

Petrochemicals and Plastics in the “Perfect Storm”

ADI Weekly Webinar Series

May 7, 2020



ADI Analytics
OIL & GAS • ENERGY • CHEMICALS
CELEBRATING 10 YEARS

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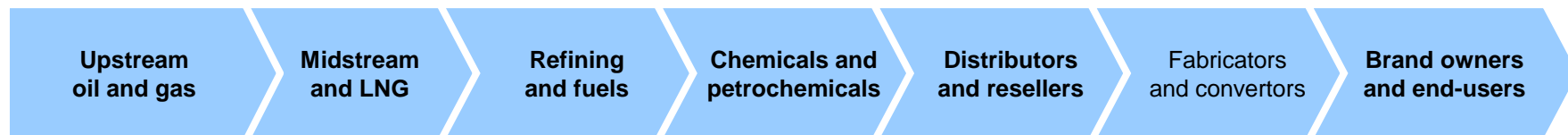
ADI Analytics is a consulting firm serving oil and gas, energy, and chemical companies with passion, expertise, and rigor



Fortune 500 and mid-sized companies, start-ups, investors, and governments have hired us to shape decisions globally



ADI's acquisition of CMR brings deep expertise across the hydrocarbon value chain



CHEMICAL
MARKET
RESOURCES
An ADI Business

- ADI's expertise spans upstream E&P, midstream and LNG, and fuels and refining in oil and gas ...
- ... Along with power, chemicals, and industrials
- Since 2009, ADI has completed 450+ projects for 150+ clients
- ADI acquired Chemical Market Resources in late 2017 ...
- ... Deepening and broadening expertise in chemicals, petrochemicals, polymers, and plastics
- Since 1990, CMR has served 200+ clients via 500+ projects
- Learn more at www.adi-cmr.com

How are we helping clients navigate the oil price crash and COVID-19 impacts?



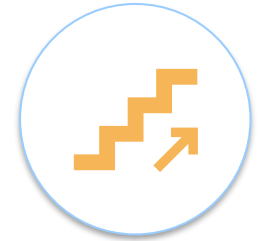
Target the right customers and market segments



Reorient offerings and value props for recovery phase



Benchmark and quickly cut costs to cope with the crisis



Support M&A strategy and due diligence



Reshape go-to-market plans with voice-of-customer research



Refine pricing and sales strategies via market-backed insights



Revisit customer and channel engagement models for recovery



Revisit R&D, innovation, and product devt. portfolios

ADI has been very active in the chemical, petrochemical, and plastics markets

1

North American Operator

Assessed feasibility of a grassroots propane dehydrogenation capital project

2

Asian Chemical Conglomerate

Sized and forecasted the specialty polypropylene market in support of a new investment

3

U.S. Chemical Distributor

Developed expansion strategy in U.S. Gulf Coast to respond to competitors

4

Middle Eastern Major

Developed market strategy for polyethylene products

5

Large PE Investor

Led due diligence on a specialty chemical manufacturer in North America

Some of ADI Chemical Market Resources' multi-client reports



2020 Global Polypropylene
Market Assessment

[Learn More](#)



2020 Global EPR-EPDM
Market Assessment

[Learn More](#)



2019 Global Tie Layer Resins

[Learn More](#)



2018 Global Polyolefin
Plastomers and Elastomers

[Learn More](#)



2018 Global SBS and SEBS
Adhesives and Sealants

[Learn More](#)



2017 Global Tie Layer Resins

[Learn More](#)



2016 Global Linear Alpha
Olefins (LAO)

[Learn More](#)



2016 Global Polyethylene
Catalysts

[Learn More](#)

Oil & gas in a “perfect storm” from price crash and COVID-19

Oil & Gas in the Perfect Storm

Oil & Gas in the Perfect Storm



March 2020

We could have borrowed from Gabriel Garcia Marquez's *Love in the Time of Cholera* to title this piece, "Oil & Gas in the Time of Coronavirus" – but that would only recognize the coronavirus disease of 2019 (COVID-19) and its impact on oil demand and ignore the black swan in the concurrent supply shock posed by Russia's refusal to typenate itself with OPEC again in cutting oil production. Broader uncertainties from an election year in the U.S. and growing investor clamor for shale profitability and energy transition initiatives add further, even if now less urgent, uncertainties.

We at ADI instead see the "perfect storm" as a better metaphor for the collective impact from the Russian-Saudi spat and COVID-19. Metaphors and clever writing aside, how should we think about this perfect storm? We try to address this here with our firm's research and consulting work.

Why are we here?

The oil markets – led by Saudi and OPEC through the majors and the shale operators to the traders and analysts – were blindsided by Russia's refusal to cut oil production with OPEC in an year when oil demand growth was expected to decline independent of the coronavirus.

Saudi announced plans to raise production from 9.7 million bpd in March to 12.3 million bpd starting April 2020.

Russia made some noise about OPEC cheating on its commitments but abandoned its three-year alliance with OPEC primarily to harm U.S. shale supply, which has been, as such, constrained by rising investor disenchantment. Larger geopolitical reasons such as U.S. sanctions on Rosneft and Nord Stream 2 also motivated Russia which is today in a stronger economic position relative to the 2014 oil price crash.

Surveying the damage

Unwilling to lose market share and also force Russia to return to negotiations, Saudi announced plans to raise production from 9.7

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Locking Both the World and Oil Down

Oil & Gas in the Perfect Storm: Part 2 – Locking Both the World and Oil Down



April 2020

Read our first "perfect storm" article to see how oil prices evolve going forward.

A third of the world's population is today living in countries that have enforced moderate to severe lockdowns on virtually all human activity to mitigate the spread of COVID-19. In all, 27 countries have imposed lockdowns with nearly all of them opting for severe measures. Only three countries – Israel, Ireland, and the Czech Republic – have chosen to impose moderate lockdowns. In addition, there are a handful of countries where lockdowns have not been mandated but citizens are being cautious and have voluntarily imposed limits on their activities.

How much oil demand is impacted?

These lockdowns are collectively impacting oil demand in an unprecedented fashion. ADI estimates that the 27 countries that are under moderate to severe lockdown measures consume ~61 million barrels of oil daily. Including other countries such as Brazil where gangs are enforcing lockdowns, almost two-thirds of global oil demand – ~66 million bpd – is under threat of significant impact from COVID-19 (see Exhibit 1).

ADI estimates that the countries under lockdown consume almost two-thirds of global oil demand

Exhibit 1. Global oil demand impacted by COVID-19, million bpd.



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Riches to Rags: Downstream O&G in Perfect Storm

Riches to Rags: Refining in the Oil & Gas "Perfect Storm"



April 2020

Read our first "perfect storm" article to see how oil prices evolve going forward.

The refining panel session at the 2020 ADI Forum – our consulting firm's annual oil & gas conference – in January this year was brimming with justified optimism. After several years of questioning and cross-questioning, IMO 2020 – the International Maritime Organization's rule limiting sulfur in marine fuel oil – was finally here and refiners were getting ready for a strong year with robust diesel margins.

Production planners at many refineries had advanced maintenance into 2019 so they could operate throughout 2020 and take full advantage of the higher margins they were anticipating. Forecasting higher demand for low-sulfur diesel as blendstock for marine fuels, many refiners in the U.S. had also started tweaking their product mix to favor diesel over gasoline.

Coronavirus has interrupted this party in a brutal manner. Forget higher margins, refiners today are struggling to maintain operations, find storage for growing inventories, and service debt as refinery margins have plummeted.

Global fuel demand collapse

As illustrated in a prior note from ADI's on-going research on the oil & gas "perfect storm", nearly two-thirds of oil demand is in countries that are under lockdowns collapsing demand for refined products. In the U.S., the most recent weekly demand for gasoline was ~45% lower than normal demand of ~6.2 million bpd averaged over 2019.

Read our second "perfect storm" article to learn how much oil demand will coronavirus destroy?

Inventories of fuels and oil, therefore, are now building quickly across the world to the point that in some places storage capacity is running out. India's Bharat Petroleum has disclosed storage capacity constraints as fuel demand has fallen dramatically in a lockdown that was recently extended again. Along with crude oil, fuel inventories in the U.S. too jumped and the market is finding creative solutions. Enterprise Products reported that it is storing gasoline and diesel in NGL wells and operating the Seaway pipeline in bidirectional model. Someone has also proposed using pipelines as short-term storage vessels.

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ADI “Perfect Storm” Research Service				Service Deliverables	
1	Oil & gas price updates and outlook	7	Deep dive into fuels and refining	Weekly markets review	
2	COVID-19-related oil demand impact / recovery	8	Deep dive into natural gas and LNG markets	In-depth segment reports	
3	Deep dive into upstream incl. shale, conv., offshore	9	Deep dive into petrochemicals	Market data spreadsheets	
4	Oil supply-demand balance and inventories	10	Oil & gas capital spend (CAPEX) outlook	Monthly workshop calls	
5	Oil price forecasts, scenarios, and outlook	11	Oil & gas operating spend (OPEX) forecast	On-demand analyst time / calls	
6	Deep dive into midstream and NGLs	12	Investor implications and opportunities	<p>Contact us at +1 (832) 768-8806 or info@adi-analytics.com to learn more</p>	



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Factors impacting chemical industry

1



Economic collapse

- Chemical industry growth is correlated to GDP growth
- Dramatic collapse in GDP outlook will hurt sales and margins

2



Feedstock volatility

- Oversupplied oil and oil-derived feedstocks
- Natural gas prices may rise in the medium term
- Ethane and NGL pricing also very volatile

3

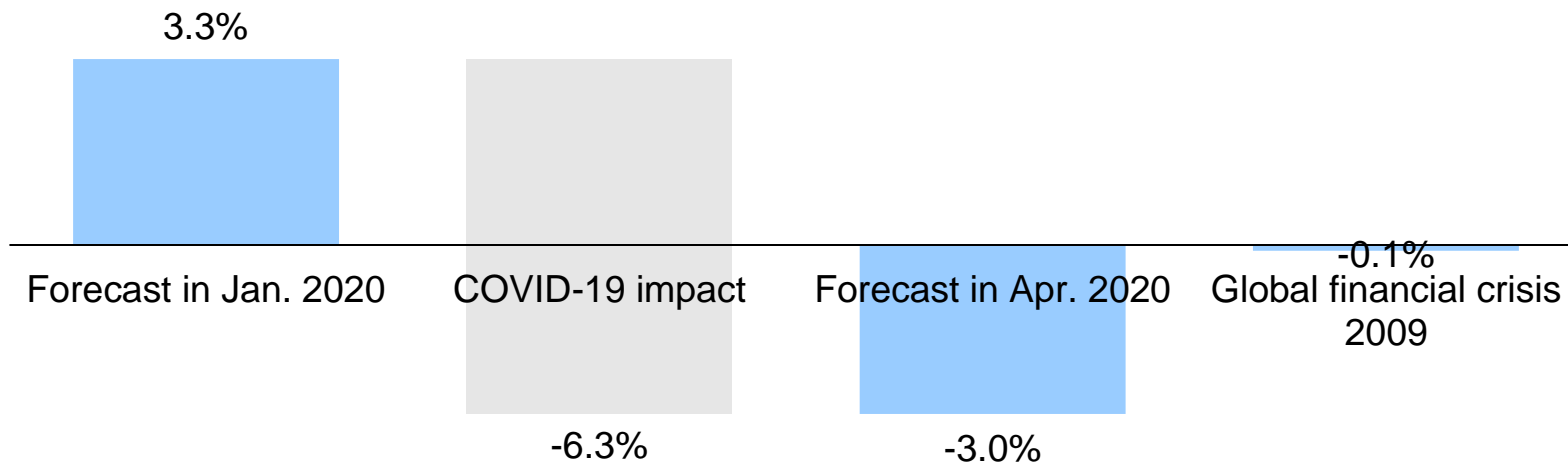


Feedstock imbalances

- Refinery utilization has fallen ...
- ... Impacting petchem feedstock supply
- NGL supply likely to fall
- Naptha cracking advantaged but co-product use impacted

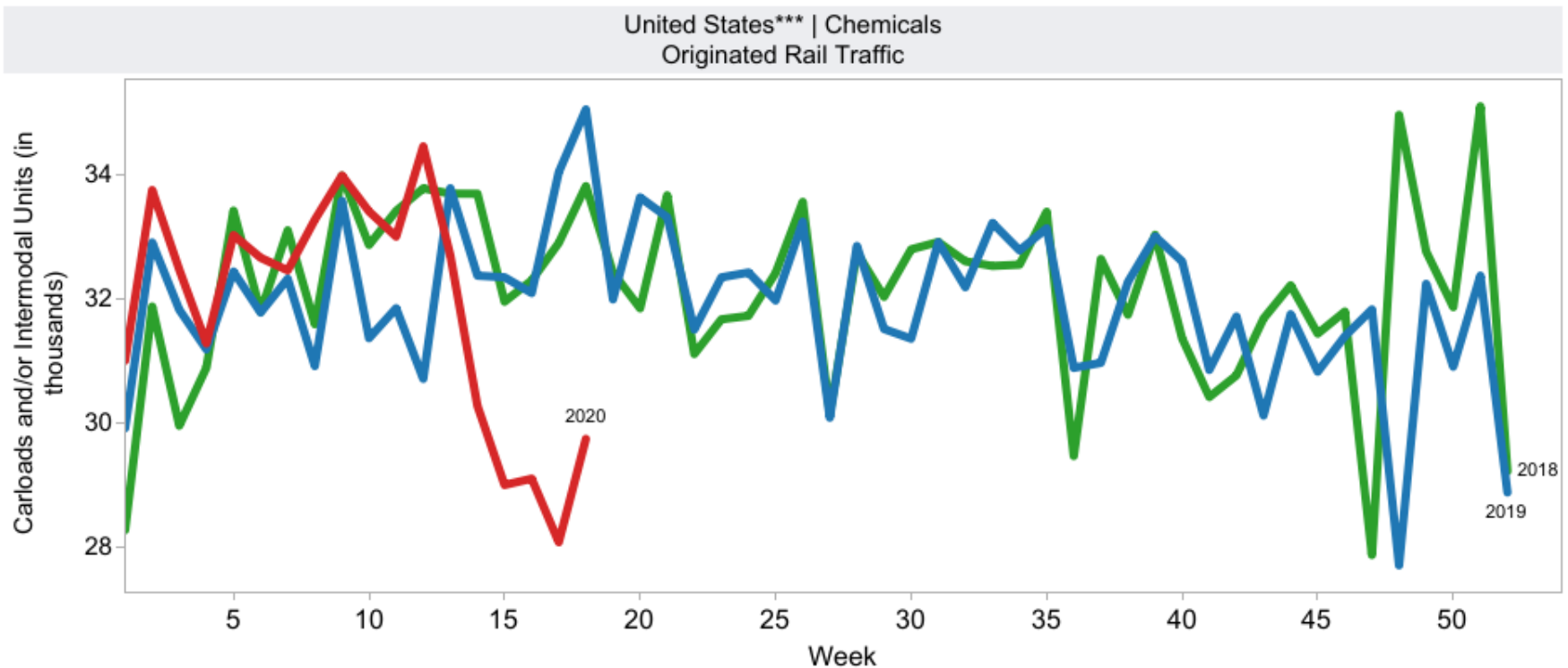
Global GDP outlook will significantly impact chemical industry prospects

Global GDP Outlook
(Percentage change)



Chemicals rail traffic from U.S. to Canada has for significantly reduced in wake of COVID-19

U.S. Chemicals Rail Traffic
(Carloads and Intermodal Units, thousands)



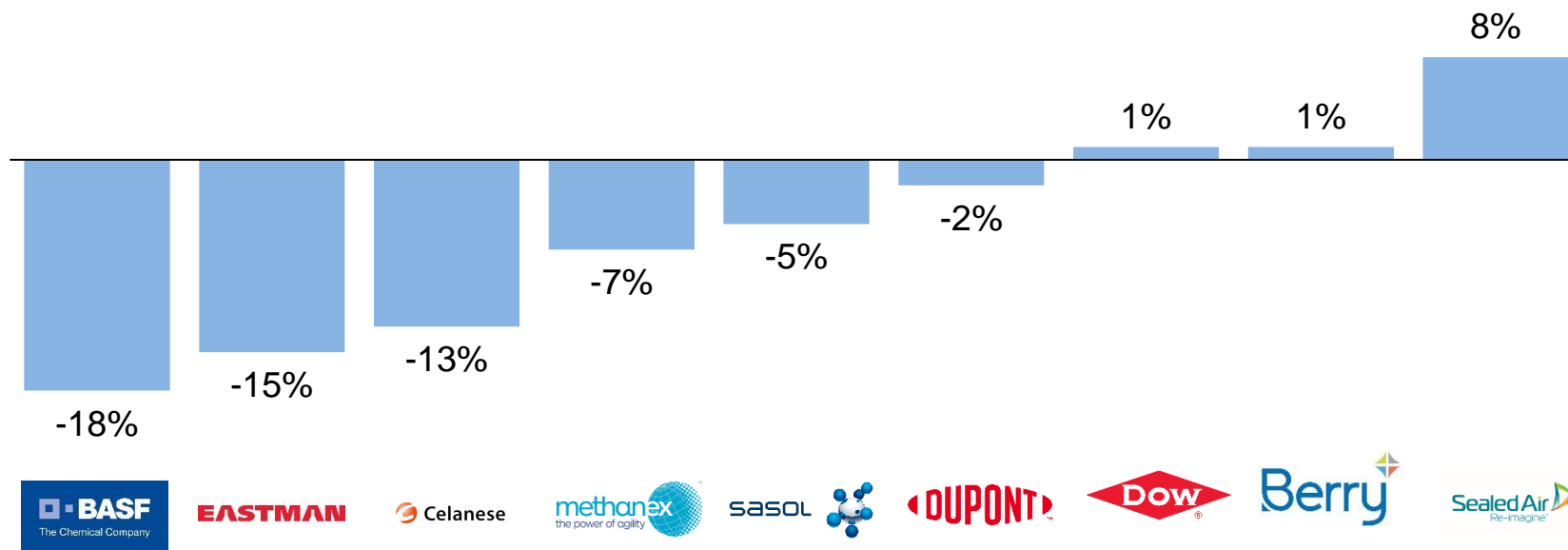
* Canadian traffic includes the U.S. operations of Canadian railroads.

** Mexican traffic includes the U.S. operations of Mexican railroads. Comparable railroad figures are not available for Weeks 1-26, 2017...



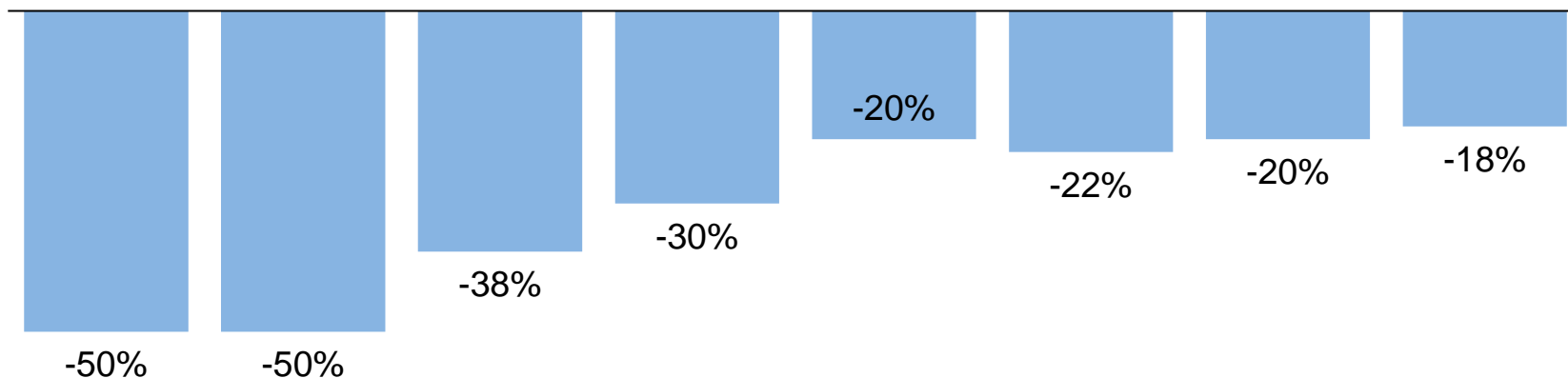
Most chemical companies have experienced sales and volumes losses due to lower demand

COVID-19 Impact on Sales Volumes
(Percent change for first quarter, year-on-year)



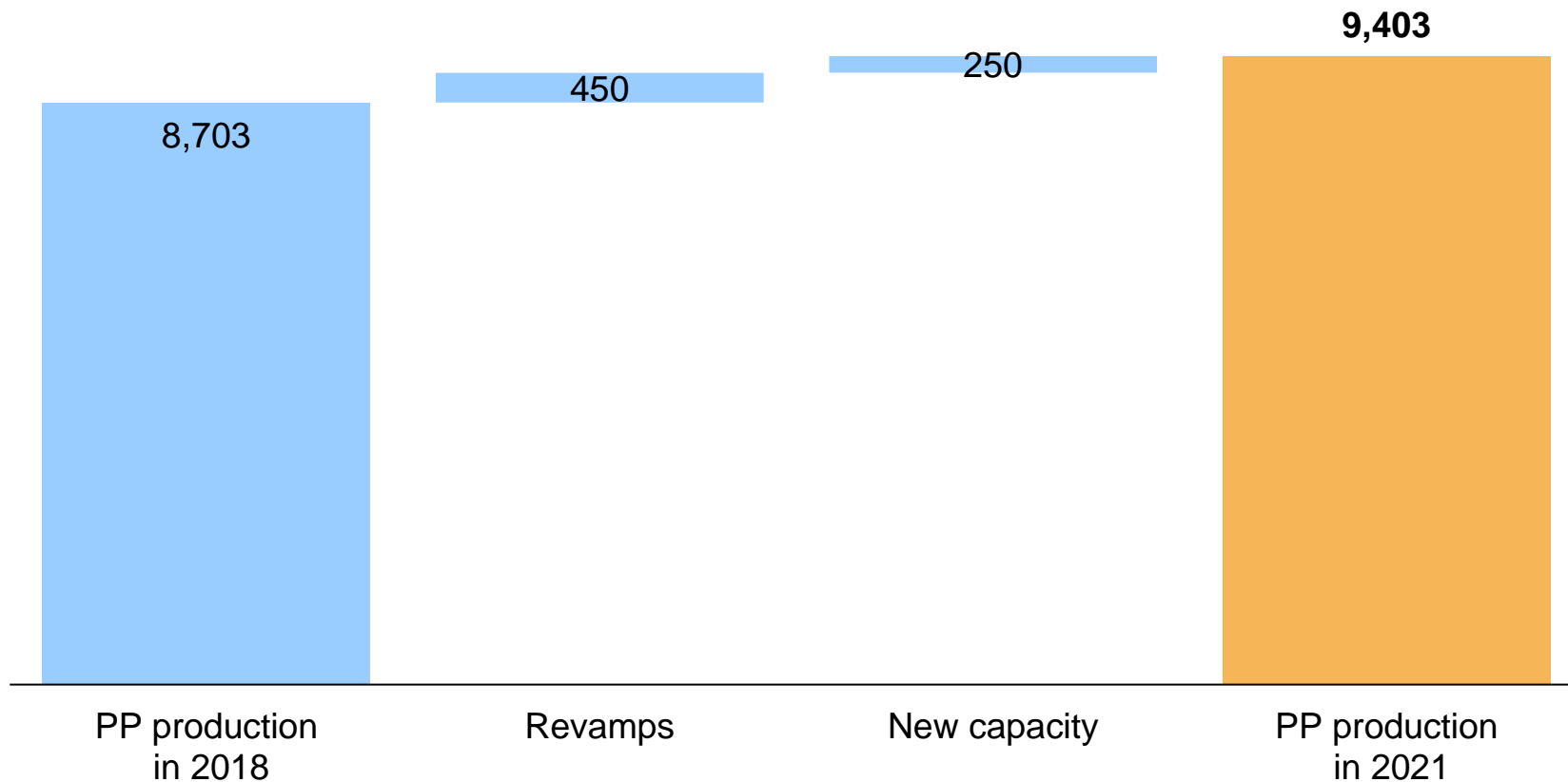
Most of these players are taking steps to cut their capital expenditures for 2020

COVID-19 Impact on 2020 Capex
(Percent of initial capex guidance)



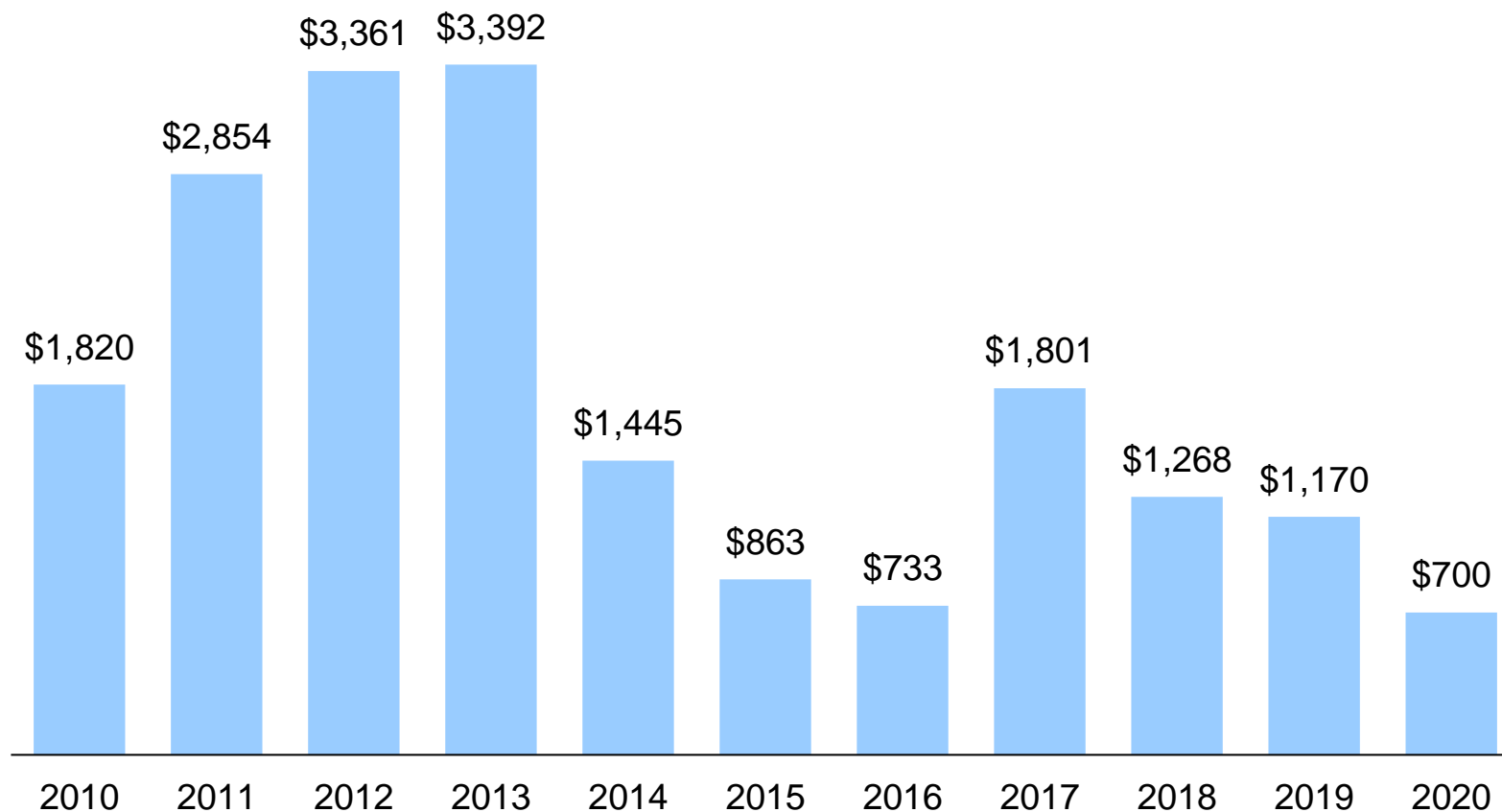
Most of the new PP capacity coming up in North America will be through revamp projects

Capacity Additions for Polypropylene in North America Through 2021
(Thousand Tons Per Year)

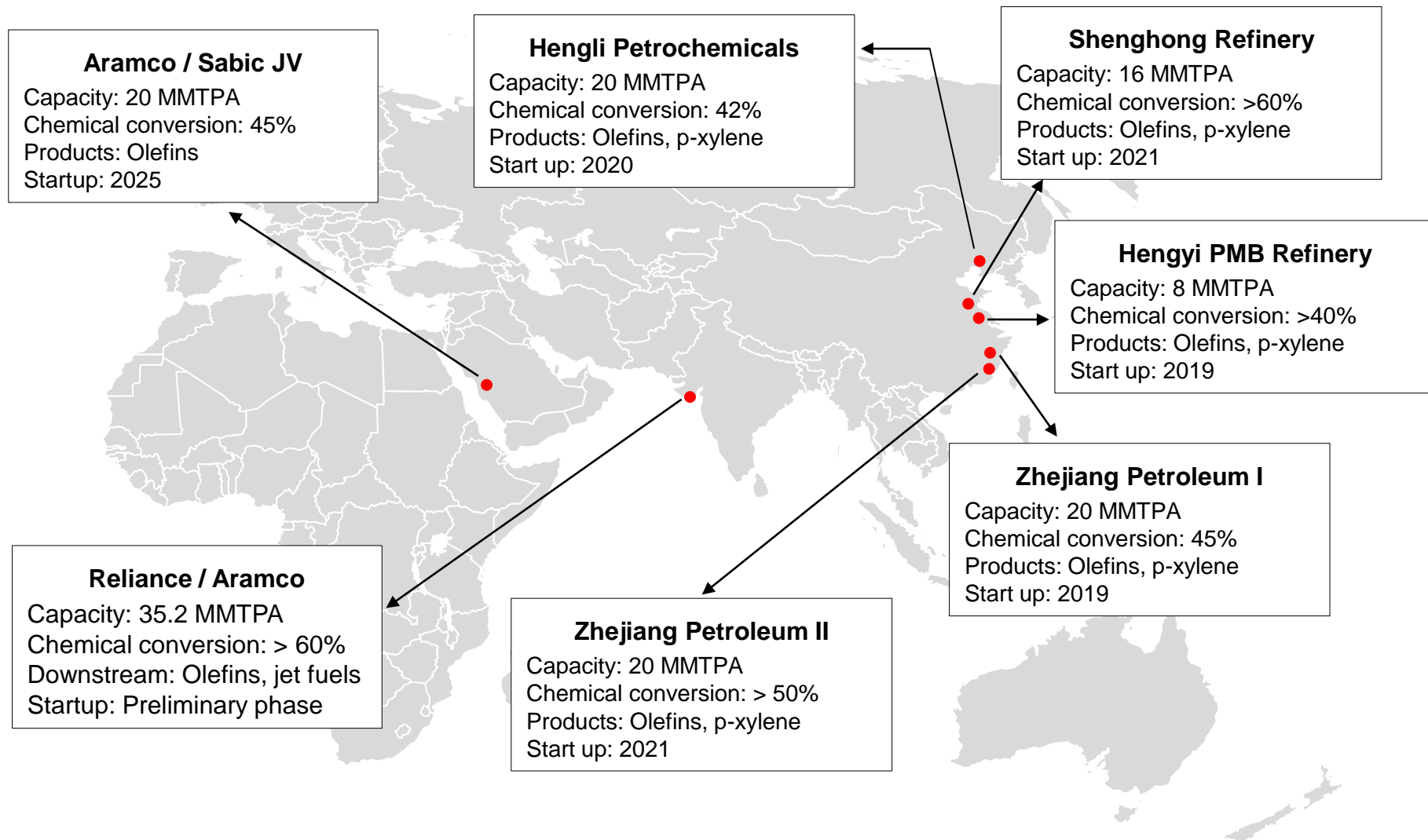


Butadiene prices reflect the current feedstock imbalances

U.S. Gulf Coast Average Price
(USD/ton)



Crude-to-chemicals projects could address some such imbalances in the future



Polymer market trends are a mixed bag

Polyethylene

- Demand's holding up led by food and other packaging
- Margins for ethane-based PE plants are down

Polypropylene

- Sharp declines led by auto downturn
- Project cancellations are likely

PVC and Vinyls

- Declining demand led by fall in construction
- Falling cost advantage in North America

Specialty polyolefins

- Varies widely by segment
- Some are doing well, e.g. adhesives and others are impacted



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Key questions in petrochemical and polymer markets

1

What segments are benefiting due to COVID-19?

2

How is COVID-19 impacting corporate performance?

3

What is likely to happen to trade flows?

4

How should we think about recovery in chemicals and petrochemicals?

5

What happens to sustainability and recycling going forward?

ADI webinar series on oil & gas in the “perfect storm”

April 17	Midstream (pipelines, gas processing, NGLs)	May 21	Industrials & OEMs - How to prepare for the downturn?
April 23	Downstream (refining and fuels)	May 28	Capital projects and engineering, procurement, and construction (EPC) in the oil & gas downturn
April 30	Natural gas and LNG	June 04	What will the new "normal" look like in oil and gas?
May 7	Petrochemicals and plastics	June 11	Renewable and low-carbon power markets in a post-COVID world
May 14	Power and utilities	June 18	Oilfield services: Survival outlook in the oil & gas downturn

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