Covestro's circular solutions

Paving the way towards low-carbon polyurethanes

Fernando Resende

6th National Conference of Rigid Polyurethane Foam
May 2024 - Turin

A perfect day starts…

A perfect day continues…

A perfect day ends…

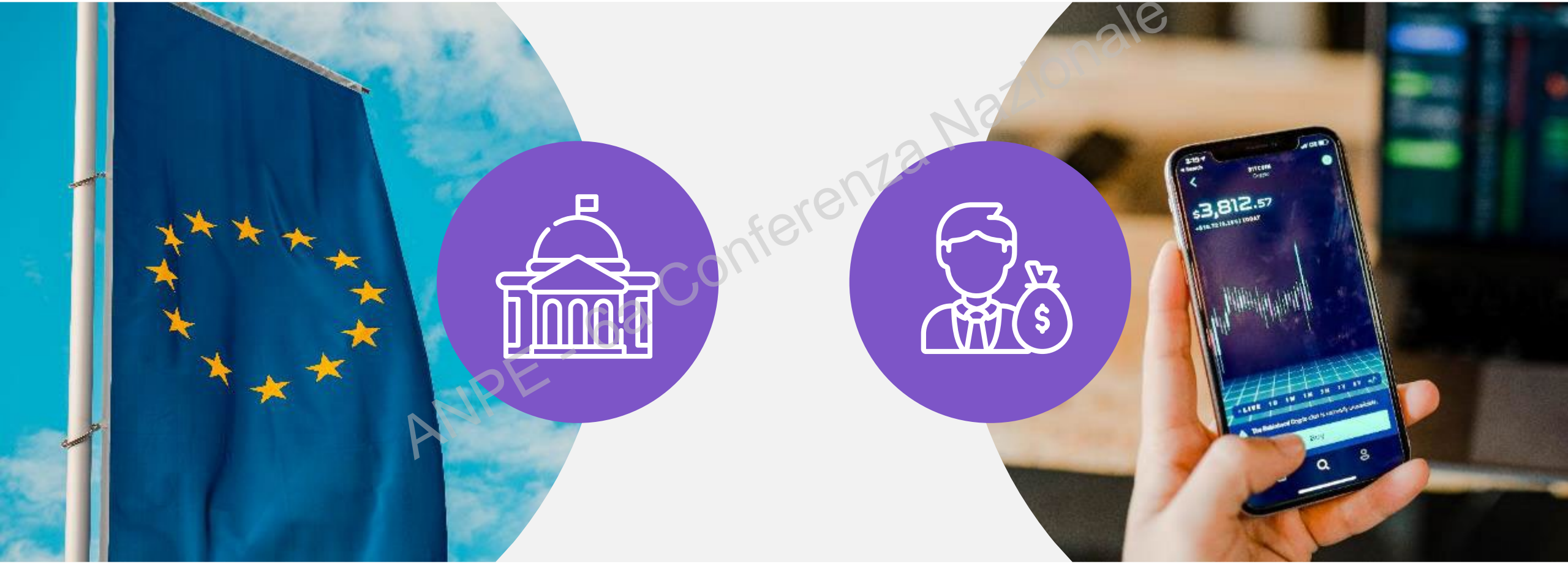
Shopping behavior is changing

73% of consumers
say brands have a responsibility to do more than generate profit

53% of consumers
actively avoid consuming from companies with a negative environmental or social impact

Sources: web research

Also, political environment and investor decisions are changing



IT IS ALL ABOUT CHANGE…
DO YOU SEE IT AN OPPORTUNITY OR THREAT?

May 2024

COVESTRO: OPPORTUNITY!

May 2024

Addressing the path to a sustainable future

The Covestro approach

Our Purpose

TO MAKE THE WORLD A BRIGHTER PLACE

Our Vision

WE WILL BE FULLY CIRCULAR

CLIMATE NEUTRALITY
(Scope 1 & 2)

ALTERNATIVE RAW MATERIALS
(Scope 3)

INNOVATIVE RECYCLING

JOINT SOLUTIONS

CLIMATE NEUTRALITY IN 2035 (Scope 1 & 2)

60% REDUCTION IN 2030 (Scope 1 & 2)

COVESTRO TARGET ALIGNED WITH 1.5°C GOAL OF THE PARIS CLIMATE AGREEMENT

SCOPE 3 SHORT-TERM TARGET: -30% CO_2 EMISSIONS IN 2035. CLIMATE NEUTRAL IN 2050.

Note: GHG emissions = Greenhouse gas emissions, calculated in accordance with GHG Protocol and WBCSD recommendations Climate neutrality currently includes residual GHG emissions (scope 1 and 2) of c. 0.2-0.3mt per year; we are planning to offset these unavoidable, remaining GHG emissions through adequate compensation measures

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Alternative raw materials as one cornerstone towards fully circular

A key pillar on the path towards climate neutrality and a circular economy

Key to save CO_2 emissions and fossil resources

HOW TO EFFICIENTLY BRING THOSE MATERIALS INTO A COMPLEX PRODUCTION PROCESS?

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MASS BALANCE:

METHODOLOGY TO BRING CIRCULAR SOLUTIONS INTO THE VALUE CHAIN

WHAT

WHY

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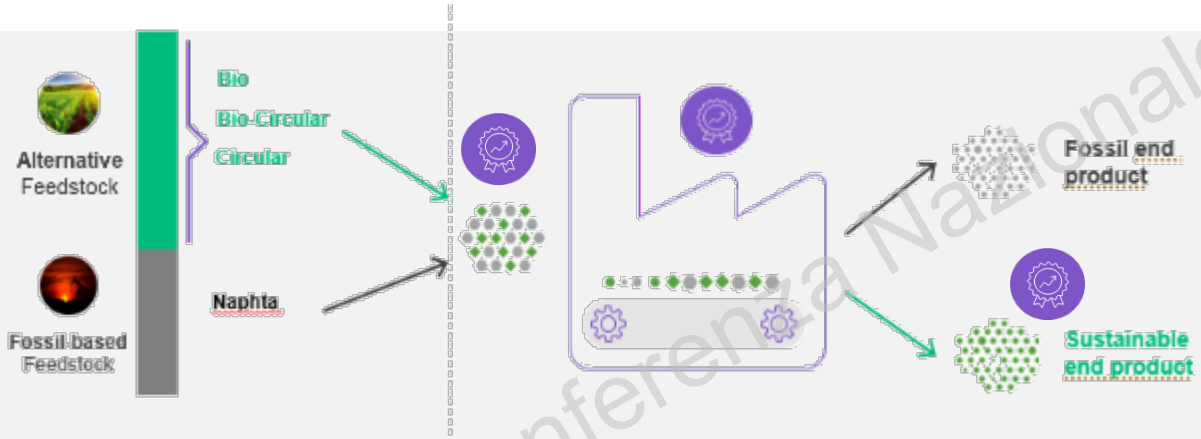
WHAT

Mass balance methodology



- Methodology to trace materials flows through complex value chains
- Alternative raw materials physically introduced in production and mathematically allocated to end products
- Independent bodies audit process and certify material flow
- End products with improved sustainability profile

Easy implementation to spur demand

PRODUCERS

Physical segregation often technically and economically challenging

Existing asset utilization

Fast scale up

USERS

Products with consistent product quality and processing behavior

Use of existing equipment and recipes

Low implementation efforts and cost

Different feedstock alternatives

- Reduced CO_2 emissions
- Reduced use of fossil resources
- More investments into circular value chain
- Attractive solutions to answer transformation requirements of stakeholders

Mass balance methodology: it isn’t new.

Other value chains are widely using it, the chemical industry is now adopting it

COVESTRO

Covestro transitions into a circular economy

At Covestro, we provide the alternative materials for the transition towards a circular economy.

CERTIFIED
Various production sites around the world ISCC+ certified to implement mass balance methodology

AVAILABE
- Climate neutral MDI[1]
- TDI & polyol with reduced CO_2 footprint

FEEDSTOCK
Today from bio-circular sources, in future also circular sources

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[1]MDI carbon emissions are reduced by up to 100% with Certified Circular MDI based on life cycle analysis cradle-to-gate. In comparison to regular MDI Desmodur®. Based on TÜV certified LCA methodology of ISO 14040:2006/ISO 14044:2006 Environmental management;

EXAMPLE: MAKING INSULATION MORE SUSTAINABLE

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Certified Circular MDI to make insulation more sustainable

REDUCED EMBODIED CARBON[1]
In line with industry targets (e.g., RIBA 2030 Climate Challenge, WGBC Whole Life Cycle Carbon Vision) and upcoming regulations

KEEP SUPERIOR PROPERTIES
Build with less environmental impact and same technical performance of PUR/PIR insulation

RENEWABLE CONTENT
Bio and bio-circular content attributed via mass balance[2], reducing fossil-based resources use

[1]MDI carbon emissions are reduced by up to 100% with Certified Circular MDI based on life cycle analysis cradle-to-gate. In comparison to regular MDI Desmodur®. Based on TÜV certified LCA methodology of ISO 14040:2006/ISO 14044:2006 Environmental management;

[2]Bio-circular refers to waste and residues of biological origin from agriculture, forestry and related industries (e.g., used cooking oil). Bio feedstocks are virgin agricultural raw materials

How can Covestro help insulation manufacturers further contribute to climate neutrality?

Example for PIR/PUR Insulation board & Sandwich Panel based on Desmodur® CQ 44V70L MS (bio-circular feedstock[1])

SANDWICH PANELS | **INSULATION BOARDS**

Assumption:

Thickness: 12 cm
PIR Density: 35 Kg/m³

Less ~7 Kg CO2equiv per sqm²
Approx. 50% less emissions[3]

Much lower scope 3 emissions
Much lower embodied carbon

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[1] Bio-circular feedstock via mass balance approach
[2] Based on Life cycle analysis of cradle-to-gate. Covestro internal calculation
[3] Refers to the Polyurethane portion. In comparison to regular PUR/PIR foams. Can vary according to manufacturer formulation/LCA basis

Making rigid foams circular

Announced Circular Economy initiatives for PU rigid foam products on short/long-term

Climate neutral raw material
Bio-circular attributed MDI
via mass balance

Bio-Aniline
Renewable raw
material

Circular Foam Project
Chemical recycling of rigid
foam

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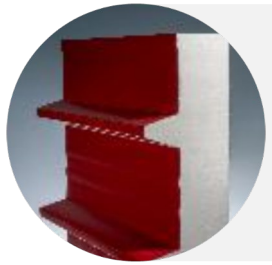
Construction products based on low carbon solutions from Covestro

INSULATION BOARDS

ONE COMPONENT FOAMS



SANDWICH PANELS

WOOD BINDERS – FORMALDEHYDE FREE / LOW-CARBON BINDERS

A perfect day…

THANK YOU

Fernando Resende

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EMEA-LATAM

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