

An aerial photograph showing a winding asphalt road that curves through a dense, vibrant green forest. The road is marked with white dashed lines and runs from the upper right towards the lower right of the frame. The surrounding landscape is a mix of tall evergreen trees and shorter, leafier deciduous trees, creating a rich texture of green. The lighting is bright, suggesting a clear day.

Mass balance in the Chemical Industry

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MORTEN MELDAL
Nobel Prize in Chemistry 2022

“There is nothing that
is not chemistry.”

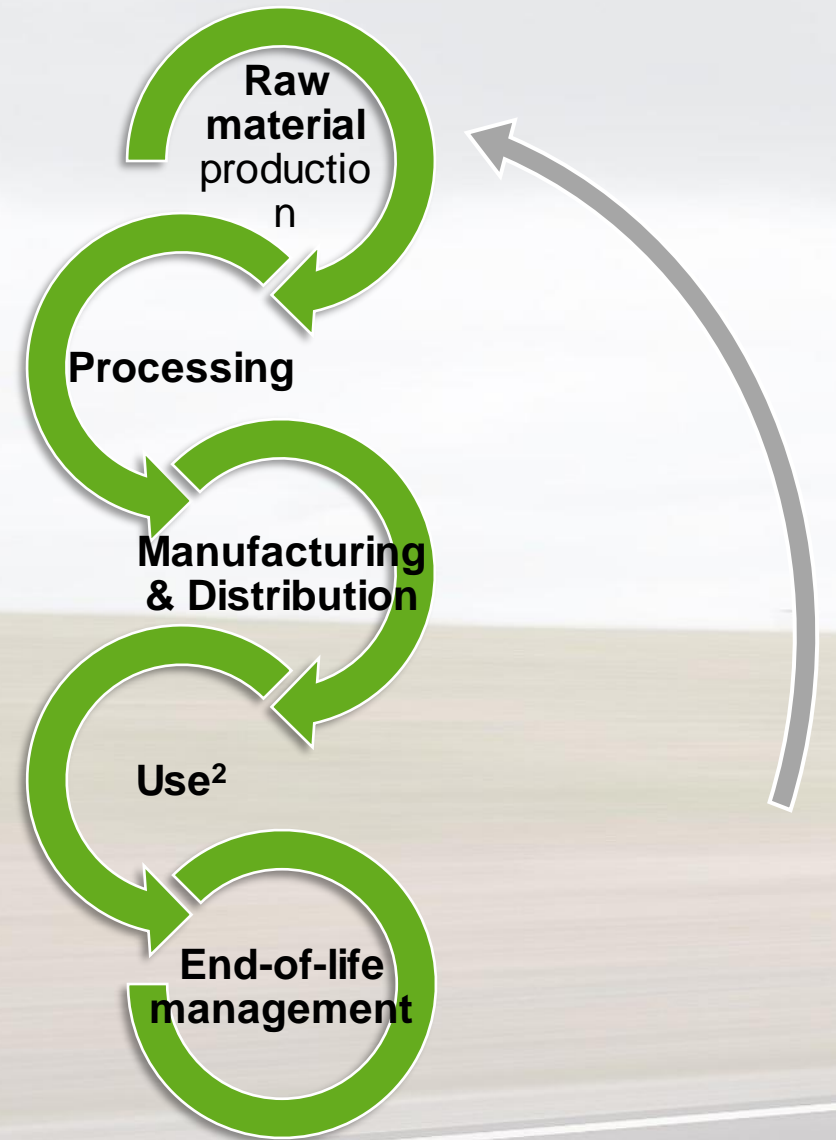
 **BASF**
We create chemistry

Chemistry in everyday life



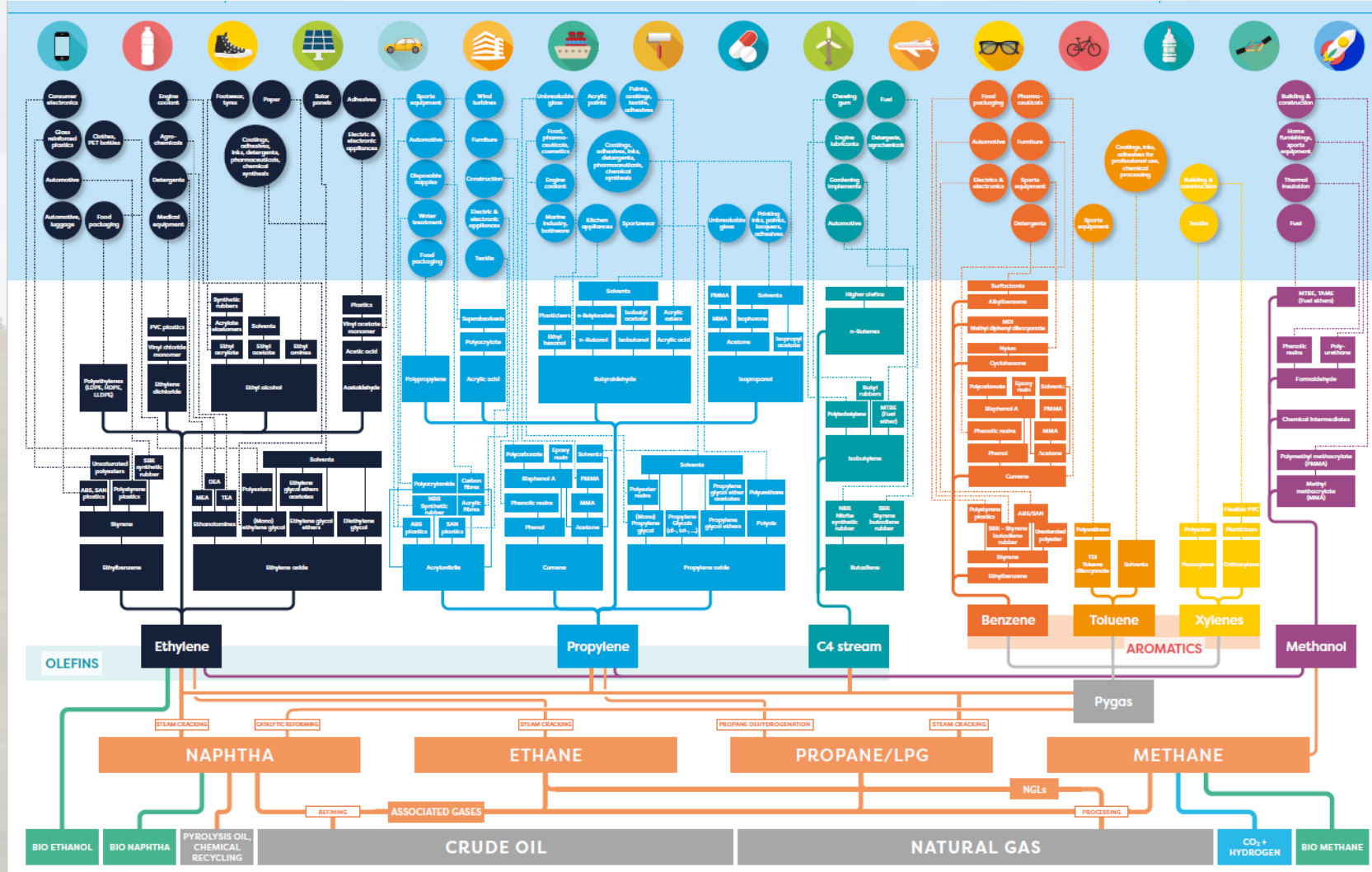
The Chemical Industry is important for the transition to a Circular Economy

- 95%¹ of manufactured goods rely on chemicals
- Chemical production is a prerequisite for a sustainable downstream
- Chemistry is an enabler of circular economy



Chemical industry

Complex value chains



Change in the Chemical Industry

Mass balance is the enabler

- Complex value chains and processes
- Chemical Industry doesn't look the same
- Cefic* supports definitions of all Chain-Of-Custody methods
- Cefic highlights the importance of a mass balance allowing the chemical industry to change

CoC models ISO 22095

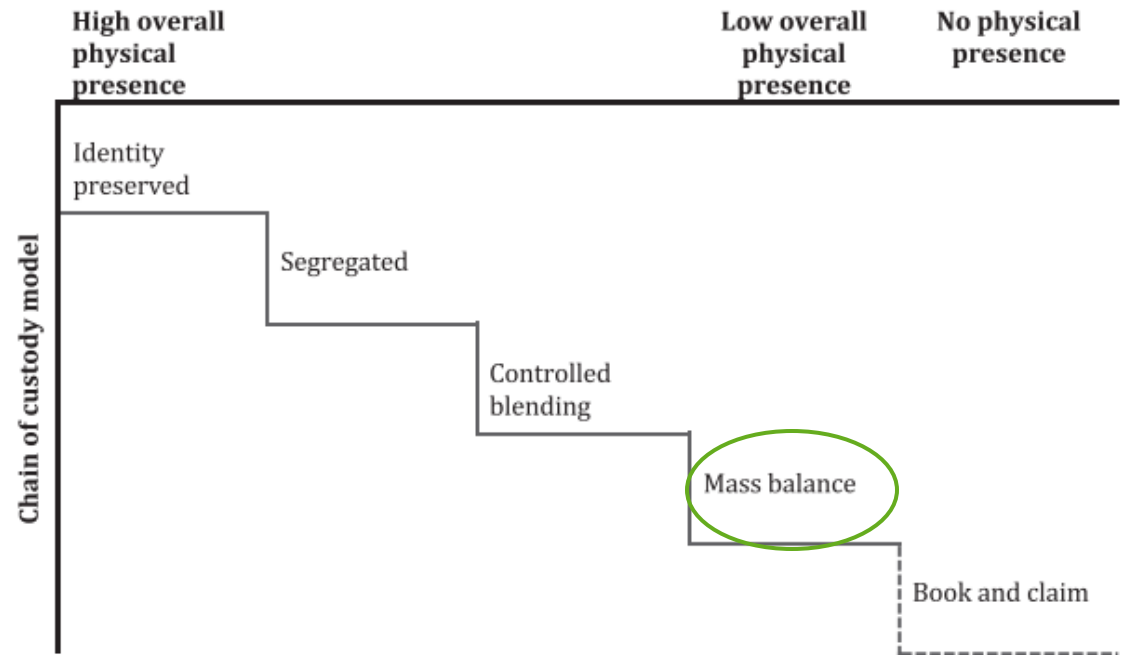


Figure 1 — Indicative illustration of chain of custody models ranked according to the physical presence of specified characteristics

Recycled or biobased feedstock?

Not one solution

Recycled feedstock

Dedicated mechanical recycling



Mechanically recycled feedstock derived e.g., from waste polystyrene (PS)

Chemical recycling (e.g. ChemCycling®)



Pyrolysis oil derived from plastic waste or end-of-life tires

Renewable feedstock

Biomass balance



Biomethane or bio-naphtha derived from biomass (waste)

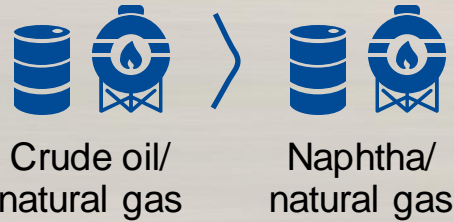
Dedicated bio-based production



Sustainably sourced bio-based resources, e.g., RSPO certified palm oil

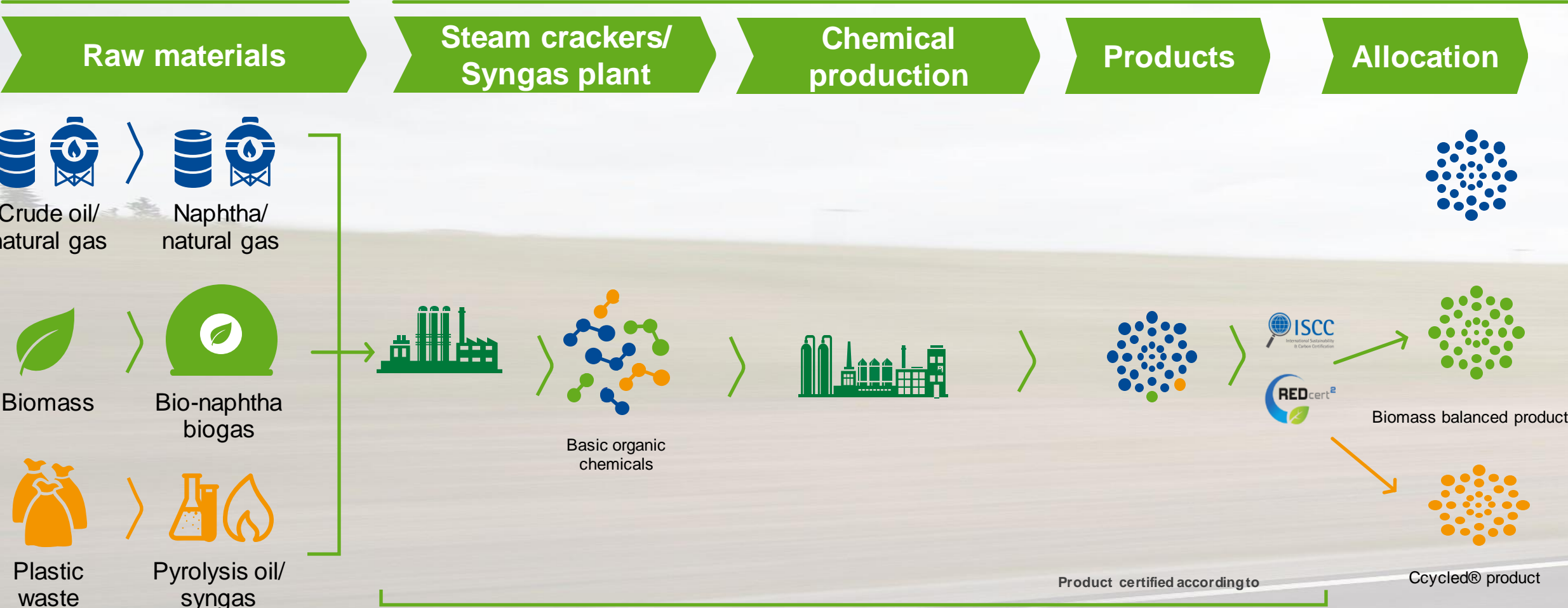
Mass balance in a complex value chain

BASF past



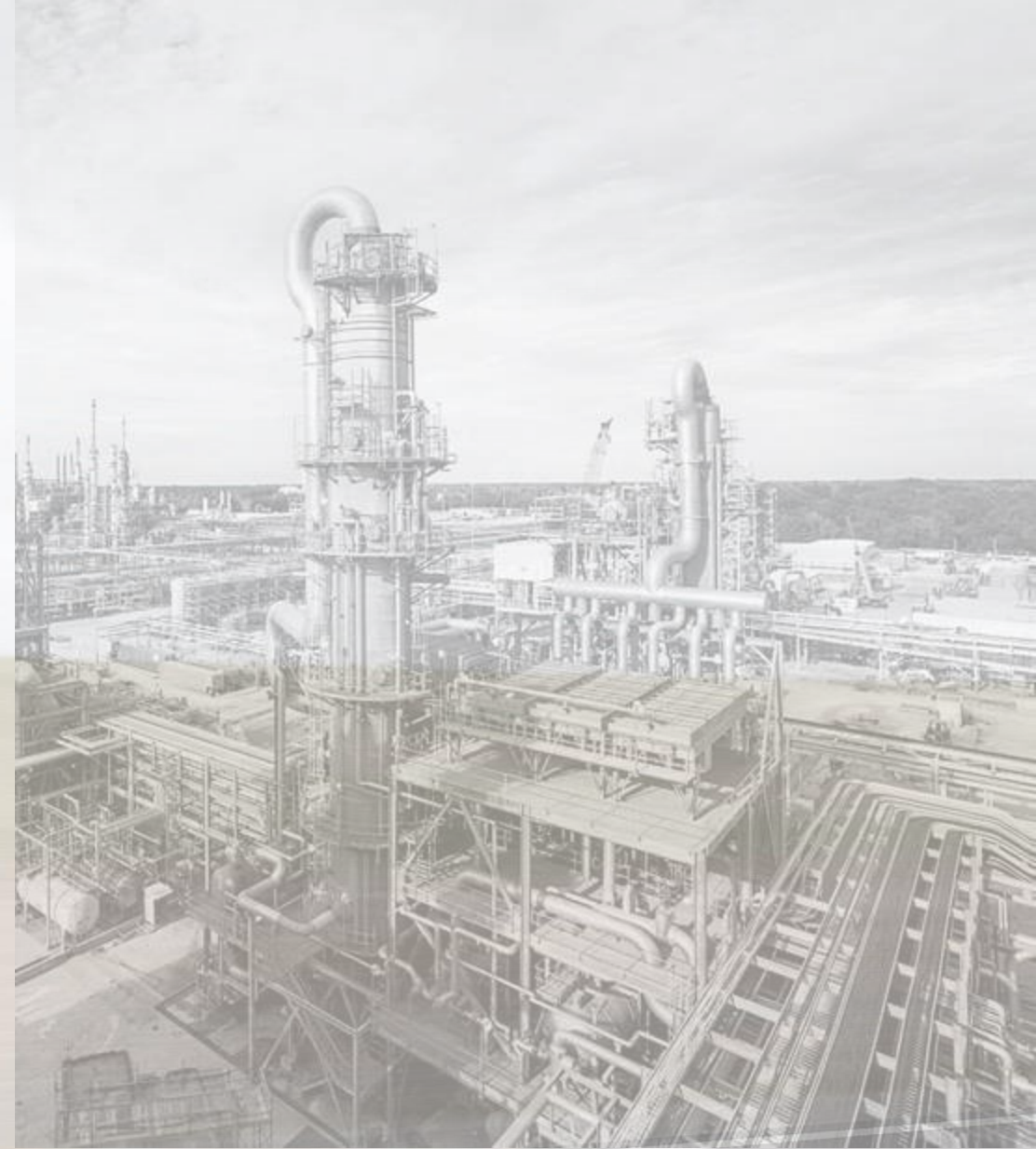
Mass balance in a complex value chain

BASF present



Why is Mass balance important?

- Use existing plants with very **efficient processes**
- Use **existing plants**
 - Lower costs, no (few) investments necessary
 - Avoid CO₂ when building new plants
- **Cost-effective** and faster shift
- Possibility to offer **more sustainable products now**



What is needed?

- Finalize and implement a mass balance standard (ISO 308), applicable for all sectors incl. the Chemical Industry
- Acceptance of mass balance by EU commission
- Possibility to use MB as sustainable solution i.e. Environmental Product Declaration (EPD)
- Companies have to request and implement mass balance

Considerations

An aerial photograph of a river winding through a lush, green forest. The river is light blue and flows from the top left towards the bottom right. The surrounding forest is dense with various shades of green trees. The image is slightly faded and serves as a background for the text.

- Mass balance is necessary to change from fossil to renewable and recycled feedstock
- Mass balance is not for customer perspective only, also B2B, B2C but also for political and company
- No quick transformation of the chemical industry and its downstream without mass balance

Understanding Mass Balance

How can mass balance support your sustainability roadmap?



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