

polykemi

Value driven use of sustainability data

Did you know that

60-80%

of a product's total
CO₂ footprint comes
from the raw material?



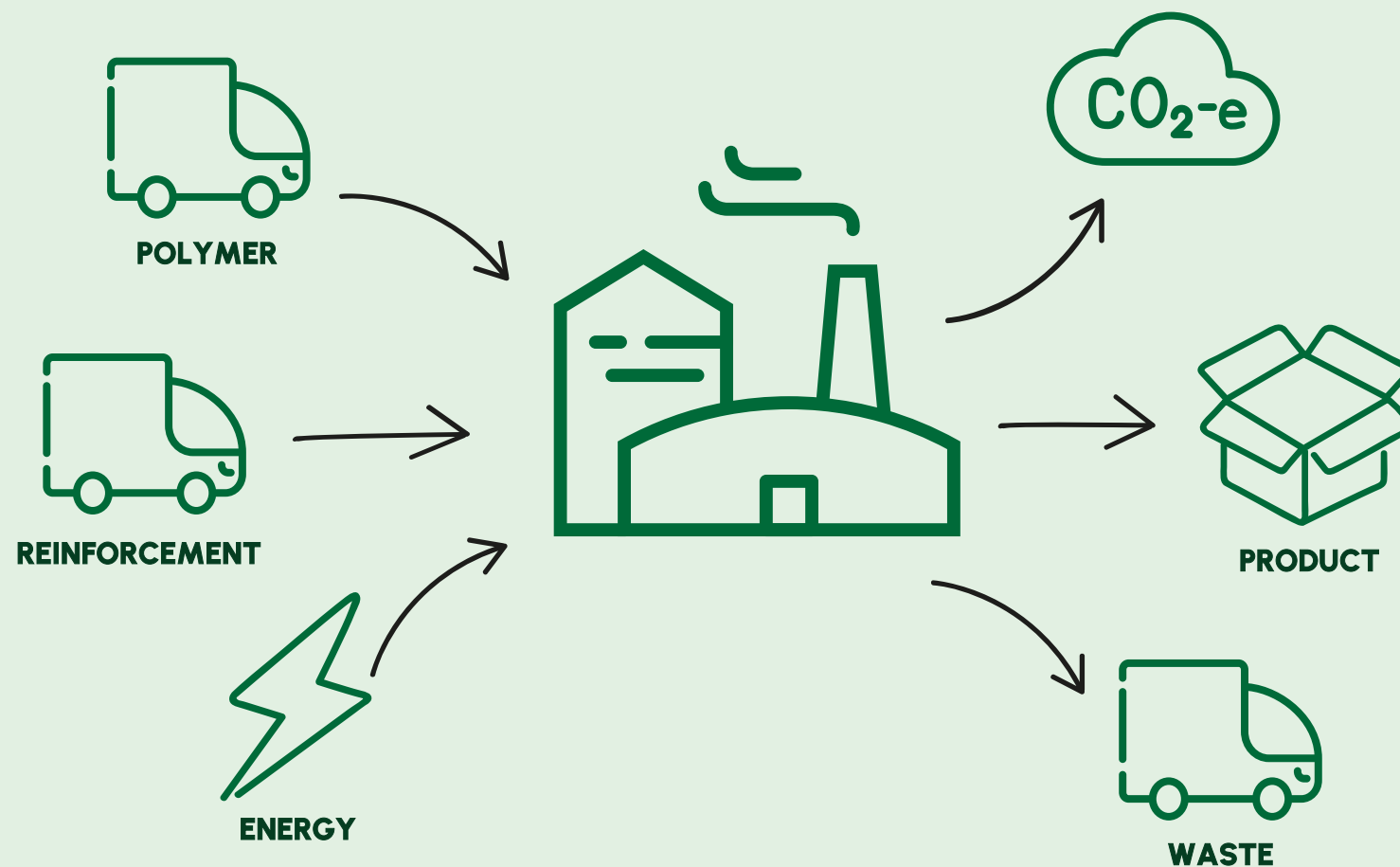
**More than 55
years of virgin
and recycled
compounds**

1968



Hugo Jönsson,
Founder of Polykemi

Life Cycle Assessment – LCA

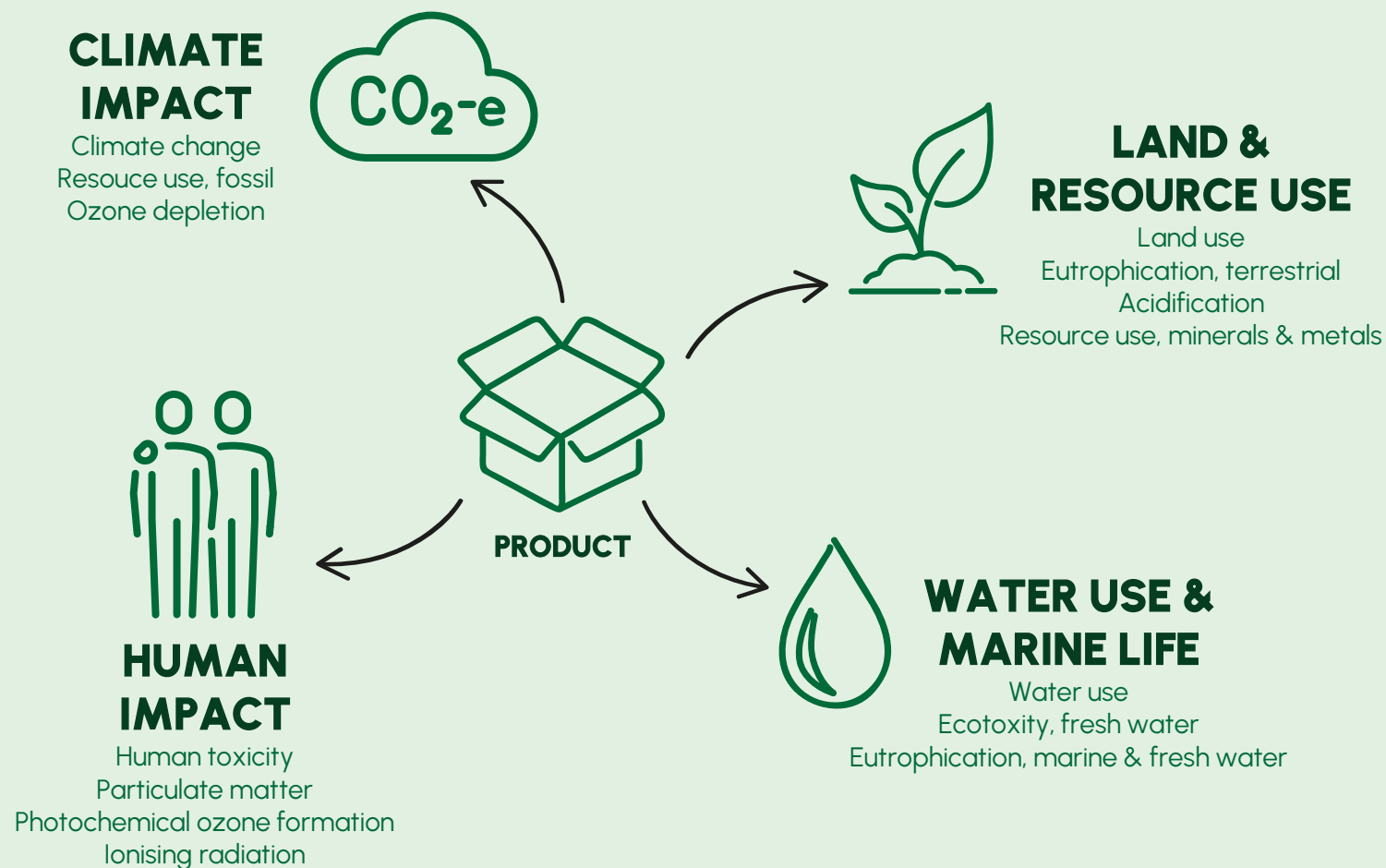


Workflow for CO_2 /LCA data according to ISO 14040-44:2006.

Analysis third-party verified.

Polykemi can present **GWP & full LCA-data** on individual compounds produced in all our factories.

Climate vs. environmental footprint



Not only the climate impact but also the full environmental impact = all 16 impact categories.

What is Points (Pt.)

- All global emissions for the 16 different impact categories summarized, weighted according to severity and divided with the total global population.
- Result is called Normalized and Weighted Environmental Impact
- 1 Pt. Equals the average impact from 1 person on earth/year.

DATA QUALITY



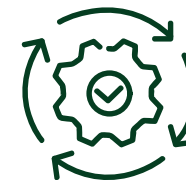
Completeness

Assumptions
Allocation methods



Databases

Version & date
Primary/Secondary



Evaluation

Methodology

RESULT

Virgin & recycled compounds

Semi crystalline

PP

 Bio PP

PA6

PA66

PBT

POM C

Blends

PC/ABS

PC/ASA

PC/PBT

PBT/ASA

PA/ABS

Amorphous

PC

ABS

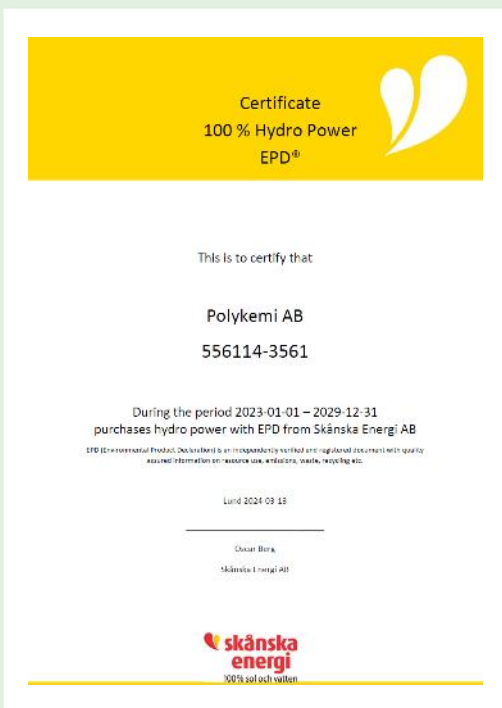
SAN

ASA


PMMA




Energy – Green Electricity




Polykemi use 100%
renewable electricity
(Hydro & Solar)

 **Sweden**
≈ **50g** CO₂-e/kWh*

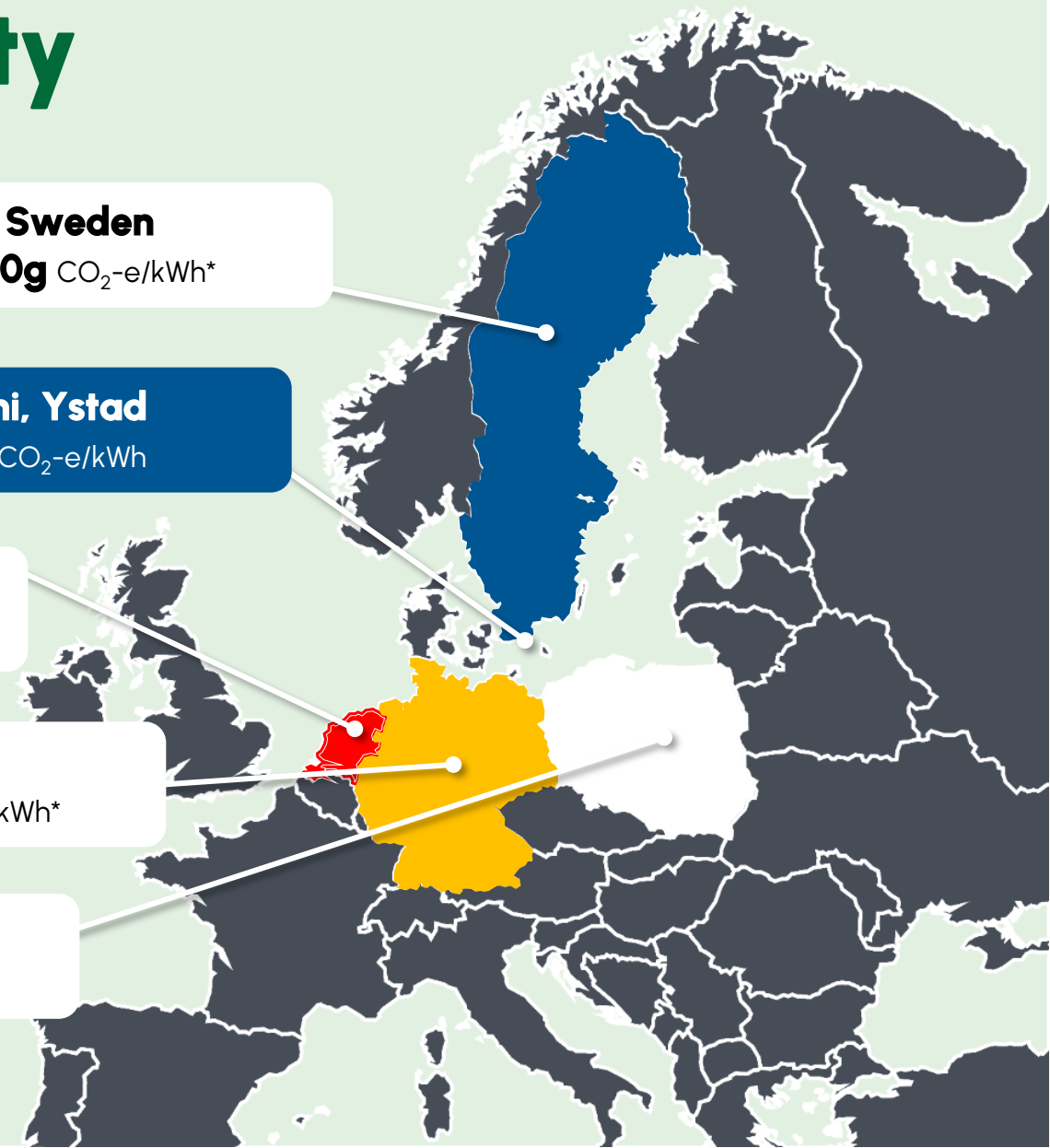
 **Polykemi, Ystad**
≈ **25g** CO₂-e/kWh

 **The Netherlands**
≈ **425g** CO₂-e/kWh*

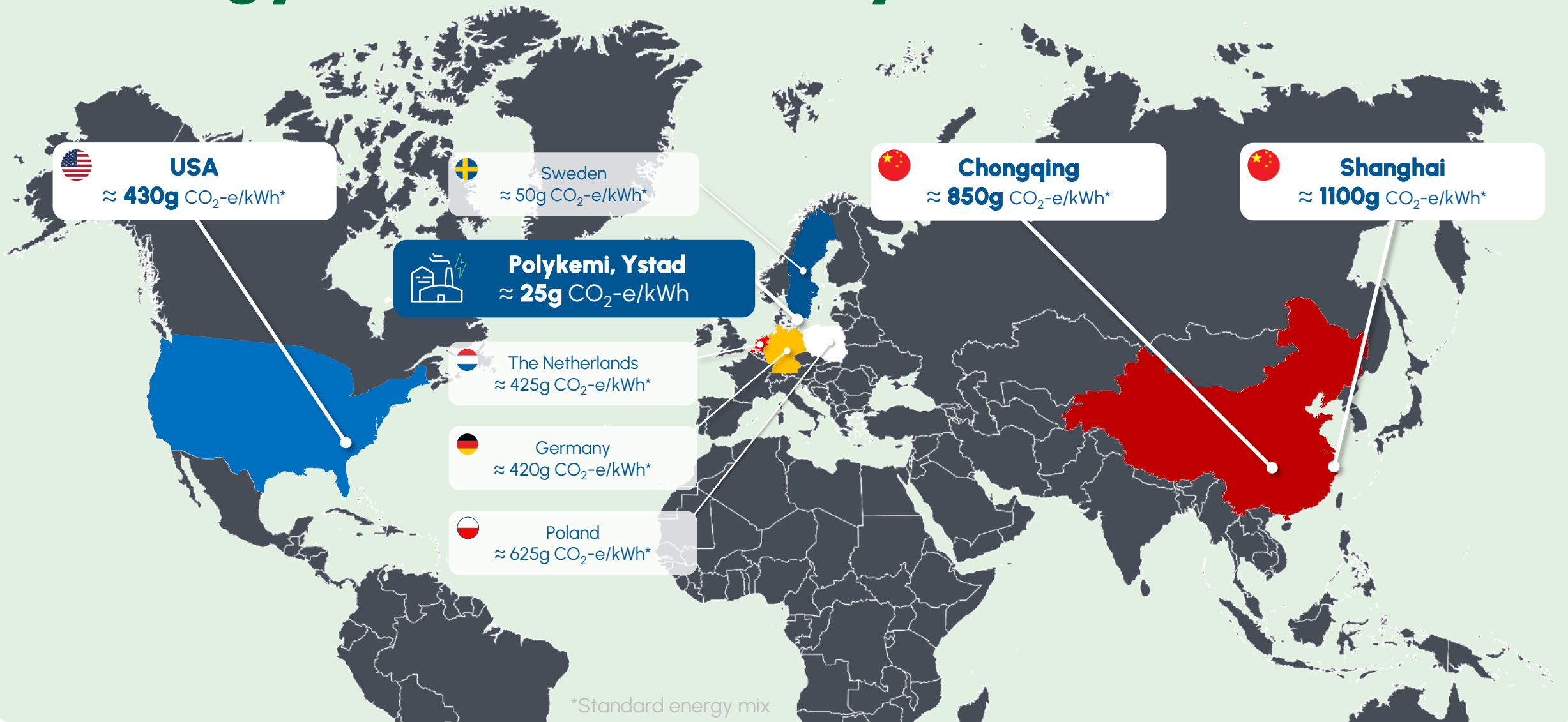
 **Germany**
≈ **420g** CO₂-e/kWh*

 **Poland**
≈ **625g** CO₂-e/kWh*

*Standard energy mix

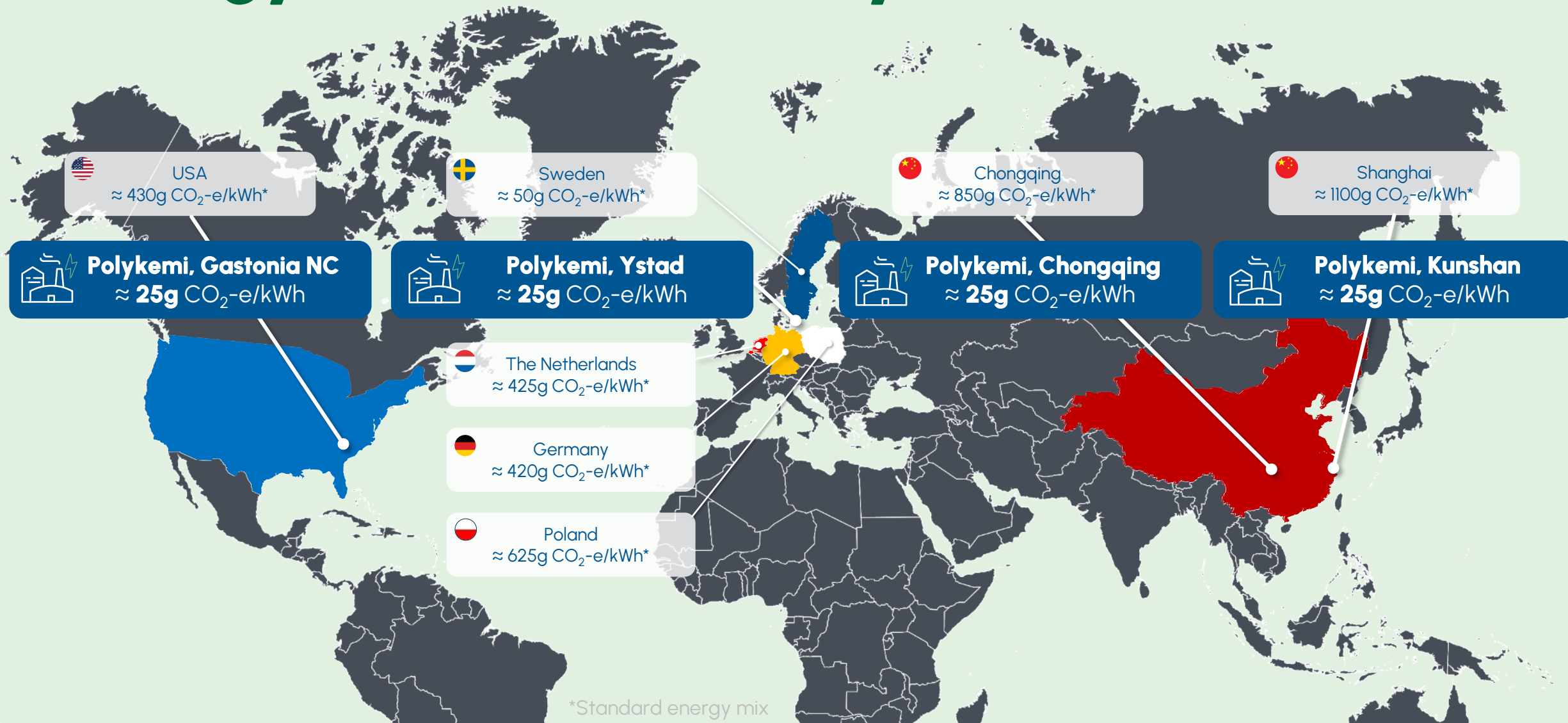


Energy – Green Electricity

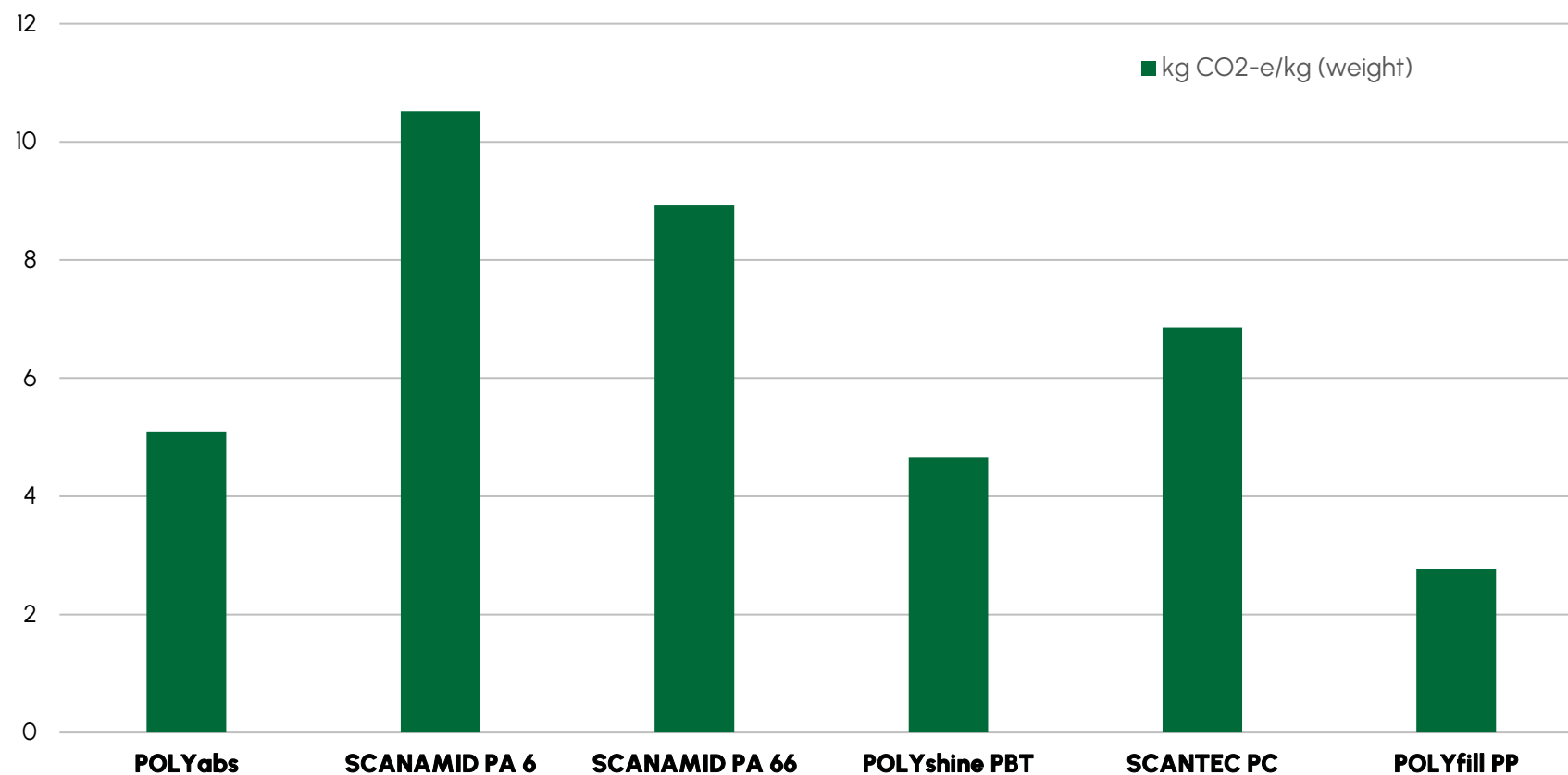


*Standard energy mix

Energy – Green Electricity



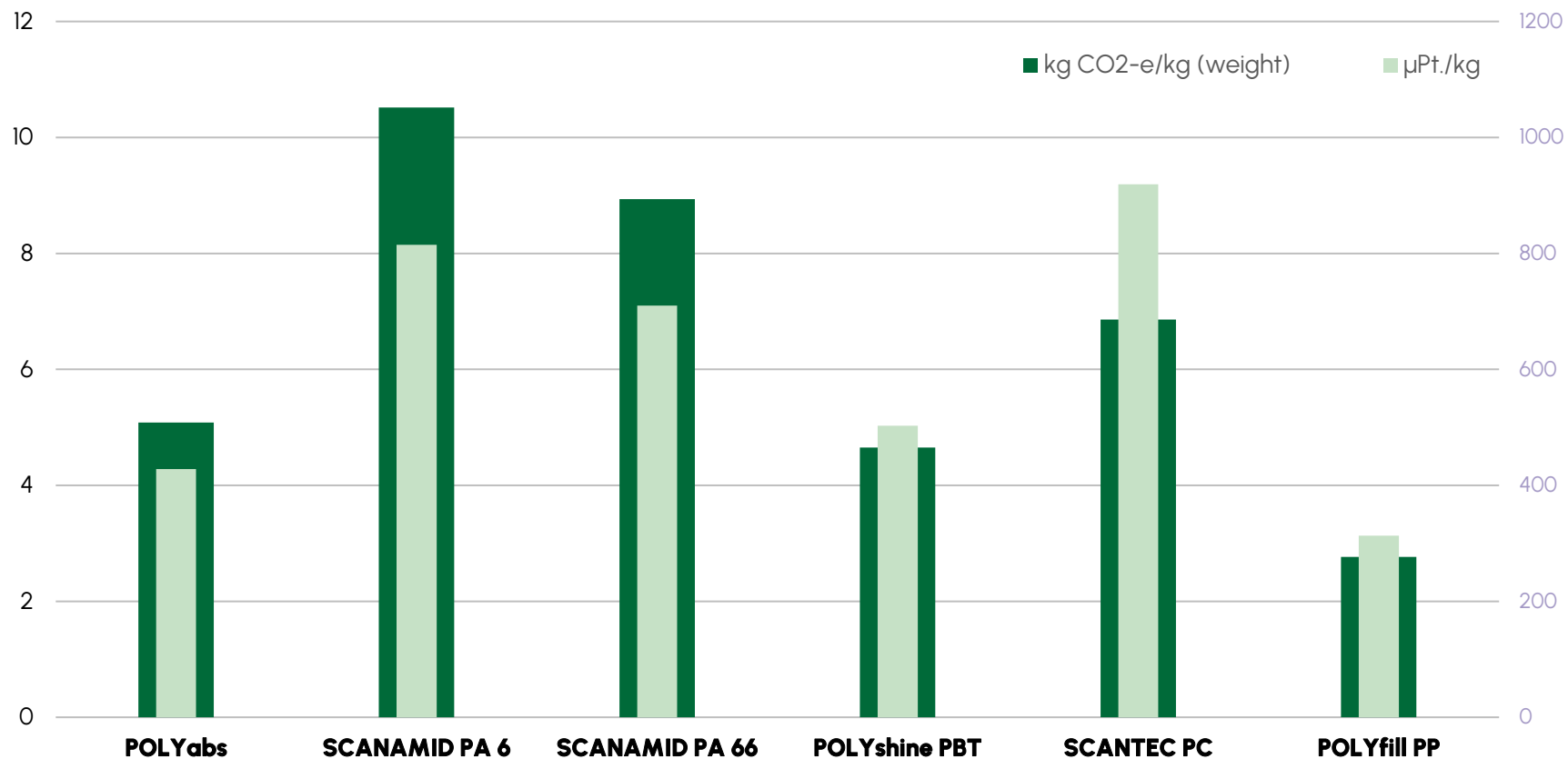
CO₂-e Polymer impact



CO₂ footprint based on Polykemi LCA (cradle-to-gate).

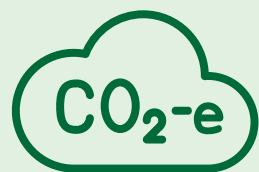
(Ecoinvent 3.10, EF 3.1)

CO₂-e Polymer impact

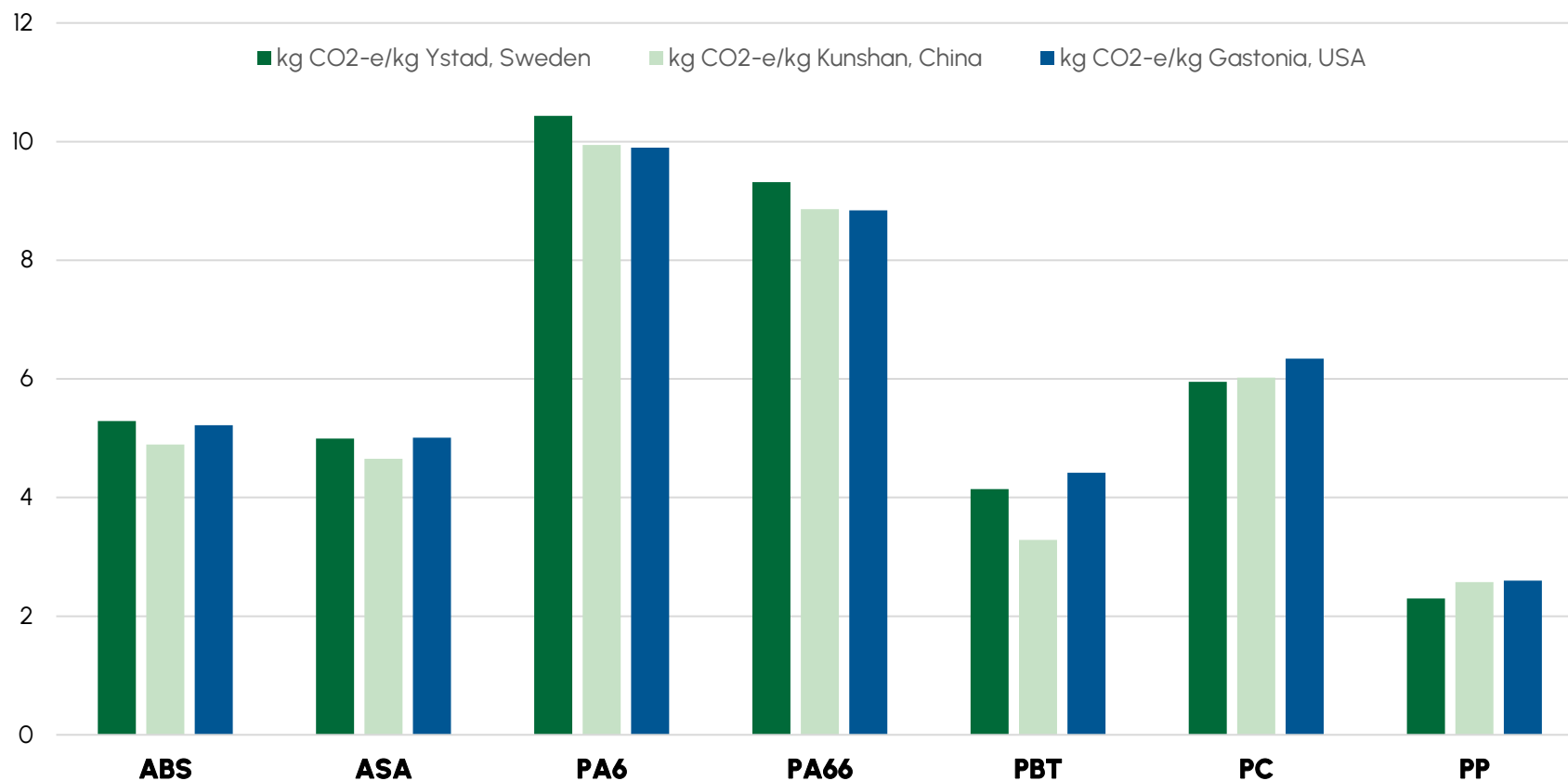


CO₂ footprint based on Polykemi LCA (cradle-to-gate).

(Ecoinvent 3.10, EF 3.1)



Polymer impact by region



CO₂ footprint based on Polykemi LCA (cradle-to-gate).

(Ecoinvent 3.10, EF 3.1)

Compound impact

VIRGIN MATERIALS



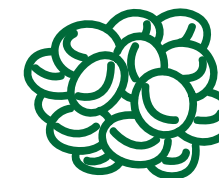
REINFORCEMENTS



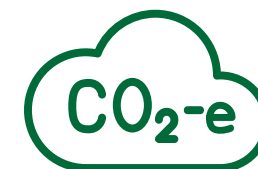
RECYCLED MATERIALS




Requirements

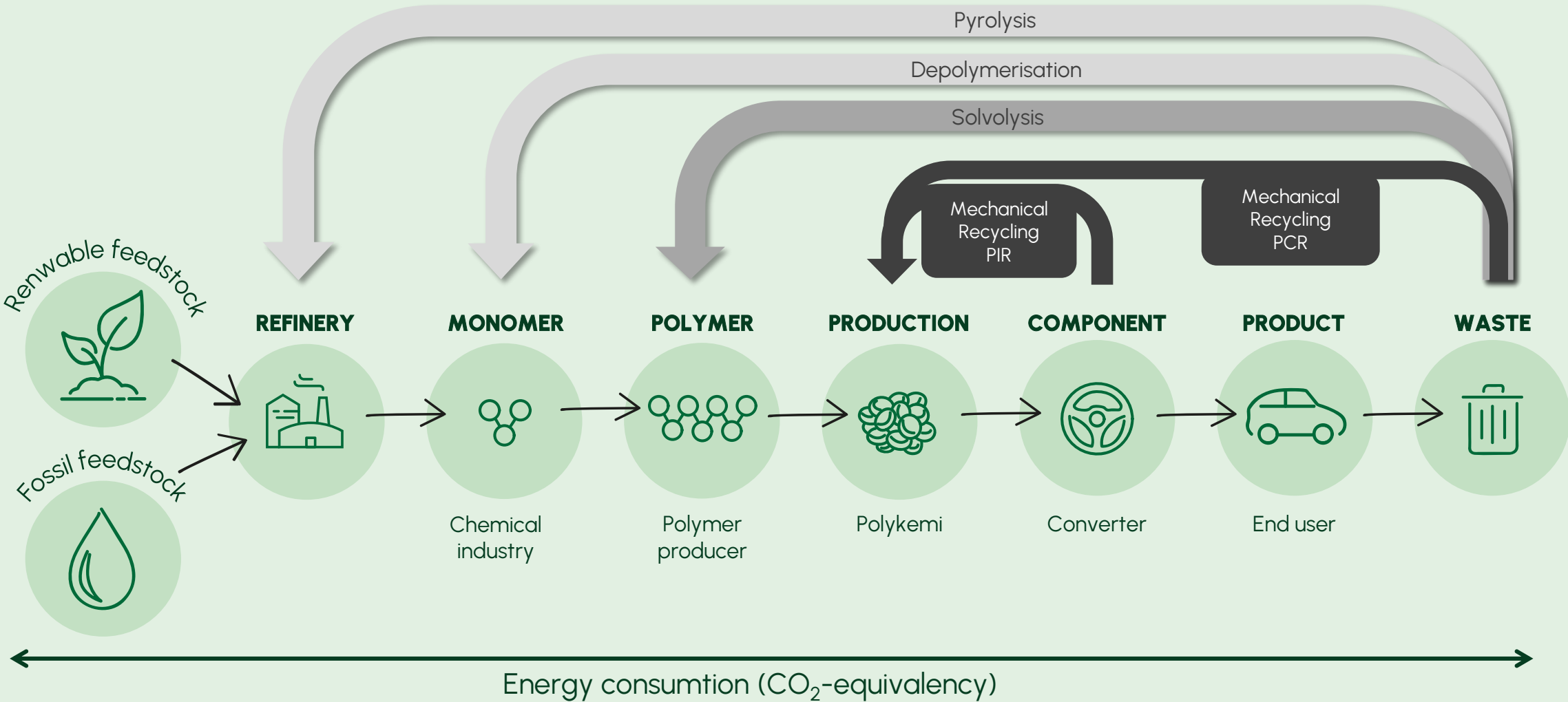


Compound



Raw materials for compound production

- Chemical recycling
- Physical recycling
- Mechanical recycling



Raw materials - Recycling

PURCHASE



Industry
(PIR)



Consumer
(PCR)



Grinding/
Ungrinded parts



Textile



Dust &
shavings



Film/Foil

QUALITY CONTROL



UPGRADING



Homogenization



Metal check

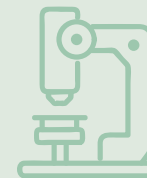


Filtration

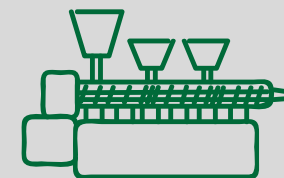


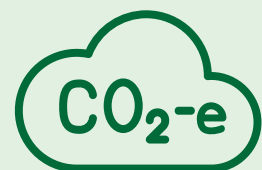
Compacting

QUALITY CONTROL

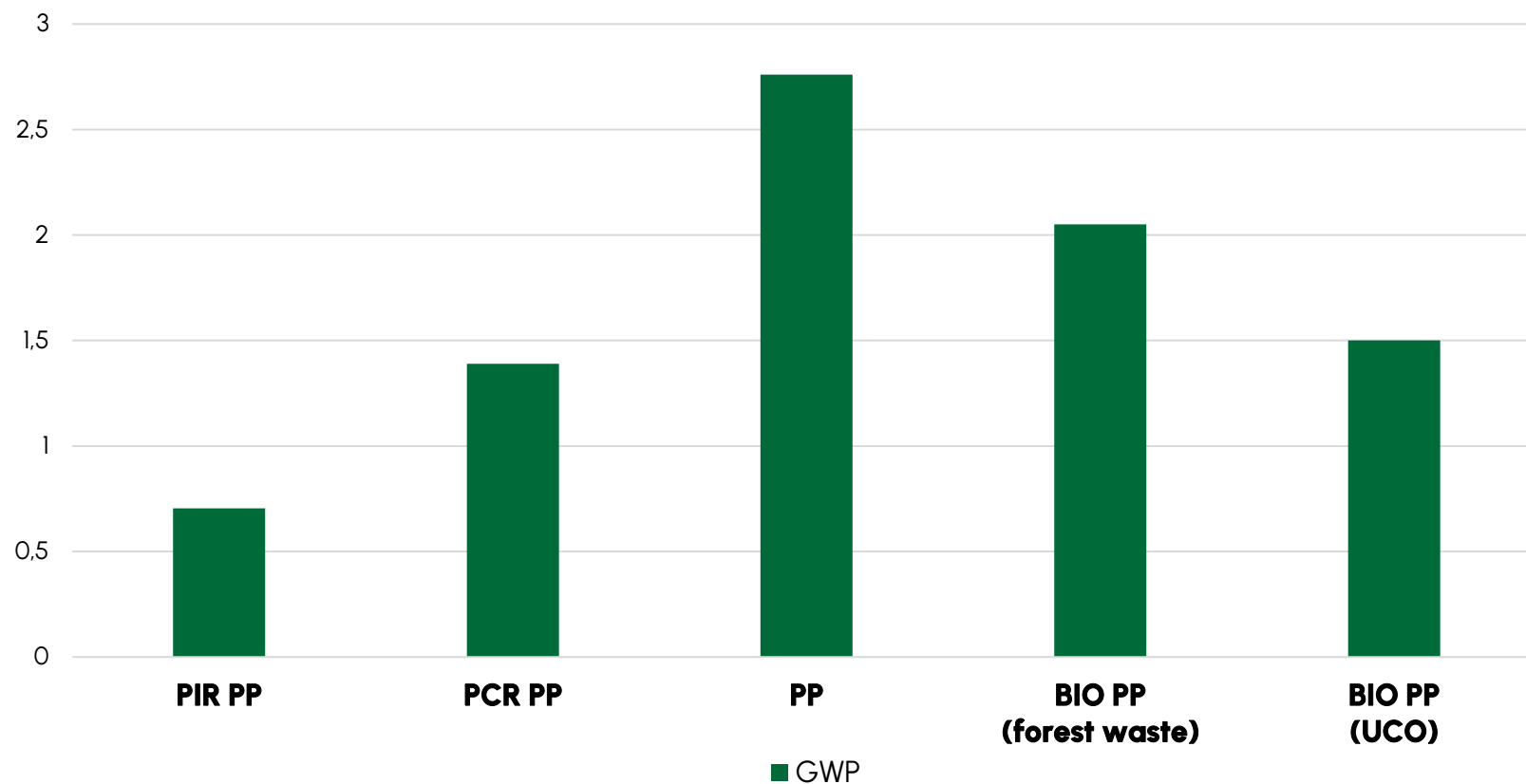


PRODUCTION





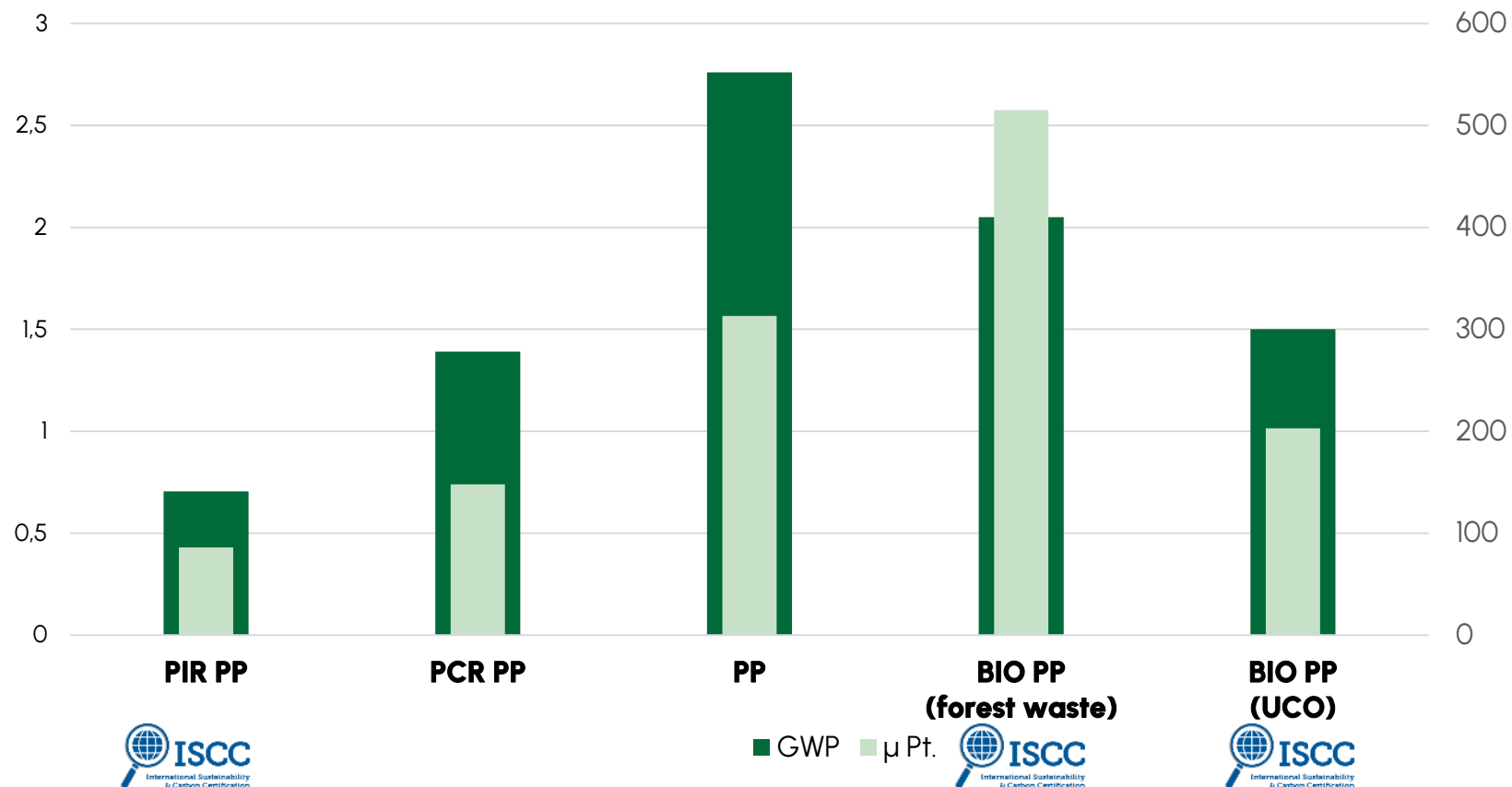
Polymer impact – different sources



CO₂ footprint based on Polykemi LCA (cradle-to-gate).

(Ecoinvent 3.10, EF 3.1)

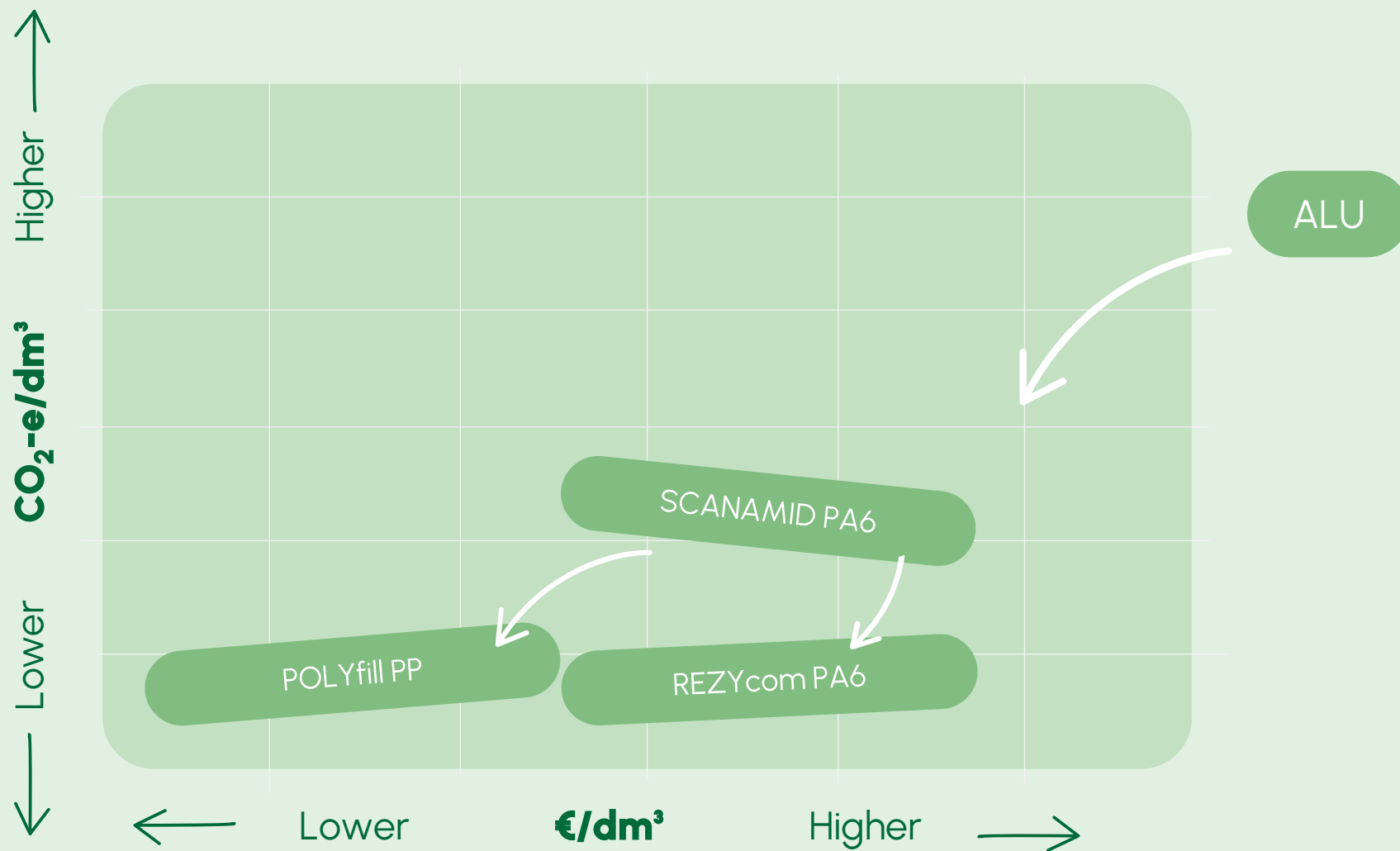
Recyclate - Virgin - Biobased



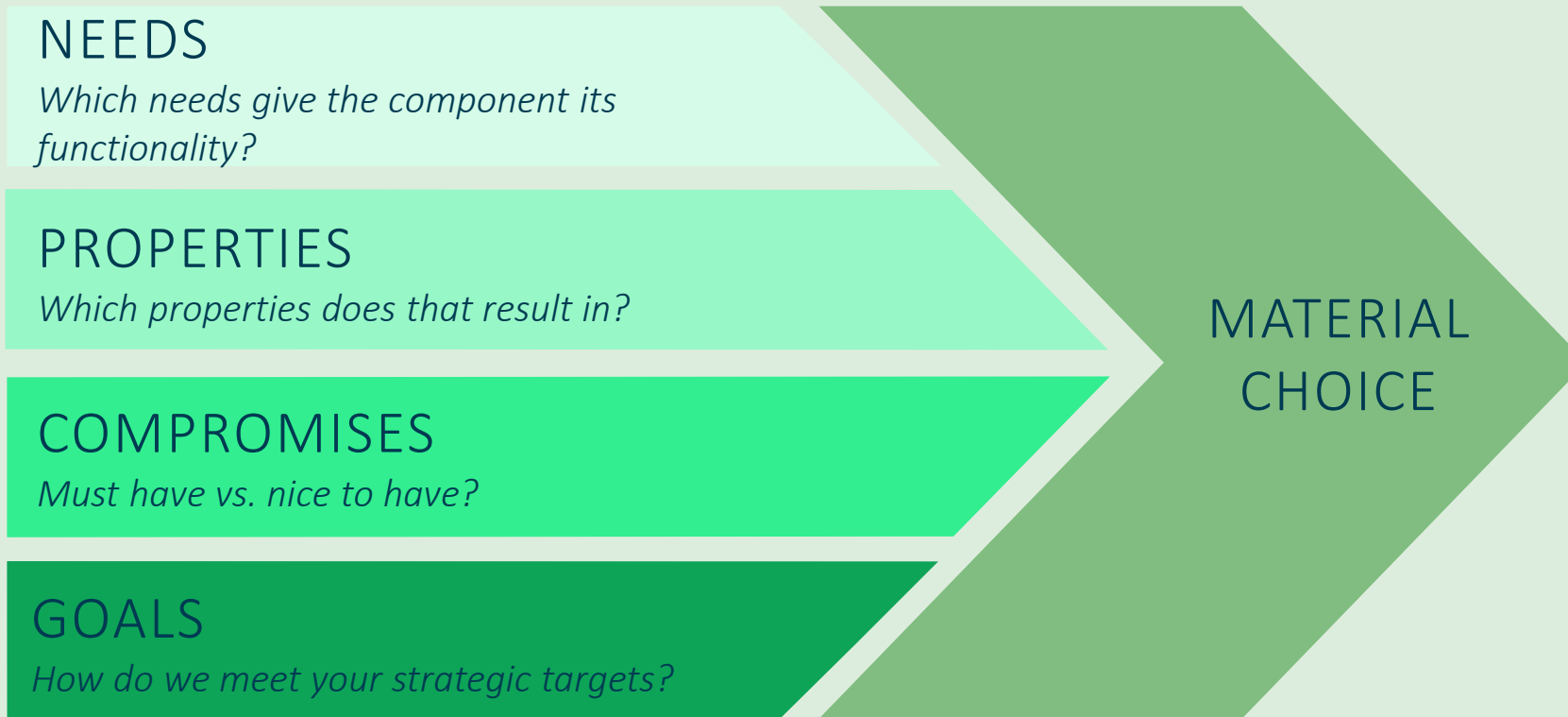
CO₂ footprint based on Polykemi LCA (cradle-to-gate).

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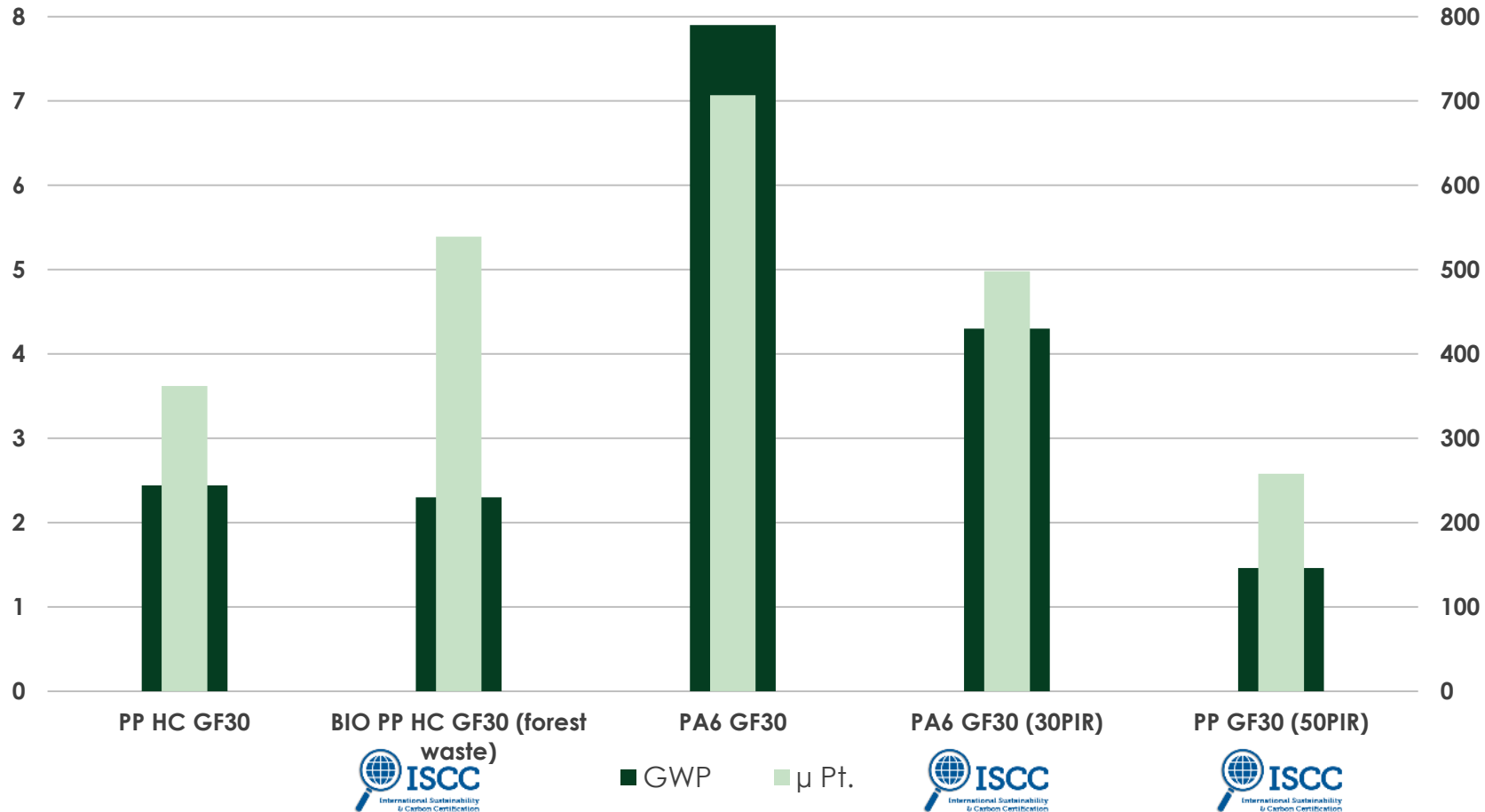
Save climate and cost?



Material Transition



Recyclate - Virgin - Biobased



Data from Polykemi LCA (cradle-to-gate).

PA6 GF30 vs PP alternatives

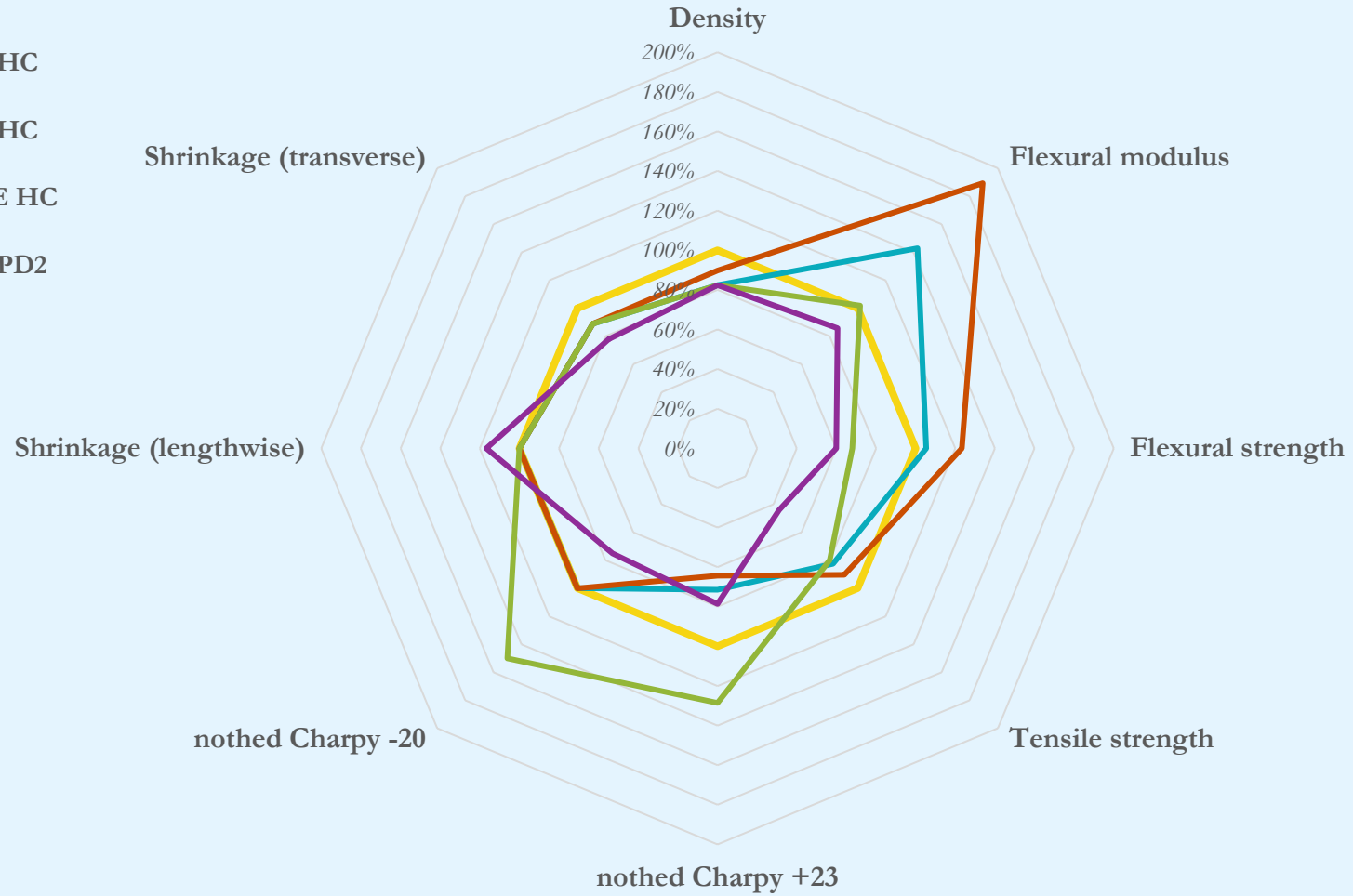
— PA6 GF30 (Cond.)

— POLYfill PPH GF5030 HC

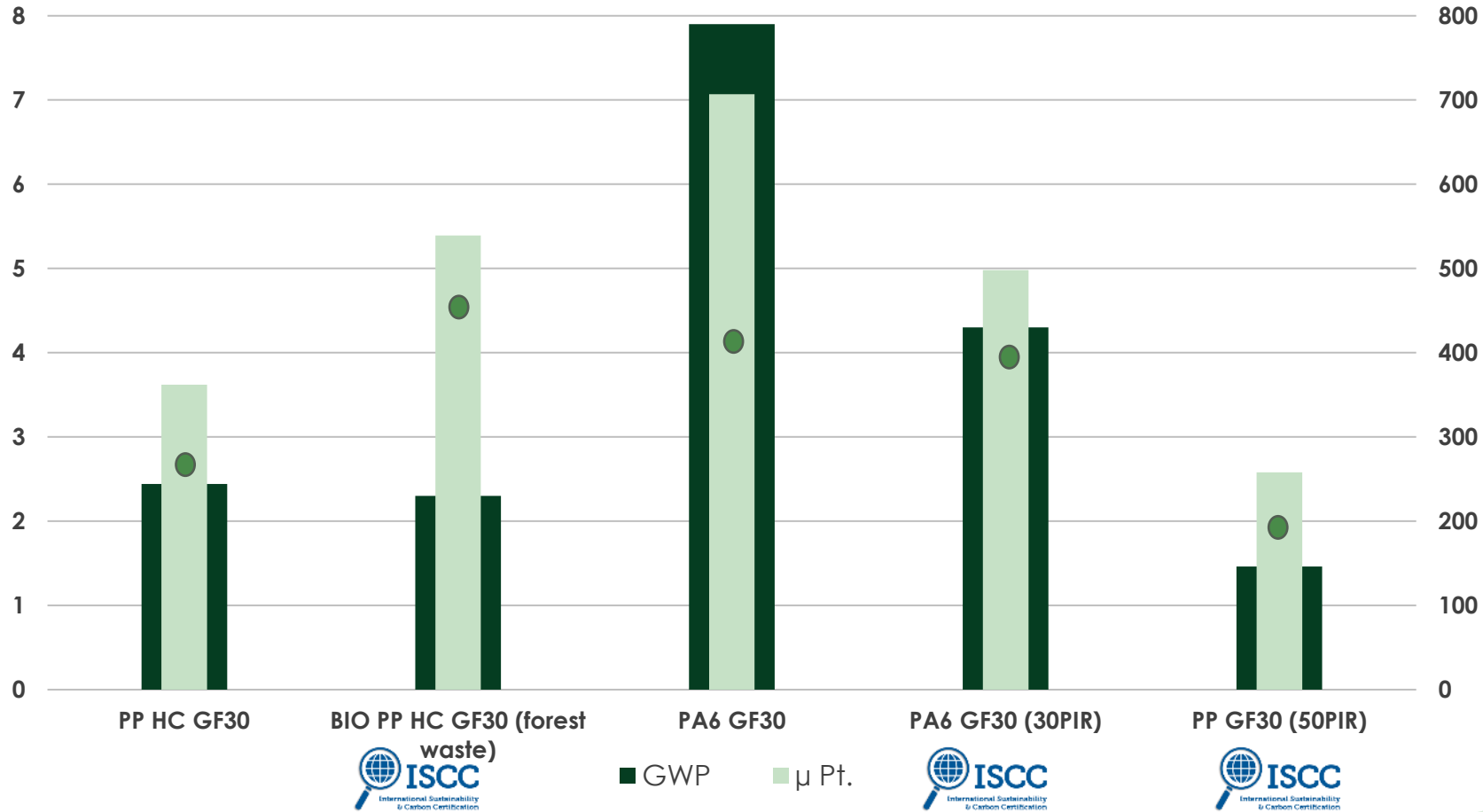
— POLYfill PPH GF5040 HC

— POLYfill PPH GF3030E HC

— POLYfill PPH GF5030 PD2



Recyclate - Virgin - Biobased



Data from Polykemi LCA (cradle-to-gate).

In conclusion...



Polymer choice can have a higher impact than only using recyclates



Polykemi can help you simulate the impact of different material choices



Biocircular materials will reduce climate impact, but might be worse for the environment

**“If you stop
getting better,
you stop being
good”**

1968



Hugo Jönsson,
Founder of Polykemi



Read more at
www.materialsmart.info