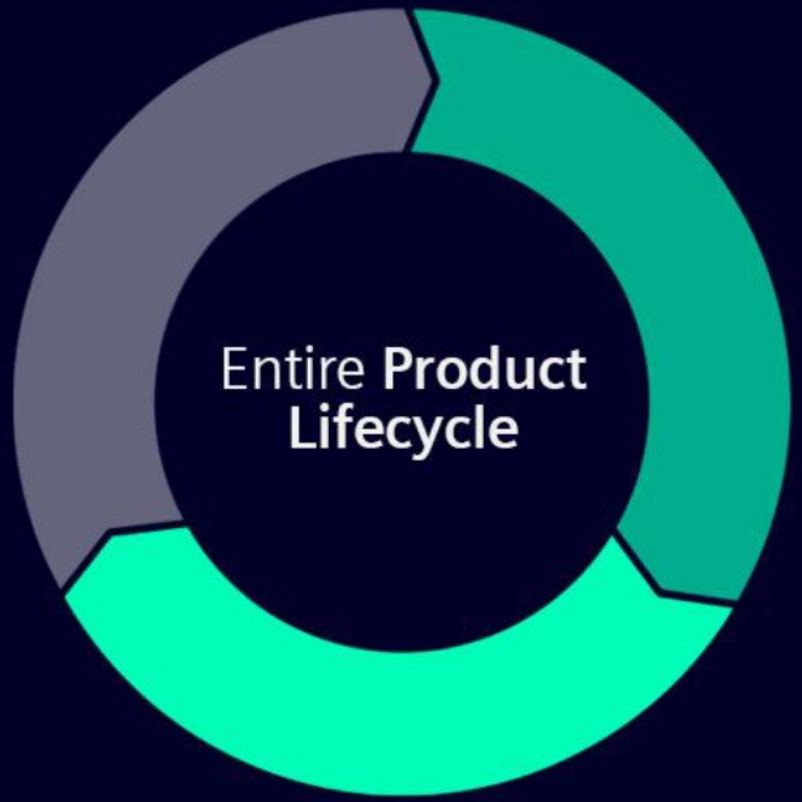
- Low carbon material
- Secondary material
- Minimum material use
- Sustainable packaging
- Substances of concern

Optimal use

- Energy efficiency
- Durability/longevity
- Maintenance possible/updatability

Value recovery & circularity

- Repairability
- Upgradability
- Ease of disassembling/circularity instructions
- Recyclability
- Take-back-scheme



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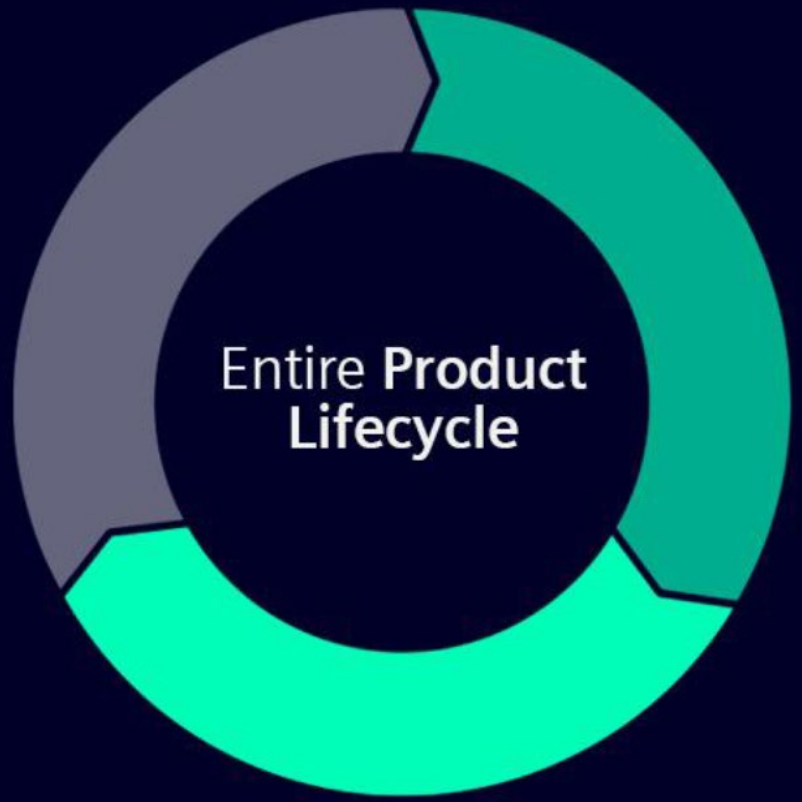
↗ **Increased material resilience**



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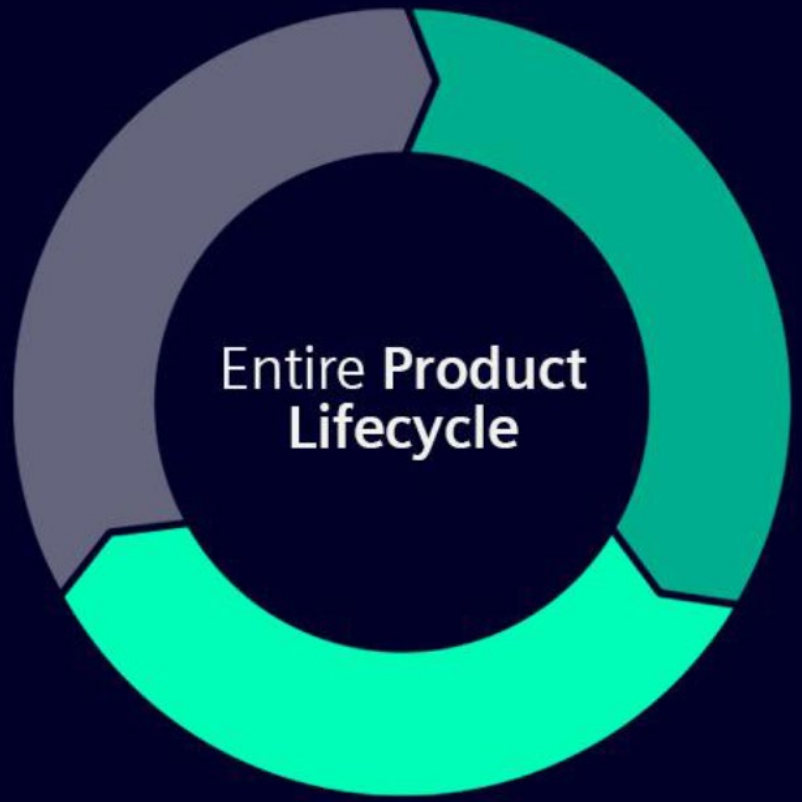
↗ **Increased material resilience**

↘ **Reduced cost**



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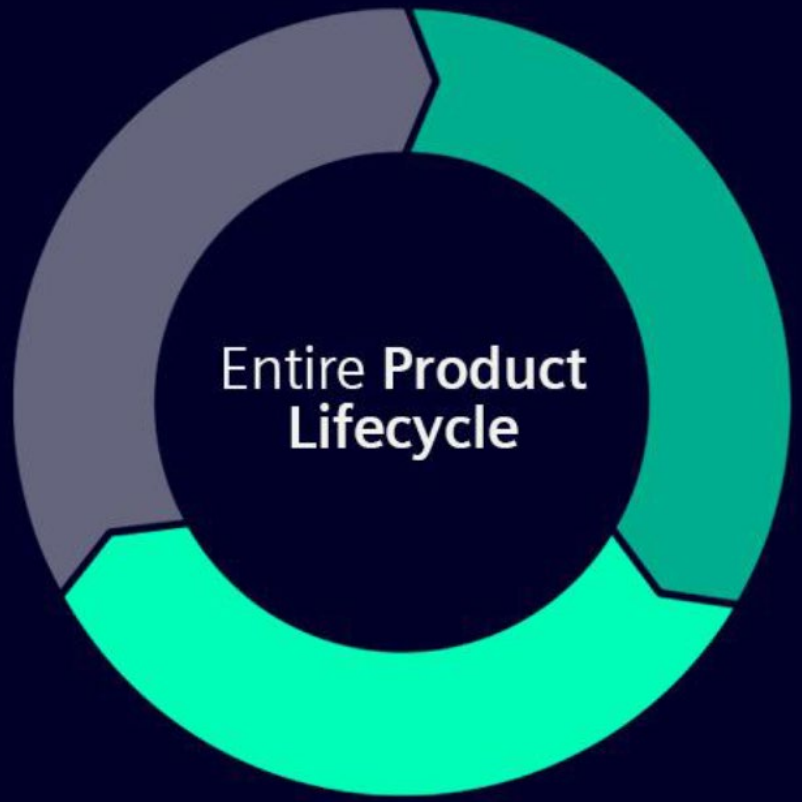
↗ **Increased customer value**



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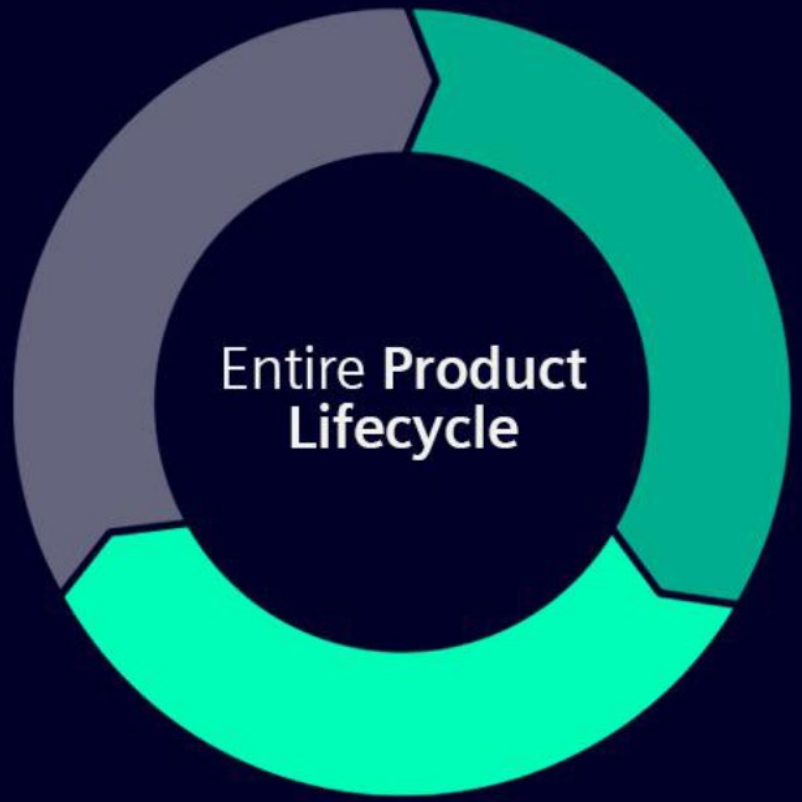
→ **New revenue stream**
↘ **Reduced lead times**



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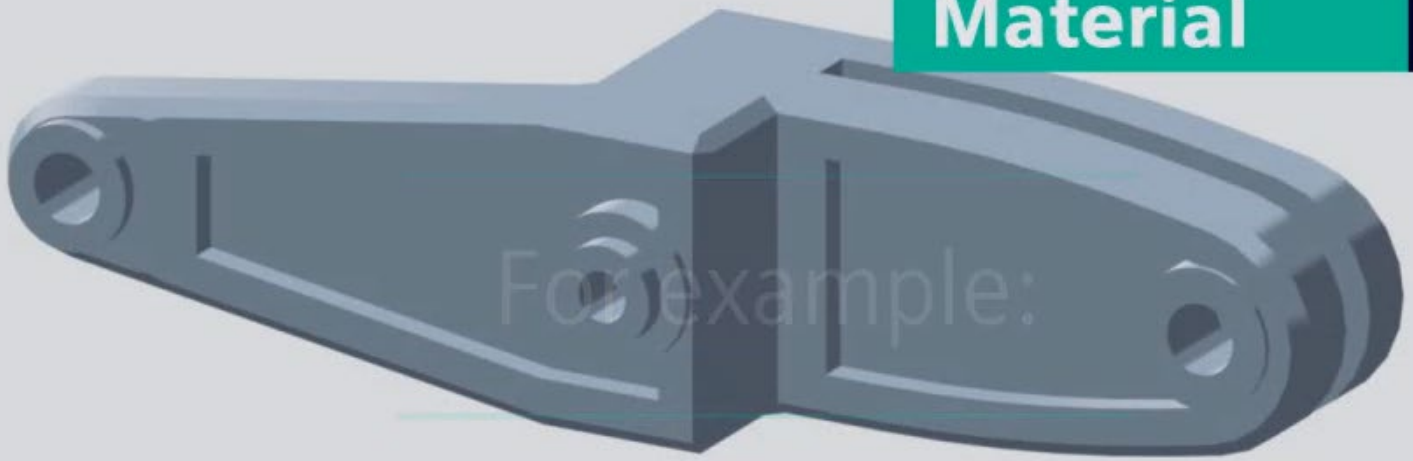

Material

For example:

$/Pcs cost

3.13

kg CO_2e/Pcs emission

4.85

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SIMATIC S7-1500 CPU – High-Performance Controller

Automate, monitor, and optimize machines and production processes

Low carbon material

The **product carbon footprint** (cradle to gate) is reduced to 25.8 kg CO2e for all variants. A reduction of more than **-35%** compared to its predecessor

Energy efficiency

Processing performance is considerably increased (between 60-400%) and **power dissipation reduced (up to 40%)** compared to the predecessor products

Minimum material use

Up to **45% reduction in product weight** compared to predecessor. Reduced use of resources due to functional integration and elimination of the heat sink

Repairability

Professional **repair services and spare parts** supply available to ensure fast and reliable support

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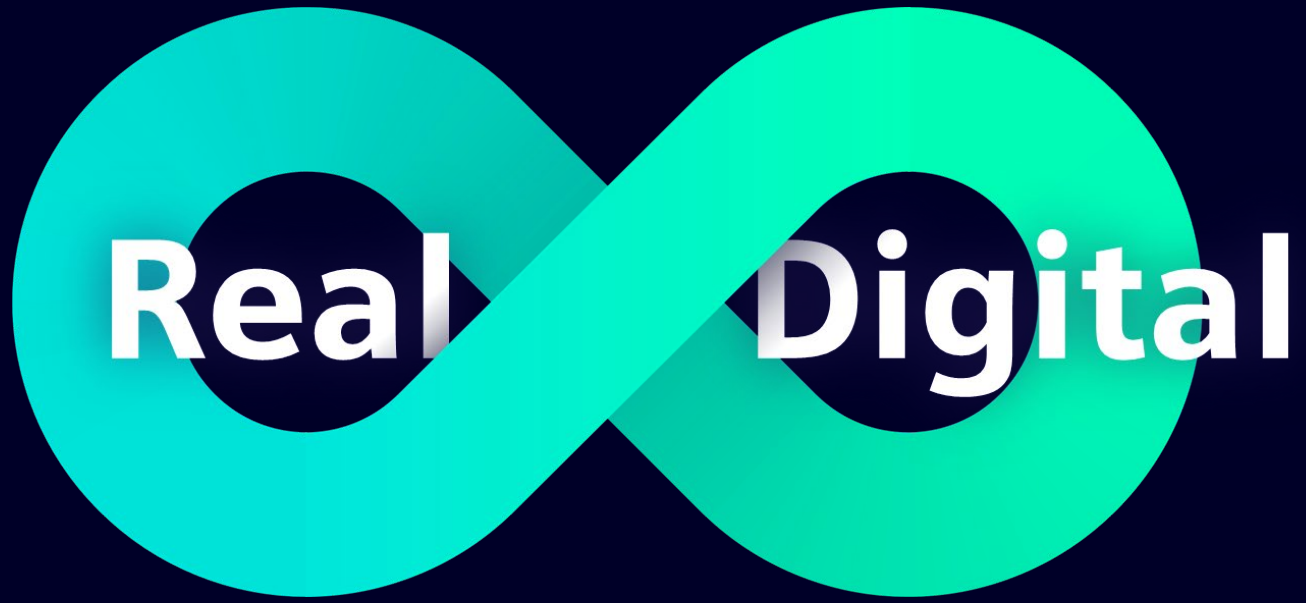
Technology
drives
Sustainability



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