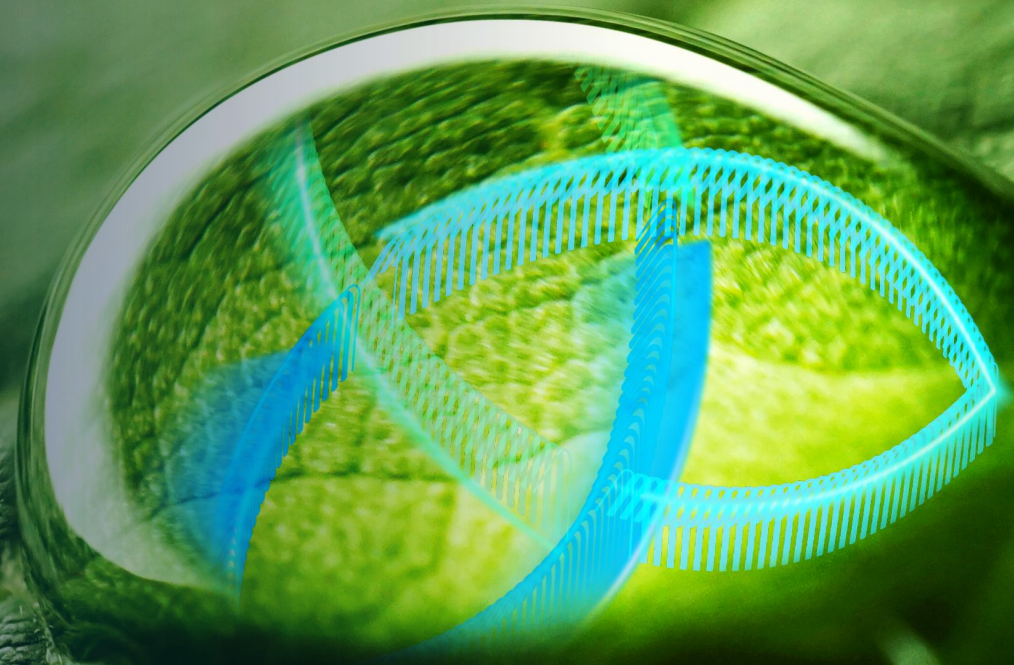
Price · Predict · Perform

Sustainability Trends in the Global and Chinese Petrochemical Industries



CPCIC Conference, Zhanjiang, China

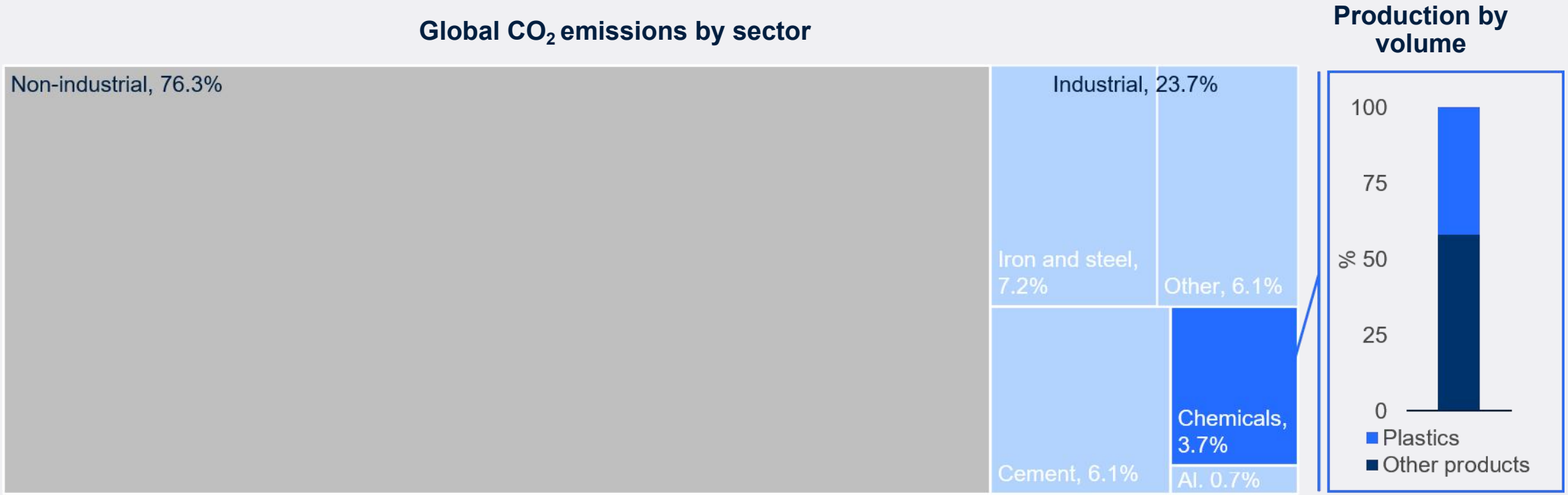
29 October 2026

Tin Nguyen – Global Head of Consulting

tin.nguyen1@icis.com

Why should sustainability continue to be important to the petrochemical industry?

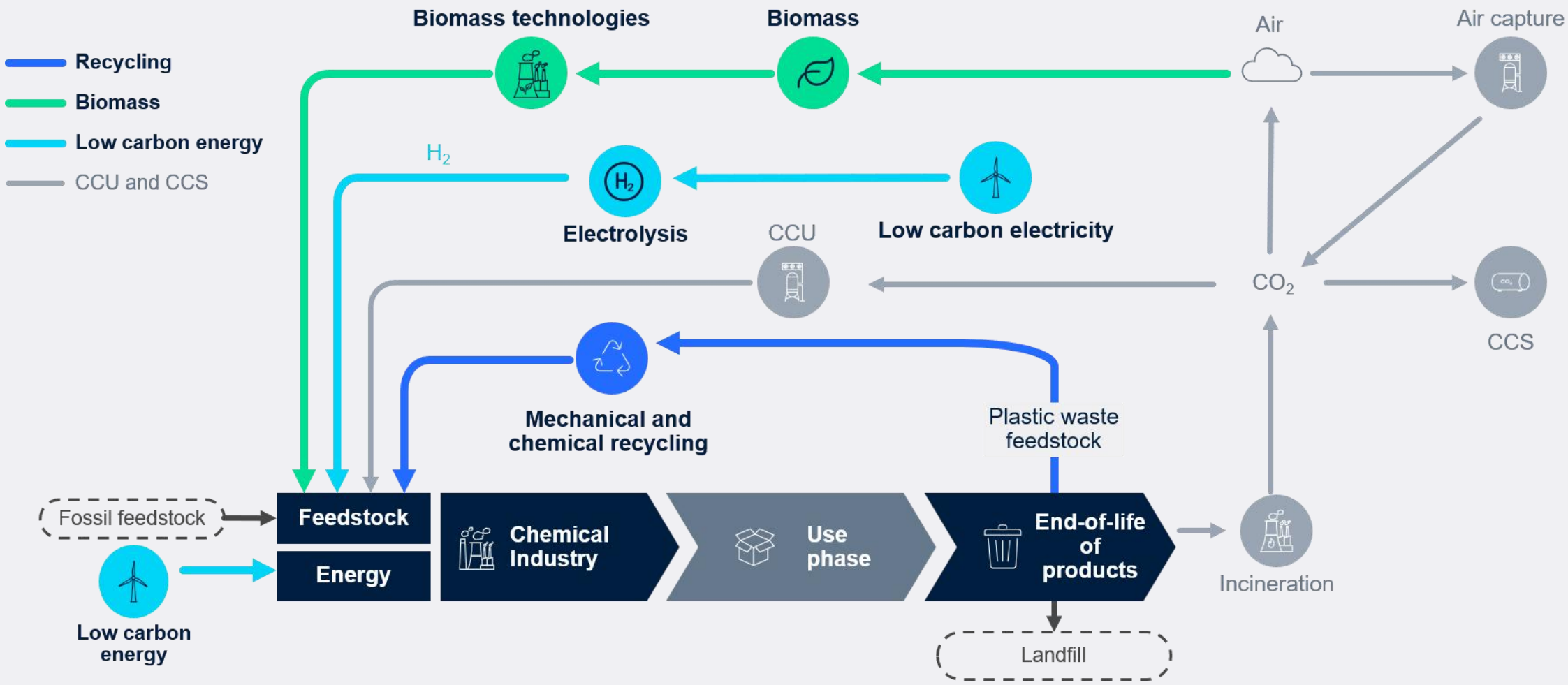
Chemicals account for 3.7% of global CO_2 emissions; within this, plastics is the largest downstream product group



Global petrochemical production is approaching **1 billion tonnes** annually, with plastics accounting for **approximately 420 million tonnes** (42% of output by volume), underscoring their central role in a sector responsible for 3.7% of global emissions

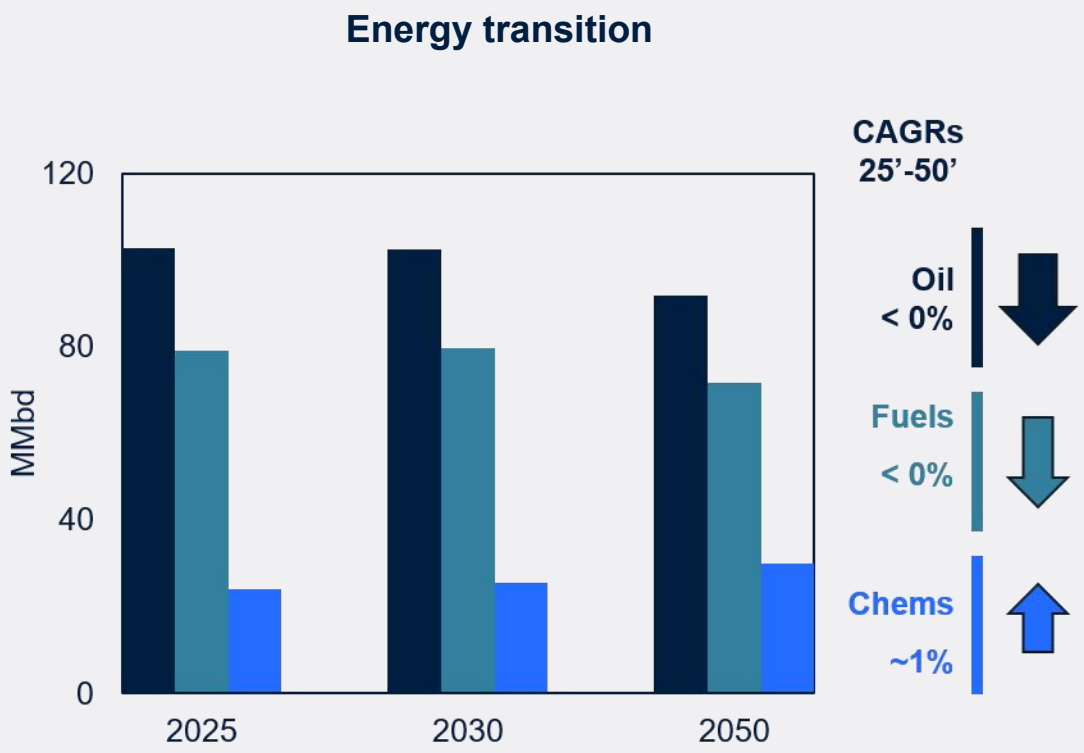
Source: [1]: WOE 2025, [2]: Emissions and system-level decarbonization pathways for global petrochemical production, [2] ICIS Supply and Demand Database

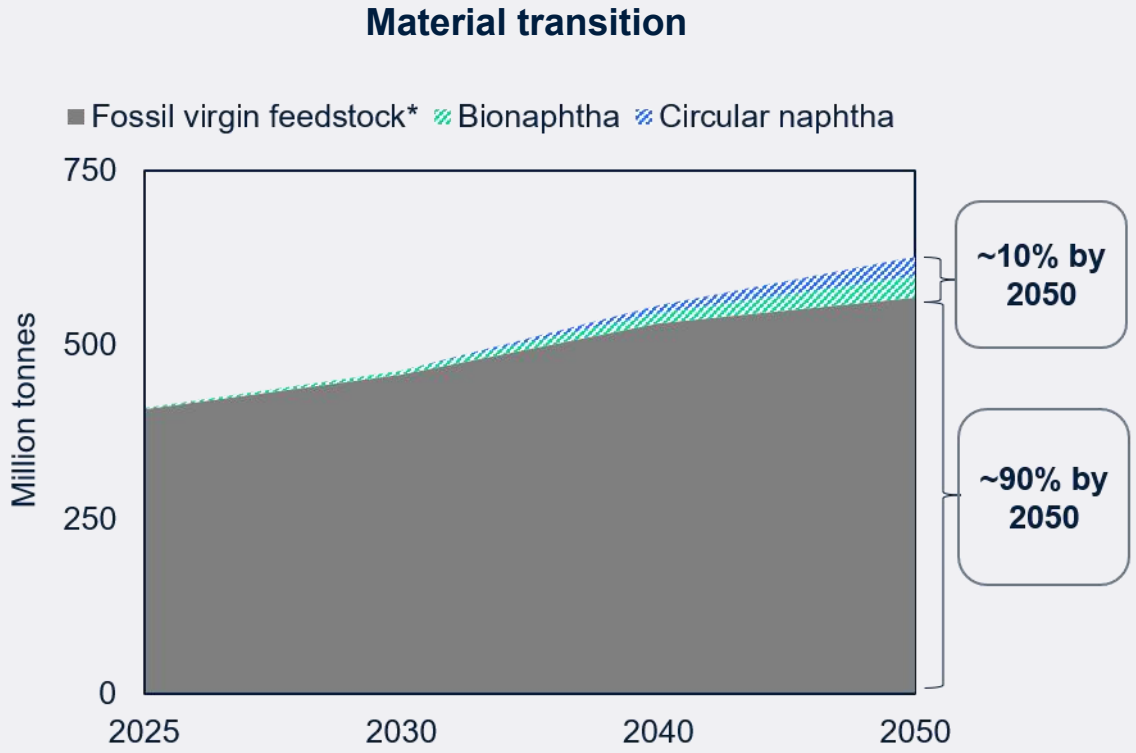
Carbon is the backbone of the petrochemical industry – alternative feedstock sources are crucial to enable GHG emissions reductions



Note: this is a simplified representation of technologies to support net-zero in the chemical industry. Detailed report: [Pathways for the global chemical industry to climate neutrality]

The Energy and Material Transitions will jointly reshape petrochemical supply and the balance between conventional and sustainable chemicals



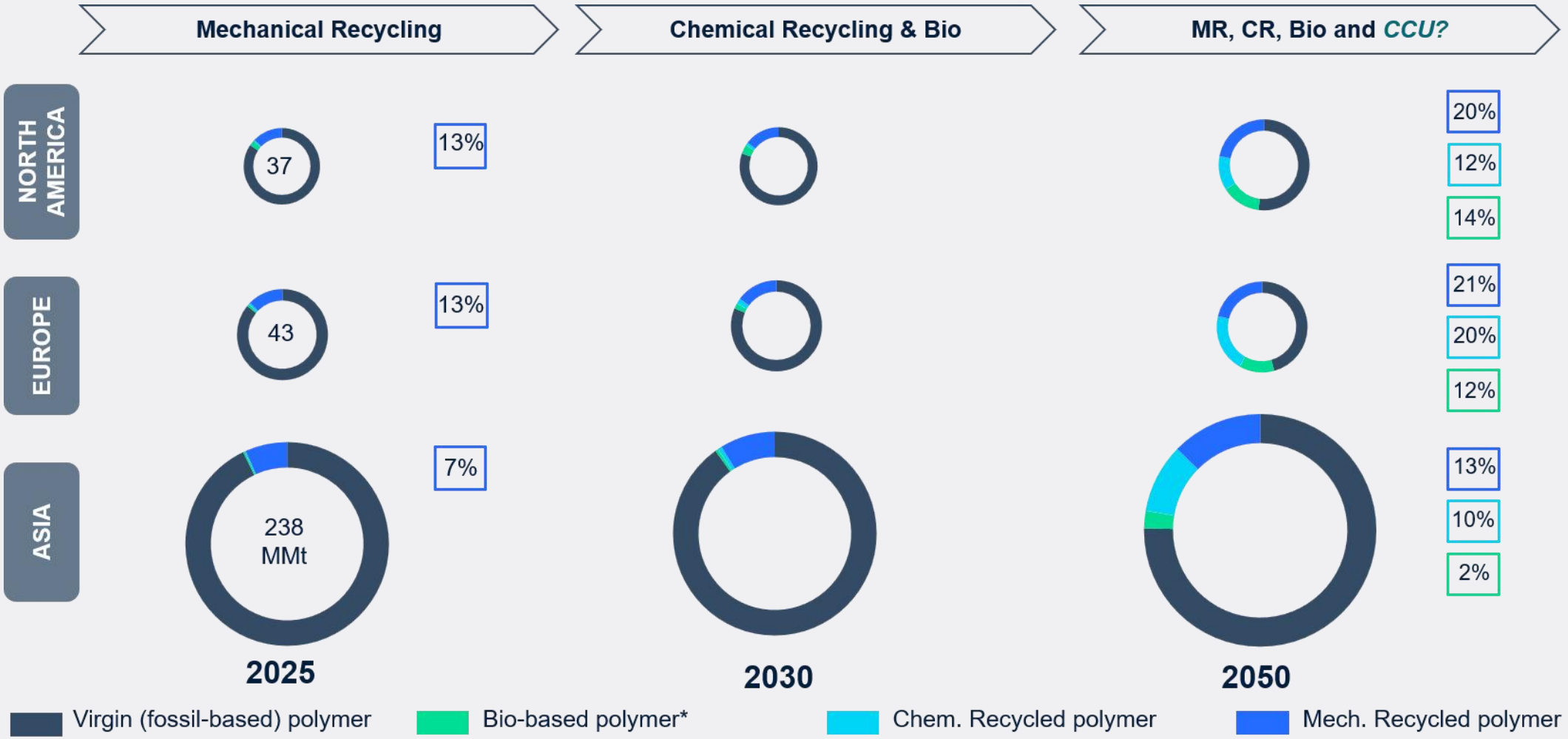


*Note: The numbers have been rounded off; *Steam-cracker feedstock*

ALIGNING FEEDSTOCK SUPPLY WITH EVOLVING MATERIAL DEMAND

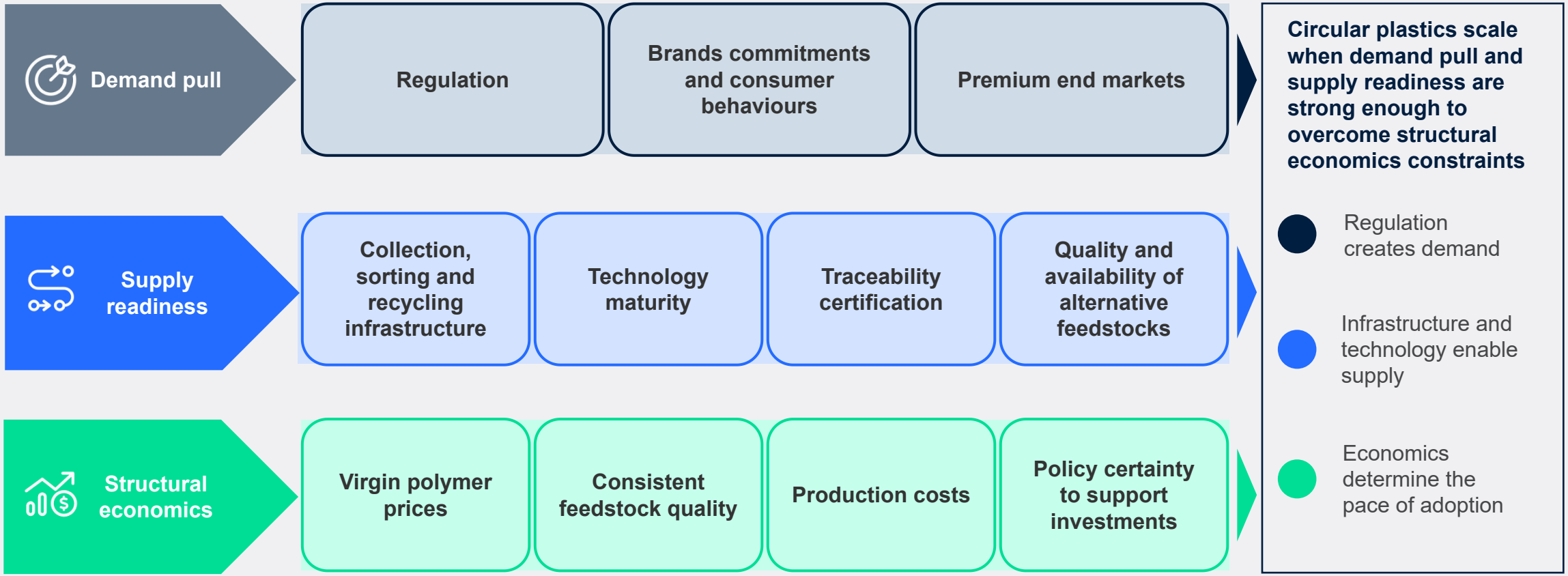
Source: [1]: ICIS

Sustainable polymer adoption is still small today – multiple pathways required to support industry circular ambitions



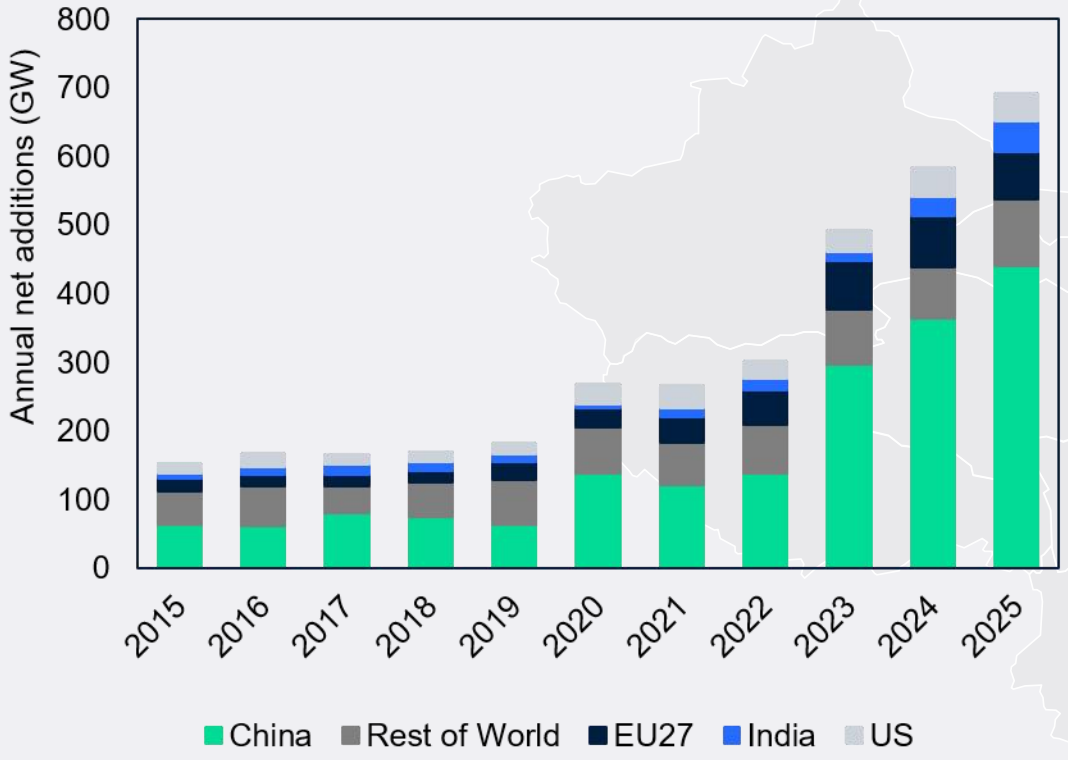
Source: [1] ICIS Analytics Scenario (Pre-Iran Conflict) – Potential polyolefins & PET (resin, film and fibre) supply mix. Europe includes both EU, non-EU countries.
**Polymers produced from bio-naphtha and/or bio-LPG, also known as 'bio-attributed'. CCU = carbon capture & utilisation*

Strong demand and greater supply readiness are needed to overcome the economic barriers to circular plastics scale-up



China is building on its renewable energy success to embed sustainability into its future strategy

Under its 14th five-year plan, China expanded renewable energy capacity at an unprecedented scale



The 15th five-year plan builds on this momentum, extending sustainability targets to plastics and chemicals

1. China's 15th Five-Year Plan targets more than **19.5 million tonnes of recycled plastics output by 2030**
2. Policy support includes **industrial-scale chemical recycling** to increase the availability of circular feedstocks
3. China's wider **circular economy agenda** is likely to shape the **future direction of its petrochemical sector**

2030 targets	2035 vision
4.5 bn tonnes of bulk solid waste utilised annually 510 mtpa of secondary resources recycled RMB 8 tn circular economy industry value	Establish an advanced circular economy with resource efficiency at international leading standards

Source: [1]: IRENA – Renewable Capacity Statistics (2026)

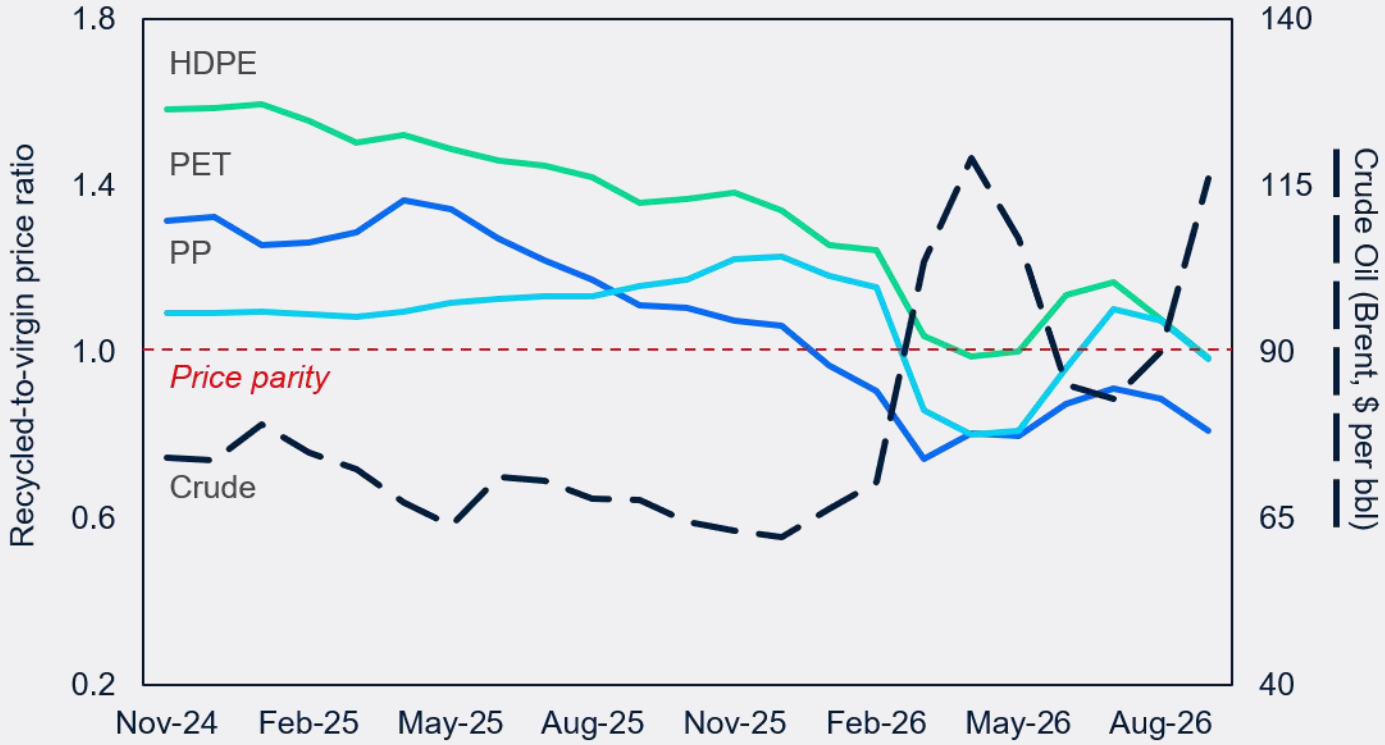
China’s chemical industry is translating national sustainability priorities into investments in circular technologies and renewable feedstocks

	Company	Technology and Partnerships	Status	Scale and Commercialisation
Circular polymers	Jiahe Junenergy	▪ Technology: Thermal pyrolysis with dechlorination step; hydrotreating partnership announced ▪ Offtake: Not publicly identified	Operating / commercial	**687.5 kt/y** waste plastic processing capacity; 1 plant operating, 3 under construction
	Sinopec	▪ Technology: Thermal pyrolysis with prior dechlorination step ▪ Offtake: own refinery; integrated cracker due in 2029	Operating / commercial	**35 kt/y** waste plastic processing capacity; target > 60% domestic market share by 2035
	Phelix New Materials	▪ Technology: Electric pyrolysis with hydrotreating step using self-produced hydrogen ▪ Offtake: Planned pipeline to adjacent cracker	Under construction	**150 kt/y** waste plastic processing capacity
Bio-attributed polymers	Sinopec	▪ Feedstock: bio-naphtha ▪ Supplier: Henan Junheng Biotech ▪ Products: Bio-attributed polyolefins	Operating / commercial	**2.5 kt** first production batch
	covestro	▪ Feedstock: bio-attributed phenol and acetone ▪ Supplier: Mitsui Chemicals ▪ Product: Bio-attributed polycarbonate	Operating / commercial	**1.5 kt** initial feedstock delivery; ongoing supply agreement

Operating / commercial Under construction

The Strait of Hormuz crisis exposed virgin polymer supply vulnerabilities, reinforcing the strategic value of sustainable supply chains

Supply disruption has narrowed the recycled premium, with North East Asia prices now close to parity



Sustainable supply chains as a buffer against fossil feedstock volatility

Crude and feedstock shocks narrow the typical recycled premium, bringing recycled polymer prices close to parity with virgin

Scaling sustainable routes strengthens supply chain resilience by filling supply gaps during disruptions to fossil-based markets

Source: [1]: ICIS

Strategic priorities for capturing circular growth

Strategic priority	Time Horizon	Areas of focus
Secure	Near ■ Medium □ Long □	▪ Secure reliable recycled & circular feedstock supply ▪ Establish traceability through mass-balance certification ▪ Prioritise customers & markets with clear demand
Build	Near □ Medium ■ Long □	▪ Developments aligned with feedstock availability & technical capabilities ▪ Build partnerships across supply chain ▪ Develop differentiated product portfolios
Scale	Near □ Medium □ Long ■	▪ Scale commercially viable pathways through phased investment ▪ Leverage existing assets where technically feasible ▪ Validate economics, carbon impact & regulatory compliance

Companies should act now to secure sustainable feedstocks, build certified capabilities and scale differentiated solutions to capture value in the evolving market

Chemical recycling plays a key role in enabling circularity in the chemical industry: watch out for the upcoming 2027 joint report

Multi-author collaboration

- CPCIF and NDRC-affiliated think tank will collaborate with international partners to deliver a multi-author report
- The report will present both China and international chemical recycling context

Chemical recycling focused

- Following previous publications on chemical recycling, the report will focus on **chemical recycling industrial implementation** covering points as:
  - Market size, key players and technologies
  - Mass balance
  - Regulatory status globally
  - Key challenges and opportunities





Thank you

Presenter

Tin Nguyen – Global Head of Consulting
tin.nguyen1@icis.com