



CARBON 
PRODUCTIVITY

Value creation through smart use of Carbon

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Why does industry need a new perspective on carbon?



FROM...."Carbon is the enemy"

TO..."Carbon as a source of value"



Creating more value from less fossil carbon



Productivity increases and re-coupling to new sources of carbon



Life-cycle and circular view of carbon including product use and after-use

¹ Analysis of ET Global 100 data shows that Scope 1 and 2 GHG emissions (emissions related to company-owned facilities and direct energy sourcing) make up less than 30% of the life-cycle emissions of a product, and even for those companies reporting, only one-third report more than five Scope 3 emissions categories

Our future is being collectively shaped

Gain maximum value out of the carbon employed



Smart use of carbon ...

Contribute to
UN Sustainable Development Goals

Ensure future economic growth
Enhance durability of products



... while

- reducing CO₂ emissions in production and over the lifetime of products
- increasing energy efficiency
- improving use of carbon along the value chain



COP21 • CMP11
PARIS 2015
UN CLIMATE CHANGE CONFERENCE

Carbon Productivity vision

Drive a new perspective on value creation through carbon



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Covestro's role:

- **Catalyse new insights** about carbon at various stakeholder levels
- Support collaborative creation of a tool which will be made available as **open source**, embraced by key stakeholders and adopted across industries
- Patrick Thomas officially announced Carbon Productivity initiative at the **UN Global Compact Breakthrough Summit 2017**



Carbon Productivity

Defining a measurement and improvement tool

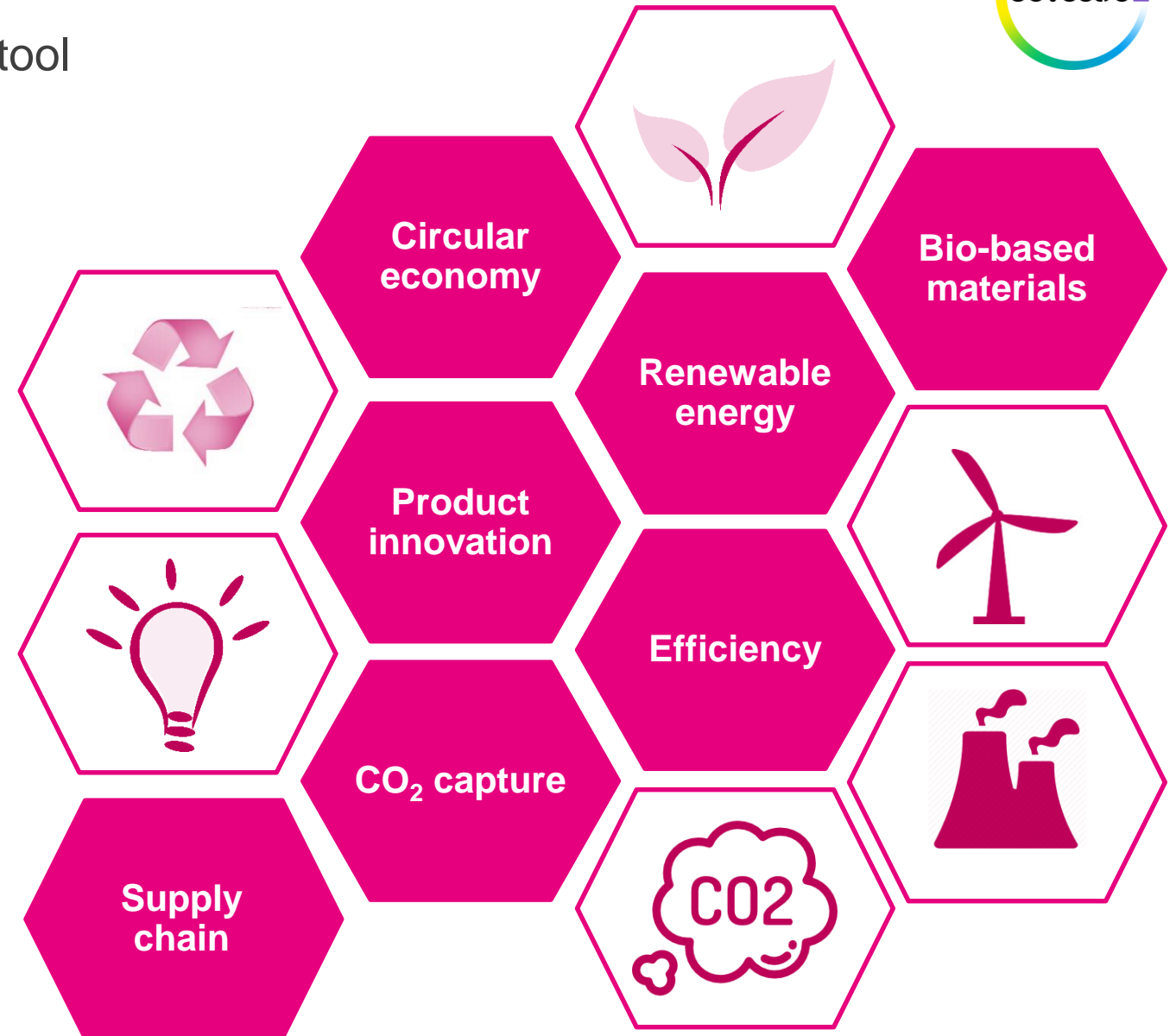


Carbon Productivity

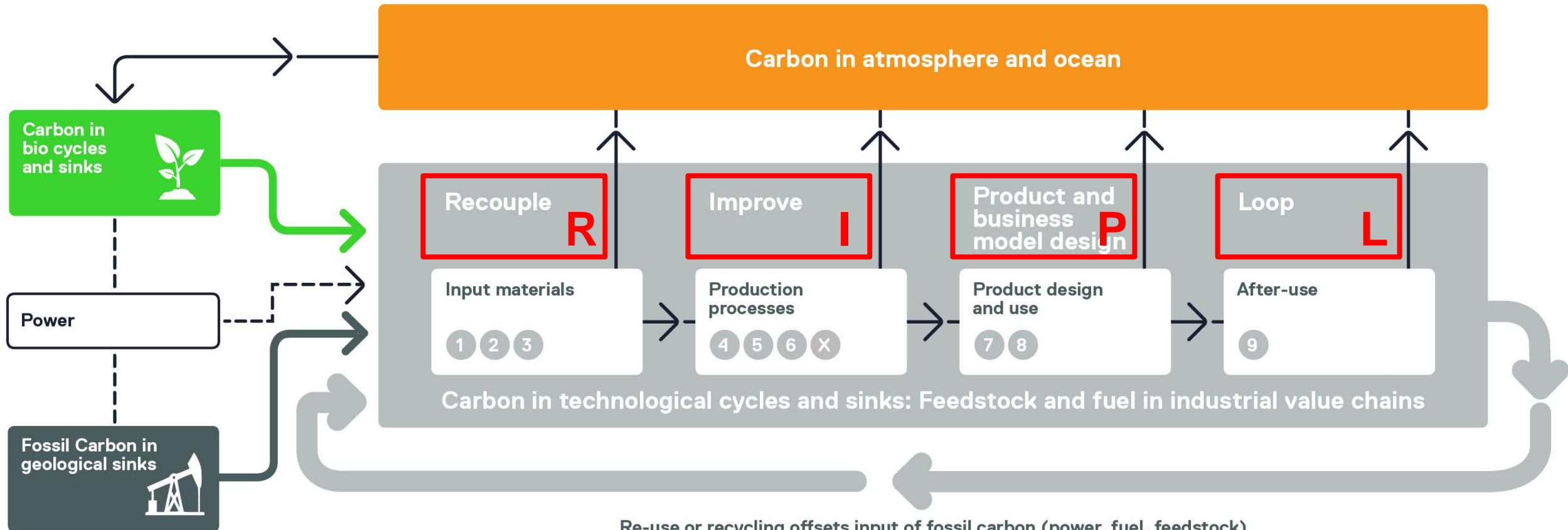


Value created

Non-renewable and renewable carbon as input for energy and feedstock



Model : Improvement framework



Re-use or recycling offsets input of fossil carbon (power, fuel, feedstock)

- | | | | | |
|--------------------------------|----------------------------|------------------------------------|--|------------------------|
| 1 Carbon capture & utilisation | 3 Recycled inputs | 5 Efficiency or process gains | 7 Use phase innovation | 9 After-use recovery |
| 2 Bio-based alternatives | 4 Supply chain improvement | 6 Renewable energy & fuel sourcing | 8 Design for carbon banks & material loops | X Carbon Sequestration |

1. Carbon sequestration refers to anthropogenic CO2 removals through land use changes and engineering CO2 sinks - not a direct carbon productivity approach as it does not reduce fossil carbon consumption for a selected value chain Source: SYSTEMIQ analysis



High-tech materials
for cars
for buildings
for electronics
for sports
for our modern world

To make the world a brighter place

Value creation through smart use of Carbon

cardyon™



YOU CAN'T
TURN CO₂ INTO
A MATTRESS.
WHY NOT?

#PushingBoundaries #CO2Dreams



From pollutant to raw material

- Covestro is integrating CO₂ into the production chain
- *Dream production*: CO₂ as raw material for polyols
- Technical and commercial viability of CO₂-containing PU foam proven in two-year test phase
- First mattresses are produced



#ReimagineCarbon
carbonproductivity.com



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#PushingBoundaries #CO2Dreams





YOU CAN'T
MAKE WIND POWER
COMPETITIVE.
WHY NOT?

#PushingBoundaries #EfficientWindPower



covestro

A solar-powered aircraft, the Solar Impulse 3, is shown in flight against a backdrop of Earth from space. The plane's wings are covered in solar panels and are spread wide. The background shows the curvature of the Earth with clouds and a bright sun on the horizon. A large, thick, curved graphic element in shades of orange and yellow is on the left side of the image.

YOU CAN'T
FLY AROUND THE WORLD
WITHOUT FUEL.
WHY NOT?

#PushingBoundaries #SolarImpulse



YOU CAN'T
DRIVE 3,000 KM
WITHOUT A DROP OF FUEL.
WHY NOT?



#PushingBoundaries
#SolarChallenge

YOU CAN'T
INTEGRATE HIGH-TECH
WITHOUT
COMPROMISING DESIGN.
WHY NOT?



#PushingBoundaries #SeamlessDesign



Covestro non-financial targets 2025

Implementation along the value chain



GLOBAL TRENDS



Research & Development

Our R&D project portfolio aligned with UN Sustainable Development Goals



Procurement

100 % of suppliers compliant with our sustainability requirements



Production

Reduce specific CO₂ emissions by 50%



Products on the market

10 million people in underserved markets reached through our business solutions



Across the value chain

We aim to get the most value out of the carbon employed

