

Plastics Circularity for a resilient Europe

Go Circular, Mannheim, March 26th, 2026

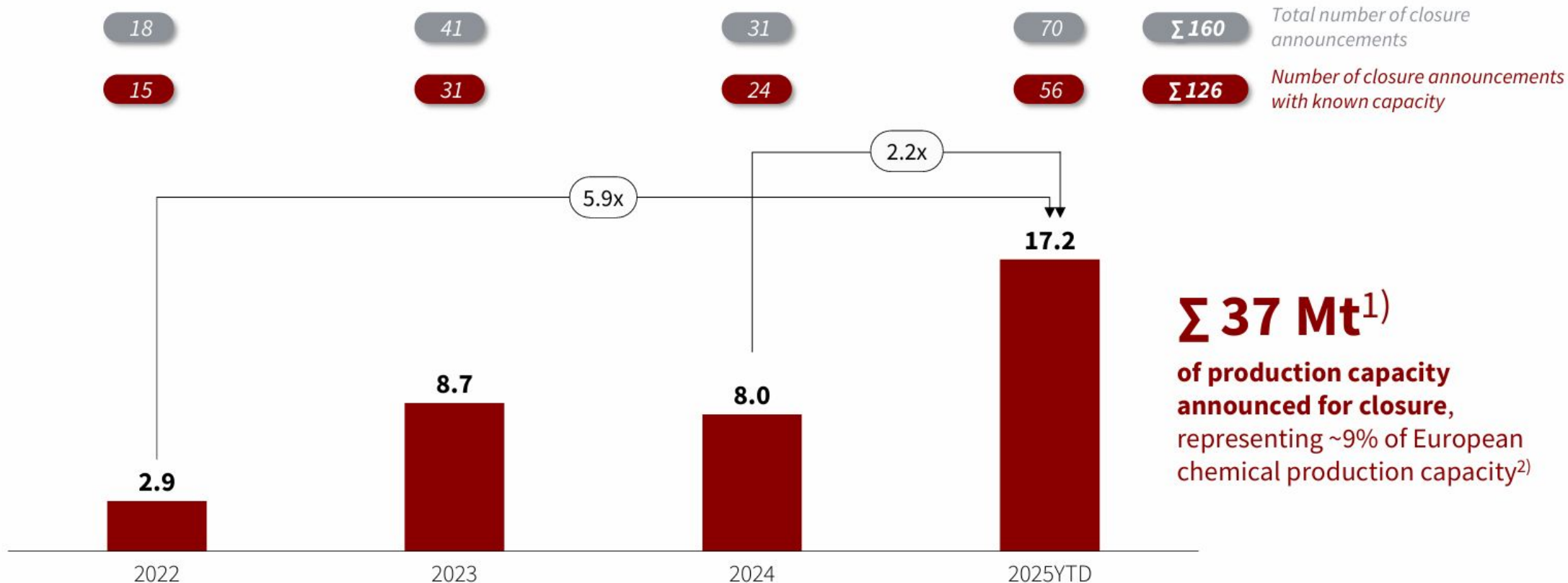
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The End of Green Transformation?

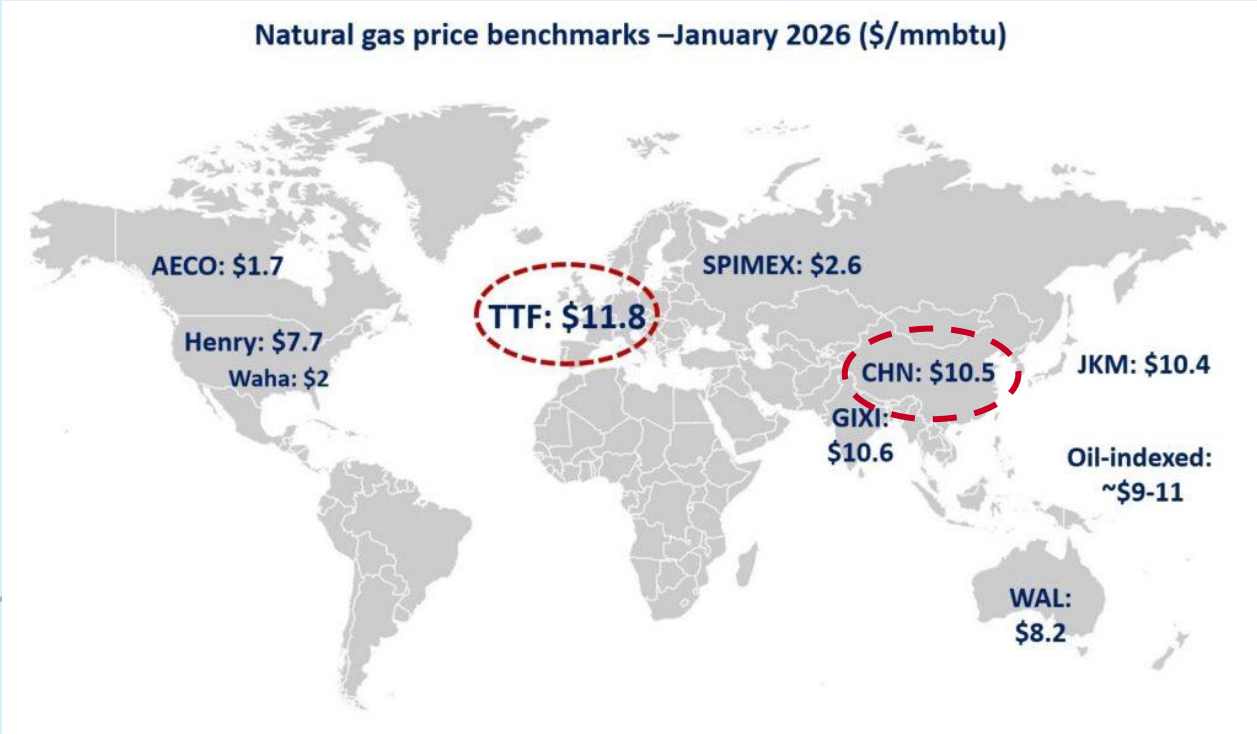
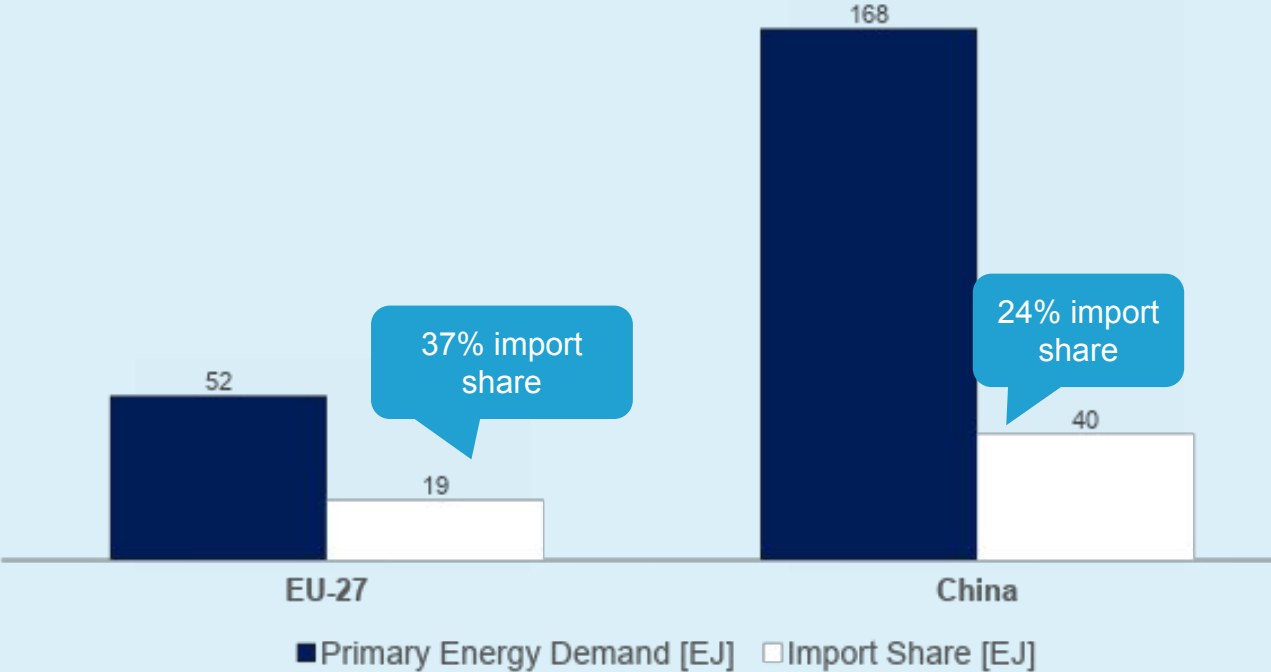
European chemical production capacity announced for closure, 2022-25YTD [Mt p.a.]



1) 32 Mt when considering EU27; 2) ~9% out of 417 Mt production capacity

Dependency on fossil fuel imports: a motivation to speed up circular economy implementation

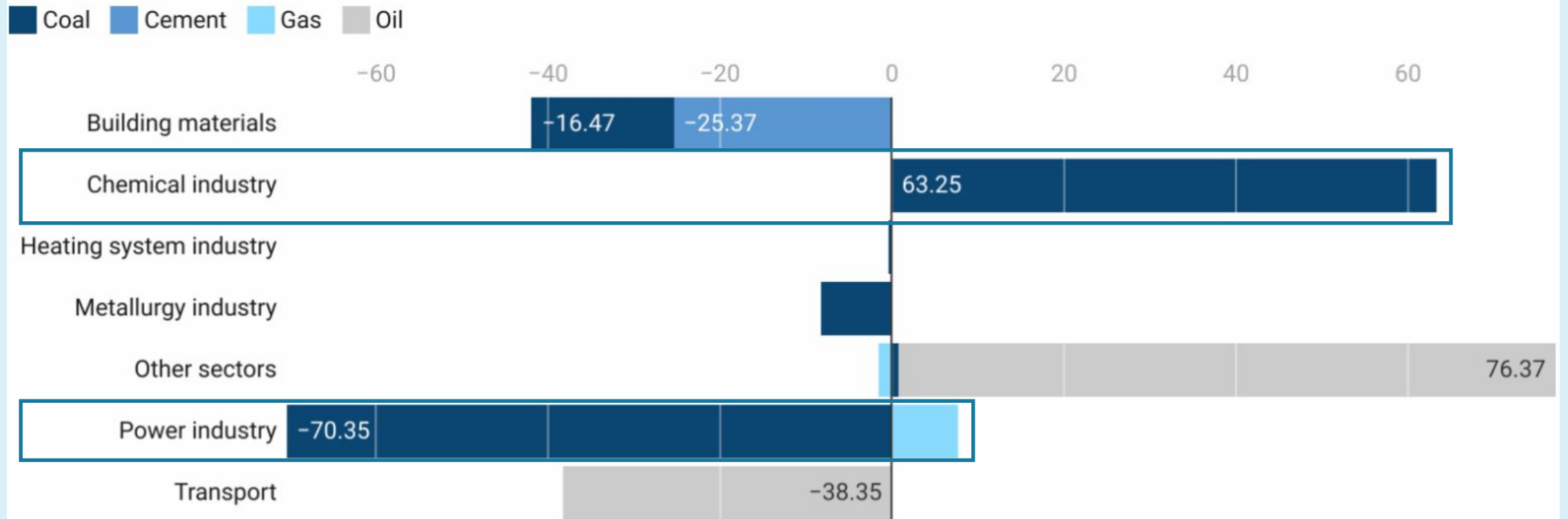
Primary Feedstock Demand for Energy & Materials EU & China



Sources: [EMBER 2026, Europe is highly vulnerable due to reliance on fossil imports](#); [European Gas Hub 2026](#)

China: Chemicals as a focus topic of the 5 Year Plan 2026-30

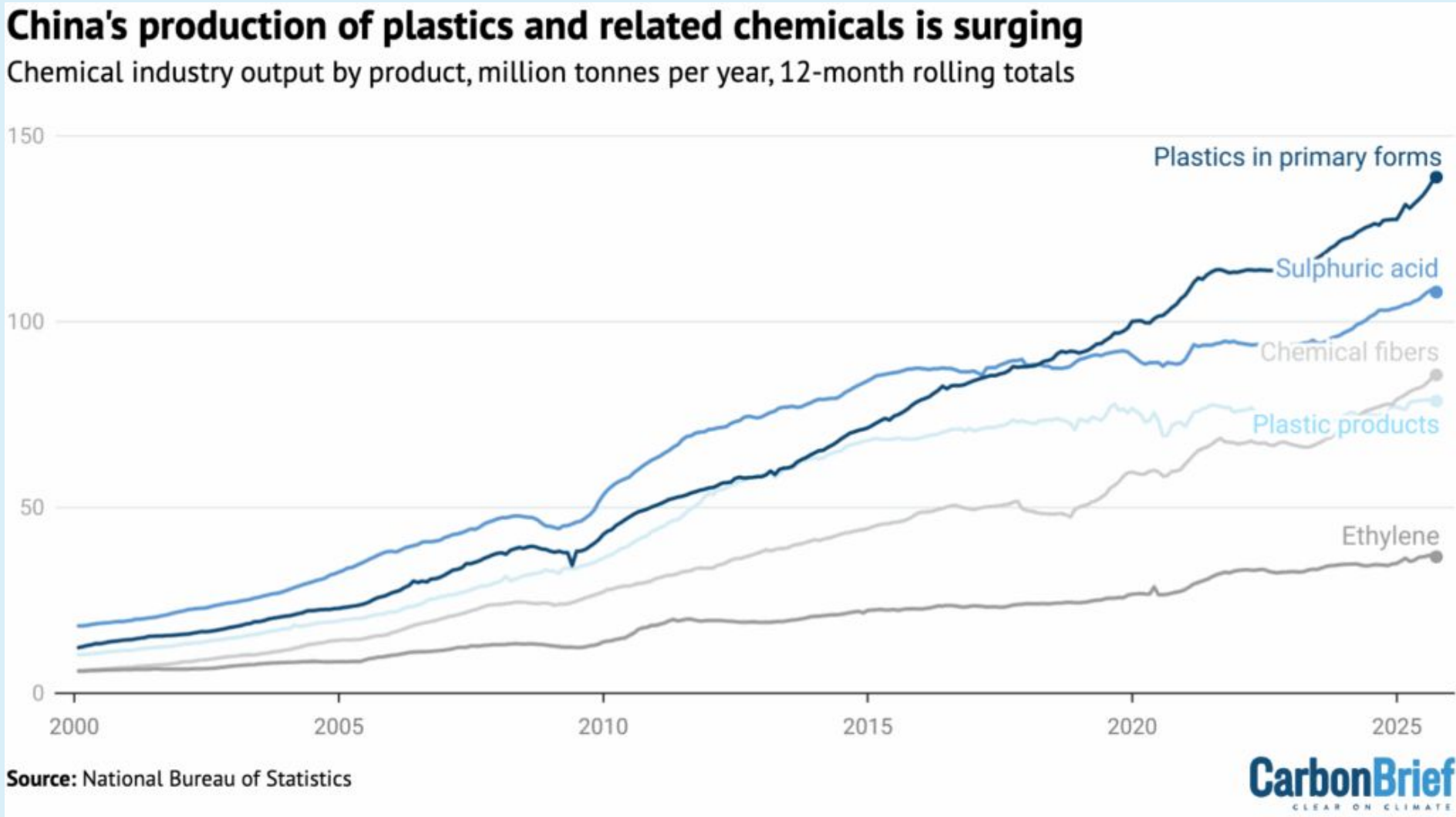
Year-on-year change in emissions during three quarters of 2025, MtCO2



Source: Analysis for Carbon Brief by Lauri Myllyvirta



China: Petrochemicals will be subject to Chinese ETS by 2027



Source: State Council of PRC, 2025

China: Financial support of plastics recycling spans across investments, operational costs, and research & development

1

Government investment and subsidies

- National financial investment, maximum 15% of overall investment
- Subsidies for asset recovery and recycling centers, maximum €250K

[China Daily 2024](#)

2

Tax benefits

- 10% off tax reduction for environmental protection equipment and accelerated depreciation for fixed assets
- VAT reduction for recycled products (70% off for recycled plastics)

[VAT Policies for Comprehensive Utilisation of Resources \(Caishui \[2008\] No. 157\), chinatax.gov.cn](#)

3

Partnerships in building the EPR Ecosystem

- Simplified licensing procedures for pilot enterprises

[China Ministry of Commerce, 2021](#)

4

New: Target to bring chemical recycling to 'Industrial Scale'

With "large scale recycled content" in automotive and E&E

[NDRC 2025, Action Plan for the Promotion and Application of Recycled Materials](#)

5

New: Proposal to Subsidize Oversea Investments in Recycling

Support Chinese companies to invest outside of China for recycling of resources

[NDRC 2025, Action Plan for the Promotion and Application of Recycled Materials](#)

Green Transformation of the 15th Five-Year Plan 2026 – 2030 Outlook: **Bio-based Raw Materials as means to reduce dependency on fossil fuels**

Core Targets Proposed

Scale of the bio-manufacturing industry exceeding 2 trillion yuan by 2030

- Bio-based materials replacing over 25% of traditional chemical products¹
- Non-grain bio-based materials accounting for over 60% of total bio-based materials²

Implementation Strategies

- Develop technologies for utilizing non-grain biomass such as straw and bagasse
- Promote application of cutting-edge technologies such as synthetic biology
- Build a full industrial chain of "agricultural waste - bio-chemicals - biodegradable materials"

Industry Impacts

- Reducing reliance on fossil resources and lowering carbon emissions
- Promoting product upgrading towards high-end and high-value-added directions
- Opening up new tracks for bio-manufacturing and reshaping the industrial competition pattern

1. MIIT, MARA and NDRC Three-Year Action Plan for Accelerating the Innovative Development of Non-Grain Bio-Based Materials .

2. Chinese Society of Biotechnology. (2025). Draft Plan for the Development of the Bio-Manufacturing Industry during the 15th Five-Year Plan Period [

China: 4.5m tons pyrolysis oil from tires across China



Highly decentralized network of pyrolysis oil plants

Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image Landsat / Copernicus

China: Implementing circular economy hubs in practice

Example of tire recycling

1 Qingdao, Shandong province
processing scale 50,000 tons tires



Tsingtao CE Park
World-class green and low-carbon high-end petrochemical industrial base

300km radius:
Shandong population (2nd): ~ 101 million > Germany + Netherlands population

2 Zhumadian, Henan province
processing scale 100,000 tons tires



Zhumadian CE Park
Largest low-speed electric vehicle (e.g. Scooter & moped) production base

300km radius:
Henan population (3rd): ~ 98 million > Germany + Belgium population

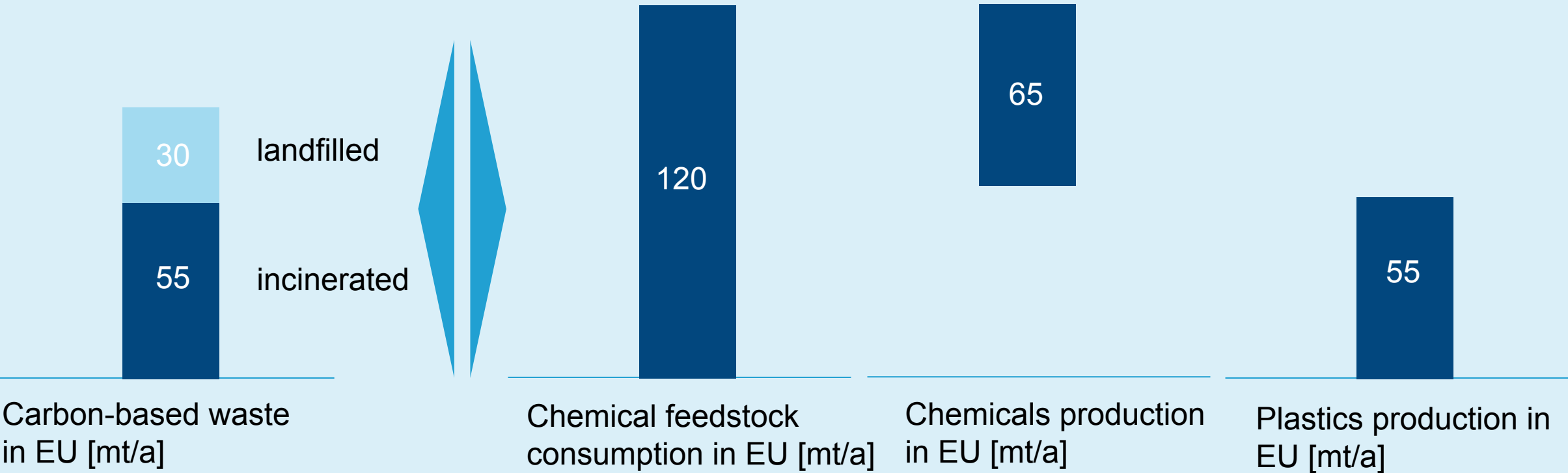
3 ShiYan, Hubei province processing scale 100,000 tons tires



ShiYan CE Park (Vehicle City)
Expected goals for resource recycling industry: 9 billion euro

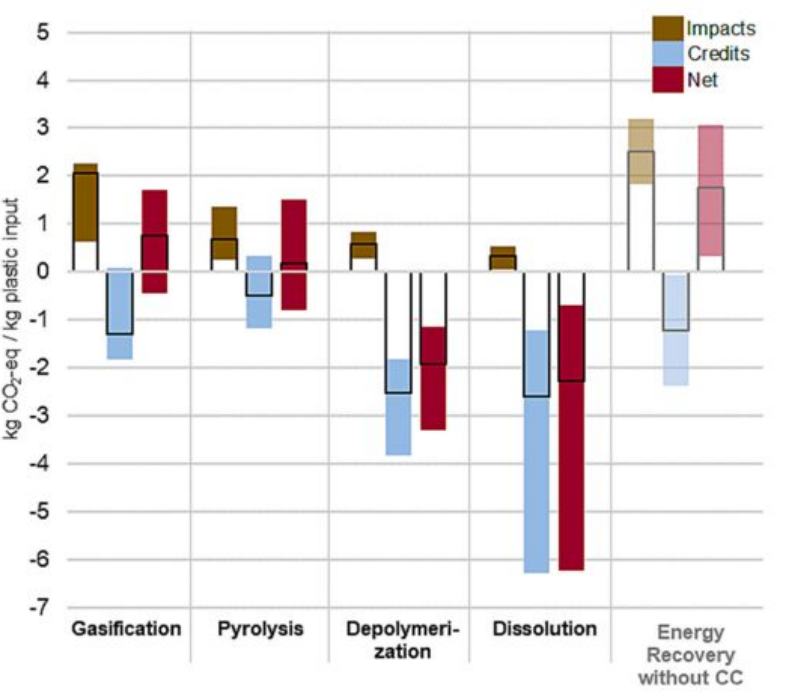
300 km radius:
~ 65 million = France population

Turning wastes into plastic feedstock – significant potential to achieve more autonomy also for the European industry



Source: PWC (2024). Study on the future chemical raw-material value chain.

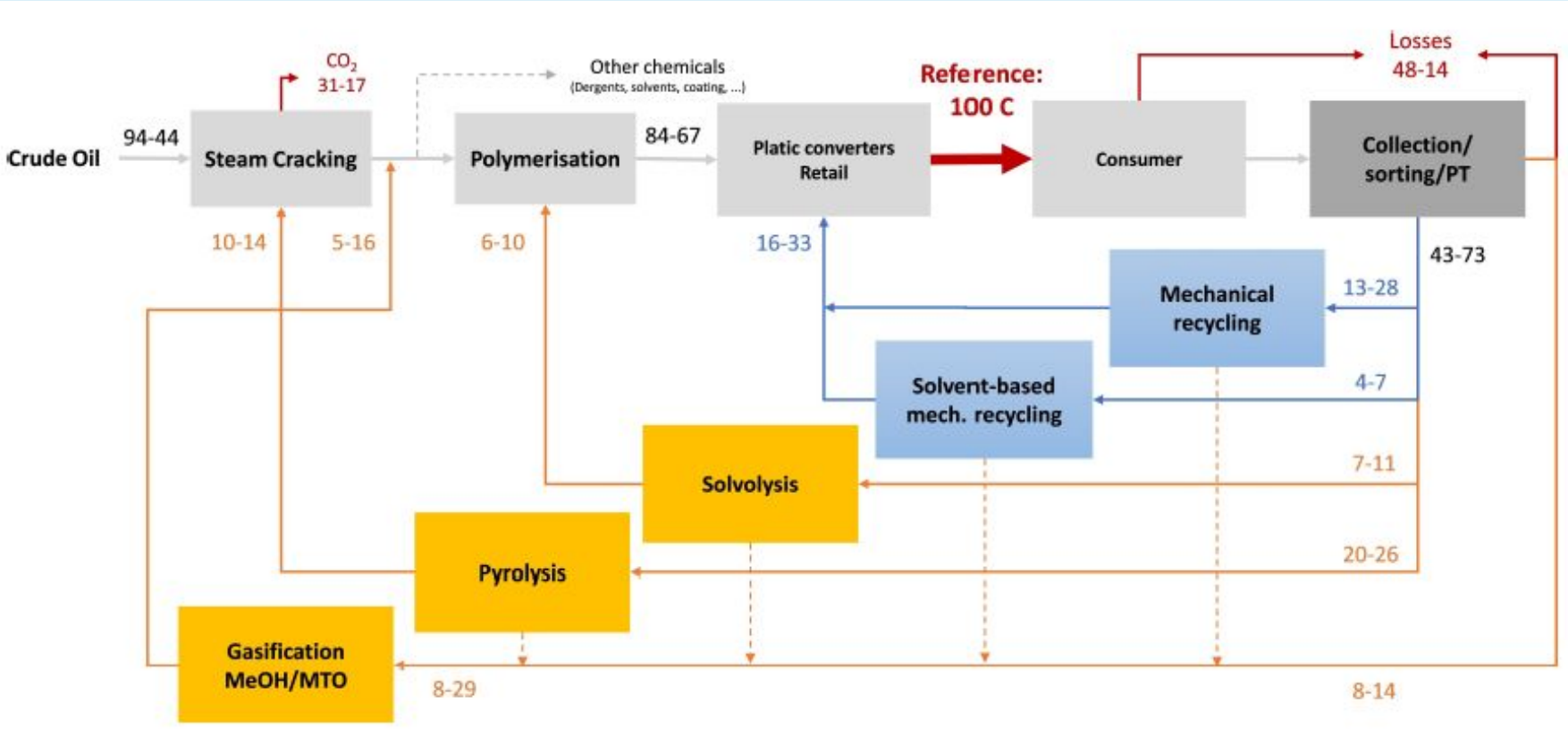
To minimize emissions, a combination of recycling technologies is needed



The waste stream at hand determines the recycling technology that fits best.

Source: Klotz, Magdalena, et al., Science of the Total Environment, 2024

Realizing a Plastics Recycling Cascade



Objectives:

- ↓ emissions
- ↓ costs
- ↑ volumes

To be discussed next:

- All technologies needed?
- Scale Up Sequence?
- Volume Split?
- Sorting Technologies?
- Biomass/CCU Integration

Normalized carbon flow of a cascade of recycling technologies based on mechanical recycling (blue) and chemical recycling (orange) technologies. The numbers represent normalized C-flows, based on a realistic (2030) – futuristic (2050) sorting scenario. (The naphtha intake is scaled to deliver 100 unit of C plastics on the market, excl. the additional non-plastics chemicals).

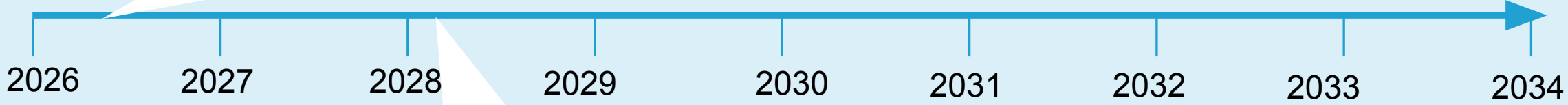
Source: [Lange, J.-P. et. Al., ChemSusChem 2024](#) and [Lange, J.P. Green Chrmistry 2026](#)

Opportunity to Speed Up Market Pull Measures and Support for R&D in Plastics Circularity in Europe



China

Subsidies: domestic invests in recycling
Subsidies: oversea invests for recycling
VAT reduction for recycled plastics
Chemical Recycling at 'Industrial Scale'
Recycled content targets (e.g., automotive & E&E)



EPR expansion



EU

PPWR
Recycled content targets

ELVR
Recycled content targets



Four Levers to Accelerate Plastics Circularity in Europe

Market Pull Measures

The green transformation needs to be a viable business case based on market pull measures

Technology Neutrality

Recognition of various feedstocks, mass balance, and recycling routes.

Access to Waste

Regulations allowing shipment of green-listed wastes for recycling

EPR across industries

Synergies across Industries

Achieving circular carbon across industries



We create chemistry