

Proposal: Select Client Study

COVID-19 Impacts on Organic Chemicals Supply & Demand

May 2020

Comprehensive Assessment



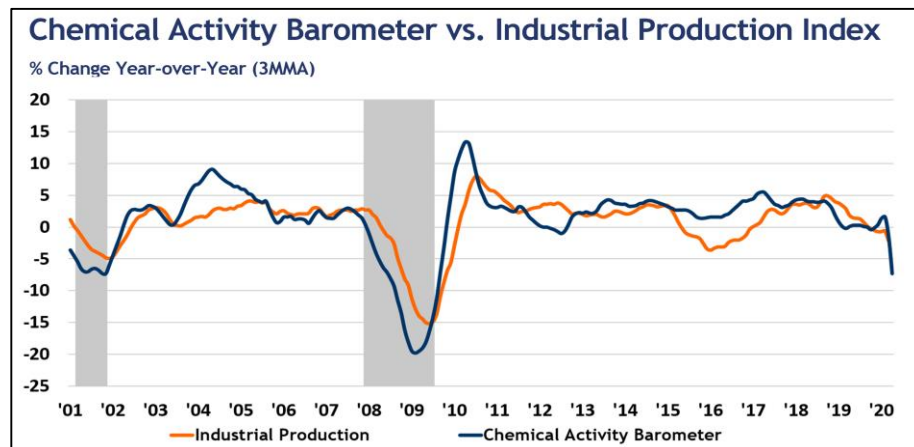
*Deep
Knowledge*

Global Impact

Background

Chemical companies are facing uncharted supply & demand challenges over the next three quarters and into 2021 as they adjust to the effects of COVID-19.

- The American Chemistry Council's Chemical Activity Barometer (CAB) fell 7.3% Y/Y and 5.5% from March on a three month moving average basis. The CAB, which consists of chemical production, chemical company stock, chemical price data, etc., is a leading indicator for the entire economy.



- While the declaration of a recession is a retrospective view of two consecutive quarters of negative GDP growth, global shutdowns due to the COVID-19 crisis are already having a drastic impact on overall supply & demand, leading to current conventional wisdom that we are already facing a global economic slowdown of unprecedented size and scope.

Need for the Study

- Forecasters are predicting a decrease in global GDP of -5% in Q2 and -8% in Q3. However, it is already clear that the supply & demand impacts will not be even, with some segments being more robust than others. For example, medical plastics and packaging are seeing increased demand, whereas the U.S. plastics sector as a whole is forecasting an overall 10-12% drop this year, according to the Packaging Institute of America (PIA).
- Government shutdown orders have led to a drop in consumption and worker availability. This has led to various supply chain disruptions with different regional impacts.

This TCGR Select Client Study will take a fast assessment of the current and short term impacts over 2020-2022 in high volume organic chemicals. Interviews of key stakeholders and independent 3rd party insight, that TCGR can provide, will be critical to impact assessment and production planning.

Scope & Methodology

Scope: TCGR currently envisages the following chemicals will be reviewed; however “charter subscribers” will have the final selection.

A. Ethylene and Derivatives

- Polyethylene LDPE, LLDPE, HDPE
- Ethylene oxide
- Monoethylene glycol

B. Propylene and Derivatives

- Polypropylene
- Propylene oxide
- Cumene
- Phenol
- Acrylonitrile

C. Butadiene

D. Benzene and Derivatives

- Styrene
- Polystyrene
- Cyclohexane
- MDI

E. Toluene and Derivatives

- Paraxylene
- PTA
- PET
- PBT

F. Other

- Hydrogen
- Methanol
- Acetic Acid
- Formaldehyde
- Ethanol

The next few slides provide a preview of the analysis and benefit that TCGR will provide and you will receive by subscribing.

Examples of Disruptions in the Global Supply Chain

Ethylene and Derivatives

- Some projections have PE demand increases for 2020 falling to zero, especially in regional markets that have been most highly affected by COVID-19 (think China, Italy, Germany, US). According to IHS Markit, demand for recycled material has disappeared. Dow Chemical announced it will idle 2 billion lbs. of capacity.
- EO demand is largely dependent on PET, which as can be seen on the right has been fairly resilient. Other uses, like in anti-freeze, may suffer from the automotive industry shutdown.

Toluene and Derivatives

- Mixed xylenes and pX prices fell significantly in March and demand for downstream derivatives (polyester, PTA) will vary.
- Shutdown and quarantine restrictions have led to consumer panic buying and increased demand for water, food, and cleaning supplies, which are packaged with PET. The panic buying has likely peaked – so what does the future hold?

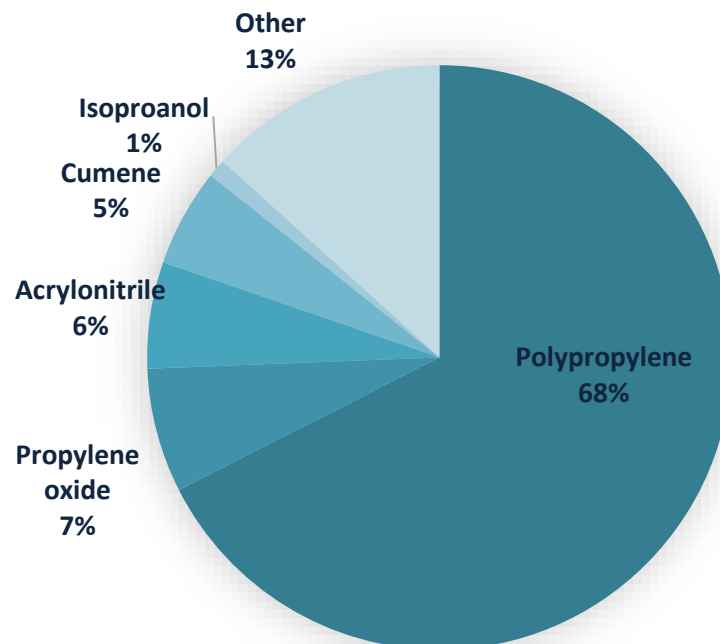
TCGR will Examine Each Value Chain in Depth

Global propylene demand reached 115 KMT in 2019, but future demand projections are complex and depend on numerous downstream chemicals:

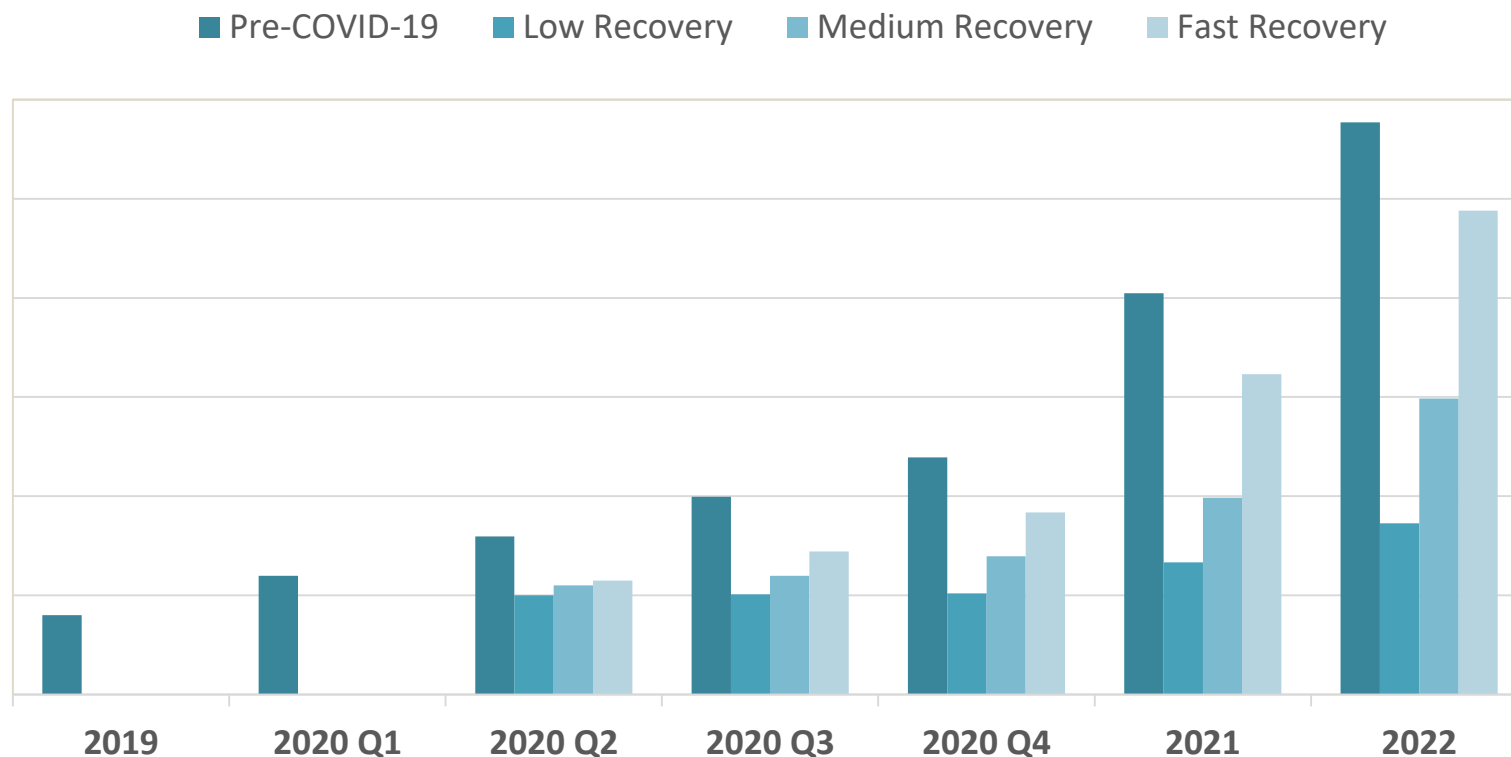
- PP is the biggest segment and fiber grade PP is in hot demand for masks, plus other medical supplies will see strong demand; however, the automotive industry has virtually shut down.
- Demand for PO will be largely driven by polyurethanes, a complicated and segmented area between foams and CASE.
- Acrylonitrile, which largely goes into ABS production, will depend on demand in the automotive, electronics, and consumer goods industries.

COVID-19 will have numerous short and long term implications on end-use products, thus dictating demand for commodity organic chemicals.

Propylene Consumption by Derivative, 2019



Polypropylene Demand Forecast



TCGR will analyze end-use product supply/demand and pricing scenarios to estimate the demand for 5-6 value chains and 20-25 different chemicals in total.

Study Deliverables

Proposed Study Outline

- I. Background
- II. Executive Summary
- III. C₂-C₄ Olefins and Downstream Derivatives
- IV. BTX and Downstream Derivatives
- V. Other Essential Chemicals and Derivatives
- VI. Commercial Implementations: How the Industry is Responding
- VII. Analysis and Conclusions

- Based on demand outlooks, supply chains will be developed with an emphasis on potential regional dislocations. We will develop three market scenarios to demonstrate slow, medium and fast economic recovery for Sections III-V.
- Key stakeholders will be interviewed to share their perspectives for the future. (Section VI).
- This TCGR Select Client Study will be delivered quickly (6-8 weeks) in PowerPoint format of 60-70 slides following “charter” subscriber critical mass.
- All “charter” subscribers will have final input on the content and table of contents, scope, and methodology before project commencement.
- Includes is a 1-hr follow up Q&A/consulting session.

TCGR Experience and Qualifications

- TCGR will leverage its access to chemicals experts that have >35 years' industry experience via its Dialog Group® (a mixture of commercial and technical) in completing this study.
- TCGR will utilize publicly available and in-house information to complete the deliverables as well as technical and commercial literature reviews, in-field interviews and its proprietary model.
- TCGR Dialog Group® experts have deep experience in the required technology from a process technology, catalyst technology and market size/growth application perspective.

The Catalyst Group Resources has covered related technical process advancements in similar reports; [those can be seen here on our website.](#) Other advancements are also tracked as part of our [Catalytic Advances Program](#) and [CO₂ Capture and Conversion Program.](#)

The Dialog Group® is a renowned group of industry-leading experts that provide key intelligence and analysis of the fuels and chemicals industries.

Order Form & Secrecy Agreement

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Please enter our order **COVID-19 Impacts on Organic Chemicals Supply & Demand**, to be completed in **June/July 2020**, as follows:

_____ **COVID-19 Impacts on Organic Chemicals Supply & Demand**, as a “charter” subscriber for \$8,500 (US\$10,500 after study launch) to be delivered as a PDF file containing PowerPoint slides, which includes use across locations (i.e. site license) and a 1-hr follow up Q&A/consulting session.

In signing this order form, our company agrees to hold this report confidential and not make it available to subsidiaries unless a controlling interest (>50%) exists.

Signature: _____ Date: _____

Name: _____ Title: _____

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