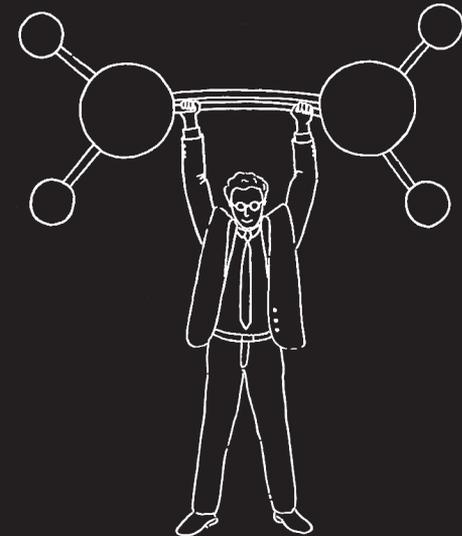


ceg

COMPETITION
DISPUTES
REGULATION

Asia-Pacific | Europe | North America

Petrochemicals and Chemicals



CEG experts provide specialist advice to petrochemical and chemical companies and Governments around the world

The global chemical and petrochemical industries collectively generate more than \$4 trillion sales per year with historical growth levels that have exceeded increases in GDP. The technologies, innovations, products and applications truly touch everything we encounter in our lives today. The very nature of how chemicals are found and integrated make it a segment which is easily overlooked, despite the wealth of benefits it continually brings. Being energy intensive and dependent on hydrocarbons and other natural resources for feedstock, chemicals are closely coupled with the oil and gas industries.

CEG supports independent issues analysis and thinking in each of these sectors. Over the last 10 years the dynamics of the industry have changed immensely, with new areas of geographic development, changing relative costs for raw materials, more stringent environmental standards, skilled labour shortages and global economic turmoil.

The chemical industry is continually navigating new challenges in a globalised market.

Unconventional oil and gas provides a useful recent-year example of an unexpected transformation that has changed market dynamics and investment patterns. Possible future consequences may include:

- US natural gas prices increasingly influenced by LNG netbacks from other regions
- A potential petrochemical market price mechanism shift as some US segments increasingly export surplus volumes as more investments come on-stream
- Weaker than recent year oil price expectations may dampen appetites for continued shale-linked investment options or lead to new portfolio risk management approaches

- The challenge of finding markets for large new petrochemical output produced from unconventional hydrocarbons and the challenge of providing persuasive plans to support capital intensive financing

There are many other issues which have the potential to change the world in which we operate in unexpected ways. Some may include:

- Climate change – regulatory, resources challenges and potential migratory shifts
- Demographics – changing demand patterns from maturing/aging populations
- Security conflagration and political instabilities
- Economic scenarios that were potentially unthinkable in most recent decades
- Autonomous transportation, 3D printing and other technology led changes
- Asset based reliability challenges for aging plant portfolios
- Leaner supply chain management practices contributing to enhanced market volatility

The rapidly evolving markets and chemical technologies provide many uncertainties for all stakeholders in this sector. Planning, developing and executing a strategy that has the robustness to deal with the potential outcomes is likely to provide a competitive edge over rivals.

CEG provides independent advice to chemical and petrochemical companies around the world, as well as to governments and regulators. Our experts deliver advice and support to clients on many of the headline issues within the industry – the team has a broad range of backgrounds within the industry which includes project development, operations, trading and finance, as well as contractual disputes. We are therefore well placed to help clients clearly understand the real issues that they face and to develop workable solutions.

Our team of experts provide Commercial Advice, Regulation and Policy Advice and act as expert witnesses in Disputes.



Commercial Advice

We provide informed and practical advice on the big commercial issues faced by chemical and petrochemical companies.

Whether it is an appraisal of the strengths and weaknesses of a prospective acquisition target, or an independent analysis of the real economics of a new project, we have the skills to get to grips with the market, commercial, technical and financial aspects of each case and deliver frank and honest opinions backed up by facts and clear reasoning.

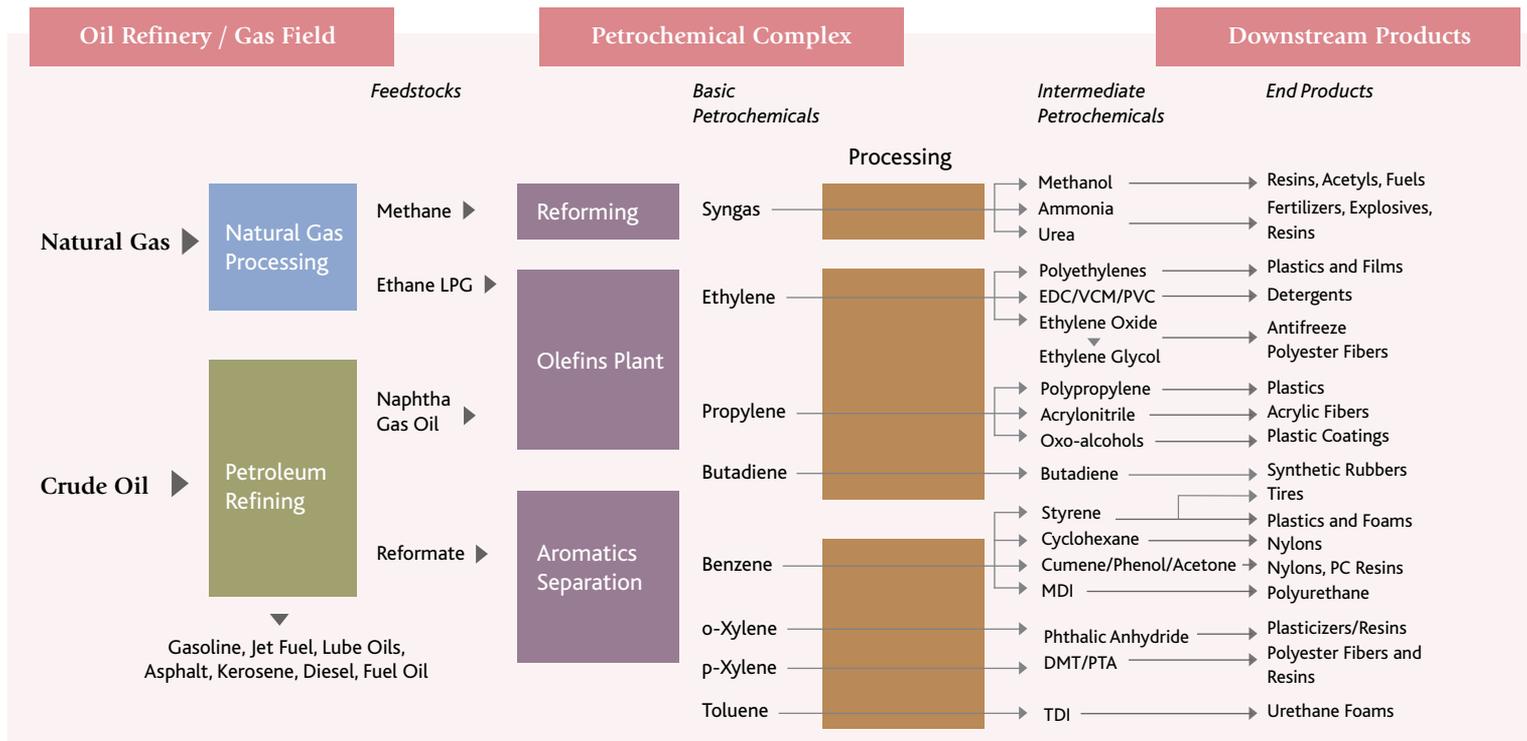
- Feasibility study for a prospective Middle East petrochemical complex, including product market & portfolio screening, feedstock analysis, preliminary technology recommendations, initial financial models and preparation of information packages for project EPC bidders and lenders
- Representation in project financing discussions with a range of global financial institutions, on behalf of a Middle East petrochemical complex
- Commercial and technical due diligence, valuation and negotiation support for an inward investor in a greenfield refinery and petrochemical plant in China
- Working with a combined team from an international oil company (IOC) and a petrochemical major to identify JV petrochemical opportunities based on methane and ethane feeds in North America
- Due diligence review (technical, economic and commercial) of Petkim, the Turkish petrochemical producer on behalf of a potential acquirer
- Many reviews of opportunities for MTO/MTP from techno-economic and commercial perspectives

Case Study – Commercial Advice

For a client looking to develop a world scale Middle East petrochemical complex, the team’s work included product market & portfolio screening throughout industry value chains as shown in the illustration.

The team also prepared feedstocks analysis, preliminary technology recommendations, initial financial models and preparation of information packages for project EPC bidders and lenders.

Covering Produced Oil and Gas Through to End-uses and Selected Inorganics

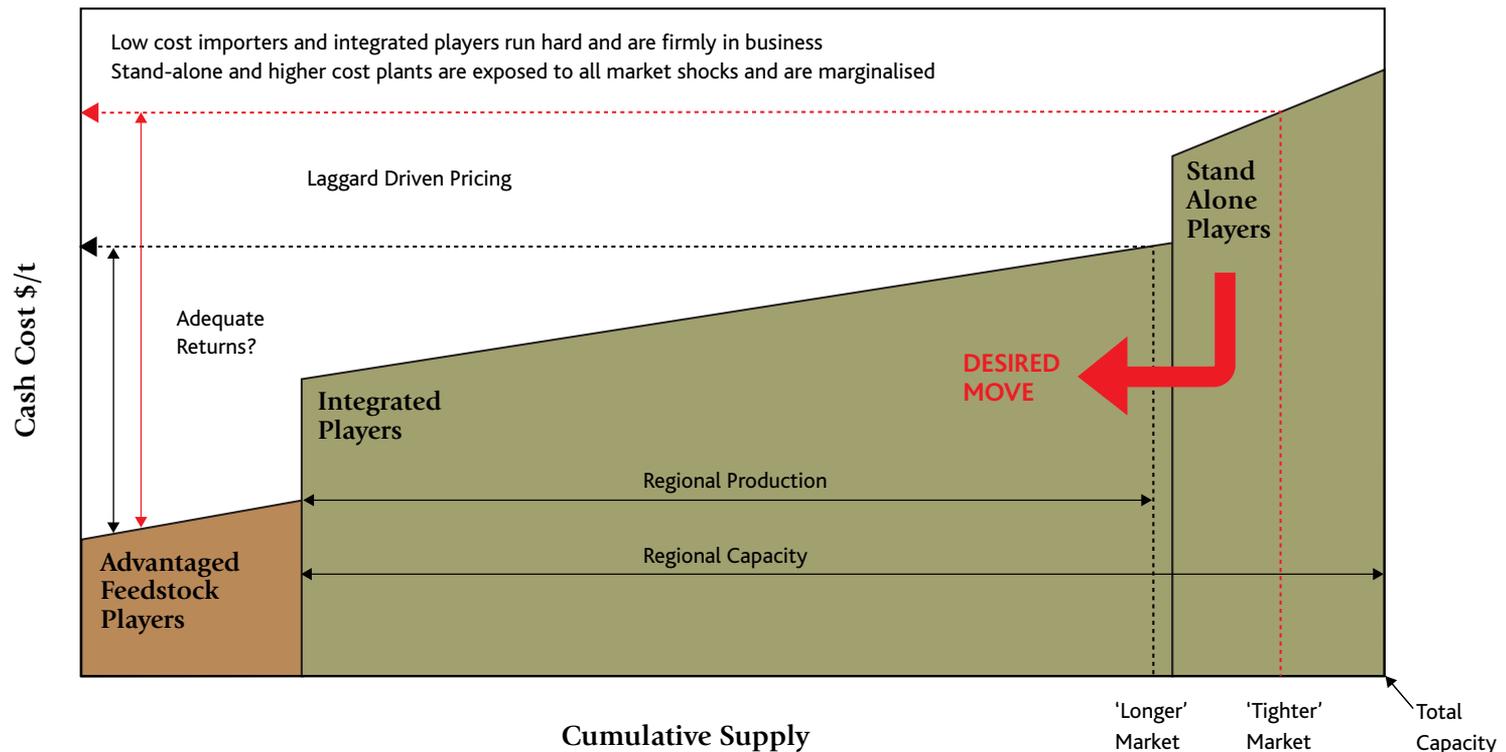


Case Study – Commercial Advice

Continued client project engagement led to successful representation for client in project financing discussions with a range of global financial institutions where markets understanding and forecasting logic for cash flow models

via detailed cost curve styled analyses such as the concept ethylene derivatives illustration, were subject to multi-party scrutiny.

Concept Cost Curves for Ethylene – Derivatives Change and Need Interpretation

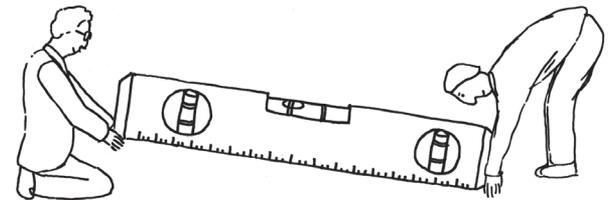


Regulation and Policy Advice

CEG experts have extensive experience in helping firms formulate and present economic arguments and evidence during Government inquiries, market investigations, public consultations and other regulatory proceedings that affect petrochemical companies and their stakeholders across the globe. We understand how regulation needs to work in a free market to minimise distortion and achieve objectives that can at times seem contradictory.

Our focus is on helping Governments define and prioritise those objectives to give clarity to decision making and regulatory design. We also bring commercial expertise into the policy debate to ensure that market realities are given appropriate consideration.

- Advising a petrochemical client on transfer pricing frameworks to ensure sustainable longer term business operating structures
- Worked with numerous petrochemical and refining companies to understand impact of emerging legislation concerning MTBE use in gasoline and response options
- UK and EU Government assignments on eco-labelling in a variety of categories examining policy options for improving (i.e. reducing the environmental impact of) products such as laundry detergents and dishwashing detergents, a variety of personal care products, etc.
- Detailed review of the merits of recycling options for a variety of packaging materials (beverage cans, glass bottles, HDPE bottles) for the UK Government
- Undertook review of emissions intensity (mainly greenhouse gases) in certain EU petrochemical sectors in order to provide better understanding of energy costs and carbon offsets and exemptions on behalf of an industry body affiliate



Case Study – Policy Advice

PETROCHEMICAL MASTERPLAN FOR THE STATE OF EGYPT

Having witnessed the growth of the petrochemical and fertilizers industries throughout the GCC, Egypt was keen to emulate this success whilst recognising that it possessed a large labour pool as an enabler. Our work included:

- Situation review of existing petrochemical and refining facilities
- Status of oil & gas production and future prospects as source of petrochemical feedstocks
- Assessment of local and global markets to develop ideal product slate
- Development of detailed plan of the industry and recommend means to realise the plans

The Masterplan was presented to the Egyptian Prime Minister and his cabinet. The plan was adopted although implementation has not been completed.

Subsequent work looked to accelerate implementation of the Masterplan by introducing the concept of a massive-scale integrated oil refinery and petrochemical complex, together with plans for its implementation. Received positively at the highest levels within the then Egyptian Government.

Disputes

CEG has been at the forefront of economic consultancies advising on high profile disputes including equity and commercial damages, private actions against those in breach of competition law in Europe, intellectual property and judicial reviews.

CEG can independently assess both the question of liability as well as estimating the quantum of damages incurred. Our experts have presented analysis before competition authorities, arbitration tribunals and courts. We are contractually bound to reveal no details of most cases, but those about which we can refer include:

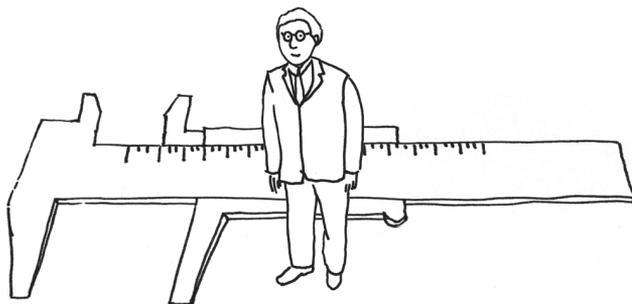
- Representing an IOC in a project finance dispute
- Settlement in detergents cartel damages case for plaintiff
- Advising client on competition dispute related to olefins and polyolefins
- Contaminated cargo (fertilizers) damage estimation
- Defence of allegedly defective licensed polymers technology

Case Study – Disputes

CHINESE PETROCHEMICAL FACILITY – GENUINE OPERATION OR TAX LOOPHOLE?

We were retained by counsel for the Chinese facility concerned that the US IRS was viewing the facility as a money-laundering scheme rather than an operational petrochemical facility adding value to the feedstocks consumed. The translated description of the plant as a “catalytic pyrolyser” did not assist either.

Our team visited the site and discovered that it was actually a petrochemical residue fluidised catalytic cracker (RFCC), producing a range of petrochemicals including ethylbenzene, styrene and MTBE. Moreover, a review of the price envelope in which it was operating showed it to be reasonable for China and our lead expert testified about these matters in a telephone deposition with the IRS.



CEG brings together experts in the leading competition and regulatory agencies, academia and industry

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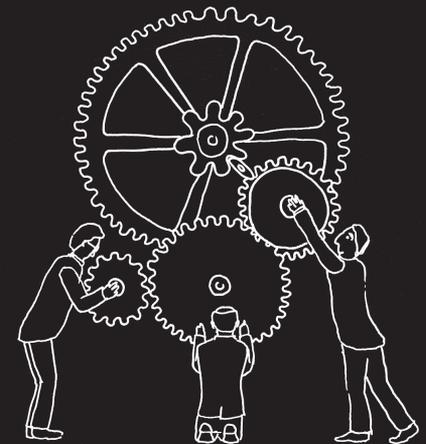
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