

The background of the slide is a photograph of an industrial facility, likely a refinery or chemical plant, with several tall smokestacks and complex piping. The facility is situated behind a line of green trees and a large, open green field in the foreground. The sky is blue with scattered white clouds. A semi-transparent green rectangular box is overlaid on the middle of the image, containing the title text in white.

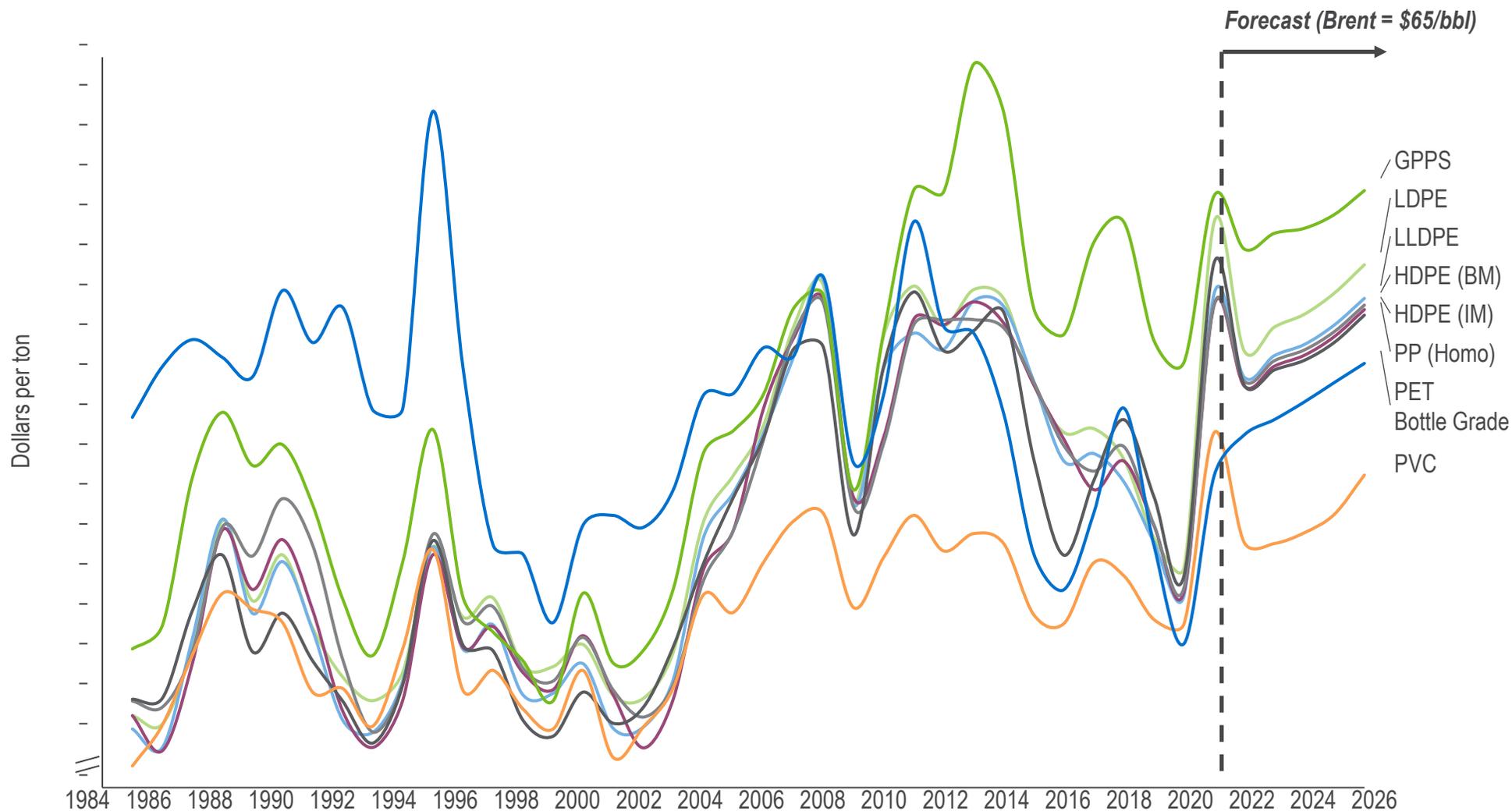
Executive Sustainability Reports Impact of a carbon tax on plastics manufacturing competitiveness



Data analytics and insights for a sustainable future

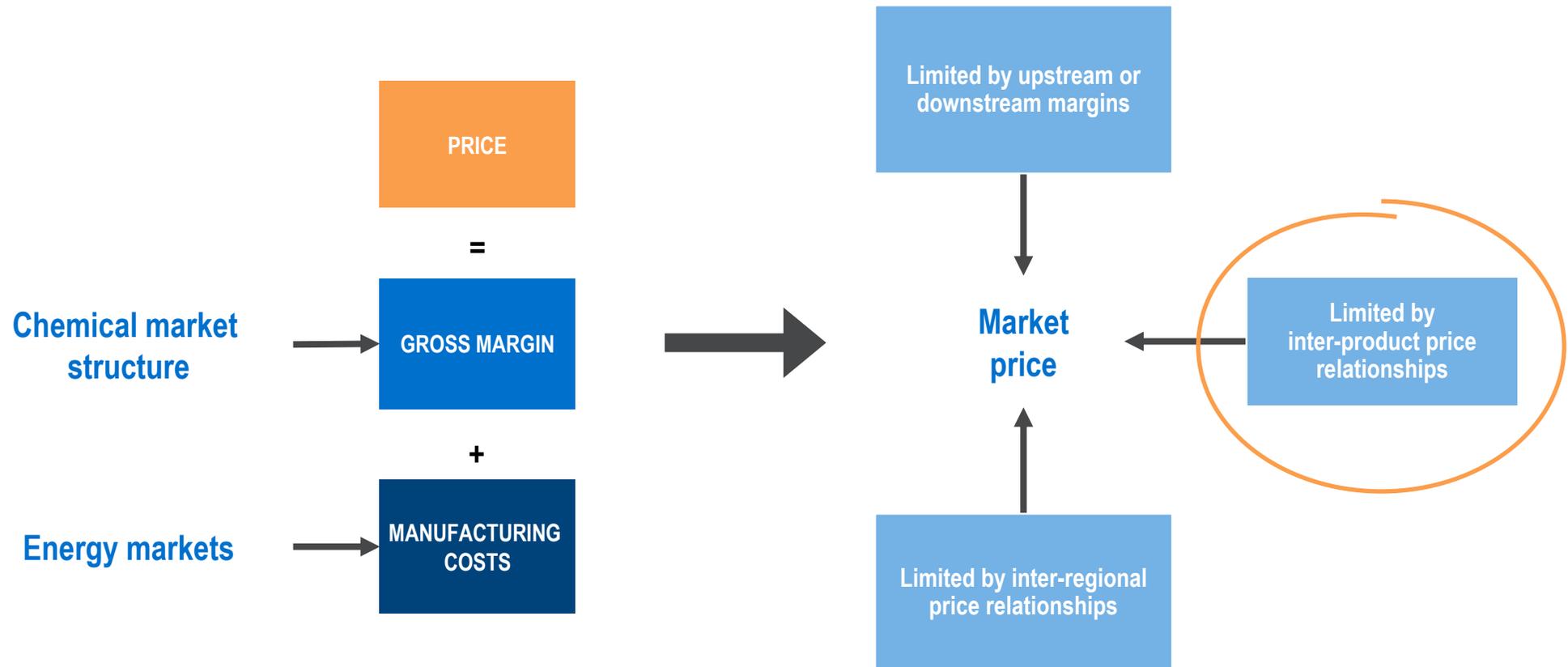
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PET and PVC have historically set the ceiling and floor of the plastics market price. The high cost of SM sets PS as the current ceiling in the European market



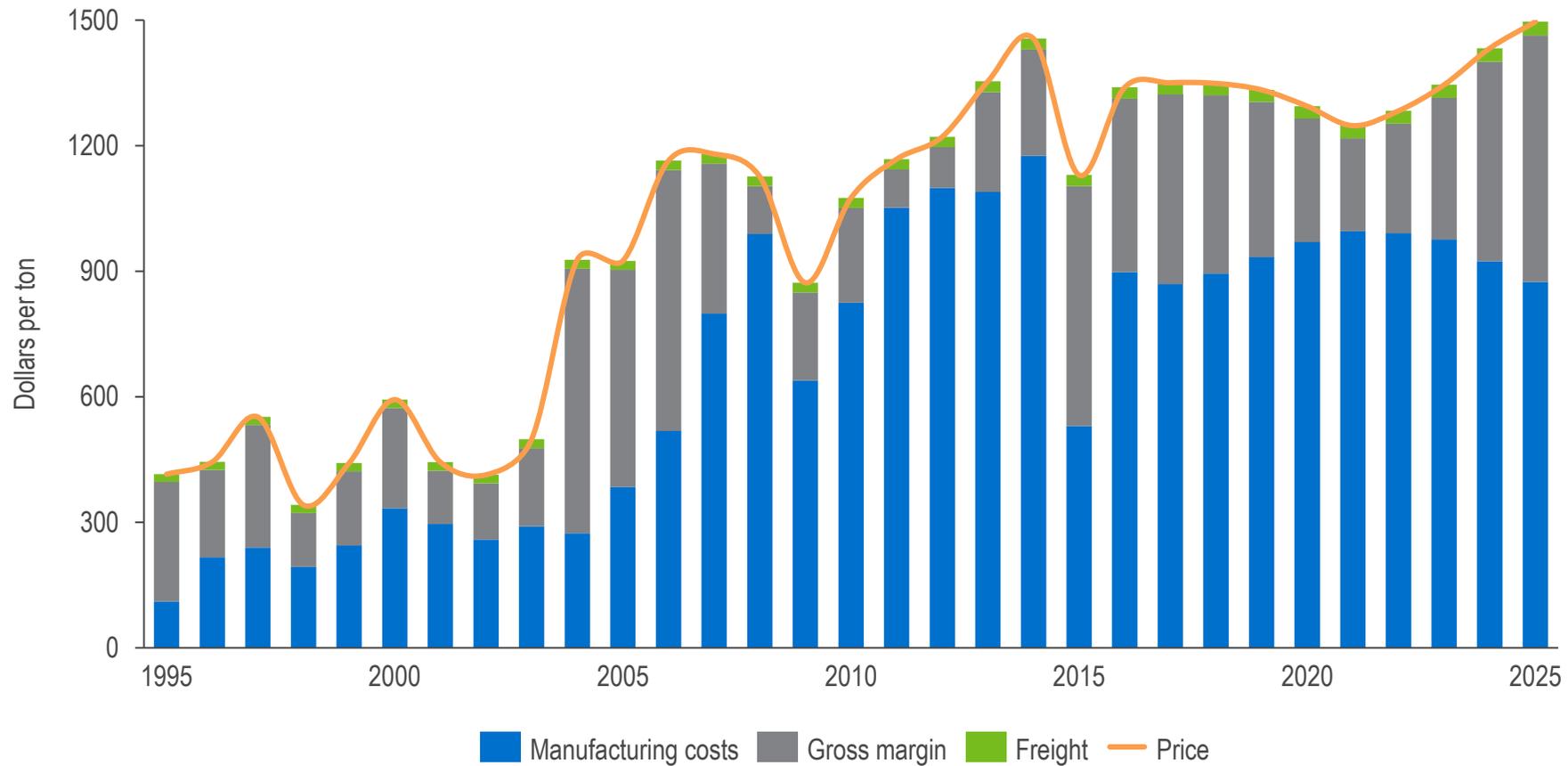
The market price is a compound of manufacturing costs and gross margins. Inter-polymer competition and inter-regional relationships condition gross margins and overall market prices

Historical influences on petrochemical prices



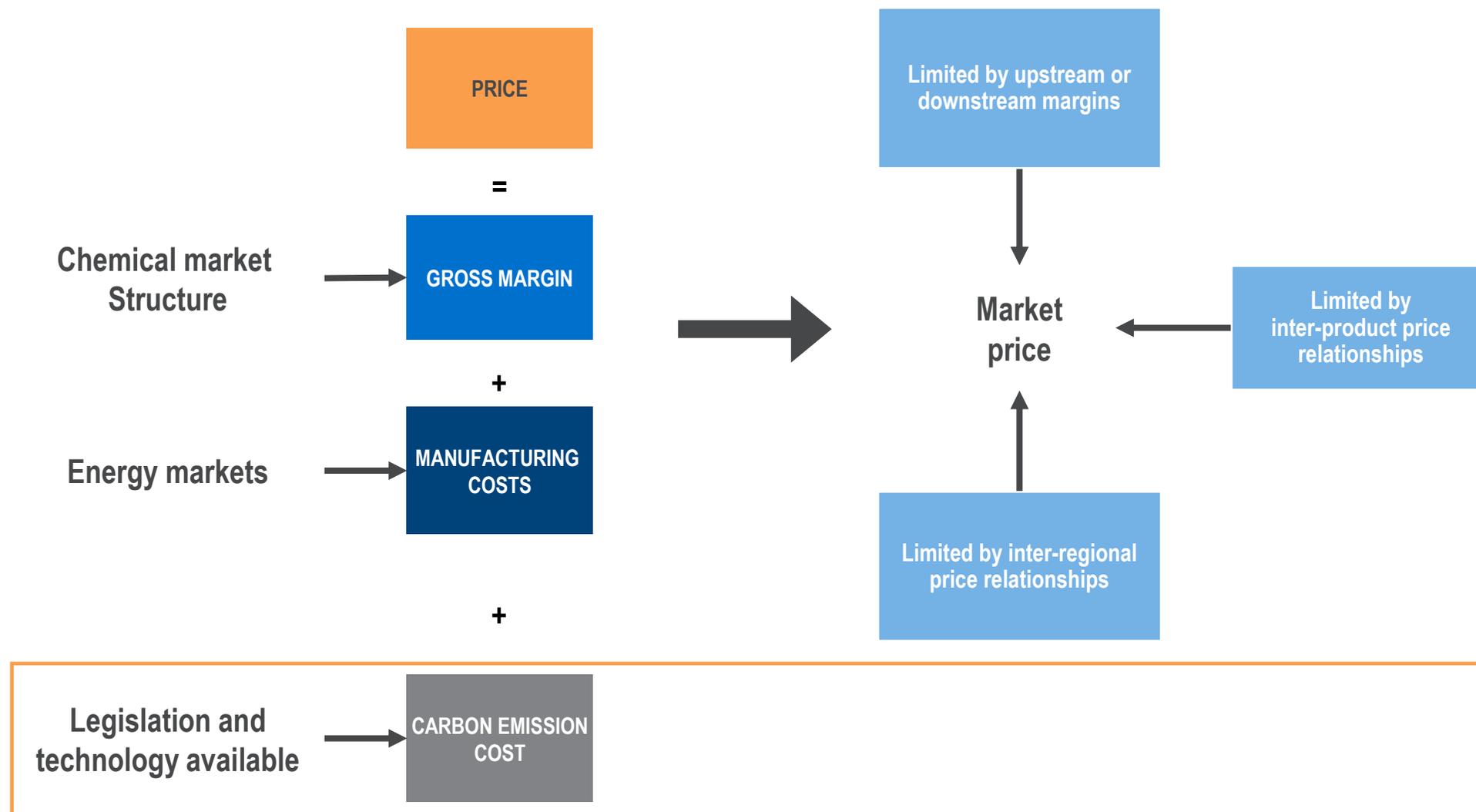
The introduction of a carbon cost can structurally change the cost competitiveness between manufacturing assets in different regions and increase inter-polymer competition

Delivered cost competitiveness: South-East Asia Ethylene
 (Leader, basic naphtha cracker, \$ per ton)



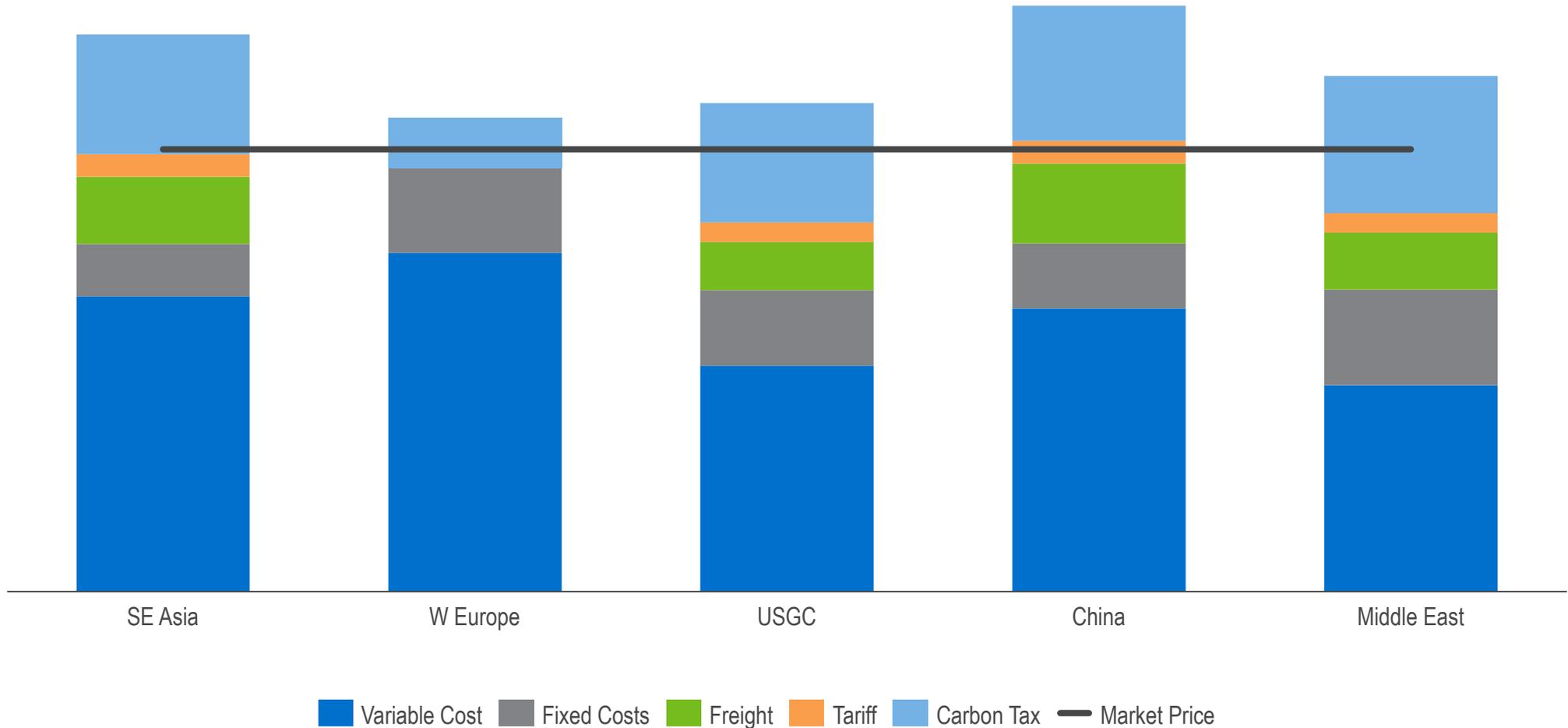
Governments are projected to drive pricing mechanisms and legislation such as the EU Green Deal. CO₂ technology will improve to address lower concentration streams and capture cost

Historical influences on petrochemical price

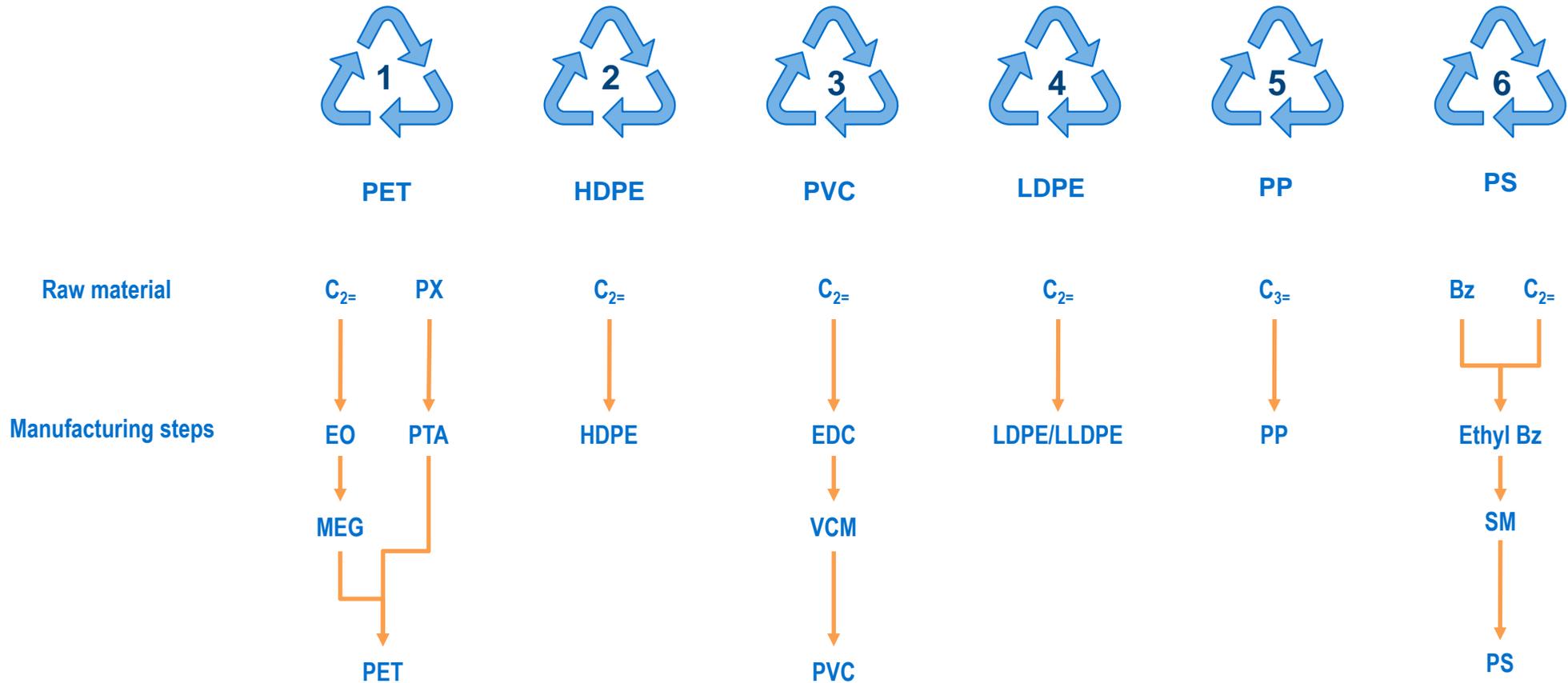


Companies are expected to pass additional costs to consumers. There is a motivation to shift towards plastics with lower carbon footprints (vol) and improve CO₂ capture technologies (\$)

Delivered cost to Rotterdam, 2019
(US dollars per ton)



Inter-polymer competition is anticipated to increase with many plastics overlapping in performance but consumption set due to current market prices



Plastics recyclability and integration with virgin resin is expected to lead to competitiveness advantage

Proposal Table of Contents

1. Executive Summary

2. Business overview

- EU green deal
- Carbon tax and border tax
- Regional energy mix

3. Plastics' emission profiles – ton CO₂ / ton of product

- PET
- HDPE
- PVC
- LDPE/LLDPE
- PP
- PS

4. Carbon dioxide pricing – \$ / ton CO₂

- Established carbon capture technology
- Cost of carbon capture

5. Delivered cost competitiveness

- USGC
- Western Europe

Impact of a carbon tax on polymers cost competitiveness

- A narrative summary of current and future global legislation that concerns industrial CO₂ emissions
- An overview of carbon emission intensities for ethylene, propylene, benzene, para-xylene and plastics. Based on geography – i.e., energy mix – and technology
- Brief overview of established carbon capture technologies and its cost of capture
- Delivered cost competitiveness of plastics to Europe from various geographies, assuming European legislation and investments in decarbonisation by domestic producers and imports
- Understand what regions will benefit from carbon taxes and potential plastics substitution due to their carbon footprint and recyclability.

References

Saxton, D. and N. Faísca (2020). Business Trends: The impact of a carbon tax on the European chemical industry. *Hydrocarbon Processing*. 99 (8), pp 9-10

Authors



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Summary

Nuno is a Managing Consultant at NexantECA, based in London. He is the sector leader of Technology Evaluation and Management.

Nuno is a Chemical Engineer with 20 years experience in the chemical industry and a member of the Institution of Chemical Engineers UK.

After spending several years working with modelling and optimisation tools to evaluate process technologies and the impact on production costs, I currently support governments, lenders and chemical majors in business strategy, transaction support, feasibility studies and independent technology evaluations – e.g., verify sustainability and green claims

Professional experience

Nuno has managed and carried out several governmental and corporate strategy assignment in Western Europe, the Middle East and North Africa, including:

- Evaluation of emerging technologies and [sustainability credentials](#)
- [Business strategy for chemical majors in the Middle East](#) covering commodity chemicals, as well as specialty chemicals
- [Transaction support](#) on buy-side and sell side of European assets
- [Governmental advisory](#) on feedstock monetisation strategies.

He has also carried out project financing projects and construction monitoring of projects on behalf of Lenders.



Daniel Saxton
 Consultant
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Summary

Daniel is a Consultant at NexantECA, based in London. He is a key contributor to various sectors, including polyurethanes and sustainability.

Daniel is a Chemical Engineer with previous operating experience in the refining, and pulp and paper industries.

Daniel supports Lenders and chemical majors in transaction support, project finance, technology evaluation, market analysis and early-stage project development.

Professional experience

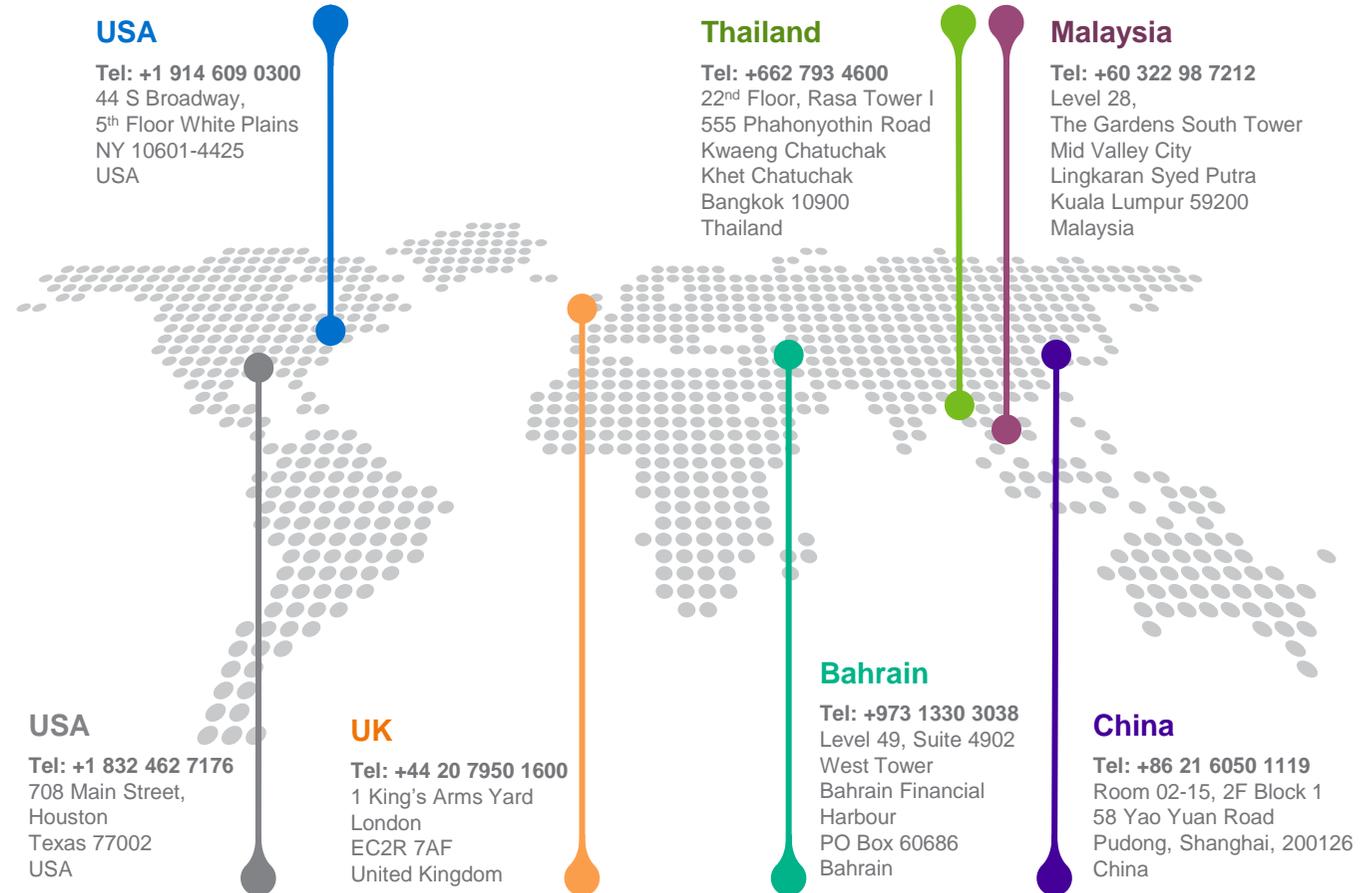
Daniel has supported several corporate strategy assignments in Europe, the Middle East and Africa, including:

- Evaluation of [commercial](#) and [developing technologies](#) in various value chains
- [Market, cost competitiveness](#) and [pricing](#) analysis for various chemicals
- [Screening studies](#) and [feasibility studies](#) for greenfield projects in Europe, the Middle East and Africa.
- [Transaction support](#) on buy-side of European and North American assets

He has also carried out project financing projects and construction monitoring of projects on behalf of Lenders.



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