CPMA

Chemicals & Petrochemicals Manufacturers' Association, India

APIC 2020

ASIA PETROCHEMICAL INDUSTRY CONFERENCE

28TH - 29TH MAY, 2020 NEW DELHI, INDIA

(POSTPONED DUE TO COVID-19)

INDIAN PETROCHEMICAL INDUSTRY

COUNTRY PAPER FROM INDIA

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Message from Mr. Kamal P. Nanavaty
President, CPMA

The APIC 2020 as you know was to be held in May 2020 but got postponed. Its date and venue is being finalized in consultations with CPMA members and APIC steering committee members from Korea, Malaysia, Japan, Thailand, Tai wan and Singapore. The annual report is published every year by each APIC nations for circulation among all the delegates from across the globe at APIC. In India, the report is the reference book for petrochemical industry representing all its segments with the review and outlook together with detailed statistics on capacity, production, import, export, demand etc.

It is indeed my privilege to launch the report now as the same got ready despite APIC 2020 did not take place due to covid-19.

I am sure that you would find the report useful and serve as reference for the petrochemical products. I may mention here that India has a vast potential for petrochemical industry to grow when we see the demand in comparison with Europe, Gulf countries, China, South East Asia and America. This may also be gauged from the fact that India imports large volume of petrochemical products. Govt. of India has identified this industry as the focus industry which can contribute significantly to GDP growth in India.

Over the years, CPMA enjoys the status of VOICE of Petrochemical Industry in the country with a credible contact point for the Government on all matters relating to the petrochemical industry and an industry apex body which has been proactively safeguarding the interests of the domestic petrochemical industry in India. In order to facilitate policy regime which ensures sustainable growth, CPMA has been striving to lead advocacy initiatives.

Due to the positive role played by plastics during COVID, the aggressive stance of policy makers to phase out SUP is now taking a back seat. To safeguard the interest of the industry for its sustainable growth, CPMA has now become the apex forum in India. It has affiliations with national trade bodies namely FICCI, CII and other related associations etc.

Today the Indian economy is a US$ 2.7 Trn and Govt has targetted to make it a US$5Trn economy by 2024-25 with manufacturing contributing US$ 1 Trn. Petrochemicals have app 6% share in manufacturing today. If same share is to be maintained in US $ 5.0 Trn, then the petrochemical manufacturing has to grow at 15% pa till 2024-25.

The emergence of electric vehicle which may drastically change the fuel demand would give rise to altogether new concept of Oil to Chemicals for our industry.

I would specifically mention about the impact of outbreak of corona virus across the Globe. India too has witnessed huge impact on the industry.

Building competitiveness with innovation to respond quickly to these shocks is the key and I am sure that we all shall emerge stronger from the crisis.

My best wishes to you and your families. Stay safe, stay healthy.

Thank you.

Mr. Kamal P. Nanavaty
President, CPMA

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SECTION 1

THE INDIAN ECONOMY

The Indian Economy: Review and Outlook

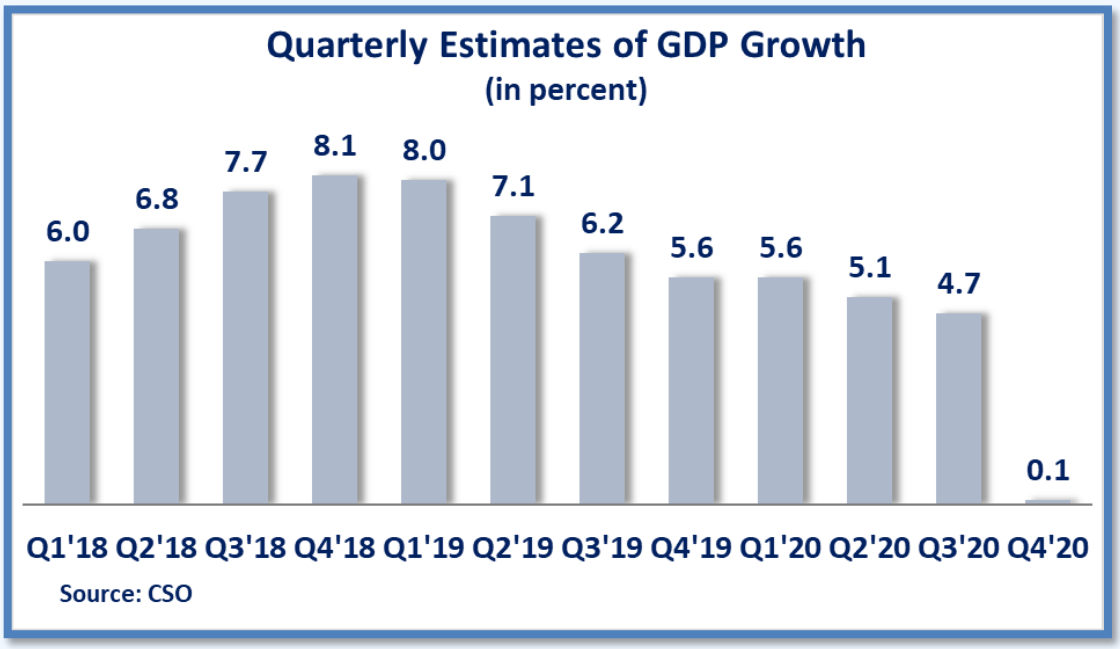
The Indian Economy Review of 2019-20 - Snapshot of Key Indicators

I. GDP Growth

The country's quarterly economic growth slowed to a near seven-year-low in the October-December period of 2019-20, dragged down by contraction in manufacturing and electricity, reinforcing the view that more measures are needed to help the economy navigate choppy waters, especially with the coronavirus threat looming.

Data released by the National Statistical Office (NSO) showed GDP (gross domestic product) grew by 4.7% in the December quarter, slower than the upwardly revised growth of 5.1% in the previous quarter and below the downwardly revised 5.6% in the December quarter of 2018-19.

Figure 1: Quarterly GDP Growth (in percent)



The October-December GDP growth of 4.7% is the slowest in 27 quarters according to official data and slowest since the 4.3% expansion in the January-March quarter of 2012-13. In the fourth quarter analysts have forecasted the growth to be around 0.1%.

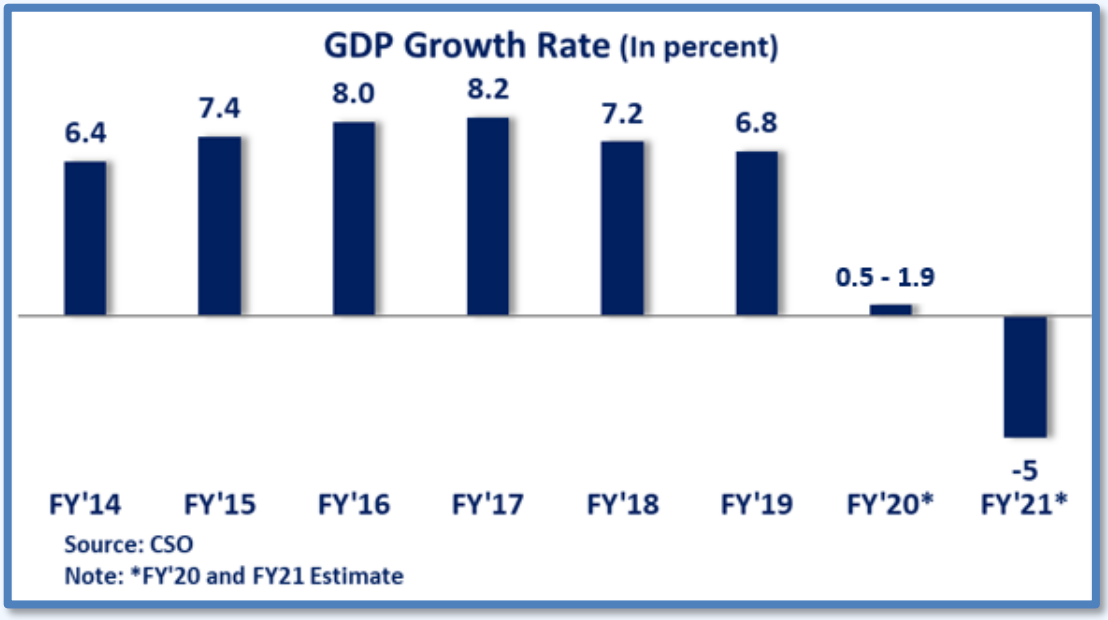
The farm sector was the mainstay of growth, growing by a steady 3.5% during the December quarter compared to 2%. The manufacturing sector contracted 0.2% compared with a 5.2% expansion in the year – earlier quarter but a decline of 0.4% in the previous quarter. Based on the expenditure method, robust and double-digit growth in consumption along with the higher government expenditure has driven the overall GDP growth in Q3-FY20.

However, contraction in gross fixed capital formation (GFCF) has limited the upside. The investment activity, as measured by GFCF (as % of GDP) declined to 26.1% in Q3-FY 20, compared to 29.1% in the corresponding quarter a year ago. The decline in growth in GFCF has been significant at 3.3% in Q3-FY20 as against a robust growth of 16.3% seen in Q3-FY19. GFCF is a proxy for investment.

The RBI also aggressively cut rates to support growth and has indicated the willingness to do more if needed.

Given the challenges that the businesses and people are facing currently, the Indian economy is most likely to experience a lower growth during the last quarter of the current fiscal. In case the spread of corona virus continues, growth may remain subdued in the first quarter of FY 20-21 as well. Most multilateral agencies and credit rating agencies have therefore revised their 2020 and 2021 growth projections for India keeping in view the negative impact of coronavirus-induced travel restrictions, supply chain disruptions, subdued consumption and investment levels on the growth of both global and the Indian economy. The GDP growth estimate for 2019-20 has been revised downward by many international agencies and even the government apart from Indian economic agencies. It is estimated that growth for FY20 would be around a meagre 0.5% or 1.9%.

Figure 2: India's GDP Growth (year-on-year in percent)



Foreign research houses have yet again rung a death knell on India's economic growth. While Goldman Sachs and Nomura separately estimated real GDP growth to shrink 5% in FY21, US investment management firm Bernstein projected an even sharper negative growth of 7%. In absolute numbers, India's national output will shrink by as much as $ 96 bn (Rs 7.3 lakh crore).

It means, if in FY20 real GDP (calculated using base year 2011-12) stood at $ 1945 bn Rs 147 lakh crore, this fiscal it could settle at $ 1839 (Rs 139 lakh crore). The sectors which are likely to register growth rate of over 7.0% are construction, public administration, defence and other services, manufacturing, electricity, gas, water supply and other utility services and financial, real estate and professional services. Similarly, nominal GDP (calculated at current prices) and the often-used metric stood at $ 2699 bn (Rs 204 lakh crore) in FY20.

Assuming a 5% negative growth in nominal terms will result in domestic output shaving off nearly $ 132 billion (Rs 10 lakh crore) taking GDP to $ 2567 bn (Rs 194 lakh crore) in FY21. Worryingly, this time, if the negative growth forecasts turn out to be true, India will see the harshest recessions it has ever experienced.

While a recession is usually defined as contraction in real gross value added for two consecutive quarters, in India Inc, contraction in gross value added for three consecutive quarters has been common since 2008-09. This was not the case earlier. If the fourth quarter also records a contraction then this would be the most prolonged recession in 20 years.

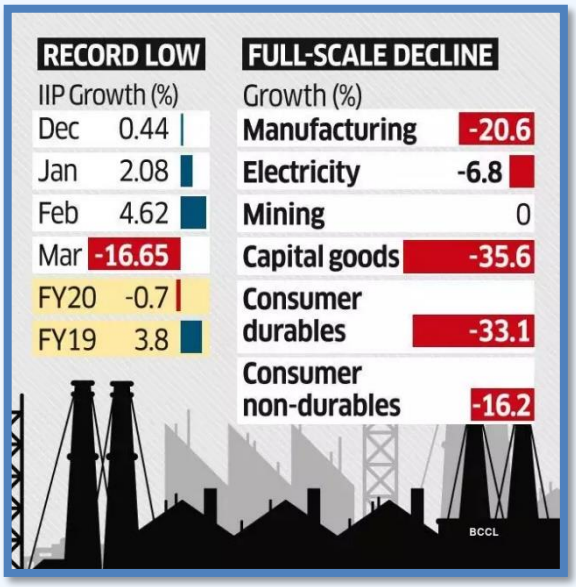
During the current quarter (Q1), Goldman pegged an unusual fall in GDP at 45% over the previous quarter. Earlier, it projected the decline to be 20%. The good news is, it expects an equally sharper rebound Q2 at 20% over, and Q3 and Q4 at 14% and 6.5%, respectively.

It was the deceleration in the manufacturing sector – the dominant component of industry – that deepened this slowdown, due to weak domestic and external demand. Private consumption, in particular, is at serious risk from the COVID-19 pandemic, notwithstanding improved rabi prospects and the recent rise in food prices, and the rationalization of personal income tax rates in the Union Budget 2020-21 along with measures to boost rural and infrastructure spending. Aggregate demand is expected to be impacted adversely by likely recession in the global economy, caused by disruptions in global supply chains, travel and tourism, and lockdowns in many economies. Domestic production will also be impacted by the nation-wide lockdown. In the near-term, the challenge is to mitigate the adverse impact of COVID-19.

II. IIP – Index of Industrial Production

India's industrial output, measured in Index of Industrial Production (IIP), expanded 2% during January 2020, the fastest in six months. The uptick in factory production came on the back of surge in mining and power generation sectors. This was expected as production in eight core sectors grew by 2.2% in January. According to government data, output in manufacturing sector grew at a rate of 1.5% in January, as opposed to a rise of 1.3% in the corresponding month a year ago. Electricity generation rose 3.1% in January 2020, against 0.9% growth in January 2019. Mining sector saw a growth of 4.4% in production during January 2020, compared to a rise of 3.8% a year ago. In terms of industries, eleven out of the twenty-three industry groups in the manufacturing sector have shown positive growth during the month of January 2020 as compared to the corresponding month of the previous year.

Figure 3: Index of Industrial Production (IIP)



The IIP growth in February 2020 was revised slightly upwards to 4.6% from the initial 4.5%. This was led by upward revisions for primary goods (to +8.3% from +7.4%), consumer non-durables (to +1.5% from +0.0%), consumer durables (to -5.8% from -6.4%), and capital goods (to -9.5% from -9.7%), but was partly offset by the downward revision in growth of intermediate goods (to +19.4% from +22.4%) and infrastructure/construction goods (to -0.1% from +0.1%).

In sectoral terms, electricity (to +11.5% from +8.1%) recorded an upward revision, partly offset by downward revision in mining (to +9.7% from +10.0%) and manufacturing (to +3.1% from +3.2%) in February 2020.

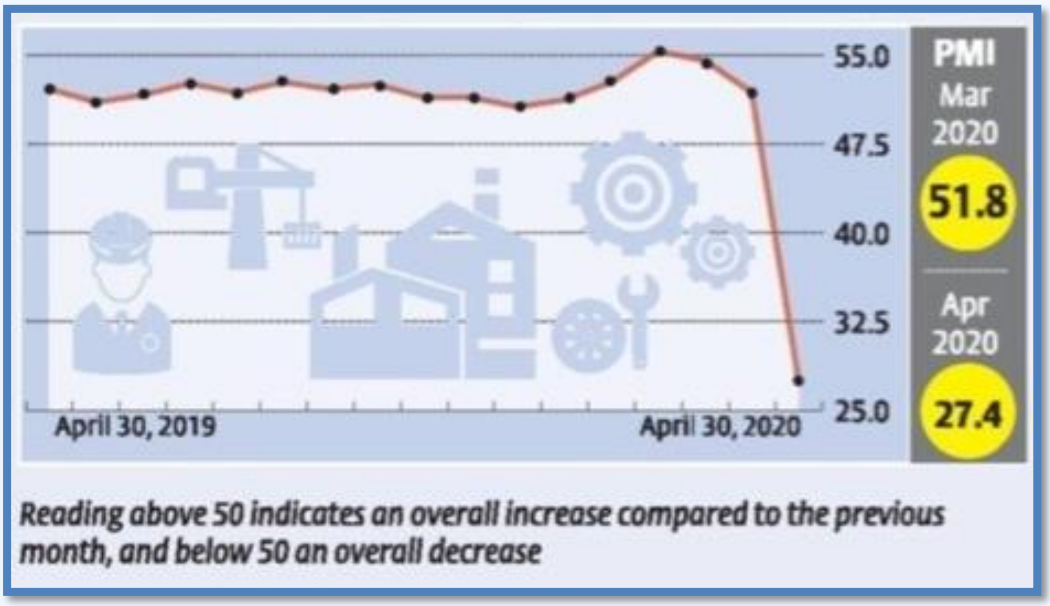
After reporting growth for four consecutive months, the IIP recorded a sharp year-on-year (YoY) contraction of 16.7% in March 2020, following the commencement of the lockdown related to the outbreak of the Covid-19 pandemic. India's factory output contracted a record 16.7% in March with economic activity coming to a standstill due to the nationwide lockdown imposed to contain the spread of the coronavirus outbreak.

The first phase of the lockdown began March 25, a loss of one week of production. Industrial production had risen 4.62% in February. For all of FY20, industrial production contracted 0.7% against 3.8% expansion in FY19. The country was locked down all of last month.

April could be worse because that was a complete month of lockdown. Only units manufacturing essentials were working last month. Manufacturing contracted 20.6% in March while electricity generation shrank 6.8%, compared with 11.5% growth in February. Mining output was flat in March after it grew 9.7% in February.

The Purchasing Managers' Index (PMI) for manufacturing and services slumped to record lows in April, stoking fears that the economy is headed for a recession as the nationwide lockdown shut businesses and kept consumers indoors.

Figure 4: Purchasing Managers' Index (PMI)

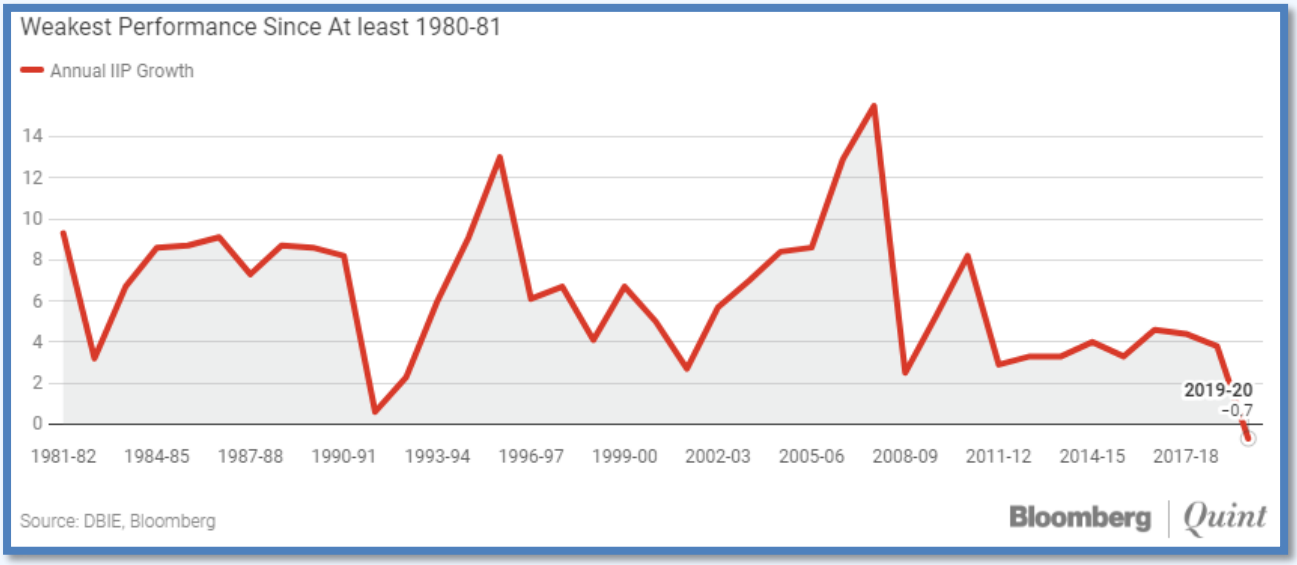


All three key sectors, mining, manufacturing and electricity saw a contraction, although the fall in manufacturing was the steepest.

- Manufacturing output contracted by 20.6% in March compared to growth of 3.2% in February.
- Electricity generation contracted by 6.8% compared to growth of 8.1% in February.
- Mining output was flat in March after it grew by 10% in February.

IIP growth contracted for the first time since at least 1980-81. March factory output dropped most in 39 yrs. Industrial output over the April 2019- March 2020 period contracted by 0.7% as compared to a growth of 3.8% in the previous financial year.

Figure 5: Industrial output contracted in FY 20



Industrial production was weak even before the spread of Covid-19 disrupted economic activity. IIP grew by 0.9% between April 2019- February 2020 on an annual basis, but the sharp fall in March led to a contraction in output for the full year. Industrial output, as classified by the end-use of goods, also showed a contraction in all categories. Capital goods and consumer durables saw the steepest fall in output.

- Primary goods output contracted by 3.1% in March compared to growth of 7.4% in February.
- Intermediate goods output growth fell by 18.5% compared with 22.4% growth in the previous month.
- Capital goods output contracted by 35.6% in March against a contraction of 9.7% in the previous month.
- Contraction in consumer durables continued by 33.1% compared to a fall of 6.4% from February.
- Consumer non-durables output contracted by 16.2% after showing no growth in February.
- Infrastructure and construction goods output contracted by 23.8% compared with 0.1% rise in February.

Not surprisingly, the extent of contraction is the most severe in the case of capital goods and consumer durables, highlighting the pause in investment intentions and deferral of non-essential consumption. Even consumer non-durables, which includes several essential items, witnessed a contraction in output in March 2020, as the lockdown interrupted production in several factories.

Table 1: Use based Classification of (IIP)

Trend in IIP Growth										
		Sectoral			Use-Based Classification					
	IIP	Mining	Manufacturing	Electricity	Primary	Capital	Intermediate	Infrastructure/ Construction	Durables	Non-Durables
Weight	100%	14.4%	77.6%	8.0%	34%	8.2%	17.2%	12.3%	12.8%	15.3%
Month										
Feb-19	0.2%	2.2%	-0.3%	1.3%	1.3%	-9.3%	-5.0%	1.9%	0.9%	5.0%
Mar-19	2.7%	0.8%	3.1%	2.2%	2.6%	-9.1%	12.4%	5.1%	-3.2%	1.4%
Feb-20	4.6%	9.7%	3.1%	11.5%	8.3%	-9.5%	19.4%	-0.1%	-5.8%	1.5%
Mar-20	-16.7%	0.0%	-20.6%	-6.8%	-3.1%	-35.6%	-18.5%	-23.8%	-33.1%	-16.2%
FY2019	3.8%	2.9%	3.9%	5.2%	3.5%	2.7%	0.9%	7.3%	5.5%	4.0%
FY2020	-0.7%	1.7%	-1.3%	1.1%	0.8%	-13.7%	8.8%	-4.0%	-8.4%	0.5%
Source: Central Statistics Office (CSO)										

Overall, the contraction in the IIP widened to 3.8% in Q4 FY2020 from 1.4% in Q3 FY2020. With the YoY performance of several lead indicators of manufacturing and services portraying an unfavourable trend in the just-concluded quarter, driven by the Covid-19 related disruptions, GDP growth is expected to have declined to 2.0% in Q4 FY2020 from 4.7% in Q3 FY2020, despite the anticipated improvement in agricultural GVA growth. In cumulative terms, the IIP recorded a mild 0.7% contraction in FY2020, in contrast to the 3.8% growth in FY2019, led by the performance of capital goods (to -13.7% from +2.7%), infrastructure/construction goods (to -4.0% from +7.3%), consumer durables (to -8.4% from +5.5%), primary goods (to +0.8% from +3.5%), and consumer non-durables (to +0.5% from +4.0%), which offset the significant improvement in the expansion of intermediate goods (to +8.8% from +0.9%).

With the year-on-year performance of many lead indicators of manufacturing and services portraying an unfavourable trend in the just-concluded quarter, driven by the Covid-19 related disruptions, GDP growth is expected to slide to 2% in Q4 FY20 from 4.7% in the previous quarter, despite the anticipated improvement in agricultural gross value-added growth in that quarter.

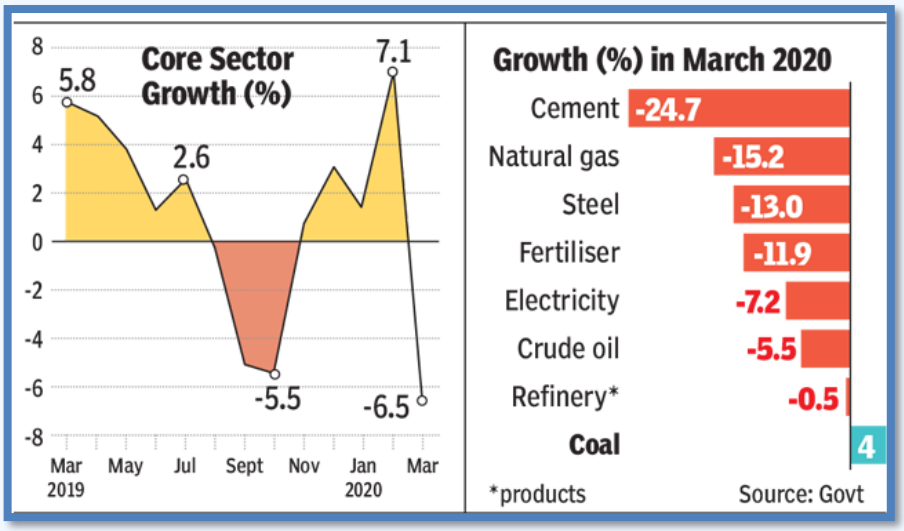
As per Ministry of Statistics and Programme Implementation, the growth numbers could be revised as many units are still closed and had not responded yet.

Early indicators for April 2020 have confirmed a sharper downtrend in economic activity, given the impact of the lockdown, such as the contraction of ~24% in electricity generation and ~11% in the output of Coal India Limited (CIL). With manufacturing activity expected to have plunged in that month, the performance of the IIP is set to deteriorate sharply in April 2020.

III. Core Industries Performance

The eight core sector industries, which account for over 40% of the index of industrial production, slumped 6.5% in March — the steepest monthly fall since the series was constructed in 2011-12 — as the deadly coronavirus severely hit output across sectors and highlighted the pain ahead for the industrial sector. While the same was recorded at a 19-month high in the previous month of February 2020 growing at 7%. Core sector's monthly fall in March was biggest in 8 years.

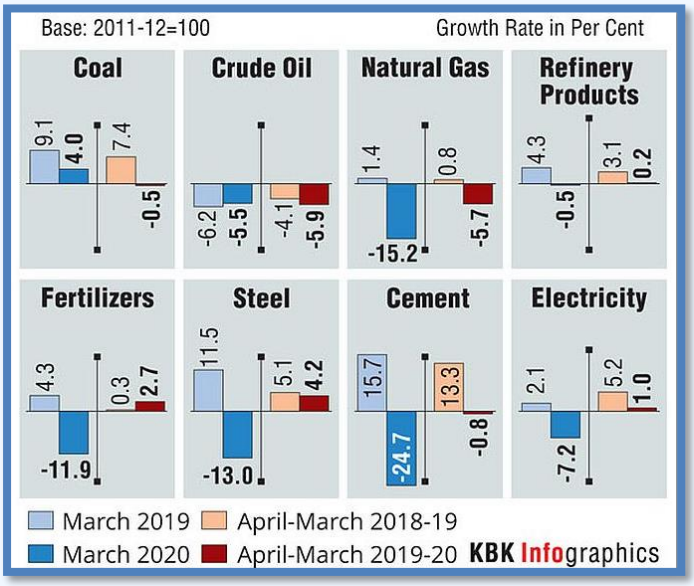
Figure 6: Core Industries Growth Rate (in percent)



Coal was the sole segment that recorded growth, as the remaining seven saw lower production with cement, steel and fertiliser reporting double-digit decline. Although the nationwide lockdown started in the last week of March, several states had taken measures before that and companies had begun readjusting their production, factoring in the spread of the virus. During April-March 2019-20, core industries recorded 0.6% growth against 4.4% in 2018-19.

Experts had warned last month that a steep drop would arrive soon. Now, they fear the hit to production will be larger than anticipated. Several multilateral agencies -- including the IMF and World Bank -- as well as rating agencies -- like Moody's, Fitch and S&P -- have significantly slashed India's growth projection for 2020-21 due to coronavirus outbreak.

Table 2: Core Industries Cumulative Growth Rate (in percent)



For instance, the lockdown curtailed the demand for electricity by 24% on a year-on-year (YoY) basis in April, according to the official data

Table 3: Core Industries Growth Rate (in percent)

Growth in Index of Core Industries	Index of Core Industries	Coal	Crude Oil	Natural Gas	Refinery Products	Fertilizers	Steel	Cement	Electrcity
Weight	**100.00%**	**10.33%**	**8.98%**	**6.88%**	**28.04%**	**2.63%**	**17.92%**	**5.37%**	**19.85%**
Month									
Jan-19	1.5%	2.0%	-4.4%	6.2%	-2.6%	10.5%	5.5%	11.0%	0.8%
Feb-19	2.2%	7.4%	-6.2%	3.7%	-0.7%	2.5%	4.9%	8.0%	1.2%
Mar-19	5.8	9.1%	-6.2%	1.3%	4.3%	4.2%	11.4%	15.8%	2.2%
Jan-20	1.4%	7.0%	-5.2%	-9.1%	1.9%	-0.1%	-1.4%	5.1%	3.3%
Feb-20	7.1%	11.2%	-6.4%	-9.5%	7.4%	2.9%	6.3%	7.8%	11.7%
Mar-20	-6.5%	4.0%	-5.5%	-15.1%	-0.4%	-11.8%	-13.1%	24.7%	-7.2%
FY2019	4.4%	7.4%	-4.1%	0.8%	3.1	0.4%	5.1%	13.3%	5.2%
FY2020	0.5%	-0.4%	-5.9%	-5.7%	-5,7%	2.6%	4.2%	-0.9%	1.0%

Source: Index of Eight Core Industries, Central Statistics Office (CSO)

This is the sharpest monthly decline since April 2005. Economists warned that the core sector index paints a grim picture for IIP and the situation could deteriorate in April, when there was a nationwide lockdown. The initial 40-day lockdown has stalled economic activity but now the Centre has allowed some manufacturing units to restart, while there are expectations that there will be staggered exit from the lockdown.

IV. Balance of Payments

Balance of payments stood at a surplus of $21.6 billion in Q3 of 2019/20 compared with a deficit of $4.3 billion a year ago, data showed. However, the surplus ballooned from $5.1 billion seen in Q2. The Balance of Payments position had improved to USD 433.7 billion by September, 2019 from USD 412.9 billion of forex reserves in March, 2019. India' s current account deficit (CAD) narrowed further in the October-December quarter on the back of a contraction in the trade deficit and rise in net services receipts. The CAD declined to 0.2% of gross domestic product in the three months, the third quarter of the 2019/20 fiscal year, from 2.7% in the same period a year before. On a quarterly basis, it shrank from 0.9% of GDP in the second quarter.

V. FDI

Even before the COVID-19 pandemic, at the height of the trade war with China, US President Donald Trump had ordered US companies to move their factories out of China. In fact, even before his order, many US giants such as Apple, fashion designer Steven Madden, toymaker Hasbro and L Brands, which owns Bath & Body Works had announced plans to substantially reduce their dependence on Chinese supply lines.

Apple has already announced that it will invest $1 billion along with its partner Foxconn, the Taiwanese contract manufacturer that makes most Apple products, in India. There were also reports that Hasbro is looking at India as a potential location for its next factory.

India’s large domestic market makes it an attractive FDI location as companies can build economies of scale in the local market and then leverage this to export their products around the world.

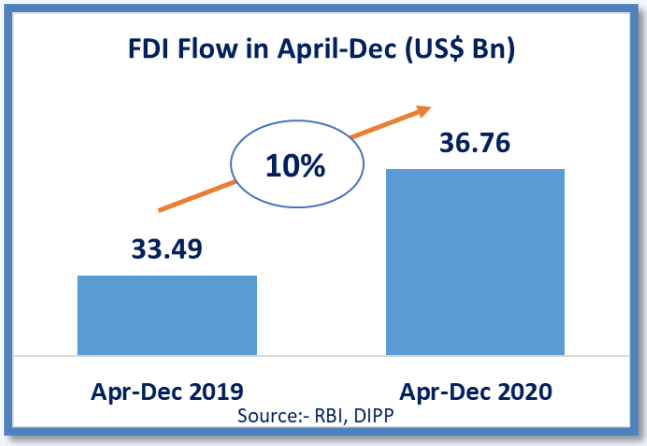
India will, thus, offer significant advantages to foreign investors who relocate their factories for making mobile phones, electronic goods, pharmaceuticals, automobile components and toys, among other things.

The government on 16th May 2020 announced a slew of measures to promote indigenization of defence production under its 'Make in India' initiative, including raising the foreign direct investment (FDI) cap from 49% to 74% via the automatic route. India allows 100% FDI in greenfield, or new, pharma projects under the automatic route. For brownfield pharma, or investments in existing companies, up to 74% FDI is allowed under the automatic route and approval is required beyond that.

Moreover, FDI in brownfield pharmaceuticals, under both automatic and government approval routes. India, however, allows FDI up to 100% under the automatic route for manufacturing medical devices.

India received a USD 27.2-billion foreign investment in the first half of 2019. Foreign direct investment into India dipped marginally by 1.4% to USD 10.67 billion (about Rs 76,800 crore) during October-December period of 2019-20, according to government data. Inflow of foreign direct investment (FDI) during October-December of 2018-19 stood at USD 10.82 billion. FDI inflows in July-September period of the current financial year stood at USD 9.77 billion. During April-December period 2019-20, foreign investments into the country grew 10% to USD 36.76 billion as against USD 33.49 billion in the same period of 2018-19, according to the data.

Figure 7: FDI Inflows



Sectors which attracted maximum foreign inflows during the nine-month period include services (USD 6.52 billion), computer software and hardware (USD 6.35 billion), telecommunications (USD 4.29 billion), automobile (USD 2.50 billion) and trading (USD 3.52 billion). Singapore continued to be the largest source of FDI in India during April-December period of the current financial year with USD 11.65 billion investments. It was followed by Mauritius (USD 7.45 billion), the Netherlands (USD 3.53 billion), Japan (USD 2.80 billion) and the US (USD 2.79 billion). FDI is important as the country requires major investments to overhaul its infrastructure sector to boost growth.

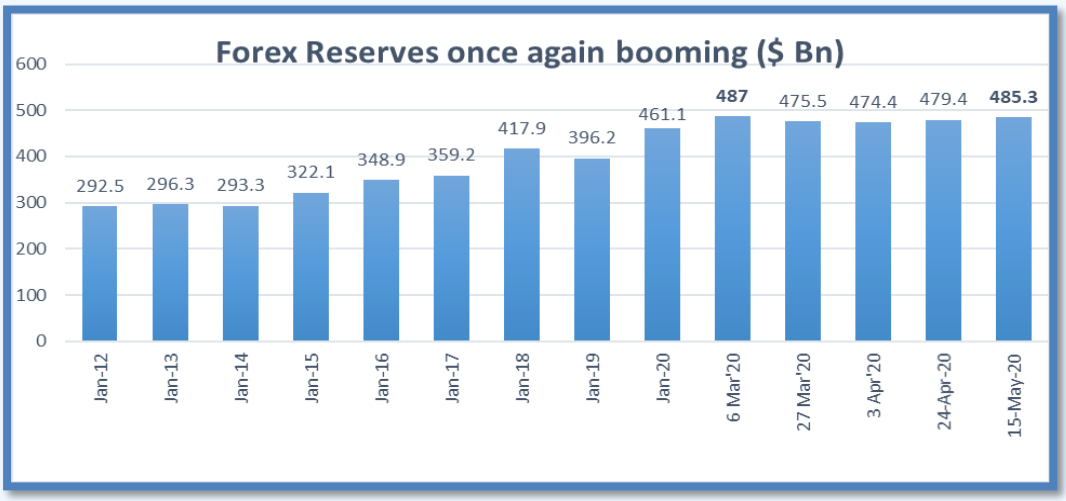
VI. Forex Reserves

The country's foreign exchange surged by $5.69 billion to reach an all-time high of $487.23 billion in the week to March 6, 2020 following an increase in foreign currency assets. However, the foreign exchange reserves fell for the first time in almost six months to $481.89 billion in the week ended March 13, after touching a record high of $487.23 billion

India's foreign exchange reserve fell the most in nearly 12 years by as much as $11.98 billion in the week ended March 20, as the central bank sold to arrest the slide of the rupee, which has fallen to a record low amid a flight of capital from emerging markets to safe havens.

India's foreign exchange reserve slumped $11.98 billion during the week ended March 20 to $469.9 billion. The last time that we saw such a huge fall in reserve was during the global financial crisis in 2008.

Figure 8: Forex Reserves



Forex reserve had dipped by $15 billion during the week ended October 24, 2008, when foreign investors pulled out huge amounts from the emerging markets on near collapse of major US financial institutions on account of a crisis in the US sub-prime market.

The increased risk aversion on account of the fallout of the new corona virus disease (COVID-19), that is emerging as a global Pandemic has resulted in foreign investors pulling out from the emerging markets including India.

It is estimated that they have pulled out close to $15 billion from the Indian markets in three weeks of March and nearly $6 billion during the week ended March 20 as the stock markets lost the most in value during the week. Economists said that the central bank has enough reserved and could sell up to 30 billion without unduly disrupting the external sector balance sheet as it had piled up reserve worth $63 billion in the last one year.

The Reserve Bank unveiled measures to ensure dollar liquidity in the market as foreign investor sell-off is expected in the coming weeks. Forex reserves is expected to drain further in the subsequent weeks as major financial markets fell sharply with investors rushing to park their money in safe haven assets such as the US treasury. The country's reserve position with the IMF dipped by USD 77 million to USD 3.542 billion, the data showed.

Expressed in dollar terms, the foreign currency assets include the effect of appreciation or depreciation of non-US units like the euro, pound and yen held in the foreign exchange reserves. The gold reserve, which was rising for the past many weeks, decreased by USD 1.610 billion to USD 27.856 billion in the week under review, the RBI data showed.

The special drawing rights with the International Monetary Fund (IMF) were down by USD 40 million to USD 1.409 billion.

Reserves have decreased by nearly $12 billion i.e. total reserves are now $469.9 billion, down from $481.9 billion. This could be an indication that the central bank might have taken measures to curb a sharp decline in the rupee because it witnessed sharp selling pressure. The reserves had touched a life-time high of $487.23 billion in the week to March 6 after rising by $5.69 billion. During 2019-20, the foreign exchange reserves had risen by almost $62 billion.

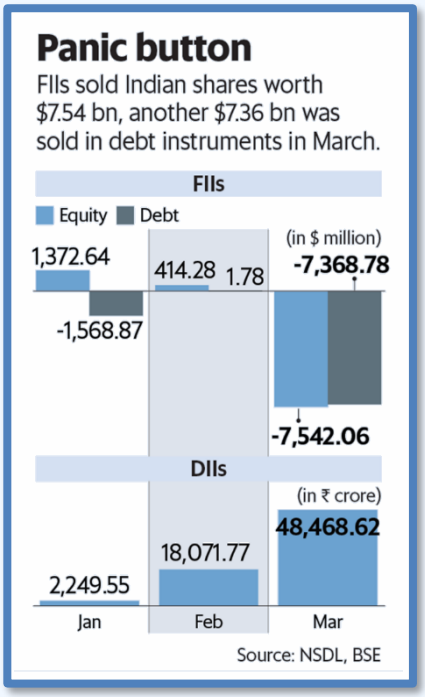
VII. FII Flow and Stock Market

Around $15 billion foreign money was taken out of Indian markets in equity and debt in March, making it the highest-ever sell off by foreign institutional investors in a month. Investors rushed to dump equities typically considered risky assets as Covid-19 spread across geographies.

The panic sell-off by foreign institutional investors (FIIs) led to massive liquidity outflow from domestic markets, dragging benchmark indices down by more than 25% in March. FIIs sold Indian shares worth $7.54 billion, while another $7.36 billion was sold in debt instruments in March. In 2020 so far, FIIs are net sellers of $14.69 billion, the highest annual outflow, both in equity and debt.

During the great financial crisis in 2008, FIIs had sold Indian equities worth $12.2 billion, the highest annual outflow since 1993. However, in 2008, FIIs were buyers of Indian debt worth $2.9 billion, hence net foreign outflow in that year was $9.28 billion. Before the Covid-19 outbreak, the biggest yearly outflow by FIIs from India was in 2018 when they sold $4.62 billion in equities and were net sellers of debt worth $9.36 billion, taking the total outflow to $13.98 billion.

Figure 9: Sharp FII sell off



The sharp sell-off by FIIs is primarily from quant funds, hedge funds, risk parity funds, which had grown massively, some on leverage, when global liquidity was easy.

Foreign portfolio investors (FPIs) have reduced their exposure to India's biggest listed companies significantly during the January-March period, bringing the foreign institutional ownership in Indian companies to a 25-quarter or six-year low.

At March-end, foreign institutional ownership for 308 firms in the BSE 500 index, which contribute at least 90% of India's market capitalization, slumped to 12.3%.

The sell-off by FPIs, somewhat on slow burn due to steep valuations and poor macros, intensified following the covid-19 outbreak, slashing stakes more sharply in FMCG and pharma stocks.

In the first three months of 2020, FIIs sold Indian shares worth $6.09 billion. FIIs had got into a massive sell-off mode in March to the tune of $7.88 billion in March, a month when Sensex dropped 26% in dollar terms and Indian currency depreciated.

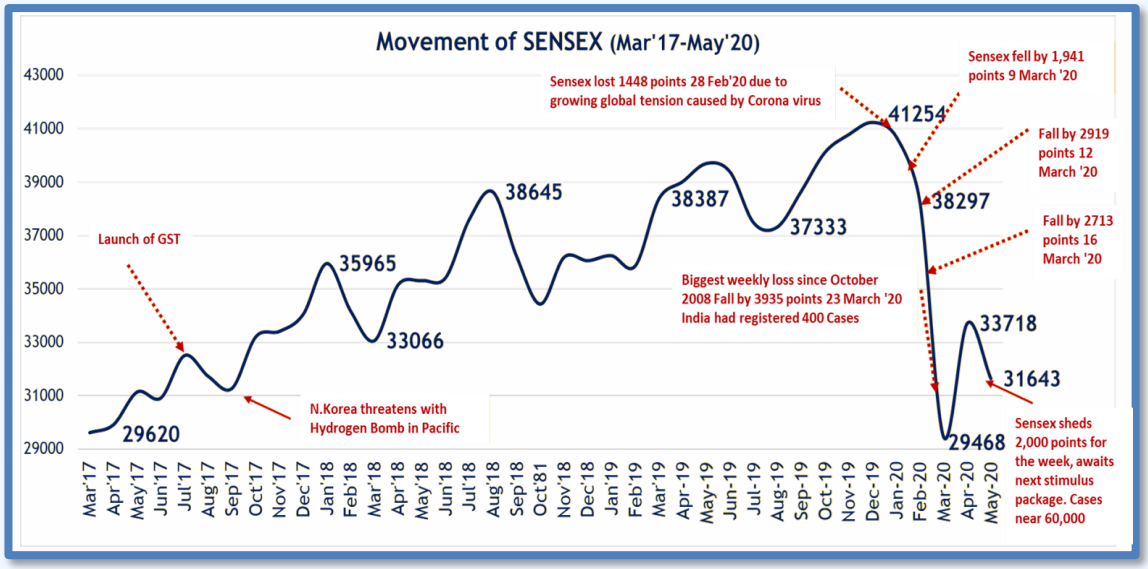
Continuing their selling spree for the second straight month, foreign portfolio investors (FPIs) withdrew a net $ 2 billion (Rs 15,403 crore) from the Indian capital markets in April amid the coronavirus crisis. As per the depositories data, FPIs pulled out a net sum of $ 0.9 billion (Rs 6,884 crore) from equities and a net $ 1.12 billion (Rs 8,519 crore) from the debt segment between April 1-30.

India-focused offshore funds and exchange-traded funds (ETFs) witnessed a net outflow of $5 billion in three months ended March 2020, making it the eighth consecutive quarter of withdrawal amid the coronavirus pandemic, according to a Morningstar report.

Foreign investors are expected to evaluate how India unlocks business activities post lockdown, number of cases in the country and economic growth path before taking long-term investment plunge into the country.

After pulling out massive funds in the previous two months, foreign investors have poured in over $ 2.24 billion (Rs 17,000 crore) into Indian equities in the first fortnight of May, largely driven by block deals.

Figure 10: Stock Market Performance



The Covid-19 outbreak has wreaked havoc on markets across the world, with investors fleeing to whatever haven they can find, exceeding exits from India during the financial crisis. Sensex fall of nearly 32% had been the fastest compared with historical dips. Be it the dotcom bust, 2008 crisis or Harshad Mehta scam, the falls were gradual extending over several months.

Indian equity market continued to remain under pressure amid massive sell-off by investors who feared that the pandemic of coronavirus may cause heavy damage to the economy. Bear stranglehold persisted as the central government and various states took major steps, including suspension of public transport such as railways, metro rail and bus services, and lockdown of 75 districts across the country to prevent the spread of the deadly virus.

The benchmark Sensex tumbled 3,934.72, or 13.15%, to end at 25,981.24 points, while the Nifty 50 index settled 1,100.85 points, or 12.70%, lower at 7634.60. The downfall of 10% or triggering of circuit breaker in Sensex. From Mt 40K to Mt 26K, this is how the market had fallen in just one month.

With the spread of Covid-19 continuing unabated and the fears of global recession increasing, Indian market crashed on March 23, 2020. The market closed much lower in percentage terms compared to the Asian and European markets, which indicated increased uncertainty regarding the spread of the virus in India after the government indicated that the country was in a crucial phase in its fight against the virus.

The erosion in aggregate market-capitalization of all BSE-listed shares stood at $688 bn, as it has dropped from $2051 bn on December 31, 2019, to $1363 bn, March 23, 2020. The loss was seven times India's revised FY20 fiscal deficit target of Rs 7.67 lakh crore ($101 bn).

The selloff wiped off $188 bn, which was more than the gross domestic product of Algeria, and 130 other countries the world over, as the benchmark equity indices logged their worst day in history. Nifty tanked 1,135 points to slip to a four-year low of 7,610, while Sensex plummeted 3,935 points to hit a three-year low of 25,981. As fear engulfs the nation, it is led to a major capitulation of domestic stocks, reviving memories of the 2008 market meltdown. The benchmark indices had lost 37% in just 44 sessions. Wiping off 40% India's annual GDP in just 44 days.

The pace of the fall had already eclipsed any market crash seen in the past. In 2008, the benchmark indices had fallen 66% in 200 sessions, while in 2011, they had lost 28% in 275 sessions. The selloff hurt everyone from the smallest investor to the biggest billionaire equally hard.

India dropped out of the list of the world's top 10 stock markets as the covid-19 pandemic led to a rout in global equities, ravaging valuations significantly this year. India's benchmark indices entered a bear market, and the rupee hit a record low against the dollar, indicating fragile economic activity.

Bloomberg data showed value of all shares traded, or aggregate market capitalization of India, fell 27.31% in dollar terms from the beginning of the year. India is no longer part of the $2-trillion market cap club, falling to the 11th spot in the league table with $1.57 trillion mcap. In January, India was ranked 10 with a market cap of $2.16 trillion, and was in the seventh spot while in January 2019, with an aggregate market cap of $2.08 trillion.

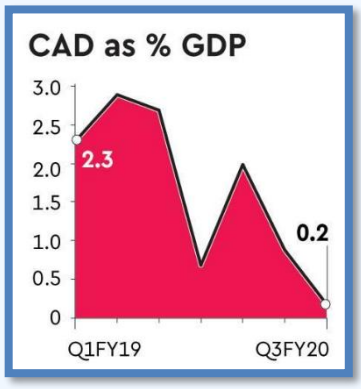
India tumbled out of the top 10 list on 23 March, when the benchmark indices saw one of the biggest one-day decline, with the Sensex losing 13.15%. India's aggregate market cap on the day was at $1.31 trillion in dollar terms, and ₹101.87 trillion in rupee terms. In rupee terms, aggregate market cap of all listed companies on Indian bourses has fallen 21.74% to ₹121.73 trillion so far this year from ₹155.54 trillion.

The Indian financial markets in May 2020 got boosted with liquidity, whether it be the US Fed or the Indian Government which announced stimulus in the form of credit expansion to various stressed parts of the economy. Hon'ble Prime Minister synthesized the mega economic relief package of nearly Rs. 20 lakh Crs. This move was to inject liquidity and keep afloat livelihood through targeted loans to MSMEs, farmers, migrant workers etc. The fiscal response was poor but monetary response was aggressive which may lead to heightened delinquencies in the financial sector due to ever increasing debt levels and or cause inflationary pressure. The stimulus is expected to bring in short to medium term stability but longer-term viability is still unclear.

VIII. Current Account Deficit

India's current account deficit (CAD) narrowed sharply to $1.4 billion or 0.2% of GDP in Q3 of 2019-20 from $17.7 billion (2.7% of GDP) in Q3 of 2018-19 and $6.5 billion (0.9% of GDP) in Q2 of 2019-20, the Reserve Bank of India said on Thursday. The contraction in CAD in Q3 was primarily on account of a lower merchandise trade deficit at $34.6 billion (against $49.5 billion in year ago quarter and $38 billion in the preceding quarter). On a balance of payment basis, the country's forex reserves saw net accretion of a robust $21.6 billion in the December quarter, thanks to the shrinking of CAD and robust net FDI and portfolio inflows that drove the capital account to a surplus of $22.4 billion.

Figure 11: Q2'19 CAD at 2.9% of GDP



In Q2FY20, capital inflows remained subdued (surplus was just $12 billion); despite the CAD being benign even then, the accretion to the reserves in Q2 was just $5.1 billion. In Q3FY19, the reserves actually depleted $4.3 billion.

As for the current quarter (Q4FY20), the CAD might again be relatively benign. Though merchandise trade deficit rose to a seven-month high of $15.2 billion, the fall in oil prices could potentially bring down import bill in February-March and curb the trade deficit.

However, the pull-out by FPIs from Indian markets in recent weeks could weaken the capital account. FPIs have sold Indian equities worth $1.3 billion since the beginning of the year on a net basis. At the same time, they have sold over $2.7 billion worth of Indian bonds in 2020 so far.

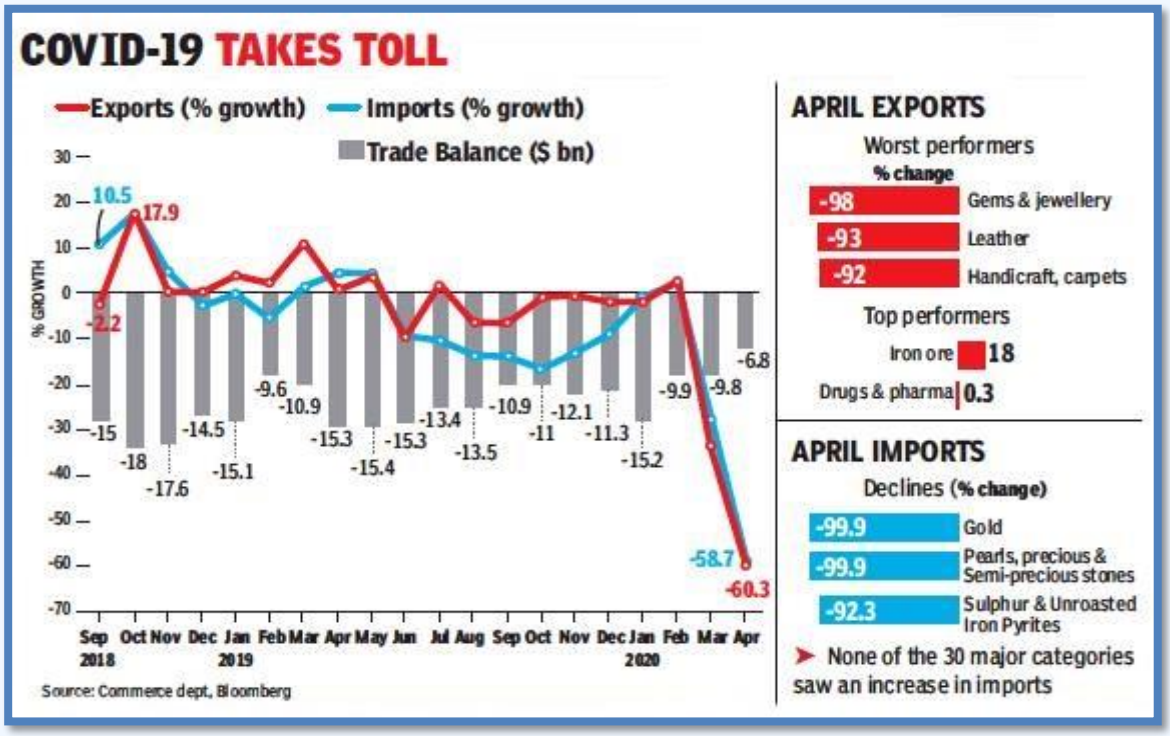
Net services receipts too increased in Q3FY20 to $21.9 billion compared with $20.4 billion in Q2. Private transfer receipts, mainly representing remittances by Indians employed overseas, increased to $ 20.6 billion in Q3FY20, up 9% from the level a year ago. As per RBI, net foreign direct investment at $10 billion was higher than $ 7.3 billion in Q3 of 2018-19. Foreign portfolio investment recorded net inflow of $7.8 billion in Q3 this fiscal as against an outflow of $2.1 billion in the year ago quarter – on account of net purchases in both the debt and equity markets.

Net inflow on account of external commercial borrowings to India was $3.2 billion as compared with $2 billion in Q3 of 2018-19. The current account is expected to move to surplus in the March quarter due to a plunge in crude oil prices, a key contributor to the deficit. The trade deficit narrowed to USD 6.76 billion. The trade deficit in April 2019 stood at USD 15.33 billion.

India's Trade

Coronavirus has battered Indian exports — which fell over 60% in April, the worst in almost 30 years — with the monthly value of outbound shipments at $10.4 billion being the lowest in 14 years. The lockdown, which halted almost all economic activity in the country, also resulted in a 59% slump in imports to $17.1 billion, the lowest monthly value since February 2009.

Figure 12: Trade Deficit at $6.27 billion



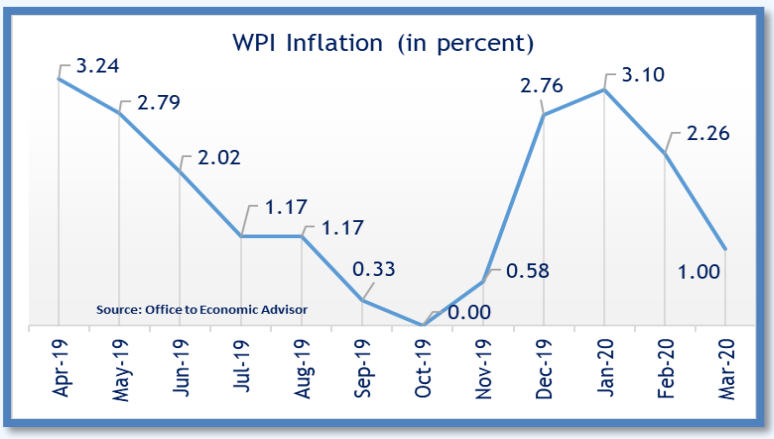
The pace of decline in exports was the worst since 1991 as data prior to that period was unavailable. The problem was so acute that 28 of the 30 major sectors saw a fall in exports, with drugs, pharma and iron ore being the sole exceptions. In case of imports, none of the 30 major sectors saw higher value of shipments, resulting in trade deficit narrowing to $6.8 billion in April, lowest in four years. Although some economic activity has begun, exporters from key sectors such as garments, engineering goods and gems/jewellery said May is unlikely to be better than the previous month.

The sector was the worst performer, with exports falling almost 99%. It also showed in imports, with gold, precious and semi-precious stone shipments almost wiped out at $2 million each, while silver imports crashed 59% to $104 million. The World Trade Organization (WTO) has projected global merchandise trade to drop between 13% and 32% in 2020 due to the pandemic.

IX. Inflation

As per the data released by the Commerce and Industry Ministry, wholesale price index (WPI) deflation in primary articles was 0.79% in April, as against an inflation of 3.72% in March. The fuel and power basket saw a deflation of 10.12% in April, against 1.76% deflation in the previous month. In view of the limited transactions of products in the wholesale market in April 2020 due to the spread of COVID-19, it has been decided to release the price movement of selected sub-groups/groups of WPI, following the principles of adequacy. All commodities WPI could not be computed for April-2020 due to non- availability of manufactured product group index. The price collection of manufactured products through personal visits of officials was suspended from 19 March due to the preventive measures and announcement of nationwide lockdown by the government to contain spread of covid-19 pandemic, the Department for Promotion of Industry and Internal Trade (DPIIT).

Figure 13: WPI Inflation (in percent)

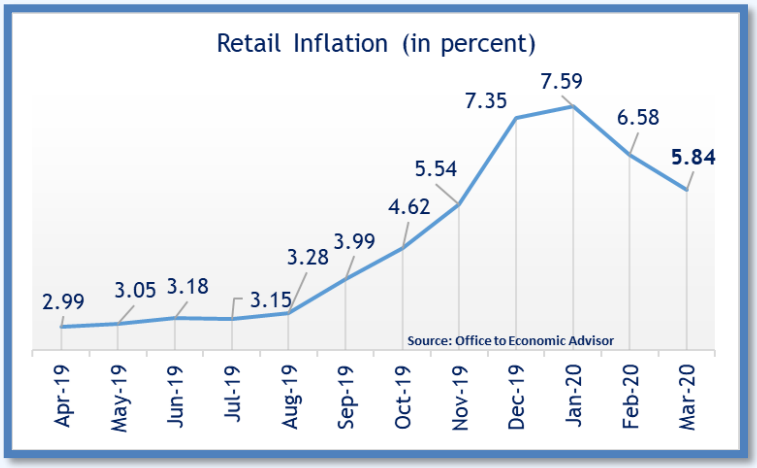


The data (ex-factory prices) was collected through electronic means of communications from selected factories and institutional sources. The Price Movement of these Sub-groups/Groups of WPI was worked out by taking the prices of only those items for which at least 25% of price quotations were reported from the selected manufacturing units.

The price indices of primary articles have been computed based on mandi prices of agricultural items; ex-mine prices of minerals; prices of crude petroleum and natural gas. The rate of inflation based on WPI Food Index decreased from 5.49% in March, 2020 to 3.60% in April, 2020. In March wholesale price inflation eased to a four-month low of an official statement said one per cent, from 2.26% in February, on sharp fall in prices of food and fuel items as demand slowed.

Price indices of fuel and power major group have been computed based on the price data reported from Ministry of Petroleum and Natural Gas, selected public sector undertakings (PSUs), Office of the Coal Controller and Central Electricity Authority.

Figure 14: Retail Inflation



Prices of manufacture of food products (-0.29%), pharmaceuticals, medicinal chemical and botanical products (-0.15%) and basic metals (-0.84%) provisionally declined, whereas prices of chemicals and chemical products (0.86%) and beverages (0.24%) provisionally increased in April compared to the previous month.

X. Rupee

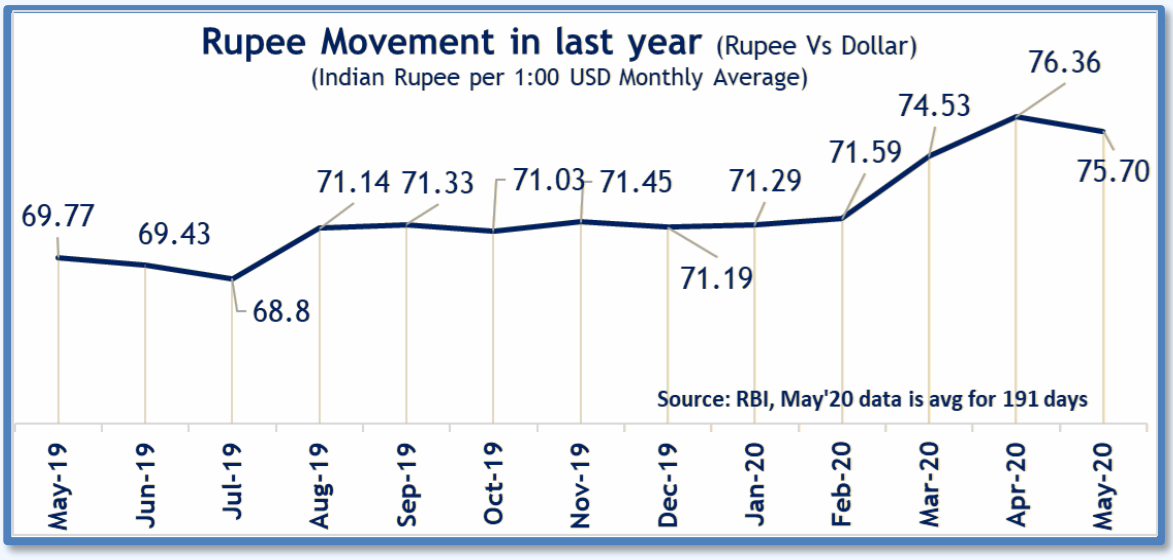
Emerging market currencies across the world have been on a slide as investors dump assets in their flight to safety. In the process, the demand for the US dollar has been surging across the word resulting in USD shortage.

Rupee witnessed high volatility indicating RBI intervention as the foreign exchange reserves had declined from the peak of $487.23 billion in the first week of March this year to $481.89 billion as on March 13, 2020. Over the last five years, India has had added $130 billion into its foreign exchange kitty. Clearly, the outflow of $11.3 bn (Rs 85,558 crore) from the equity and debt markets over the first three months of 2020 reflected in the rupee weakness.

There was another danger to rupee from the possible 'debt monetization' by the Indian government as it decided to give a big stimulus by borrowing from the RBI. The finances of the government were already constrained with fiscal deficit target at 3.5% of GDP in 2020-21. The government was most likely to overshoot the deficit by borrowing more to respond to the Covid-19 risks. While the US, Europe and other countries had already committed trillions of dollars to protect their economies, the response from the Indian government came around 15th May 18, 2020.

The rupee weakened past the 76/USD mark for the first time in history on 23rd March 2020, as the demand for dollars continues to shoot up amid high economic uncertainty. The rupee depreciated by more than 7% in 2020, with the bulk of its losses, a 4.1% slide, having occurred in March.

Figure 15: Rupee Movement in last one year



The dollar inflows into financial markets are often called 'hot inflows' because they get in and get out very quickly. When the dollar inflows come, the currency of the receiving country generally appreciates and gives a feeling of safety and security from any external shocks. However, when the outflow happens, the currency depreciates in quick succession, leaving the country in a vulnerable situation. The rupee which has maintained a level of Rs 70 for the last two years has depreciated to Rs 76.15 levels in just three months. In March alone, it has slipped from Rs 73 to Rs 76 against the US greenback.

Indian rupee appreciated slightly to trade around 75.6 against the USD on 19th May 2020, as global market sentiment was supported by positive results from the first human trial of Moderna's vaccine candidate to treat Covid-19. The Indian rupee will probably cut some of its losses against the dollar in the next year, according to strategists polled by Reuters, but it's likely to stay weak with other emerging-market currencies until the coronavirus pandemic subsides.

The rupee's path will largely depend on how successful the Indian government's steps are in containing the spread of COVID-19 in a country of more than 1.3 billion people, the second-most-populous in the world. The RBI may continue to step in to prevent excessive INR depreciation but is unlikely to alter the currency's inherent trend immediately. We will end up flowing with the emerging-markets space in the current mayhem.

Highlights of 2019-20

On the supply side, agriculture and allied activities imparted momentum to gross value added (GVA) in Q2 and Q3, buoyed by increases in kharif and horticulture production. The bumper rabi crop harvest and higher food prices during 2019-20 provided conducive conditions for the strengthening of rural demand. The transmission of past reductions in the policy rate to bank lending rates witnessed improvement with favourable implications for both consumption and investment demand. Reductions in the goods and services tax (GST) rates, corporate tax rate cuts in September 2019 and measures to boost rural and infrastructure spending were directed at boosting domestic demand more generally.

The government has initiated a host of reforms to put the economy back on track. It dramatically slashed corporate tax rates in September 2019 and announced work on infrastructure plans worth 1 trillion rupees was now under way, with the target ultimately expected to reach 3 trillion rupees.

On the financial front, the Reserve Bank of India (RBI) cut its key lending rate by a total of 135 basis points in 2019, which was good news for business borrowers. However, bank lending remains sluggish.

The economy had been sluggish in the last eight months because of a sharp slowdown in exports, part of a broader global problem, and a decline in industrial production. Private investment had been negligible and non-performing assets (NPAs) have risen substantially, making it difficult for banks to lend to micro, small and medium enterprises.

In 2019-20, the GDP growth slowed down, which contributed to an increase in the fiscal deficit mainly on account of (a) lower aggregate demand (denominator), (b) lower fiscal revenue due to lower economic activity, and (c) higher fiscal expenditure on account of the measures to address the economic slowdown. Thus, a considerable portion of the fiscal deficit deviation in 2019-20 could be attributed to cyclical factors. In such scenario, the inflationary impact of this deviation was largely subdued.

In the first quarter of 2019, India GDP grew by 5.8%, marking the slowest growth since the fourth quarter of FY13. The second quarter experienced a drastic fall in the GDP growth rate to 4.5%. The third quarter witnessed a slight improvement however still it was dragged down to a 27-quarter low. India's growth rate has been slipping for five quarters now.

Several international bodies like the International Monetary Fund (IMF) and the World Bank constantly slashed their growth estimates for the Indian economy, recording the lowest GDP growth rate in 26 quarters or six years. A fall in consumption, lack of private investments and sluggish exports are being blamed for sluggish GDP growth.

State of Economy before COVID in 2019-20

Macroeconomy

The government had carried out reforms such as providing banks with extra capital, introducing new bankruptcy rules to give extra protection to lenders, and consolidating the state-owned institutions that dominate the sector. Nonetheless, the banks remain fragile, amid a perception that the reforms have not been aggressive enough.

India jumped from 142 in 2014 to 63 in 2019 in ease of doing business rankings. However, India continues to trail in various parameters such as ease of starting business (rank 136), registering property (rank 154), paying taxes (rank 115), and enforcing contracts (rank 163). These parameters provide a scope for further improvement.

Government had also eased restrictions on foreign investment in certain industries in a bid to attract funds. On the financial front, the Reserve Bank of India (RBI) cut its key lending rate by a total of 135 basis points in 2019, which was good news for business borrowers. However, bank lending remained sluggish.

The deterioration in aggregate demand conditions in 2019-20, was exacerbated by contraction in investment, and moderation in government expenditure in H2. On the supply side, agriculture and allied activities accelerated, buoyed by the late surge in south-west monsoon rainfall and bountiful north-east monsoon precipitation. However, industrial growth decelerated, led by a slowdown in manufacturing activity. Services sector activity moderated, pulled down by a slowdown in construction; trade, hotels, transport and communication; and public administration, defence and other services.

Industrial performance

The industrial sector remained moribund, bound down by weak demand conditions, and hence weak pricing power. In the services sector, activity has been weakening through H2:2019-20 with high frequency indicators for January and February 2020 either moderating or declining, barring PMI, cement production and railway freight traffic. Public administration, defence and other services (PADO) remained robust in Q2 and Q3. However, during January-February 2020, center's revenue expenditure excluding interest payments and subsidies grew marginally. Index of Industrial Production Growth (IIP) was 0.6% during 2019-20 (April-November).

Private final consumption expenditure and gross fixed capital formation

Capital goods, signifying investment demand in the economy, shrank for the 12th month in a row in December. This was reflected in the Gross Fixed Capital Formation (GFCF) representing investment activity in the GDP data.

However, other lead indicators showed some signs of recovery. After hitting a six year low in August-October period, India Inc's business confidence picked up only modestly in November-January quarter, according think tank, National Council of Applied Economic Research (NCAER).

Private final consumption expenditure (PFCE) remained the mainstay of aggregate demand, with its share at 57.6% in H2:2019-20. The slowdown in PFCE in H2:2019-20 was caused by a combination of factors — weak rural demand due to depressed food prices/inflation in the previous two years; deceleration in rural wages; and downturn in labour-intensive exports which impacted rural consumption; and slowdown in urban consumption due to decelerating incomes.

GFCF growth turned negative in Q2 and Q3:2019-20. Consequently, the share of GFCF in GDP dropped to 30.2% in 2019-20 from 31.9% a year ago. Two key indicators of investment demand, viz., production and imports of capital goods have remained in contraction in January/February 2020 as well. Growth in government final consumption expenditure (GFCE) moderated in H2:2019-20 due to a sharp slowdown in Q4. During January-February 2020, revenue expenditure of the Centre grew by 3.9%.

Inflation

Food Inflation in India jumped to a 71-month high, increasing the wholesale price inflation (WPI) to 0.58% in November'19. The Consumer Price Index (CPI) based inflation increased from 3.7% in 2018-19 (April to December, 2018) to 4.1% in 2019-20 (April to December). The Wholesale Price Index (WPI) based inflation decreased from 4.3% in 2018-19 to 1.5% in 2019-20 (April to December). After remaining subdued for a considerable period, food inflation in India increased sharply by January 2020, driven by a spike in vegetable prices.

Exports

Net exports contributed positively to aggregate demand in H2:2019-20, with imports contracting more sharply than exports. The contraction in merchandise exports, which started in Q1:2019-20, accentuated in Q2, as the slump in shipment of engineering goods, gems and jewellery, cotton and handloom products, and rice became pronounced in the face of a prolonged slowdown in world trade and demand. The pace of overall export contraction moderated during Q3:2019-20, and eventually there was a turnaround in February, supported by petroleum, oil and lubricants (POL), engineering goods, electronic goods and chemicals.

Current Account deficit

The current account deficit (CAD) narrowed to 0.2% of GDP in Q3:2019-20 from 0.9% in Q2:2019-20 and from 2.7% in Q3 a year ago. The contraction in the CAD was primarily on account of a lower trade deficit and a rise in net services receipts. Services exports grew on the back of a rise in net earnings from software, travel and financial services. Remittances from overseas Indians were strong in Q3:2019-20. Net capital inflows exceeded the CAD in Q3:2019-20.

Foreign Direct Investments (FDI) and Foreign Portfolio Investors (FPIs)

Net foreign direct investment (FDI) flows at US$ 37.8 billion in April-January 2019-20 were higher than those a year ago, flowing mainly to manufacturing, communication, retail and wholesale trade, financial and computer services. Amidst growing risk aversion on fears of global recession in the wake of COVID-19 pandemic, foreign portfolio investors (FPIs) turned net sellers beginning February 18, 2020.

FDI had remained buoyant, rising by 28% between April and June 2019. The current account balance had remained between 2 to 3% of GDP. Exports had fallen in light of the global economic slowdown and the US–China trade war, while sluggish domestic growth has reduced import growth. In August 2019, the Finance Minister announced a series of measures designed to stimulate the economy including tax cuts on the super-rich and on corporate profits. In total, the stimulus package was worth US$20 billion.

GST Collection

During 2019-20 (April-February), the fiscal position of the central government deteriorated mainly due to a decline in gross revenue under corporation tax, reflecting mid-year cut in tax rates. GST collections were 89.5% of RE and 4.5% higher than a year ago. On the whole, direct taxes contracted by 3.3%, while indirect taxes grew barely by 1.6% in the first 11 months of the year, lower than the budget estimates (BE).

Rupee

The INR remained volatile during H2:2019-20 due to multiple factors referred to in preceding sections and the high volatility in equity markets.

Financial Markets

The BSE Sensex had reclaimed the 40,000 level on October 30, 2019 taking positive cues from global markets amidst fresh optimism over the US-China trade negotiations and agreement on Brexit deal. The uptrend continued in November and December on the back of growth boosting measures by the GoI, support to the Insolvency and Bankruptcy Code amendment and approval for a partial credit guarantee scheme for public sector banks to purchase pooled assets from NBFCs. Domestic financial markets were overwhelmingly influenced by evolving domestic and global developments and the outbreak of COVID-19 in India in end-January 2020. The Indian equity market, which made sizable gains till mid-January 2020, recorded a sharp decline in the remaining part of H2:2019-20 tracking the deterioration in global equity market sentiment due to COVID-19.

Automobiles

The year 2019 was the worst for the automobile industry. Automobile sales in India see the worst-ever fall in 21 years in May 2019. Passenger vehicle sales declined by 17.98% in April-November 2019 over the same period last year, according to the Society of Indian Automobile Manufacturers (SIAM).

Unemployment

India's unemployment rate rose to 8.5% in October from 7.2% in September 2019. The last time India witnessed such a massive unemployment rate was way back in August 2016, at 9.59%. Another assessment claims that India has lost nine million jobs until 2018. By December, the country's unemployment rate was at a 45-year high.

Housing

Despite strong measures by the government for affordable housing, the country's real estate sector witnessed a massive loss combating poor housing demand. There remains an unsold inventory of 450,000 housing units at present.

State of Economy "Post COVID breakout"

Macroeconomy

The current COVID-19 pandemic situation has sent the entire world into a frenzy. India has been appreciated worldwide for taking quick measures at the right time in this fight against COVID-19. India has been in lockdown since March 25,2020 when it was announced by the Indian Prime Minister Narendra Modi through a television address. The lockdown is supposed to carry on till May 31, 2020. The outbreak has presented fresh challenges for the Indian economy now, causing severe disruptive impact on both demand and supply side elements which has the potential to derail India's growth story.

Industrial performance

Beginning March, the lockdown in the wake of the outbreak of COVID-19 has choked manufacturing activities. Anecdotal evidence suggests that in the manufacturing sector, dislocations of labour adversely impacted automobiles, electronic goods and appliances, and apparel. Services such as trade, tourism, airlines, the hospitality sector and construction have been hit hard. Core sector's monthly fall in March 2020 was biggest in 8 years.

Private final consumption expenditure and gross fixed capital formation

Growth in government final consumption expenditure (GFCE) moderated in H2:2019-20 due to a sharp slowdown in Q4 as implicit in the SAE released by the NSO

Inflation

Impact of COVID-19 on inflation is ambiguous relative to that on growth, with a possible decline in prices of food items being offset by potential cost-push increases in prices of non-food items due to supply disruptions. The MPC reduced the policy repo rate by 75 bps to 4.4%. During February-March 2020, the Reserve Bank of India (RBI) also undertook several measures to further improve liquidity, monetary transmission and credit flows to the economy, and provide relief on debt servicing.

Exports

Indian exports — which fell over 60% in April, the worst in almost 30 years.

Foreign Direct Investments (FDI) and Foreign Portfolio Investors (FPIs)

Foreign portfolio investment (FPI) outflows accentuated further from March 6, 2020 as the oil price war between Saudi Arabia and Russia caused fresh turbulence in global financial markets.

Overall, FPI outflows were of the order of US$ 7.1 billion in 2019-20 (up to March 31, 2020). Under the voluntary retention route, however, net investment by FPIs amounted to US$ 8.7 billion up to March 31, 2020. Net disbursals under external commercial borrowings (ECBs) by Indian entities at US$ 3.2 billion in Q3:2019-20 were higher than those of US$ 2.0 billion a year ago.

Financial Markets

Domestic financial markets remain vulnerable to global developments, deepening of the growth slowdown in India and rising concerns about COVID-19. Despite the weak domestic growth outlook, Indian equity markets scaled new highs, before turning highly volatile in early- March in tandem with global equity markets. The BSE Sensex touched the 40,000 level during Q3:2019-20 but it came under intense pressure during Q4: 2019-20. Overall, the Sensex declined by 23.8% during H2:2019-20.

Automobiles

The automotive component sector had already witnessed sluggishness in demand for over a year. As per the auto body SIAM, the industry de-grew (-) 33.61% overall considering all segments. March 2020 witnessed double digit decrease in sales across auto segments. For the entire year, the industry saw Passenger Vehicles sales was down by (-)17.82%. Commercial Vehicles sales in April-March 2020 down by (-) 28.75%. Three-wheeler sales down by (-) 9.19%. Two-wheeler sales down by (-)17.76%. The Industry was already reeling under severe degrowth and the pressure of disrupted supply chain, which was followed by a majority of the auto companies announcing a shutdown of their manufacturing units in the last week of March 2020. Month of April was going to be extra special as from April 1, 2020, BS-VI emission norms became mandatory across India, however April month, witnessed no sale in the entire country as the entire automotive sector was closed. SIAM cuts domestic vehicles sales projection by 15.2% to 18 million units in FY2021.

Unemployment

Unusually lower agriculture prices, slowdown in the construction sector and below average performance of the flagship MGNREGA programme have contributed to lower farm incomes, deceleration in rural wages and loss of employment opportunities in the rural sector and, more so, in the wake of COVID-19.

Forex reserves

India’s foreign exchange reserves were placed at US$ 475.6 billion, equivalent to 11.8 months of import, as on March 27, 2020 – an increase of US$ 62.7 billion over the level at end-March 2019. India's foreign exchange reserve fell the most in nearly 12 years by as much as $11.98 billion in the week ended March 20, before touching a record high of $487.23 billion by mid-March 2020.

There is a lot that has been lost, and a lot to rebuild and that won’t happen in the next quarter. Let’s brace for a down cycle.

The readings about Asia’s third-largest economy come as policy makers are focused on ensuring Indians have cash in hand to buy essentials as more cities are locked down to prevent the spread of the virus, and countries around the world race to ease fiscal and monetary policies to shore up their economies.

Going by the size of fiscal aid unveiled by other governments around the world, analysts believe the Indian government needs around at least 1% of GDP in fiscal aid to meaningfully respond to the virus outbreak. That amounts to 2200 billion rupees, or roughly $30 billion, of aid. This should push the government's budget deficit for fiscal 2021 up to a minimum of 4.5% of GDP, 1 ppt above its 3.5% target.

XI. Outlook for 2020-21: India

The Indian economy has been experiencing significant slowdown over the past few quarters. In the third quarter of the current fiscal, the economy grew at a six-year low rate of 4.7%. Investment and consumption demand had been languishing and a number of stimulus measures have been taken to bring back the economy on a growth path. There was a strong hope of recovery in the last quarter of the current fiscal. However, the new coronavirus epidemic has made the recovery extremely difficult in the near to medium term. The outbreak has presented fresh challenges for the Indian economy now, causing severe disruptive impact on both demand and supply side elements which has the potential to derail India's growth story.

The trajectory of inflation in the near-term is likely to be conditioned by the pace of reversal of the spike in vegetables prices, the dispersion of inflationary pressures across other food prices, the incidence of one-off cost-push effects on various elements of core inflation and especially, the evolution of the COVID-19 outbreak.

Food prices may soften under the beneficial effects of the record foodgrains and horticulture production, at least till the onset of the usual summer uptick. Second, the collapse in crude prices should work towards easing inflationary pressures, depending on the level of the pass-through to retail prices. All these signals are, however, heavily conditioned by the depth, spread and duration of COVID-19 and shifts in any of these characteristics of the pandemic can produce drastic changes in the outlook.

Given the lockdown, the compilation of the CPI for March and the following few months by the National Statistical Office could also become challenging. For 2021-22, assuming a normal monsoon and no major exogenous or policy shocks, structural model estimates indicate that inflation could move in a range of 3.6-3.8%. Renewed bouts of global financial market volatility caused by the uncertainty of macroeconomic impact of the COVID-19, as in February-March 2020, could exert pressure on the Indian rupee.

Should the INR depreciate by 5% from the baseline, inflation could edge up by around 20 bps while GDP growth could be higher by around 15 bps through increased net exports. In contrast, should COVID-19 normalize quickly, strong capital flows could revive. An appreciation of the INR by 5% could moderate inflation by around 20 bps and GDP growth by around 15 bps vis-à-vis the baseline.

The baseline path assumes vegetable prices to fall rapidly in response to arrivals of rabi harvests and a normal south-west monsoon during 2020, which is supported by early signals of likely ENSO (El Nino – Southern Oscillation) neutral conditions. Adequate buffer stocks in cereals and a good rabi harvest (2019 season) could soften food inflation more than anticipated and pull-down headline inflation by 50 bps below the baseline. On the other hand, a deficient or spatially skewed south-west monsoon, and an unexpected hardening of prices of non-vegetable food items could push headline inflation above the baseline by around 50 bps in 2020-21.

COVID-19, the accompanying lockdowns and the expected contraction in global output in 2020 weigh heavily on the growth outlook. The actual outturn would depend upon the speed with which the outbreak is contained and economic activity returns to normalcy. Significant monetary and liquidity measures taken by the Reserve Bank and fiscal measures by the government would mitigate the adverse impact on domestic demand and help spur economic activity once normalcy is restored.

For 2021-22, assuming a normal monsoon and no major exogenous or policy shocks, structural model estimates indicate that inflation could move in a range of 3.6-3.8%. Risks around the inflation projections appear balanced at this juncture and the tentative outlook is benign relative to recent history. But COVID-19 hangs over the future, like a spectre.

The recent outbreak of COVID-19 and the subsequent lockdown enforced in the country are expected to bring down the aggregate demand drastically, both in rural and urban areas. The Government has announced a slew of measures like direct cash transfer to farmers, hiking wages under the MGNREGA scheme, and utilization of welfare funds for construction workers to offset the adverse impact on rural demand. However, given the severity of the pandemic, rural demand is expected to go down further at least in the near future.

The equity market outlook is characterized by heightened uncertainty with capital outflows continuing and exerting pressures on the INR. This outlook is uncertain and is increasingly getting reflected in bond market yields. Credit growth is likely to remain modest, reflecting weak demand and risk aversion. Going forward, liquidity conditions would be managed under the revised liquidity management framework, consistent with the accommodative stance of monetary policy as long as necessary to revive growth and mitigate the impact of COVID-19, while ensuring that inflation remains within the target. Better transmission of monetary policy impulses to the credit market would remain a priority.

On average, an Indian consumer spends about $80 or nearly ₹5,700 per month on discretionary items of which two-third is from urban regions and the balance from rural areas. It includes expenditure on clothing, footwear, household equipment, and recreation.

One month of lockdown could potentially defer discretionary consumption of $45 billion on a pan-India basis, while if lockdown remains concentrated on urban areas it would have the impact of $22 billion.

The discretionary spending per capita of the urban and rural consumer per month is about $53 (₹3,816) and $26 (₹1,872), respectively. More cases of Covid-19 infection are emerging in big states like Maharashtra, Delhi, Uttar Pradesh, Kerala, Karnataka, and Gujarat which together account for nearly half of the country's gross domestic product (GDP). Any slowdown in the consumer spending from these states will significantly impact manufacturing and services sectors.

This also means the GDP growth for FY20 may dwindle.

The personal final consumption expenditure was $1482 bn (₹112 lakh crore) in FY19 and was estimated to be $1614 (₹122 lakh crore) in FY20, according to the ministry of statistics and programme implementation (MOSPI). Based on the last year's GDP of $2,515 billion (around ₹190 lakh crore), the per day GDP contribution works out to be about $6.85 billion (₹51,800 crore). Assuming that 20% of the daily GDP is impacted due to lockdown, it may reduce the GDP by $1.3 billion (₹10,500 crore) every day. With nearly second fortnight of March is affected due to lockdown, the CSO forecast of 4.7% GDP growth for the current fiscal now looks ambitious.

A single day of complete shutdown, which entails zero production of goods and services, impacts real GDP by around $ 6.6 bn (Rs 50,000 crore). A 10-day shutdown for example would translate to $ 66 bn (Rs 5 lakh crore), or 3.4% of GDP. This slowdown will hobble tax collections and trigger a vicious cycle. Extension of deadlines for tax filings will not mean much when economic activity is at a standstill. A fiscal stimulus package to reboot the economy is highly essential at the central level.

Rating agencies, both global and domestic, are unanimous that the Covid-19 pandemic will be an economic tsunami for India.

In India, GDP growth is already at a decadal low and any further dent in economic output will bring more pain to workers who have seen their wages erode in recent times.

Major ratings agencies forecast for India's GDP growth:

Goldman Sachs predicts the Indian economy will shrink by 45% on an annualized basis this quarter and suffer its most severe recession since 1979 this fiscal year, as the coronavirus pandemic wreaks havoc on many of its industries. Overall, Goldman's forecasts suggest India's GDP will slump 5% this fiscal year, which would be its steepest contraction.

The UN slashed India's projected growth rate to 1.2% in 2020 and forecast that the global economy will contract sharply by 3.2% as the COVID-19 pandemic paralyses the world, sharply restricting economic activities, increasing uncertainties and unleashing a recession unseen since the Great Depression of the 1930s. There is likelihood of mismatches in labour availability and sectors, such as manufacturing, construction, trade, hotels and transport, will drag down growth.

CARE estimates that growth in the January-March 2020 quarter could plummet to 1.5-2.5%, as the usual ramping up of production due in the year end could not be implemented due to the shutdown. Its earlier forecast was a 4.7% growth in the period. ICRA projects Indian GDP to contract in a range of 16-20% in Q1 FY2021 (previous expectation -10 to -15%), which would translate to a contraction of 1.0%-2.0% in FY2021 (previous expectations +/-1%).

Many rating agencies have a consensus, the real impact of the 21-day lockdown will be felt in the first quarter of financial year 2021, potentially a de-growth in GDP.

Two factors that have to aggressively drive this recovery are government expenditure and the banking sector which should augment credit to all the sectors.

In one scenario, according to the NITI Aayog the government think-tank, India's GDP could decline by 2-3% year on year in FY21 as restarting supply chains and normalizing production and consumption will take 3-4 months. In another potential scenario, the GDP could decline by 8-10% in FY21 if the lockdown continues in April-June and additional lockdown is imposed in July-September and October-December.

The pandemic has had a major impact on the supply chains, besides the direct impact on demand and supply of goods and services, businesses are also facing reduced cash flows due to slowing economic activity which in turn is having an impact on all payments including to those for employees, interest, loan repayments and taxes.

As not a single sector in the economy has been spared which is not facing the brunt of this crises, the consumption across sectors have been deeply impacted. This has put a bearing on the demand for petrochemical products as well as end user industries where all plastics is being consumed be it automobiles, medical devices, textiles, agriculture and food processing and even e-commerce.

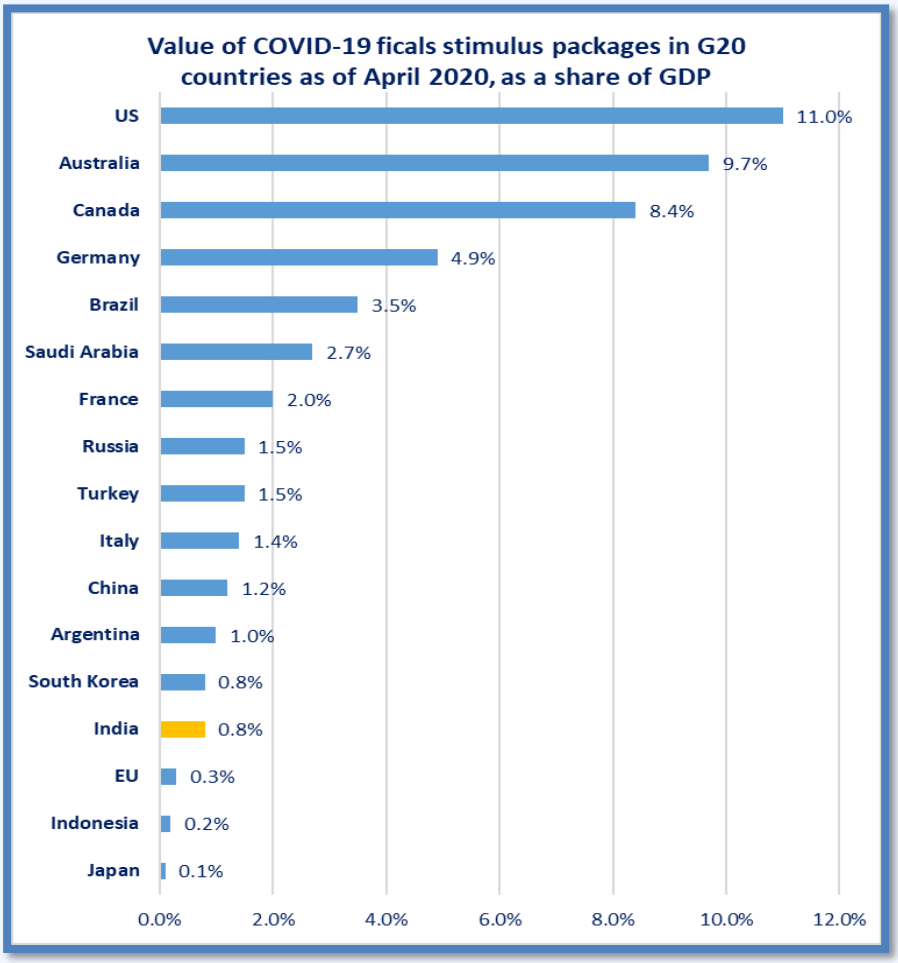
Table 4: India's GDP Growth Projection – 2020, 2021 and 2022

S .No.	Agency	2019-20 (FY20)	2020-21 (FY21)	2012-22 (FY22)
1	Goldman Sachs		-5.0%	
2	Bernstein		-7%	
3	Morgan Stanley		0.0% (2020)	7.7% (2021)
4	Bank America		0.5%	
5	Moody	0.2% (2020)	0.0%	6.6%
6	Nomura	Minus 5.0% (2020)	-5.2%	7.9% (2021)
7	DBS	4.5%	1.0%	
8	UBS		-0.4%	7.0%
9	Crisil		1.8%	
10	India Rating	5.0%	1.9%	
11	Care		1.1% to 1.2%	
12	CII	-	-0.9% TO 1.5%	
13	Fitch (BBB- with stable outlook)		0.8%	6.7%
14	Fitch Solutions	4.9%	1.8%	
15	S&P Global Ratings	5.0%	1.8%	7.5%
16	SBI Report	4.1%	1.1%	-
17	IMF	4.2%	1.9%	7.4%
18	Baraclays	CY2020-0%	0.8%	
19	World Bank	4.8 to 5%	1.5 to 2.8%	5.0%

A combination of monetary, fiscal and financial market measures is needed to help the businesses and people cope with the crisis. India's recovery to its trend growth rate of 5% is going to be very slow and may take a couple of years depending upon how soon the political environment in the country improves to strengthen its economic fundamentals. A quick recovery in investments would not only boost demand, including through consumption, when investment happens in greenfield projects and supports expansion in employment, but would also boost supply and domestic savings rate to the improve the potential growth of the economy. A lot will also depend on how fast the consumption demand in the economy lifts up and also the return of the migrant labourers as many establishments face shortage of workers.

The initial instinctive reaction to the COVID-19 crisis by most countries was to look inwards and act alone. As a result, borders were closed, supply chains have been disrupted, and regional economic activity has fallen. Stronger coordinated fiscal measures could help absorb growing economic costs. Many countries and regional unions like SAARC created emergency funds and announced relief packages in their own countries in terms of tax benefits, tax cuts, export incentives etc. to boost economy and shoulder from the grave crises of COVID.

Table 5: Value of COVID-19 fiscal stimulus packages in G20 countries



COVID-19 has already had an enormous impact on consumers and brands. The stay-at-home directives, radical shifts in demand for certain product categories, undersupplied distribution channels, and supply chain difficulties for certain companies have disrupted habitual behaviors and required customers to shop in new ways. Above 100% spike in demand in essential commodities such as rice, wheat and pulses. Others food categories like- confectioneries, sweets, organic processed food and spices have also witnessed 15-20% rise in the month of March. This certainly augers well for the plastic industry and in turn petrochemicals given the current scenario.

APIC 2020

ASIA PETROCHEMICAL INDUSTRY CONFERENCE

28TH - 29TH MAY, 2020 NEW DELHI, INDIA

(POSTPONED DUE TO COVID-19)

SECTION 2

INDIAN PETROCHEMICAL INDUSTRY

XII. Petrochemical Industry in India

The petrochemical industry occupies a pivotal place in the country's economy. The sector serves as the backbone for the development of various other key sectors such as agriculture, infrastructure, health care, automobile, textiles and consumer durables. It is one of the fastest growing sectors, with demand growing at a CAGR of 8%-plus over the last five years. The penetration level of petrochemicals in India is, however, far lower than the global average. India's per capita consumption stands at 10 kg compared to the global average of 30 kg, indicating significant headroom for growth.

For the Indian petrochemical industry in 2019-20- the key application industries like packaging, construction, and automobiles pulled down the demand specially in the second half of the year, after which the industry faced turmoil of COVID which has impacted demand across sectors with factory closures and lockdown situation impacting supply chains.

The vision for the next 5 years is to have investment-led growth, to be driven by the private sector. To achieve this vision, the Government is working incessantly on policies to attract investment, both from domestic and foreign sources. The work-plan includes further liberalizing our FDI policy, simplification of labour laws, further enhancing ease of doing business, power sector reforms, and reforms in banking, insurance and pension sectors. The Government is reportedly targeting Rs.100 lakh crore worth of investment in infrastructure over the next 5 years.

Implementation of the above measures would go a long way in making India an attractive destination for investment and also making it a global hub for manufacturing. However, at present, the factor cost disadvantages disincentivize manufacturing in India. Compared with its ASEAN neighbours, India has among the highest cost of land, capital, power and inland freight. The cost of finance (PLRs) in India is 9.5% per annum whereas, the same is 0.95% in Japan, 3.42% in Korea, 4.35% in China, 5.35% in Singapore and 7.1% in Thailand. Likewise, the power rates in India are much higher at 8-12.5 Cents/KWH as compared to our competitors like China (5.5-8.8 Cents/KWH) and Korea (5.3 Cents/KWH).

A study of cross-country comparison of business facilitation measures shows that in respect of all listed parameters, viz. ease of doing business, competitiveness, infrastructure and logistics, India ranks poorly as compared to countries like Singapore, Korea, Japan, Malaysia, Thailand and China. Recently, India slipped 10 places to the 68th rank in the WEF's Global Competitiveness Index. Though in World Bank's ease of doing business ranking, India has recently climbed 14 places to reach 63rd rank among 190 countries, it is nowhere closer to the countries mentioned above.

The Indian government has had announced many initiatives like Digital India, Swachh Bharat, Start-up India and Skill development program etc. which have started and will eventually expected to have a widespread multiplier effect.

Success of 'Make in India' programme will be a game changer and a big boost to manufacturing in the country. Increased focus on agriculture and irrigation will boost the demand for plastics along with GOI's thrust on infrastructure followed by a good monsoon forecast in 2020 by IMD.

A few of the many such initiatives that are likely to result in new opportunity for industries and positively push the demand for petrochemicals are: Rapid expansion of Metro Rail Projects across the country and electrification of existing & addition of new railway lines. From a humble beginning of just 8 km in 2002, 425 km of metro lines are operational as of now in 10 different cities across the country. In the next few years, the network length is expected to cross 700 km.

Government's flagship schemes like Pradhan Mantri Gram Sadak Yojna (PMGSY), UDAN (Ude Desh ka Aam Nagrik) reiterate the continued thrust to the plastic industry in years to come.

Government for having undertaken, in recent years, several bold fiscal measures for the development of petrochemical industry. Measures taken in the last Budget to incentivize domestic value addition, promote Make in India and create a level-playing field for the domestic industry are very positive steps towards making India a global manufacturing hub.

Government's growing thrust on the water sector, includes a scheme to take piped drinking water to 18 crore rural households by 2024. The allocation for the overall Jal Jeevan Mission, which seeks to ensure water security across the country, is $ 1.5 bn (Rs 11,500 crore), up from $ 1.32 bn (Rs 10,000 crore) in 2019-20. The 'Har Ghar Nal Se Jal' scheme, to provide a functional tap connection to all households by 2024, is part of the Jal Jeevan Mission. A total allocation of $ 1.62 bn (Rs 12,300 crore) in Swachh Bharat mission for 2020-21 has been done. Rs 1.7 lakh crore to be provided for transport infrastructure in the financial year 2020-21.

Safe drinking water to all Indians, micro-irrigation techniques for efficient use of water in agriculture, road connectivity, rail network, electric vehicles, renewable energy, affordable housing, most of the sectors found mention in the recent budget speech which augers well for the plastic sector and the demand for petrochemicals in India.

The opportunities are huge, and the petrochemical industry stands to benefit in a big way. These proposals and the focus to support the start-ups will also go a long way in encouraging domestic manufacturing and demand.

The recent pandemic has made a dent in the demand for petrochemicals but this is expected to be for a short-term period as the demand for food packaging has already witnessed huge increase than normal demand with demand for packed food and water bottles rising.

A number of Indian state-owned energy companies are making major investments to boost their petrochemical activities and are expected to become significant players in the sector.

Despite the factor cost disadvantages, the domestic manufacturers have committed thousands of crores of rupees to create new capacities in petrochemical products. Some of these projects are at a preliminary stage; final decisions are yet to be taken.

There are nine projects under implementation stage with an investment of $ 25 bn (Rs 1,97,805 crores). Three projects under announced stage with investment to the tune of $ 48 Bn (Rs 3,71,630). Other than these projects there are at least 8 projects which are awaiting board approval with an expected investment of $ 30 bn (Rs 2,33,725 crores), making a combined investment for the 20 petrochemical projects to $ 105 bn (Rs 8,03,160 crores).

Due to COVID pandemic the announced investments are expected to be delayed by a year. Going forward the planned investments on drawing board would need some government support and benefits so that they fructify and able to generate and create more job opportunities in the country.

Overall, the outlook for the petrochemical industry in India remains positive in years to come and as the key end-use industries like automotive, packaging, and consumer durables start to witness demand again as slowly the impact of COVID will withers off.

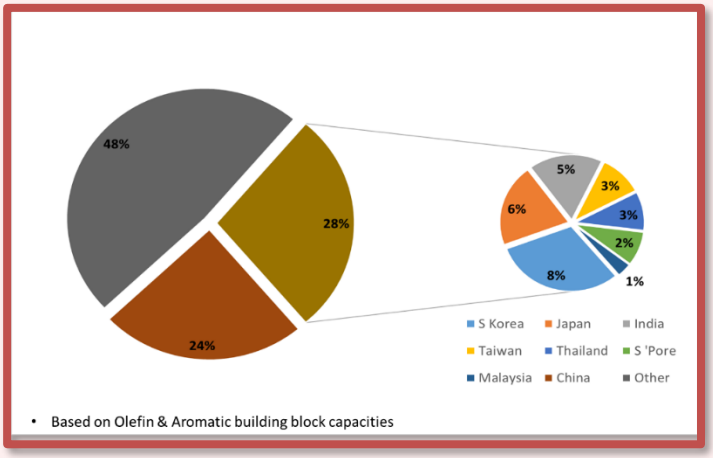
XIII. Petrochemical Industry Review of 2019-20 & Outlook for 2020-21

A. Global Petrochemical Industry review

Scale of Petrochemical industry in APIC and member countries

In 2019, based on the Olefin and Aromatic building block capacities APIC represented 28% of the Global Petrochemical industry capacity. India has a share of ~5% of this pie.

Figure 16: Scale of Petrochemical industry in APIC and member countries



Ethylene is normally taken as the barometer of the petrochemical industry. The share of APIC countries in the global ethylene supply stood at 21%. India's Share was at 4%. Whereas China's share was at 13%. India's ethylene share in APIC countries was 19%.

Table 6: Ethylene Share Global and APIC Countries

Countries	Capacity 2019 (KT)	Capacity Share in APIC (%)	Capacity Share in Global (%)
INDIA	**7477**	19%	4%
JAPAN	**6839**	18%	4%
S.KOREA	**9590**	25%	5%
MALASIA	**1994**	5%	1%
SINGAPORE	**4150**	11%	2%
TAIWAN	**4140**	11%	2%
THAILAND	**4609**	12%	3%
APIC COUNTRIES	**38799**	100%	21%
CHINA	**24098**		13%
GLOBAL	**182362**		100%
Source: ICIS			

India's Ethylene capacity in 2019 stood at 7477 KT out of the total 38799 KT of the APIC countries.

B. Price movement of Petrochemicals in 2019-20.

US-China trade tensions added volatility in global petrochemical markets in 2019 and the effects of the ongoing issue had become visible at the starting of 2020. Global energy markets had been quick to react to the evolving coronavirus situation in crude oil prices plummeted by 25% in February 2020. This impacted the entire petrochemicals value chain which started seeing faltering prices and compressed margins and as the Russia–Saudi Arabia oil price war of 2020 escalated, crude oil prices plummeted to historical lows in April 2020.

Presently, the fuel demand has plummeted more than 40% as the coronavirus pandemic caused governments to impose restrictions on movement and businesses closed their doors.

Below table reflects the downturn petrochemical products have faced since July 2019. (summary of the Platts SEA prices)

Table 7: Platts SEA Prices from January 2019 to May'20

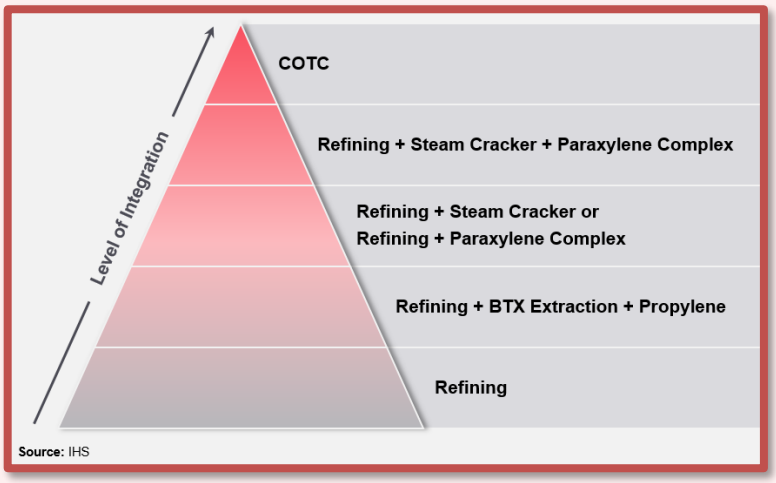
PLATTS AVERAGE PRODUCT PRICES ($/MT)												
	POLYMERS					POLYESTERCHAIN						OTHER PETROCHEMICALS
Month	PP	HDPE	LLDPE	LDPE	PVC SR	PTA	MEG	POY	PSF	PET	PX	LAB
Jan-19	1080	1010	1023	1039	890	814	622	1066	1128	1048	1047	1615
Feb-19	1086	1020	1023	1050	895	847	616	1106	1149	1083	1106	1563
Mar-19	1113	1020	1030	1060	861	854	640	1156	1259	1105	1087	1556
Apr-19	1158	1030	1040	1064	826	842	598	1206	1279	1106	1013	1500
May-19	1125	1000	1010	1053	838	802	549	1042	1092	1005	885	1485
Jun-19	1043	924	943	983	860	722	538	1023	1078	937	831	1525
Jul-19	1060	934	949	996	872	757	538	1100	1146	972	850	1262
Aug-19	1036	904	905	971	871	678	535	994	1055	890	793	1290
Sep-19	1021	850	858	943	874	658	583	993	1039	873	797	1290
Oct-19	1031	856	876	944	847	642	566	925	981	854	794	1280
Nov-19	979	823	823	900	825	611	542	897	946	825	790	1273
Dec-19	955	815	805	895	828	620	572	905	934	831	819	1270
Jan-20	968	832	849	919	858	628	592	944	913	847	810	1269
Feb-20	918	815	850	915	863	570	524	922	853	816	734	1264
Mar-20	868	775	799	893	833	489	454	786	777	740	587	1215
Apr-20	775	700	680	790	630	420	410	702	722	670	493	1105
May-20	810	740	730	820	690	430	418	705	735	680	481	1105
Jul;19 Current Price Average	947	822	829	908	817	591	521	897	918	818	723	1238
% Change Current Price over Jul'19	-24%	-21%	-23%	-18%	-21%	-43%	-22%	-36%	-36%	-30%	-43%	-12%

Source: PLATTS for Polymers, CCFG for Polyester, ICIS for LAB

Collapse in crude oil prices and forecasted increase in the US NGLs are reshaping regional cost competitiveness. Producers in Asia and Europe will benefit from the low-crude-oil-prices, which will lower their cost base, and narrow the ethylene cash costs gap between the US (ethane-based) and Europe and Asia (both naphtha-based).

C. Major factors impacting petrochemicals Industry globally

a. Oil to Chemical shift - Based on the IEA forecast for oil demand, it is expected that fuel volumes will reach a plateau by 2030. One of the primary reasons for this is the penetration of electric vehicles and increased uptake of alternative drive technologies for commercial vehicles. With the decline in demand for transportation fuels and stricter regulations, refiners are forced to explore ways to improve the yield of high-value products from refineries to remain profitable in the near future.



Therefore, refiners are emphasizing more on higher-margin chemicals than transportation fuel. A majority of COTC plants (Exxon, Hengli, Yanbu, Zhejiang PC) that have started operations are based in China or the Middle East. The choices of technology for the COTC plant depend on the type of feedstock available for processing and end-products being produced in refineries. COTC plants are primarily focused on increasing the yield of light olefins or aromatics, such as benzene, toluene, and xylene. From 2020, the IMO's new regulatory changes and environmental requirements have a material impact on the economics of almost all major refineries. Refiners that are flexible and able to adapt without huge capital investment will be in the best position to take advantage of these changes. Typical output of conventional refineries gives 15-20% as chemicals. The new Oil to Chemicals refineries will have app 60-80% as chemicals. The scale of chemical output from these OTC refineries are slated to be much higher than the biggest plant globally at present and will be much lower on cost curve with competitive pricing.

b. Electric Vehicle - Vehicle fleet electrification has gained significant momentum in recent years, supported by regulatory incentives and changing consumer perception. The eventual extent of global vehicle fleet electrification is dependent on the interaction of a large number of variables, including the direction of government policy, technological progress, raw material availability and the wider transition of energy generation towards renewable sources. However, the emergence of Electric Vehicles has resulted in uncertainty over future of Transport Fuels. According to BP's 2018 Energy Outlook, the share of the average oil barrel dedicated to transportation fuel will peak at 58% in 2025 and begin to decline. Oil consumed by industry, buildings, and power will also slump. This has forced the Refinery players to relook and recast their Strategy for Future and hence the focus has shifted to "Crude to Chemicals (CTC)" as indicated in the para on OTC.

c. US-China trade war – US-China trade war started back in July 2018. The trade war officially started on July 6, 2018, when the US imposed a 25% tariff on Chinese imports with $34 billion. This was just the first in a series of increases in tariffs over the subsequent year, and China also retaliated with tariffs on some US goods. Over this period, the global economy was heavily preoccupied with these trade tensions, which affected investment decisions and impacted supply chains, including in countries supplying raw materials and intermediates to China for final processing and export to the US. Eventually, an agreement in principle on a Phase-1 trade deal was reached in mid-December 2019, signed on January 15, 2020. Under this agreement, China would buy $200 billion more of US goods and services over the following two years and remove barriers to various US exports. The US agreed to suspend an additional 15% tariff to be imposed on around $162-billion worth of imports from China and reduce some newly imposed duties.

However, the Covid-19 outbreak in Wuhan from January 2020 affected some of these equations. Another escalation in the trade war would take a toll on businesses and consumers. US-China trade tensions added volatility in global petrochemical markets in 2019, and as the year comes to an end, the effects of the ongoing issue had become visible at the starting of 2020, across downstream petrochemical markets, such as that for polyester, which started seeing faltering prices and compressed margins. Post COVID breakout US- China relationships are still evolving and likely to have major impact on trade flows of petrochemicals globally. A new normal is in the making. Some downstream capacity was expected to move to countries in South Asia or elsewhere to avoid the tariffs resulting from the US-China trade tensions, however, that is a not happening anytime soon now.

d. Crude price complexities. Saudi Arabia-Russia-USA - The Russia–Saudi Arabia oil price war of 2020 is an economic war triggered in March 2020 by Saudi Arabia in response to Russia's refusal to reduce oil production in order to keep prices for oil at moderate level. This economic conflict resulted in a sheer drop of oil price over the spring of 2020. These breakdown of discussions or not arriving at a consensus among major crude producers are giving a roller coaster ride to oil prices which are not likely to recover in near future to earlier steady state of US$ 60-70 per barrel.

e. Ban on single use Plastic and cOVID-19 – 2018 onwards there war against singe use plastics led by UN World environment day in May 2018 in India. India announced to eliminate single-use plastics by 2022, around 150 countries have already banned single-use plastic fully or partially in their countries. The movement of plastic scrap among countries is under great scrutiny and being stopped by all developing countries where large scale plastics reprocessing was being done.

Break out of COVID worldwide is changing the perception of plastics as plastics are in forefront in fight against COVID-19. It has thrown open an entirely new market of Face masks, PPE, hand sanitisers and host of other single use and other medical articles being used for fighting corona virus.

Huge new capacities have come up in a matter of 3 months to produce such articles world over. This a new segment of demand and the fierce opposition to single use plastics at govt levels is taking a back seat. Moreover the hygiene awareness among general public is greatly improved which will help in responsible disposal of used plastics and collection/recycling of the same.

D. Product wise review 2019-20

Polymers

Polyethylene

In case of Polyethylene, Asian buyers adopted a wait-and-see approach throughout 2019, with most parts of the world experiencing an economic slowdown. Asia region accounts for 60% of global Polyethylene demand. In 2019, the Asian PE market was forecasted to be in net deficit of 14 million mt/year in 2020. Middle East producer sources estimate that around 12 million mt/year of PE in 2020 will continue to diversify end product portfolios, where competition is less intense.

While each region has unique prospects for PP, the global polypropylene market is expected to remain generally balanced to long through 2023 and tighten past 2024, according to S&P Global Analytics. The majority of the new PP production is expected to come online from 2021 to 2023, creating the so-called low margin, trough years, Platts Analytics data showed.

Polypropylene

The outlook for Asian PP for the first half of 2020 was mixed amid a cost-push from expected higher naphtha prices and several PP startups in the region. However, market sources said healthy demand from various sectors, including moulded plastics, stretchable plastics and automobiles, might spur demand for demand for various PP grades. Some end-users, however, were more pessimistic, seeing slowdowns in home appliances and fast-moving goods amid certain Asian governments launching anti-plastic movements, they said.

PVC

India needs to import PVC about 2 million mt/year to satisfy domestic demand. A government plan to increase supplies for making plastic pipes and ensure clean water supply in rural areas signals further demand growth.

The polyolefins sector often provides a good measure of the overall petrochemical industry prospects. These plastics are widely used across a broad spectrum of applications that cover most aspects of the economy.

Naphtha/Ethylene

In 2019, naphtha-based ethylene margins reached their lowest since 2014, averaging US$313/t. Although the 2019 average margin didn't appear to be so tight, the market had been in a transition period since Q4 2019 when the ethylene market price dropped below US$800/t. This level hit some production cost lines, forcing some producers to cut their operating rates to stabilize the market.

Steam cracker operations remained high in 2019, supported by healthy margins for propylene and butadiene production. At the end of May 2020, ethylene/naphtha spread increased to an average of $288/mt from $187/mt in beginning of May 2020.

Ethylene

In 2019, ethylene margins fell into a negative territory, which prompted talk of possible cuts, although healthy margins for propylene kept steam cracker operations running fully. Operating rate cuts were expected and happened in China first and then across Asia and world, as the prices plummeted to new lows. Thirteen new PE plants in the first wave of startups from 2017-2019 were expected to increase North American PE capacity by 35% to more than 27 million mt/year. The 15 plants slated to start up through the 2020s were expected to push that overall capacity up by another 26% to 34.35 million mt/year. The lockdown has slowdown everything.

Elastomers

SBR

In Asia, styrene-butadiene-rubber would likely remain under pressure for the second-half of this year as weak automobile sales would continue to slash tire demand. Rising natural rubber production would also increase competition.

For the first half of 2020, Asian SBR market dropped to a record-low, due largely to lower automobile production amid the coronavirus pandemic.

The weakness in styrene had translated to improved ABS production margins. Demand recovery in automobile and home appliances sector remains a top concern for the Asian ABS market, while China's demand is regarded as the main contributor.

PX/PTA

The paraxylene (PX) market experienced turbulence in 2019. Market supply is lengthening at an unprecedented pace as some of the world's largest PX buyers have started to operate their own world-scale PX assets. The PX-naphtha spread has more than halved in the past year, and some producers in the region are struggling with negative production margins.

The Asian PTA/PX spread averaged $153/ mt in H1 2019 and $147/mt over July-October for dollar dominated PTA cargoes, based on S&P Global Platts data. This indicated the profit margin for PTA was strong in 2019, remaining well above the typical breakeven level of $85-$120/mt, assuming 0.665 mt of PX is required to produce 1 mt of PTA.

Asian producers such as Hengli, Hengyi and Zhejiang had brought over 8 million mt of new paraxylene capacity online and further capacity additions were expected in 2020 and 2021.

In India, JBF Industries' 1.25 million mt/year PTA plant in Mangalore is unlikely to start up in 2020, given its neighbour ONGC Mangalore Petrochemicals Ltd., which is due to supply PX to JBF Industries' PTA operation, was seen recently offering 570,000 mt of PX via tender for January-December 2020.

PET

The Asian PET profit margin was calculated at around $27/mt in the first half of 2019 ahead of the traditional peak season, but turned negative from July to October, averaging minus $1/ mt, amid lackluster demand, as per S&P Global Platts data. At the end of April 2020, the SEA PET prices were down 31% as per Platts data.

MEG

Monoethylene glycol prices were expected to come under further downward pressure in the first half of 2020 as additional capacity comes on stream, adding to ongoing uncertainty over how increasing US production can be absorbed in Asia while largest importer China maintains tariffs on imports from the US. Total global MEG capacity stood at 38.1 million mt/year in November, exceeding global demand by 10%-15%, based on Platts data. Global MEG capacity had increased by around 18% since the start of 2018. At the end of April 2020, the SEA MEG prices were down 24% as per Platts data.

Styrene, PS, ABS

Downstream styrene markets, where pricing has been soft due to muted demand in the polystyrene and ABS markets, in part due to ongoing US-China trade tensions. Asian styrene established a downward trend in late 2019 and sank to a four-year low of $867/mt on November 11, on ample supply and bearish sentiment. Lackluster demand and increasing supply were the key drivers, and the trend is expected to continue. At the end of April 2020, the SEA Styrene prices were down 22% as per Platts data. India was set to introduce the next stage of BS-VI gasoline standards in April 2020, which was expected to impact the aromatics demand and supply balances. The next stage of BS-VI gasoline standards in India would primarily reduce the sulfur content from 50 ppm previously to 10 ppm from April 2020 onwards, while the aromatics content remains unchanged from 35% previously.

Butadiene

In 2019, the CFR China butadiene price benchmark averaged at $1,119/mt to the end of October, according to S&P Global Platts data. That was a significant decrease from 2018 when the CFR China butadiene price averaged $1,430.56/mt. As a result of falling butadiene prices in 2019, the spread to feedstock naphtha fell to an average of $601/mt for the first 10 months of 2019 compared with $814.46/mt in 2018, according to Platts data. As steam cracker production yields of butadiene were low compared to ethylene and propylene, poor or negative butadiene margins affected operations.

A. Outlook for 2020-21

a. Production/ Demand impact due to COVID break out – As of May 2020, IHS Markit projects around 5.5% decline in global real GDP in 2020, a worse outcome than the 1.7% contraction in 2009, with sharper contractions in Europe and North America. Recovery to the previous peak level of output will take until 2022. The risks remain on the downside given the uncertainty surrounding the pandemic development and policy response.

A deep global recession is developing in 2020, resulting in a major chemical demand decline. Demand for durable goods, such as cars and white goods, correlate strongly with GDP growth and is being delayed by the lockdowns, while many of the large chemical markets are in non-durable end-use segments, and demand for non-durables has been steady. As a result of capacity overbuild in recent years, the petrochemical industry was largely heading for a downcycle, and situation will be worsened by the COVID-19 induced global recession and chemical demand contraction.

US export-oriented ethylene derivative projects will be challenged and imported US ethane to Europe or Asia will no longer be an attractive feedstock in the short to medium-term. Coal-to-olefins (CTO) production in China also appears to be no longer attractive under a low-crude-oil-price environment.

Oversupply due to overbuilding, and poor economics have led to extensive coal-to-MEG shutdowns in China since March 2020.The global petrochemical sector has experienced demand shocks in the past, notably from SARS in 2003 and the financial crisis in 2008. However, the full force of the coronavirus is still unknown and therefore at this stage markets are in a period of high uncertainty.

Olefins markets like ethylene and propylene in the US, and butadiene in Asia, was expected to see a boost in supply due to capacity additions in 2020. A 1 million mt/year export terminal in the US was to lead to an increased supply flow of cheap ethylene from the country to the rest of the world during 2020.

b. Likely change in trade flows - Asia's consumption for many plastics would be limited even as countries ease their lockdowns gradually, as the uncertainty surrounding the new norm in a yet-to-foreseen success against the coronavirus remains. In the petrochemical chain, a common trend emerges, that is, supply is outstripping demand in general.

c. New product categories growth in demand - The weak industry outlook coincides with the wider polymer sector being exposed to a significant negative media commentary over the past 18 months due to growing environmental pressures relating to the consumption of single-use plastics. However, it is worth highlighting the value plastics provide across a diverse spectrum of different applications. For example, surgical masks consist of a multi-layered structure by covering a layer of textile with non-woven bonded fabric on both sides. Non-woven polypropylene is the preferred material for this application as it provides enhanced bacteria filtration and air permeability while remaining less slippery than woven cotton. Masks can also be produced using polystyrene, polyethylene or polyester. Furthermore, the onset of the coronavirus has stimulated more discussion and awareness around increased personal hygiene, health and wellbeing. This has resulted in increased demand recently for specific petrochemicals and polymers used in production of applications such as surgical masks and alcohol-based sanitizers. There is now, more than ever, a need for increased food hygiene and a need for more plastic packaging to be used. A combination of smart chemistry and innovation continues to provide us with important materials that add value to our daily lives.

d. Impact on new investments - Falling chemical prices with crude oil prices and weak demand are worsening the chemical margin outlook and have led to delay in investment decision making across regions with laggard facilities and/or business models unable to continue operations.

XIV. Feedstock

A. Naphtha

Naphtha is a major raw material for production of Ethylene, Propylene and Aromatics. The current demand in country is lower than the production from refineries and as a result, India is exporter of nearly 7-9 MMTPA. Naphtha consumption witnessed an improvement of around 10% due to increase in demand from downstream products like Ethylene, Propylene demand in 2018-19. While in 2019-20 there is expected to be a dip in demand and growth of around 2-3%.

Table 8: Naphtha Demand Supply

Naphtha (MT)	2017-18 A	2018-19 A	2019-20 A	2020-21 E	2021-22 E
Production	19993	19600	18654	--	--
Imports	2212	2082	1775	--	--
Exports	8951	6963	8897	--	--
Apparent Demand	12889	14131	14436	--	--
Demand Growth%	**-2.7%**	**9.6%**	**2.2%**	**--**	**--**

B. Natural Gas

Natural gas production from India's conventional fields has been declined from past few years which is also supported by lack of new gas discoveries. Unconventional fields (like CBM) are also not contributing significantly, hence country is dependent on incremental gas imports with increase in consumption. The state-run company GAIL (India) Ltd has committed an investment of USD 2 billion to expand its natural gas pipeline network to 18,000 km, up from 11,000 km at present. GAIL envisaged pipeline network is expected to be completed by December 2020. India has set a target of natural gas contributing 15% by 2030 to the energy mix from the current level of 6.5%. India imports half of its gas which costs more than double the domestic rate. The central government is promoting gas-based economy which needs a massive network of pipelines for transportation of natural gas to various corners of the country.

Table 9: Natural Gas Demand Supply

Natural Gas (MMSCM)	2017-18 A	2018-19 A	2019-20 A	2020-21 E	2021-22 E
Production	32649	32875	31359	--	--
Imports	27439	28740	33613	--	--
Exports	0	0	0	--	--
Apparent Demand	59170	60798	64059	--	--
Demand Growth%	**6.2%**	**2.8%**	**5.4%**	**--**	--

The Centre will initially spend $ 10 billion to spread gas pipelines across the country, and is working out plans to expand gas network to Myanmar through Bangladesh. Under this programme, pipelines are proposed to be constructed between Dhamra to Bangladesh and Siliguri to Bangladesh to export LNG gas according to the requirement of the neighboring nation.

Turning to Odisha, Pradhan said the state needs a huge infrastructure to store, refine and transport the natural gas to the doorstep of the industry from Paradip, Dhamra and Gopalpur. Centre is contemplating to promote port-based industries in Odisha and also in other coastal states having natural ports.

The eastern part of India, including Odisha, needs a high double-digit growth rate to be on a par with Western region. In Odisha, around $ 640 million would be pumped in to construct 1700 kms of pipeline network in first phase.

A strategic oil reserve project will also be launched in Chandikhol after acquiring land there. South Eastern Region Pipelines (SERPL) is presently operating cross-country pipelines network of crude oil and refined products as well as LPG of 1570 kms length with 19.35 MMTPA capacity Under this region, India Oil is having the biggest and largest crude oil handling facility at Paradip, which is feeding four most important refineries - Paradip, Haladia, Barauni and Bangaigaon.

A 1,212-km pipeline project crosses 16 districts in three States. There is hectic activity along the ambitious $ 0.5 billion (₹3,800 crore) Paradip, Hyderabad Pipeline Project (PHPL), linking Paradip refinery in Odisha to Hyderabad in Telangana via Andhra Pradesh, being executed by the Indian Oil Corporation (IOC). The project to augment fuel supplies in the three States was formally launched in December 2018 by Prime Minister Narendra Modi. It will become operational by mid-2020. The project linking Paradip refinery in Odisha and the city would facilitate enhanced leverage in terms of fuel supplies for the oil major in the state.

Once commissioned, the project will augment fuel supplies in the three States that are embarking on major infrastructure development, including that of capital city/ cities in AP. It will aid in improving the energy landscape too.

The pipeline will ensure transportation of 4.5 MMTPA of petrol, diesel, and aviation fuel in economic, reliable and environment-friendly manner, with negligible pollution compared to other modes of transportation.

The complex operational aspects of transporting of petroleum products will be handled by the latest SCADA systems, backed by leak-detection system and surveillance system operated by IOC officers 24×7 at the site near Rajahmundry.

On its journey from Paradip, the pipeline would feed the new depots being set up in Berhampur, Odisha; Achchutapuram near Vishakhapatnam, and in Vishakhapatnam as well as in Malkapur, near Hyderabad. IOC will optimize use of the existing depots in Rajahmundry and Vijayawada.

The pipeline would terminate at the new petroleum terminal of IOC coming up in Malkapur near here with a storage capacity of 180 thousand kilo litres at an investment of $ 0.08 billion (Rs 611 crores) and it would be ready within 18 months, he said. The Paradip-Hyderabad Pipeline project is at an advanced stage of completion with some smaller segments to be patched up.
Indian Oil has won New Geographical Area in Telangana comprising of Jagityal, Pedappalli, Karimnagar and Rajanna Sircilla districts as per the latest round of bidding.

City Gas Distribution would result in emergence of fuels like PNG for industrial and domestic applications and CNG for auto fueling.

In only the second instance of the government directly funding a gas pipeline, the Cabinet Committee on Economic Affairs (CCEA) in January 2020 approved a $ 7.35 billion (Rs 5,559 crore) viability gap funding for the proposed North-East gas grid.

The 1,656-km North-East Natural Gas Pipeline Grid will connect Guwahati in Assam to major cities in the region such as Itanagar, Dimapur, Kohima, Imphal, Aizwal, Agartala, Shillong, Silchar, Gangtok, and Numaligarh. The pipeline will enable the supply of piped cooking gas to households and CNG to automobiles, besides fuel to industry. However, in the absence of anchor customers, the $1.22 Bn (₹9,265 crore) pipeline is not economically viable.

The CCEA headed by Prime Minister Narendra Modi approved a viability gap funding of 60% of the project cost.

The North-East pipeline grid is to be implemented by Indradhanush Gas Grid, a joint venture of state-owned GAIL India, Indian Oil Corp (IOC), Oil and Natural Gas Corp (ONGC), Oil India Ltd (OIL) and Numaligarh Refinery Ltd (NRL).

The consortium had pitched for a 60% funding support from the government and would raise the rest via equity and debt. Without government support, the pipeline will not be viable.

This is the second time that a gas pipeline project in the country will be funded by the government.

In 2016, the government provided a capital grant of $ 0.685 billion (₹5,176 crore), or 40% of the project cost of the 2,655-km Jagdishpur-Haldia and Bokaro-Dhamra (JHBDPL) gas pipeline project, which GAIL is currently executing.

GAIL is also laying a 750-km line from Barauni to Guwahati as part of the $1.71 bn (₹12,940 crore) JHBDPL project, which is also known as the Pradhan Mantri Urja Ganga' project. This is proposed to be connected to the North-East via the Indradhanush grid.

All other pipelines in the country have been funded by public or private sector companies. The project is critical towards implementing the government's Hydrocarbon Vision 2030 for the North-East.

The vision envisages the development of the region by leveraging its hydrocarbon potential, enhancing access to clean fuel and accelerating the growth.

About 20% of India's natural gas production comes from the North-East. Out of about 75 million standard cubic meters per day of gas output, 15 mmscmd come from North East. Currently Assam, Arunachal Pradesh and Tripura have established gas production potential while there are possibilities for the same in Nagaland and Manipur."

The funding support to the gas grid is a part of a broader goal of the government to raise the share of natural gas in the country's energy mix to 15% by 2030 from current 6.2%.

The government has envisaged developing the National Gas Grid. At present, about 16,788 km natural gas pipeline is operational and about 14,239 km gas pipelines are being developed to increase the availability of natural gas across the country.

Quantum of viability gap funding (VGF) would be capped at 60 per cent of estimated project cost and would not be linked with upward capital cost variation.

For effective monitoring of the project implementation, a committee comprising of officials from Ministry of Petroleum & Natural Gas, Department of Expenditure, Ministry of Development of North East Region, Ministry of Environment, Forest & Climate Change, and Department of Fertilizers, may be formed, which would periodically review the progress in its implementation and take steps to smoothen out any issues in execution.

The gas pipeline grid will be developed in the eight states of the North-Eastern region -- Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura.

The capital grant will provide natural gas supplies to various types of consumers and would help in substituting liquid fuels. The pipeline grid would ensure reliability and uninterrupted natural gas supplies to the consumers which otherwise gets severely affected due to various reasons in this part of the country.

Availability of natural gas across the region is expected to boost industrial growth without impacting the environment and would offer better quality of life to the people in general due to use of cleaner and green fuel, it said, adding the move will boost exploration and production of gas in the region and help in early monetization of natural resources.

Possibility of installing bottling plants for LPG can be explored for reducing transportation cost, it said, adding the uninterrupted supply of LPG and other value-added products can be ensured in the region which will bring energy security to the people in the area.

IOC is also working on laying a 1,385 km natural gas pipeline originating from the Ennore terminal to Nagapattinam in Tamil Nadu via Puducherry. Also, branch pipelines will be laid in Madurai, Tuticorin, and Bengaluru to meet the demand from multiple LNG consumers in the region.

Indian Oil Corporation (IOC) commissioned its liquefied natural gas (LNG) import terminal at Ennore in Tamil Nadu in March 2019. This is the first LNG terminal that IOC has built on its own. The 5 million-tonne-per-annum (MTPA) liquefied natural gas (LNG) import and regasification terminal, built by IOC at a cost of $ 735 million after completion of dredging of the channel that will bring cryogenic ships carrying natural gas in its liquid form to the port.

IOC has already secured captive customers for 2 MTPA of capacity. The Ennore terminal will also help fast-track IOC's city gas distribution plan, as gas from the terminal will be supplied to consumers around Chennai and Madurai. PM Narendra Modi laid foundation stone of India’s longest LPG pipeline in February 2019. State-owned Indian Oil Corp (IOC) is laying an LPG pipeline from Gujarat coast to Gorakhpur in eastern Uttar Pradesh to cater to growing demand for cooking gas in the country. IOC plans to import LPG at Kandla in Gujarat and move it through the 1,987-kilometre pipeline to Gorakhpur via Ahmedabad (in Gujarat), Ujjain, Bhopal (in Madhya Pradesh), Kanpur, Allahabad, Varanasi and Lucknow (in Uttar Pradesh).

The pipeline possibly is the longest LPG (liquefied petroleum gas) pipeline in the world, and the pipeline would be laid at a cost of $ 1.28 billion. The pipeline will carry 3.75 million tonne per annum of LPG. LPG will be fed into the pipeline at Kandla port as well as IOC’s Koyali refinery in Gujarat. This will be the biggest LPG pipeline in the country. GAIL currently operates a 1,415-km line from Jamnagar in Gujarat to Loni near here. The line carries 2.5 million tonne of LPG annually. GAIL also has a 623-km Vizag-Secunderabad pipeline. IOC also has a 274-km pipeline from Panipat in Haryana to Jalandhar.

Further, due to the Government of India’s emphasis to make LPG – a clean and environmentally friendly fuel, available to every domestic household in the country, LPG demand is expected to increase at a much steeper rate in the coming year. It expected the deficit between what its refineries produce and the demand to reach about 10 million tonne per annum by 2031-32.

LPG demand has grown 10.5% this fiscal (2019-20) with just about half of the 8.4 million tonne consumed being locally produced. India is poised to lift its domestic natural gas price to the highest in at least two years, boosting earnings of producers like Oil and Natural Gas Corp. Ltd (ONGC), according to a survey of analysts and industry participants. India plans to double its LNG import and regasification capacity to 56.5 MTPA by 2025 to meet the energy needs of a fast-growing economy.

The Ministry of Petroleum and Natural Gas wants to capitalize on the government's move to partly ease the ongoing nationwide lockdown and allow limited economic activity, the sources said. State oil companies have assessed that 511 projects can be started immediately, a government official said. These projects would require expenditure of $ 5.66 bn (Rs 42,790 crore) in the current fiscal year.

GAIL currently operates 12,160-km of pipeline network and markets two-thirds of all-natural gas sold in the country. It is currently executing more than 5,500 kilometers of pipeline projects and a similar length is at the planning stage.

Projects at hand include the ambitious Urja Ganga Project to take gas to Bihar, West Bengal, Odisha, and Jharkhand as well as Kochi-Kootanad-Bangalore-Mangalore line and the Indradhanush North East Gas Grid. These pipelines will connect supply and demand centers envisaged under the National Gas Grid.

Besides pipelines, GAIL is also expanding city gas distribution (CGD) networks for retailing of CNG to automobiles and piped natural gas to household kitchens. Investments are also planned for the expansion of petrochemical plants.
GAIL is looking to put up 400 CNG stations and give out a record 10 lakh piped natural gas (PNG) connections to household kitchens in the next 3-5 years.

Jagdishpur-Haldia & Bokaro-Dhamra Natural Gas Pipeline (JHBDPL) project, also known as the 'Pradhan Mantri Urja Ganga' project, was inaugurated by the Prime Minister in July 2015. GAIL has commenced city gas operations in all the six geographical areas (GAs), including in Patna and Bhubaneshwar, that was awarded to it along the Urja Ganga route.

The pipeline will be extended to Guwahati by laying an additional 750-km line. At Guwahati, it would interconnect with the upcoming 1,500-km 'Indradhanush' pipeline network conceived to operate in the northeast region by the public sector oil and gas majors.

GAIL will also lay a 600 km Srikakulam-Angul natural gas pipeline.

Gas can also be used as fuel in steel plants, oil refineries, industries, and transportation, he said, estimating that power sector alone would need 100 mmscmd of gas and 50-55 mmscmd each would go for city gas distribution and fertiliser plants. Steel plants and refineries can consume 70 mmscmd between them.

C. Coal Bed Methane

India has the fifth largest proven coal reserves in the world and thus holds significant prospects for exploration and exploitation of CBM. The prognosticated CBM resources in the country are about 92 TCF (2600 BCM) in 12 states of India. In a bid to incentivize production, the Cabinet Committee on Economic Affairs (CCEA) had in February 2018 approved a new policy allowing marketing and pricing freedom for CBM gas.

Essar Oil had sold its entire production of coal-seam gas or CBM from a West Bengal block to state-owned GAIL India Ltd. GAIL had bought 2.3 million standard cubic metres per day of coal-bed methane (CBM) that Essar Oil and Gas Exploration and Production (EOGEPL) will produce from its Ranigunj block in West Bengal for USD 7.1 per million British thermal unit. The Ranigunj East block is India's most prolific CBM block, which has achieved gas production of more than 1 mmscmd (million standard cubic metres per day), which will be gradually scaled up a saleable volume to 2.3 mmscmd.

Central Mine Planning & Design Institute (CMPDI), the exploration and consultancy arm of Coal India, will be the implementing agency for its proposed $ 0.39 bn (Rs 3000 crore) coal bed methane (CBM) projects.

A memorandum of agreement was recently signed by the consultancy arm with subsidiaries, Bharat Coking Coals and Eastern Coal Fields for developing such projects in their respective leasehold areas. CMPDI will be the principal implementing agency for the subsidiaries and facilitate methane extraction to supplement domestic demand for the gas and enhance safety of mines and coal production.

The first project is likely to be undertaken by Bharat Coking Coal, at Jharia coalfields in Jharkhand. This block holds CBM reserves of 25 billion cubic meter and is expected to start production two years after the project is initiated. The second project would be undertaken at Ranigunj in West Bengal by Eastern Coalfields.

This block holds around 3 billion cubic meters of CBM trapped in coal seams that can be viably extracted and sold in the market. Two years ago, the Cabinet Committee of Economic Affairs waived off the coal major's requirement of procuring separate licenses from the ministry of petroleum and natural gas for extracting coal bed methane from its lease hold areas.

The Ministry of Coal has asked the state-run coal miner Coal India Limited (CIL) to produce 2 MMSCB (million metric standard cubic metres) per day of coalbed methane (CBM) gas in the next 2 to 3 years. India has the fifth-largest coal reserves in the world, and CBM has been looked at as a clean alternative fuel with significant prospects.

33 blocks have been allotted to various companies in four CBM bidding rounds. State-wise list of CBM blocks is annexed. CBM production in the previous five years till February 2020 for Jharkhand stands at 17.11 MMSCM, West Bengal stands at 2103.24 MMSCM, Madhya Pradesh stands at 879.42 MMSCM and totals to 2999.77 MMSCM (Million Metric Standard Cubic Meters). Operators are required to take environment clearance from Ministry of Environment, Forest and Climate Change before starting CBM operations in the area.

Getting environmental approvals and dealing with local resistance are major challenges for CBM producers. Unlike conventional oil and gas well, in the case of CBM companies have to drill a lot in wells to produce gas. Also, most of the CBM sites are located in isolated areas in the country, which are not well connected to the national grid, so there are no major markets nearby. Hence, the investments in the sector are lacklustre because of the lack of investment returns.
The regulatory approval process needs to be much more simplified, especially on the front of environmental clearance. Also, unless the isolated regions with CBM potential are well connected to the national grid, its market cannot be expanded and therefore pipeline connectivity needs to be completed on a fast-track basis.

Coal India is in talks with Gail India and IOC for joint ventures to develop coal bed methane fields and sell the produce. Coal India has already lined up investments to the tune of $ 428 million for its methane projects. The joint ventures are also likely to enable Coal India inject coal bed methane into the proposed Urja Ganga gas pipeline that aims to meet energy requirements of 40 districts and 2,600 villages covering Uttar Pradesh, Bihar, Jharkhand, Odisha and West Bengal.

In June 2018, the Cabinet Committee on Economic Affairs had waived the requirement for procuring separate licences from the ministry of petroleum and natural gas for taking up coal bed methane projects on its lease hold areas.

Following the development, the world's largest coal producer lined up two coal bed methane projects at an estimated investment of $ 428 million. The first project will be undertaken by Coal India subsidiary, Bharat Coking Coal, at Jharia coalfields in Jharkhand. This block is estimated to hold methane reserves of 25 billion cubic meters and is expected to start production two years after the project is initiated.

The second project at Ranigunj in West Bengal is to be undertaken by Eastern Coalfields. The block holds around 3 billion cubic meter of coal bed methane that can be viably extracted and sold. EOGEPL has invested around $ 0.571 billion in the Ranigunj block, which will produce 1.7 million standard cubic metres per of gas from coal seams (CBM) in the next two years and ramp up to 2.5 mmscmd in the next three to four years. Essar Oil & Gas Exploration and Production (EOGEPL) had received environment clearance for exploring shale gas reserves in its Ranigunj block in West Bengal, in March 2019. This followed the government's decision to allow operators freedom to explore both conventional oil and natural gas as well as non-conventional sources like coal-bed methane (CBM) and shale reserves within an exploration acreage.

Table 10: Coal Bed Methane Demand Supply

Coal Bed Methane (MMSCM)	2017-18 A	2018-19 A	2019-20 A	2020-21 E	2021-22 E
Production	735	710	651	--	--
Imports	--	--	--	--	--
Exports	--	--	--	--	--
Apparent Demand	--	--	--	--	--
Demand Growth%	**--**	**--**	**--**	**--**	**--**

Previously, companies could explore only oil and natural gas or CBM depending on their licence for the block. Essar was planning to double production of coal-seam gas or coal-bed methane (CBM) from its Ranigunj east block in West Bengal as a vital Urja-Ganga gas pipeline connecting users in eastern India gets commissioned by end of 2019. Essar Oil and Gas Exploration and Production (EOGEPL) till September 2019 produced about 0.45 million standard cubic metres per day due to constraints of pipelines that could take the gas to consumers. The company plans to ramp up the production to more than 1 mmscmd. The firm has already invested $ 0.52 bn (₹4,000 crore) in the project, which encompassed drilling of 348 wells, setting up the supply infrastructure, and laying pipelines to Durgapur and nearby industrial areas. As per company officials the additional wells will enable the company to ramp up production to a peak of 2.3 mmscmd in the next few years.

D. Methanol

Methanol consumption and production over last couple of years in India were stable, however consumption has been increased by 4% vs 1% projected. Increase in Methanol consumption majorly due to initiatives taken by government to substitute petroleum products with methanol to reduce GHG effect and crude oil import bill. Methanol consumption in India is projected to grow at a CAGR of approx. 3 to 4 %. India's domestic production also expected to increase with increase in consumption, however 90% of methanol requirement is met through imports primarily from Iran and Saudi Arabia.

Table 11: Methanol Demand Supply

Methanol (KT)	2017-18 A	2018-19 A	2019-20 A	2020-21 E	2021-22 E
Capacity	631	631	631	631	631
Production	200	203	222	263	313
Imports	1955	2084	2027	2057	2082
Exports	6	7	0	0	0
Apparent Demand	2044	2145	2249	2320	2394
Demand Growth%	**4.5%**	**4.9%**	**4.9%**	**3.1%**	**3.2%**

XV. Building Blocks

A. Ethylene & Propylene

Ethylene Capacity had increased from 6253 KT in 2016-17 to 7377 KT in 2017-18 with RIL Jamnagar, Hazira, Gandhar and Nagothane plants adding up capacity and further to 7477 KT in 2018-19 with 100 KT being added by RIL (Hazira complex). In 2019-20, it remained unchanged and it expected to remain same in the next year as well.

By 2022, it is expected to touch 8002 KT with HMEL adding 525 KT up. Ethylene consumption in the country rose from 5944 KT in 2017-18 to 6460 KT in 2018-19. It further grew by 4% in 2019-20 to 6741 KT, however is expected to witness a de-growth of 4% to 6483 KT in 2019-20 and gain witness growth in 2021-22 to touch 6806 KT.

Exports of Ethylene witnessed a spike from 29 KT in 2016-17 to 133 KT in 2017-18 and further to 149 KT in 2018-19 before a decline in 2019-20 to 137 KT. It is projected that exports will remain flat for next two fiscals. While production rose from 4733 KT to 6815 KT in 2019-20. It is forecasted to dip in next fiscal year i.e. 2020-21 to 6520 KT and then bounce back to 6843 KT.

Propylene demand rose from 4847 KT in 2017-18 to 4985 KT in 2018-19 and 5347 KT in 2019-20. It is further forecasted to rise to 5619 KT in 202-21 and 5819 KT by 2021-22.

Capacity witnessed an increase from 6064 KT in 2017-18 to 6396 KT in 2028-19 with IOC Paradip adding another 350 KT. In 2019-20 also there was an addition in capacity by BPCL, Kochi of about 160 KT and total industry capacity touching 6554 KT.

It is forecasted by I HS Markit, the next year would not witness any capacity addition with the ongoing COVID situation however in 2021-22 it is expected to touch 6774 KT with HMEL capacity addition of 220 KT with their new plant coming upstream.

Production rose from 4844 KT in 2017-18 to 5022 KT in 2018-19 with increase in demand and further jump in 2019-20 to touch 5346 KT. In next two fiscals, production is projected to witness a rise and touch 5619 KT in 2020-21 and 5819 KT in 2021-22.

Table 12: Ethylene & Propylene net availability

Ethylene (KT)	2017-18 A	2018-19 A	2019-20 A	2020-21 E	2021-22 E
Capacity	7377	7477	7477	7477	8002
Production	6023	6546	6815	6520	6843
Imports	53	63	63	100	100
Exports	133	149	137	137	137
Net Availability	**5944**	**6460**	**6741**	**6483**	**6806**
Propylene (KT)	**2017-18 A**	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Capacity	6064	6394	6554	6554	6774
Production	4844	5022	5346	5619	5819
Imports	7	4	12	0	0
Exports	4	41	11	0	0
Net Availability	**4847**	**4985**	**5347**	**5619**	**5819**

The world's largest refinery was being planned in Ratnagiri district of Maharashtra, however as per news reports, has been now planned where the population have no objection to it. The Ratnagiri Refinery & Petrochemicals Ltd (RRPCL), which is running the project, says the 1.2 million barrel-per-day (bpd) refinery, and an integrated petrochemical site with a capacity of 18 million tonnes per year, will help create direct and indirect employment for up to 150,000 people, with jobs that pay better than agriculture or fishing.

The proposed 60 million tonne per annum mega refinery with an investment of USD 42 billion will have IOC holding 50% in the JV company formed in June while the rest of the equity will be equally held by the other two state-run refiners HPCL and BPCL.

Indian Oil Corporation, equity partner in the proposed mega West coast refinery, has held many rounds of talks with the new Maharashtra government and is hopeful of the project coming on-stream. Following the objection by a political party, the last state government had proposed an alternative location for the refinery at Roha, off the east coast of the megapolis.

As per IOC they are on course to finalize the technical configuration for the refinery (both Engineers India Ltd and American engineering consultancy Jacobs have submitted their final proposals), and are also engaging the state in the right earnest. However, IOC officials have added that unless there is finality on the location, the company cannot go ahead as identifying the land is crucial, considering it needs around 15,000 acres.

The BPCL Kochi Refineries is expecting around 16% increase in its turnover in another three years with the completion of its second petrochemical project. Its $1.59 billion second petrochemical complex to manufacture polyols is expected to go on stream by 2022. An import substitute, the products find wide use in the production of automotive seats, mattresses, shoe soles, refrigeration etc.

Six new process units will be built as part of this project and integrated into the existing refinery. New process units will include propylene oxide, propylene glycol, polyols, ethylene oxide/monoethylene glycol, ethylene recovery unit and a cumene unit.

When complete, the Kochi complex will produce propylene glycol, ethylene glycol and various grades of polyols based on 250 000 tpa of polymer grade propylene. Polyols are used for a variety of applications in the automobile, textile and furniture industries. They are also widely used in construction as insulation and sealants. There is a huge demand for polyols and it is growing by over 10% per annum providing good scope for MSMEs to set up units for polyols-based products in the complex.

BPCL is investing 111.3 billion rupees to set up the Kochi specialty polyols petrochemical plant, which will be fed by propylene produced at the refinery. The project is scheduled to be completed sometime during 2023-24, according to BPCL's website. It will produce acrylic acid, acrylates and oxo alcohol that are used in the manufacture of paints, super absorbent polymers, detergents, adhesives, sealants, solvents etc. The technology has been sourced from global companies like Mitsubishi, Air Liquide Global and Johnson Mathey Davy. Both complexes have been made possible after the integrated refinery expansion project (IREP), recently dedicated to the nation by the Prime Minister Narendra Modi that will raise the capacity of the refinery to 15.5 million tonnes from 9.5 million tonnes. The propylene produced after the expansion is the main feedstock of the petrochemicals.

The refinery now has the capacity to produce 500,000 tonnes of propylene and 100,000 tonnes of ethylene. The entire quantity of propylene will be used for the two petrochemical complexes. The two projects will result in $ 1.857 billion forex savings per annum for the country.

Numaligarh Refinery Limited (NRL) is expanding its refining capacity from three to nine million metric tons per year. The project is expected to be completed by 2024. The refinery expansion project is part of the government of India's initiative towards "Hydrocarbon Vision 2030" for the northeast region of India.

Haldia Petrochemicals Ltd (HPL) had announced last year that company would be investing over USD 4 billion in setting up a mega petrochemical complex in Odisha. In January 2020, the state government has begun the process of acquiring 3320.21 acres of land in Baliapal block of Balasore district for the same. Odhisa Industrial Infrastructure Development Corporation (IDCO) was given the nod to acquire land during the meeting in the last week of December 2019.Once complete the project is expected to generate employment of around 10,000 people. The hydrocarbon processing complex comprising a light crude oil refinery, aromatics complex and ethylene cracker units.

The Odisha government in March 2019 had approved the Rs 28,700 crore (USD 4.05 billion) investment proposal of the joint venture Haldia Petrochemicals Ltd (HPL). The proposal envisaged setting up an integrated refinery with aromatics complex for production of Paraxylene and Purified Terephthalic Acid (PTA) near Subarnarekha Port in Balasore district. The production capacity of the Paraxylene plant will be 1.6 million tonnes per annum (mtpa) and for PTA it will be 2.5 mtpa in the first phase.

The West Bengal-based company had proposed investment of $10 billion at the Make in Odisha Conclave global investors' meet held in November 2018. The land requirement for the project is 2,000 acres which will be recommended for allotment post assessment by the Industrial Promotion and Investment Corporation of Odisha Limited (IPICOL). The land for the project has been identified in the vicinity of the upcoming Subarnarekha Port.

In addition to Haldia Petrochemicals, the HLCA also approved the proposal of state-run Indian Oil Corp to set up a polyester product manufacturing unit of 300 kilo tonnes per annum (KTPA) capacity at an investment of $ 280 million in the textiles park coming up at Bhadrak district.

The project will create employment opportunities for many people and is expected to be implemented within four years of land allotment. Considering the large population base and high GDP growth rate of Odisha and the country overall, the demand for these products is likely to be huge. It is worth considering that entire eastern India and nearby countries like Bangladesh are dependent on sourcing polyester fibres from the western part of India to meet the clothing demand of the region.

Therefore, it is envisaged that setting up PTA unit will trigger investment in these products and will catalyze the growth of further downstream processing units along the value chain, driving economic growth of the region. Since the total polyester chain starting from spinning to garments is a labor-intensive process, it is estimated that direct and indirect employment generation potential of the project is about one lakh people.

Indian company, Essar Oil Limited had been rebranded as Nayara Energy Limited in 2018, operates a 20 million tonnes a year oil refinery at Vadinar. It is one of the world's most modern and complex refineries with a complexity of 11.8, which is amongst the highest globally. Nayara Energy has become the fastest growing retail business chain in India with the largest private sector fuel retail network. The company has over 4,500 operational outlets spread across 28 states and 4 Union Territories.

Nayara Energy Limited- an integrated downstream oil company, partially owned by Russia's energy giant Rosneft (49.13%), plans to launch petrochemical production at an oil refinery in India's Vadinar in 2022. The first stage of the development of the company's oil refinery in Vadinar involves organizing the production of petrochemical products and entry to the Indian petrochemical market. This decision has already been approved by the board of directors of Nayara Energy.

The first phase of implementation of the development program of the Vadinar oil refinery includes the construction of new facilities that will allow producing up to 450,000 tonnes of polypropylene per year. The project is scheduled to be completed in 2022. Thyssenkrupp Industrial Solutions (India) has recently signed a contract with Nayara Energy, under which it will provide project management consultancy (PMC) services for Nayara's new petrochemical project to be built at the site of Nayara's 20-million-t/y Vadinar refinery in India.

The planned investment is for a 450,000 tonnes a year Propylene Recovery Unit (PRU), a similar capacity Polypropylene plant and a 200,000 tonnes MTBE (methyl tertiary-butyl ether) plant.

A preliminary total investment at the first phase will amount to $850 million, the company said. Financing is planned to be provided at the expense of the Indian company's own funds, as well as with the involvement of bank financing.

The new development program will allow in the medium term to improve the financial performance of Nayara Energy and optimize the existing production processes. Besides the petrochemical unit, investments would also go into adding capacity at the refinery to produce Euro-VI grade petrol and diesel.

As part of the pacts signed, Nayara Energy will initiate smart agriculture and water conservation programme in 11,000 hectares in Dwarka, Gujarat.

HPCL-Mittal Energy Ltd. (HMEL), has selected Lyondell Basell's fifth generation Spheripol polypropylene process technology for a 500,000 metric tons per year (m.t./yr) plant in Bathinda, India.

The 15 million tonne IOC refinery at Paradip is already producing diesel, petrol, kerosene etc. The unit has been set up at an estimated cost $450 million. The 680-KTA Polypropylene Plant at Paradip Refinery which has increased Indian Oil's petrochemicals capacity to 3.15 MMTPA, with many other projects to follow. It has also considerably reduced import of polypropylene grades, thereby saving foreign exchange for the exchequer.

The plant is using Spheripol Technology from Basell, Italy, and is capable of producing different grades of polypropylene. The major facilities envisaged under the project are coker LPG treater unit, warehouse for polypropylene storage and other associated facilities such as flare and cooling tower.

The oil marketing company has also got the approval of its board to set up a second unit- the mono ethylene glycol plant at a cost of Rs 38 billion by 2020-21. Ethylene Glycol is extensively used in the manufacture of items like polyester fibre, bottle & film grade chips, solvents, coolant, textiles, packaging, PET film, sheet and molded containers for food packaging, which have a sustained industrial demand.

The project is seen as a key driver for the growing textiles industry in the region and will cater to the rising demand for polyester fibre. With a textiles park proposed at Bhadrak, there will be huge opportunity for supplying raw material to downstream textile units.

An estimated $ 0.285 billion is likely to be invested in downstream units, generating large scale employment.

Two projects –the purified Terephthalic acid (PTA) plant and petcoke gasification based synthetic ethanol plant would together cost IOCL $ 4 bn and are due to be commissioned by September 2023-24.

On the crude oil refinery spread over 3,300 acres, the oil behemoth IOC has already invested $ 5 billion. The company has pledged to invest $ 7.4 billion more on various components of the petrochemical complex.

B. Butadiene

Asia is the world's largest consumer of butadiene with the highest growth rates growing demand for tires and polymers and uncertainties of natural rubber market will drive global butadiene market and stimulate the development of bio-butadiene projects. However, supply was mixed in Q1 2020. Several crackers in Asia were shut for maintenance, but the availability of deep-sea cargoes from Europe helped to offset the tighter-than-expected supply in Asia during this period.

Demand fell due to the coronavirus outbreak in China and other parts of Asia subsequently. Lockdowns, border closures, port restrictions and travel bans imposed by regional authorities in Asia saw demand slumping in Q1. China, the world's second largest economy and the world's biggest automotive market, was shut on 23 January for a week-long Lunar New Year holiday, which was extended over several weeks to contain the outbreak.

Demand is expected to weaken in Q2 because of the fallout from the coronavirus pandemic. Lockdowns, border closures, port restrictions and travel bans are expected to continue weighing on demand, as respective Asian governments have imposed stringent measures to combat the coronavirus pandemic. Workplaces and factories will continue to suspend operations during the lockdowns. Major tyre and car makers will continue to suspend operations in their respective facilities worldwide.

Butadiene prices fell in 1st week of May 2020, as product availability continued to remain ample coupled with weaker buying trends in the region.

Around 4th May 2020, CFR South East Asia prices were assessed lower at the USD 255/mt levels, a drop of USD 20/mt from the previous week.

Butadiene prices were highly volatile in 2019 (ranging from $1740 to $1005) in line with fluctuations in natural rubber prices and tight supply due to cracker turnaround season in Asia. Butadiene prices have been witnessing a dip since the start of 2019 and ranging between $1145 and $1065 ($/MT SEA prices). Continuing weak natural rubber market sentiment and lower tire operating rates in lieu of weak automobile demand from China weighed down on butadiene prices and synthetic rubber prices. The ongoing US-China trade war had dampened market sentiment for Synthetic rubber (SBR & PBR) & ABS segment weighing down on demand.

Butadiene prices are likely to remain stable to soft volatile in 2019 as supply will ease with new capacity additions in NEA & SEA coming on-stream in 2019 with no downstream capacity. The startup of light feed crackers in 2018 & 2019 in the US, will create additional supply of BD, hence reducing current deficit and dependency on European imports. India to remain net exporter of refined butadiene with relatively less derivative production, although export volume is expected to decrease with increased domestic consumption.

Butadiene production remains limited in India and is not expected to change in the foreseeable future. Butadiene demand is set to improve in India as growth in the automotive sector is likely support robust domestic consumption of synthetic rubber, especially styrene-butadiene rubber (SBR) and polybutadiene rubber (PBR).

Table 13: Butadiene Demand Supply

Butadiene (KT)	2017-18 A	2018-19 A	2019-20 A	2020-21 E	2021-22 E
Capacity	550	605	605	605	605
Production	420	485	501	506	520
Imports	2	0	0	0	0
Exports	104	167	172	166	165
Apparent Demand	298	318	329	340	355
Demand Growth%	**-1.4%**	**6.7%**	**3.6%**	**3.3%**	**4.4%**

From a de-growth in 2017-18, it was a healthy growth year in 2018-19 with demand growing from 298 KT in previous year to 318 KT, a 6.7% growth. However, growth was subdued in 2019-20 and demand stood at 329 KT. In the following year 2020-21, the demand is projected to grow in the similar range and show a pick-up trend in 2021-22 to touch 355 KT. There was an exportable surplus of 172 KT in 2019-20, which is expected to be around 165-166 KT in next two fiscals. There are no imports expected going forward in next two years.

C. Styrene

The Indian Styrenics Market stood at 840 KT in 2019-20. The demand of Styrene has been continuously increasing in Indian plastics market from past few years. The end segment with high styrene consumption was automobiles, packaging, building and constructions, consumer products, medical devices and others. The favorable government policies & rapid expansion in projects such as Smart Cities has increased consumption of styrene used in the plastic products. The major demand for styrene is from the automotive application in which it is used as an alternative material to metals and steel to reduce the weight of the vehicle which in turn increases the efficiency. However, the product innovation, strong technology, and product awareness among the end-users are the key challenges for Styrenics in the Indian plastics market. The strong dependency on imports due to the limited domestic production, global market prices, and currency fluctuations are the major constraints for the Indian Styrene Market. India's total imports for Styrene grew by 8.2% in 2017-18 and 3.4% in 2018-19 and 2.8% in 2019-20. Imports are projected to increase ~2% in next fiscal and in 2021-22, 8% to reach 920 KT.

Table 14: Styrene Demand Supply

Styrene (KT)	2017-18 A	2018-19 A	2019-20 A	2020-21 E	2021-22 E
Imports	790	817	840	851	920
Exports	0	0	0	0	0
Apparent Demand	790	817	840	851	920
Demand Growth%	**8.2%**	**3.4%**	**2.8%**	**1.3%**	**8.1%**

D. EDC and VCM

Almost the entire production of EDC and VCM in India are consumed captively by the polymer manufacturers for production of PVC and hence, PVC manufacturers who do not have facilities for captive production of EDC and VCM have to rely entirely on imports to meet their demand for PVC building blocks viz. EDC and VCM.

Table 15: EDC & VCM Import into India

EDC (KT)	2017-18 A	2018-19 A	2019-20 A	2020-21 E	2021-22 E
Capacity	205	237	247	247	247
Production	188	229	248	244	244
Imports	521	498	484	471	490
Exports					
Apparent Demand	709	727	732	715	734
Growth (%)	**0.4%**	**2.5%**	**0.7%**	**-2.3%**	**2.7%**
VCM (KT)	**2017-18 A**	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Capacity	996	996	996	996	996
Production	928	950	1026	974	974
Imports	478	458	512	500	500
Exports					
Apparent Demand	1406	1430	1559	1527	1527
Growth (%)	**-0.4%**	**1.7%**	**9.0%**	**-2.1%**	**0.0%**

EDC demand witnessed a flat growth of 0.7% in 2019-20 and it is expected to de-grow at 2.3% in 2020-21 before a pickup for demand to touch 734 KT by 2022. While VCM too witnessed a dip in 2017-18 and almost a flat growth of 1.2% in 2018-19, it grew 9% in 2019-20 before once again witnessing a de-growth of 2.1% in 2020-21. No growth is expected in 2021-22 also. In case of EDC imports, there is dip expected going forward in 2020-21 to 471 KT from 484 KT in 2019-20. Imports in case of VCM is expected to remain around same level as in 2019-20 of 512 KT, in coming next two years i.e. 2020-21 and 2021-22 at around 500 KT.

E. Aromatics – Paraxylene

India takes up to about 8% of world's total PX capacity, as world's third largest PX producer following China and South Korea.

India is one of the major suppliers of PX to China. In 2019, China received 1.28 million tons of PX from India, accounting for about 9% of the total. It made India the third largest origin of China's PX imports, following South Korea and Japan.

India increased its exports of paraxylene (PX) following a nationwide lockdown since 25 March 2020, putting pressure on discounts for CFR China cargoes. In Asia, the paraxylene deficit was estimated at 280,000 mt per month in May 2020. Asian paraxylene CFR Taiwan/China tumbled to hit a record low of $496.33/mt, the lowest level since Platts assessed the marker on April 4, 2005.

China PX O/R remained stable at 91.90% as on 15th May 2020. High inventory continued to weigh on PX market and PX-naphtha spread further narrowed. From July 2019 till 2nd week May 2020, the average Platts price of PX was 747 $/MT, which was a 42% decline from July 2019 prices.

The paraxylene deficit in Asia was estimated at 276,000 mt per month in April 2020 amid downstream plant start-ups and also lower operation rates at major Japanese, Korean and Chinese aromatics producers due to poor margins. With the prices crashing and inventory build-up in China domestic producers in India who are already dealing with extended lockdown and plant shutdowns and lower throughput in some cases there is a dire need for some temporary relief from the government to support the domestic industry.

Polyester chain recovery amid the easing of lockdowns globally would be a gradual process on the back of the high PX, PTA inventories that requires time to be consumed.

The PTA/PX spread inched above the $100/mt mark at $104.89/mt on 8th May 2020 as it hovered around $90-$100/mt over the last two weeks. Meanwhile, the spread between PX and feedstock isomer-grade mixed xylene narrowed further to a 8-month low of $79.33/mt on 8th May 2020.

For PX, the direct impact that it may bring is on its exports, which depends not only on India's port policy, but also on the overall local demand in the later period. Similar to China, the impact of lockdown on downstream consumption is more obvious. If the impact on the export ports and shipping is not significant, unless the PX suppliers determine to significantly reduce production, the possibility of an increase in PX exports may still exist. It is forecasted that PX exports would rise from 2240 KT in 2019-20 to 2286 KT by 2021-22.

Table 16: Paraxylene Demand Supply

(KT)	2017-18 A	2018-19 A	2019-20 A	2020-21 E	2021-22 E
Capacity	5643	5786	5860	5860	5860
Production	5028	5377	5604	5604	5604
Imports	889	762	676	676	718
Exports	1968	2262	2240	2241	2286
Apparent Demand	3959	3841	3841	3859	3859
Demand Growth%	**4.8%**	**-3.0%**	**0.0%**	**0.5%**	**0.0%**

PX imports stood at 676 KT in 2019-20 and it is expected to further increase to 718 KT in 2021-22. Capacity addition from RIL took up the existing capacity to 5643 KT in 2017-18 and further to 5786 KT in 2018-19. A further addition of 74 KT took the total capacity to 5860 KT in 2019-20. In 2017-18, PX registered a modest growth of 4.8%, however the next year 2018-19 consumption de-grew by 3% and witnessed no growth in 2019-20 and forecasted to remain flat in next two years to come. The consumption is expected to touch 3859 KT in 2021-22.

As the demand for Paraxylene is driven by the growing apparel and textile industry across the regions the impact of slowdown due to COVID is adding further pressure. Demand for the packaged food and beverages from the working population owing to convenience and longer shelf life is expected to uplift the market growth going forward as the impact of lockdown reduces. Paraxylene consumption had seen growth in last few years in cosmetics and personal care industry with increasing focus on the consumer on their personal appearance.

XVI. Intermediates

Fibre Intermediates

Most Asian market participants are taking a bearish view on purified terephthalic acid for the second half of the year, in view of high stock levels, impending new startups and muted expectations over demand recovery after the coronavirus pandemic. Some market participants, nevertheless, have been wondering if there is still room left for further price declines, given that PTA prices have already hit unprecedented lows as per Platts.

Asian PTA prices tumbled to a record low of $395/mt CFR China on April 22, and have been hovering around the low-$400s/mt in May. Prior to March, the PTA CFR China marker had never fallen below $538/mt since S&P Global Platts launched the assessment in April 2008.

The SEA Platts PTA prices showed a 45% decline in prices from July 2019 to April 2020. Inventory in India too witnessed a surge of 202% in the said period from owing to the lockdown and closure of plants. Prices crashed by 8% in the period from March 2020 to April 2020 with an average operating rate of 50% of plants in India at the end of April 2020. Supply-wise, China PTA inventories hit record highs of 3.5 million-3.7 million mt in May, well above the typical level of 1 million-1.5 million mt seen in the past two years.

Such levels are sufficient to cover a month of polyester demand in China and it will take at least a few months to bring stock levels back to normal, on the conditions that polyester demand improves and PTA operating rates decline, sources said.

China-based PTA producers, however, have been maintaining high operating rates of 85-95% since April despite record high inventory levels because of decent PTA margins.

This caused concerns among some producers in Northeast and Southeast Asia as they were forced to cut production in the second quarter due to lackluster demand and less competitive production costs, with the exception of South Korea, producers, which mainly targeted European markets for exports. Cash flow could turn into a major problem for market participants within the polyester value chain if high stock levels for PTA and other commodities along the chain persist, two PTA producers said, adding that it is just a matter of time that rationalizing of production would be required for the industry.

A total of around 7.2 million mt/year of new PTA capacity is also expected to be brought online in China in H2 2020, including 2.5 million mt/year from Hengli Petrochemical in June-July, 2.2 million mt/year from Xinfengming Group Co Ltd in September, and 2.5 million mt/year from Fujian Baihong Group in October, according to market sources.

This will bring the total effective PTA capacity to 59.8 million mt/year in China and 79.8 million mt/year for the whole of Asia by year-end, Platts data shows. Market participants are concerned that the additional capacity will further pressurize the already weak PTA market in China, which is flooded with high stocks due to demand destruction amid the coronavirus outbreak.

Despite expectations of weak PTA demand-supply fundamentals extending into H2 2020, several trade participants have an opinion that the recent key driver of PTA prices has been the price direction of upstream paraxylene and the direction of crude oil, and they are predicting a continuation of this scenario. Subsequently, most US-dollar denominated spot PTA transactions have been discussed on a PX-linked floating formula basis, instead of fixed prices, to minimize risks amid sharp price volatility in upstream markets. The PTA to PX spread averaged $93.7/mt over January to mid-May, according to Platts data. In 2017-18, the combined production of fibre intermediates viz. ACN, Caprolactam, PTA and MEG reached 7212 KT, and in 2018-19 jumped 10% to 7948 KT which de-grew by 2% in 2019-20. It is expected to touch 8214 KT in 2020-21 before touching 8244 KT in 2021-22.

Table 17: Fibre Intermediate Demand Supply

ACN	2017-18 A	2018-19 A	2019-20 A	2020-21 E	2021-22 E
Capacity	0	0	0	0	0
Production	0	0	0	0	0
Imports	160	182	190	195	200
Exports	0	0	0	0	0
Demand	160	182	190	195	200
Demand Growth (%)	**14.3%**	**13.8%**	**4.4%**	**2.6%**	**2.6%**
Caprolactam					
Capacity	70	70	70	70	70
Production	86	89	90	90	90
Imports	58	65	65	65	65
Exports	0	0	0	0	0
Demand	144	154	155	155	155
Demand Growth (%)	**4.3%**	**6.9%**	**0.6%**	**0.0%**	**0.0%**
PTA					
Capacity	6230	6410	6420	6420	6420
Production	5604	5792	5734	6099	6099
Imports	469	420	840	750	1025
Exports	214	160	79	54	30
Demand	5859	6052	6494	6795	7094
Demand Growth (%)	**6.9%**	**3.3%**	**7.3%**	**4.6%**	**4.4%**
MEG	**2017-18 A**	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Capacity	1715	2215	2215	2215	2215
Production	1522	2067	1982	2025	2055
Imports	1016	632	737	750	800
Exports	139	232	122	80	72
Demand	2349	2467	2597	2695	2783
Demand Growth (%)	**9.3%**	**5.0%**	**5.3%**	**3.8%**	**3.3%**

The SEA Platts MEG prices showed a 24% decline in prices from July 2019 to April 2020. Inventory in India too witnessed a surge of 102% in the said period from owing to the lockdown and closure of some plants. The plants which were running had an average operating rate of 78% at April end in India.

PTA and MEG constituted 36% and 78% of the total 1299 KT in 2017-18 which changed to 23% for PTA and 34% for MEG of the total 1832 KT fibre intermediates imported in 2018-19. This changed in 2019-20 to PTA 47% and MEG 41% of the total imports of 1785 KT of fibre intermediates. Further in 2021-22 the same is expected to change to 49% and 38% for PTA and MEG.

Exports of fibre intermediates from India in 2017-18 were 353 KT which rose to 391 KT in 2018-19 before dipping to 201 KT in 2019-20. Exports are expected to dip further in coming two years. ACN production was stopped by RIL and demand is being met by imports on the back of pesticide industry doing well.

The export scenario of the Indian textiles industry remains weak. In addition to this, spread of COVID-19 will further aggravate the industry's difficulties. The pandemic has disturbed the demand-supply situation of the textiles industry.

The demand for textiles will face headwinds in both the markets, domestic and international. The closure of retail stores and malls on account of lockdown situation across the nation will affect the industry's sales. Even after the lockdown is lifted, demand for textiles will take time to pick up. This is because footfalls will be low in malls and retail stores as people will avoid visiting crowded markets.

PTA import volumes into India dipped in 2018-19 to 420 KT from 469 KT in the previous year. In 2019-20 it doubled to 840 KT and is expected to witness a dip in 2020-21 owing to the lockdown situation due to COVID, before rising to 1025 KT in 2021-22.

It is to be noted that the anti-dumping duty on PTA was abolished in the Union Budget 2020-21.

IOC has planned two projects at Paradip for the petrochemical complex- 1,200,000 tonnes per annum purified Terephthalic acid (PTA) plant and petcoke gasification based synthetic ethanol plant. Both these projects would together cost IOCL $ 4.38 billion and are due to be commissioned by September 2023-24.

With the availability of mono ethylene glycol (MEG) and PTA from these units, downstream industries like polyester chips, fibres, PET (polyethylene terephthalate) grade chips, PET film grade chips and polyester industrial yarn can be developed. IOCL has pumped in USD 5.5 billion on the crude oil refinery. Indian Oil signed another MoU with MCPI Ltd. for setting up a Textiles Park in Odisha.

With the coming up of a MEG (Mono Ethylene Glycol) Unit at Paradip refinery by 2020-21 and availability of PTA (Purified Terephthalic Acid) at Haldia in West Bengal, the polyester downstream industry can flourish very well in eastern region. A synergy of cotton fibre with polyester fibre to promote and popularize synthetic textiles and the manufacturing units of the textiles park can be linked to Bangladesh and Myanmar. This will create huge employment opportunity for the State.

Majority of the Caprolactam produced in the country are utilized during the production of nylon 6 fibres and nylon 6 resins, to cater textile and engineering plastic product manufacturers, respectively. In 2018-19 production and demand of fibers was healthy. However, in 2019-20 the growth was flat.

The outbound shipment of RMG/apparels (the largest segment in India's total textile exports) is expected to take a hit. This is because India's export scenario remains depressed for the top export destinations – European markets, including the UK and the US (together they account for about 60% of the total apparel exports) – given the spread of COVID-19 in these markets and the lockdown situation there. Given the unfavourable demand scenario, textile firms may not utilize their full capacities or may undertake production cuts, thus bringing down the overall output of textiles during FY21.

In addition to this, labour disruption (many labours have migrated to their hometowns) will also affect the total textile production numbers as textiles industry is a labour-intensive industry.

In the medium to long-term, some demand from the US and the EU markets is expected to shift (though gradually) from China to other major garment manufacturers viz. Vietnam, Bangladesh, India and Cambodia.

Demand for Caprolactam was lacklustre in Q1 2020.A decline in demand, resulting from the slowdown in the auto segment (the key end-user market) and the ongoing US-China trade war led to dumping of caprolactam in the Indian markets.

XVII. Polymers, Fibres and Elastomers

Polymer demand within India has weakened as well, hit by the domestic slowdown and declines in the rupee against the US dollar. The Indian currency has fallen sharply in the past weeks to around Rs 76/$1, pressured by the curfew announcement and the partial closures across the country. The overall run rate of Indian polyester sector fell to around 10%-20% after the lockdown, from around 70% in early-March and 40% in April 2020, due to weak demand.

Several petrochemical products in India hit record-low, according to S&P Global Platts data, after the country imposed a nationwide lockdown from end of March 2020 for 21 days to fight the fast spreading coronavirus outbreak.

Petrochemical plants were shut down and few lowered operations due to a lack of labour and limited logistics. However, certain petrochemical operations were exempted by the lockdown as the government sets some exceptions for industrial establishments.

According to the government statement, industrial establishments were to remain closed with exceptions of manufacturing units of essential commodities, as well as production units, which require uninterrupted operations.

The partial shutdown of non-essential services in all major states had hindered transportation and distribution of chemicals such as methanol and polymers. Chemicals supplied through a land-based distribution network covering India's 29 states were affected.

India's Directorate General of Shipping (DGS) had imposed quarantine on shipping vessels from ports of infected countries including China for 14 days starting from the date of departure from the infected ports.

The Indian domestic polymer industry (like global industry) was dominated by Polyolefins (PE & PP), representing about 74% of all commodity resins consumed in 2017-18, the same was 75% in 2018-19 and 76% in 2019-20.

After clocking a growth of 6.8% in 2016-17 the polymer growth in India grew at 8.3% in 2017-18 and further by 9.5% in 2018-19 before slipping to a modest 6.8% in 2019-20. Domestic demand has already outpaced domestic production. Demand growth is expected to weaken in 2020-21 due to nation-wide lock down and de-grow by 0.4%. However, going further in 2021-22 the demand is forecasted to bounce back significantly and grow substantially clocking a growth of 12.6%.

Table 18: Polymer Demand Supply

Polymers (KT)	2017-18 A	2018-19 A	2019-20 A	2020-21 E	2021-22 E
Capacity	12121	13111	14127	14141	14804
Production	10283	12052	12537	13201	14325
Op Rate (%)	**85%**	**92%**	**89%**	**93%**	**97%**
Import	4285	3953	4171	4025	4192
Exports	1058	1880	1545	2159	1264
Net Trade	**-3226**	**-2073**	**-2626**	**-1866**	**-2928**
Demand	13459	14738	15734	15671	17646
Demand Growth %	**8.3%**	**9.5%**	**6.8%**	**-0.4%**	**12.6%**

Polymer import dependency remained high at 32% in 2017-18, which came down to 27% in 2018-19 and it is expected to come down in next two years to ~24% by 2021-22. In 2017-18 net trade deficit of total polymers stood at 3226 KT which was lower than previous year which stood at 3371 KT. Trade deficit in 2018-19 was 2073 KT and spike to 2626 KT in 2019-20. It is expected to dip to 1866 KT in 2020-21 and spike again in 2021-22 to touch 2928 KT.

The coronavirus-related lockdowns also spurred demand for flexible packaging going into food, cleaning and pharmaceuticals segments, helping boost producer margins as lower feedstock costs and a slowdown in imports would help to balance the market and reduce competition. The difference in costs of various methods of production had narrowed and had eroded low-cost producers' margins.

Packaging, consumer and healthcare markets will continue to fare better, while demand remains weak in other plastic sectors due to lower spending amid a stay and work from home culture. Asian high-density polyethylene prices rose as demand returned post a phased easing of lockdown measures. Stretch LLDPE film demand has benefited from stricter hygiene requirements, which require more film to be used to wrap finished goods.

India has started to see signs of demand improvement around May 16, 2020 week as some downstream plants started to resume operation.

India's Paradip refinery has speeded up its operations, with the start of a polypropylene unit, as the COVID-19 lockdown eases gradually. Other polymer units are also being geared up to come online this month.

The refinery's run rate is expected to be around 80% by the end of May as the lockdown eases further.

India's third phase of lockdown is in place until May 17. The national lockdown was imposed from March 25 to April 14. A second phase was valid from April 15 to May 4. From the third week of April, some exemptions to the lockdown were granted in rural areas for farming and manufacturing activities.

The Paradip refinery has resumed the manufacture of polymer grades, with an around 60% throughput level. Paradip, located on the east coast, mainly caters to retail fuel demand and downstream industries demand in the eastern region.

Haldia (650KTA) and GAIL Pata-1 (450 KTA) cracker restarted last week and Pata-1 cracker (450KTA) started on 15th May 2020. IOCL cracker (850 KTA) has resumed operations. OPAL's 1100 KTA cracker is operating at ~ 50-60 % rate and BPCL (220 KTA) cracker ramped up rate to 70-80 %. In case of Polymers, Indian Oil Corp Ltd (IOCL) PP units (1.3MMT) is operating at 40%. Haldia petrochemicals has resumed operations of its PE (700KTA) and PP (350KTA) units, currently running at 75%.

Mangalore Refinery and Petrochemicals Ltd (MRPL), has restarted its 440KTA PP plant, currently operating at 40%. HMEL (500KTA) and BCPL (60KTA) are operating at 50-60%. HPL (350KTA) PP unit is operating at 75%. OPAL's 1.08 MMT PE unit and 340 KTA PP unit are operating at 50% and 60% respectively. GAIL has resumed operations of 220KTA HDPE.

Many downstream converters were able to ramp up operation even due to manpower shortage by convincing workers to continue working after government announced a slew of relief packages.

India's petrochemical industry, like the overall economy, faces near-term challenges, but the long-term growth outlook for the industry remains positive. Capacity expansions by several other manufacturers are moving ahead but cautiously.

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XVIII. Polyolefins

All PE registered a robust demand growth of 11.2% in 2017-18 to touch 5106 KT. In 2018-19, the growth was slower at 3.7% i.e. 5293 KT before bouncing back in 2019-20 to 7.4% and stood at 5687 KT.

Table 19: Polyolefin Demand in India Actual & Projected

(KTA)	Actual			Projected		0% change year on year			
	2017-18	2018-19	2019-20	2020-21	2020-21	2018-19	2018-19	2018-19	2018-19
LDPE+EVA	921	901	962	999	1049	-2%	7%	4%	5%
LLDPE	1916	2122	2391	2631	2876	11%	13%	10%	9%
HDPE	2452	2448	2530	2690	2860	0%	3%	6%	6%
PP	4756	5698	6114	5383	6660	20%	7%	-12%	24%
Polyolefins	10044	11169	11997	11703	13445	11%	7%	-2%	15%

Source: Industry Estimates

It is expected that PE win India would see a similar growth of around 7.5% in next two years to come and All PE would touch 6580 KT by 2021-22. Polypropylene registered a robust growth of 9.4% in 2017-18 and clocked a double-digit growth in 2018-19 of a staggering 19.8% before witnessing a modest growth in demand close to 7.3% in 2019-20. It is expected to witness a de-growth of 12% in next fiscal. Further it is expected to again bounce back by almost 23.7% in 2021-22. Polyolefins too registered a robust demand growth of 10.6% in 2017-18 and is expected to grow at 5.3% in next fiscal. Further it is expected to grow at 7.1% in 2019-20 and 7.4% in 2020-21.
Demand for medical masks has surged across the globe as the coronavirus pandemic spreads, and with that comes higher demand for resin melted into fibers for specialized masks that filter out airborne and liquid contaminants.

Polypropylene's main end uses are in packaging and automotive sectors, making everything from takeout food containers, crates and plastic dishes to dashboards and bumpers. The most common type of PP, homopolymer, also is used to make N95 masks that are in high demand for doctors, nurses and other medical professionals treating and testing coronavirus patients.

PP demand for N95 mask production "will be a small increase" of overall PP demand, largely because it must be melted and blown into fibers by specialized machines that create the nonwoven material.
At the same time, loss of polypropylene demand in the automotive sector after Maruti, Ford, Nissan, Toyota, and Volkswagen shut plants as part of their coronavirus responses will likely be much larger than gains in PP demand for medical use.

India, which was not manufacturing even a single personal protective equipment (PPE) kit, has now achieved an almost unrealistic goal of producing 2.06 lakh PPE kits daily within two months after the coronavirus outbreak.

The highest single-day production of PPE kits, around 2.06 lakh kits, was recorded on May 2, 2020. However, on average, domestic production is about 1.5 lakh per day.

A Personal Protective Equipment’s (PPE) kit consists of mask, eye shield, shoe cover, gown and gloves, which doctors and healthcare workers wear during the treatment of COVID-19 patients.

The government has identified at least 110 domestic manufacturers of PPE kits in the country. However, only 52 companies are manufacturing PPE kits right now.

Companies like Alok Industries, JCT Phagwara, Gokaldas Exports, Aditya Birla, etc., are some of the domestic PPE kits manufacturers.

The Union Health Ministry official added: "As of now, the Central government has distributed about 21.32 lakh PPE kits to the Centre and state-run hospitals. At least 15.96 lakh PPE kits are in the Centre-State buffer stock."

Recently, the Empowered Group-3 of the Central government had informed that the total projected demand of PPE kits till June 2020 would be 2.01 crore.

Orders for 2.22 crore PPE kits have already been placed, of which orders to the tune of 1.42 crore have been placed with the domestic manufacturers and 80 lakh PPE kits are being imported.

Some government institutes like South India Textile Research Association (SITRA), Defence Research & Development Organization (DRDO) and Ordnance Factory Board are at the forefront of developing new technologies, materials, and testing facilities. DRDO has also developed new PU coated nylon/polyester for supply to domestic manufacturers.

XIX. Vinyl's: PVC

PVC is seen as a key economic indicator as its growth is tied to GDP with a particular link to demand from the construction sector. In addition, rising Chinese supply has pressurized export prices, prompting concern among producers in Southeast Asia as well as other regions about cheaper Chinese volumes displacing other flows.

Asian PVC has been falling since early February as the coronavirus outbreak curbed PVC demand in the construction industry. In April second week, CFR China PVC price was assessed $100/mt lower on the week at a 11-year low of $620/mt, according to S&P Global Platts data. CFR India price had also dived $100/mt to a record low of $660/mt during the same period, according to Platts data.

Asian PVC makers are currently moving their cargoes to China after huge order cancellation in India where the country is in lockdown since March 24. The lockdown period has now been extended to May end. As per market sources, Asian PVC makers would unlikely offer to India for May business due to the lockdown, while most of their quantity would be moved to China.

Production cost of ethylene-based PVC is relatively low due to weak naphtha and ethylene feedstock prices, while carbide-based PVC makers are suffering from high coal feedstock prices.

The demand for PVC had increased marginally at 2% in 2017-18 from the previous year growth of 10.7% in 2016-17. Over next two years PVC demand grew at around 5%. Going forward in 2020-21, it is expected that PVC demand would grow at ~6.2% and around 6% in 2021-22.

Meanwhile, PVC imports are expected to increase further from 1883 KT in 2019-20 and touch 2348 by 2021-22.

Table 20: PVC Demand Supply

PVC (KT)	2017-18 A	2018-19 A	2019-20 A	2020-21 E	2021-22 E
Capacity	1557	1557	1579	1579	1579
Production	1378	1409	1464	1414	1437
Imports	1658	1813	1883	2162	2348
Exports	0	0	0	0	0
Apparent Demand	3049	3199	3361	3568	3775
Demand Growth%	**2.0%**	**4.9%**	**5.1%**	**6.2%**	**5.8%**

XX. Styrenics

A. Polystyrene

The food packaging sector has kept demand positive during the coronavirus pandemic that has destroyed styrene draw from other sectors.

The price fall for polystyrene was due to the rout seen in oil and feedstock petrochemicals over March 20202. This has been driven by the global spread of the coronavirus pandemic, as well as the oil price war between Saudi Arabia and Russia that saw crude prices falling to historic lows.

Table 21: Polystyrene Demand Supply

Polystyrene (KT)	2017-18 A	2018-19 A	2019-20 A	2020-21 E	2021-22 E
Capacity	490	490	490	490	490
Production	295	290	285	320	330
Imports	29	30	26	24	24
Exports	55	53	41	60	60
Apparent Demand	262	260	261	274	289
Demand Growth%	**2.7%**	**-0.8%**	**0.4%**	**5.0%**	**5.5%**

Styrene SEA prices have dropped sharply in April 2020 to an average $596/mt from $679/mt in March 2020 and $814/mt in Feb 2020. The yearly average for 2018-19 was $1249/mt. This steep fall was tied to the upstream benzene feedstock contract price, which was in turn impacted by extreme price drops for crude oil.

After witnessing a negative demand growth in 2016-17, demand for Polystyrene witnessed a positive growth of 2.7% in 2017-18 to touch 262 KT, as shown in table below. However, 2018-19 once again witnessed a de-grow of 0.8% and a flat growth in 2019-20. Imports are expected to remain at the same level in next two years. While demand is expected to see a growth of 5% and touch 274 KT next fiscal and grow further to touch 289 KT in 2021-22.

B. Acrylonitrile-Butadiene-Styrene (ABS)

Little support was seen for styrene from other polymer markets such as SBR or ABS. While both markets appeared to have been boosted by the ongoing return of the automobile sector as automobile manufacturers are once again starting operations and also the tyre manufacturers, market sources expected little bounce in the coming months pointing to expected low run rates at automobile and tire producers.

While Global ABS demand expected soft during the second half of 2020, Asian styrene-butadiene-rubber would likely remain under pressure for the second-half of this year as weak automobile sales would continue to slash tire demand. Rising natural rubber production would also increase competition.

For the first half of 2020, Asian SBR market dropped to a record-low, due largely to lower automobile production amid the coronavirus pandemic. Meanwhile, competition with natural rubber will continue in the second-half of this year in line with rising natural rubber production in Asia.

Asian acrylonitrile-butadiene-styrene is expected to see market recovery in the second half of 2020, with demand from China continuing to support the market. It will also find cues from feedstock styrene market movement as the weakness in styrene has translated to improved ABS production margins.

Demand recovery in automobile and home appliances sector remains a top concern for the Asian ABS market, while China's demand is regarded as the main contributor.

Sentiment in the ABS market has improved as more economics are to reopen after the pandemic outbreak. Although the market is progressively returning to normal, uncertainties over the coronavirus and global trade tensions continue to loom the market and some sources were cautiously optimistic about the outlook amid market volatility.

Month of May will be the low end of the order entry. Even when people return it will be at low rates to begin and we don't expect many orders above the contract volumes, as per an ABS producer. The SBR market remained concerned about the macroeconomic factors impacting automobile demand, with tire manufacturers proving slower to return than automobile producers. When we get back to some sort of normality it appears unemployment will be significant and the last thing on anyone's mind is buying cars. The tyre producers are very pessimistic about the remainder of the year, as per market analysts.

Both SBR and ABS are at multi-year lows with SBR spot levels at the lowest ever recorded by Platts and ABS spot prices at lows not seen since January 2010. ABS demand in India witnessed a robust growth at 9.3% in 2017-18 before slowing down to 4.8% in 2018-19. In 2019-20 there was no growth at all in the demand. Demand for ABS expected to continue to grow 6% plus in next two fiscals.

INEOS Styrolution India Ltd added 30 KT capacity taking total capacity in 2019-20 to 235 KT and the same is expected to touch 267 KT by 2021-22. Demand scenario is expected to be a key determinant for ABS pricing.

Table 22: ABS Demand Supply

ABS (KT)	2017-18 A	2018-19 A	2019-20 A	2020-21 E	2021-22 E
Capacity	190	210	240	240	240
Production	140	145	140	150	162
Imports	84	90	95	100	105
Exports	0	0	0	0	0
Apparent Demand	224	235	235	250	267
Demand Growth%	**9.3%**	**4.9%**	**0.0%**	**6.4%**	**6.8%**

C. Styrene-Acrylonitrile (SAN)

SAN has been witnessing healthy growth in last two years due to its wide-ranging usage in consumer electronics, appliances and automotive sector.

Table 23: SAN Demand Supply

SAN (KT)	2017-18 A	2018-19 A	2019-20 A	2020-21 E	2021-22 E
Capacity	160	160	160	160	160
Production	96	105	98	74	97
Imports	6	7	9	6	8
Exports					
Apparent Demand	102	112	107	80	105
Demand Growth%	**8.6%**	**9.8%**	**-4.5%**	**-25.2%**	**31.3%**

Demand for SAN surged to 8.6% in 2017-18 and at a robust rate of 10% in 2018-19 before witnessing a de-grow of 4.5% in 2019-20 and a substantial de-growth in 2020-21 before once again bouncing back with a robust growth of around 30% in 2021-22. It is expected there will be an increase in demand of SAN grades, with a focus on consumer and industrial applications. Imports are expected to be around 6 KT to 8 KT in next two fiscals to meet the rising domestic consumption. Over the last few years, INEOS Styrolution India Ltd has made investments to expand its styrene acrylonitrile copolymer (SAN) and rubber plant capacity. The new Absolan line augments Styrolution' s current 60KT/annum production capacity in India taking the total annual production capacity to 100KT/annum.

D. PET (Polyethylene Terephthalate)

The first product to hit a new low was the one furthest downstream in the chain, polyethylene terephthalate, or PET. Asian PET bottle grade tumbled to $740/mt FOB NE Asia and $760/mt FOB SE Asia on March 18, amid lower upstream prices. This was the lowest price since Platts started the assessment from February 13, 2006.

The SEA Platts PET prices showed a 31% decline in prices from July 2019 to April 2020. Inventory in India too witnessed a surge of 189% in the said period from owing to the lockdown and closure of plants. Prices crashed by 7% in the period from March 2020 to April 2020 with an average operating rate of 50% for plants in India in April end 2020.

India is consuming presently FY19-20 1150 KT per year of PET (polyethylene terephthalate) material. Around 92% of this is used in bottles for beverages (alcoholic & non-alcoholic, health drinks, etc.), pharmaceutical and personal hygiene products. The market for consumer products is growing almost in double digit resulting in 12% plus per year growth of PET material. Most beverages are served in PET bottles. However, owing to the ongoing plant shutdowns and lock down situation in the entire country which seems to be slowly easing up in few parts India's polyethylene terephthalate demand is expected to remain at an average rate of ~9% over the next two years -- far outpacing the expected growth of 4%-5% in global demand. The fast pace in India's demand growth is also expected to lift the compounded annual growth rate of Asia's PET consumption to 6%-8% over the same period. India's PET demand has surged significantly in recent years, rising to 700 KT in 2014-2015 to 1014 KT in 2018-19 before touching 1150 KT in 2019-20 which is slated to grow further to 1360 KT by 2021-22. Another main driver behind India's PET demand growth is more widespread use of PET packaging in the beverage sector in India, as most non-alcoholic beverages are currently packaged in PET bottles across Asia. Further growth is also seen from an expected large increase in high pandemic-related demand, such as those used for hygiene, beverage bottles, PET food packaging, personal care and home care. Most of PET products are classified as essentials in the current pandemic.

Table 24: PET Demand Supply

PET (KT)	2017-18 A	2018-19 A	2019-20 A	2020-21 E	2021-22 E
Capacity	1975	1925	1975	2020	2020
Production	1624	1624	1679	1700	1717
Imports	141	183	240	190	160
Exports	867	793	769	640	517
Apparent Demand	898	1014	1150	1250	1360
Demand Growth%	**4.5%**	**12.9%**	**13.4%**	**8.7%**	**8.8%**

XXI. Synthetic Fibres

In 2019-20, the combined production of synthetic fibre (PSF, ASF, PPSF, PFY, PPFY, VFY, VFS and NFY) reached 5415 KT. The same is expected to touch 5711 KT by 2021-22. The demand growth was at 4.6% in 2018-19 and improved to 6.5% in 2019-20. However, with the current pandemic situation the demand is going to derail to 4.4% in 2020-21 before diving down to 1.4% in 2021-22. The capacity in 2019-20 increased to 7545 KT from 6844 KT in 2017-18. Capacity is expected to touch 7882 KT by 2021-22.

Table 25: Demand Supply Balance of Synthetic Fibre

	2017-18 A	2018-19 A	2019-20 A	2020-21 E	2021-22 E
PSF					
Capacity	1242	1282	1391	1391	1391
Production	980	955	1009	1010	1061
Imports	45	36	59	50	50
Exports	146	168	211	220	220
Demand	881	821	832	840	890
Demand Growth (%)	**-3.5%**	**-6.8%**	**1.3%**	**1.0%**	**6.0%**
ASF					
Capacity	106	106	106	106	106
Production	82	91	92	93	94
Imports	33	19	27	23	23

Exports	25	17	16	16	16
Demand	106	107	108	109	109
Demand Growth (%)	**13.0%**	**0.5%**	**1.1%**	**0.9%**	**0.0%**
PPSF					
Capacity	13	13	13	13	13
Production	3	3	3	3	3
Imports	2	2	2	2	2
Exports	11	0	0	0	0
Demand	5	5	5	5	5
Demand Growth (%)	**4.2%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**
PFY					
Capacity	4620	4942	5209	5320	5426
Production	3076	3338	3686	3877	4075
Imports	34	38	62	56	36
Exports	146	140	152	132	124
Demand	2966	3215	3578	3759	3960
Demand Growth (%)	**6.6%**	**8.4%**	**11.3%**	**5.1%**	**5.3%**
PPFY					
Capacity	18	18	18	18	18
Production	10	11	12	13	13
Imports	1	1	1	1	1
Exports	2	2	2	2	2
Demand	9	10	11	12	12
Demand Growth (%)	**-18.2%**	**11.1%**	**10.0%**	**9.1%**	**0.0%**
VSF					
Capacity	566	566	566	566	788
Production	510	529	565	580	605
Imports	35	30	42	56	49
Exports	148	154	79	74	76
Demand	396	503	547	565	585
Demand Growth (%)	**0.6%**	**27.0%**	**8.9%**	**3.2%**	**3.5%**
VFY	**2017-18 A**	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Capacity	82	82	82	82	82
Production	60	58	55	57	57
Imports	10	12	16	25	20
Exports	6	6	6	6	6
Demand	63	63	66	66	67
Demand Growth (%)	**1.5%**	**0.2%**	**3.8%**	**0.8%**	**1.1%**
NFY					
Capacity	108	108	114	114	114
Production	105	105	105	105	105
Imports	3	23	26	25	25
Exports	3	6	8	7	7
Demand	125	121	123	124	126
Demand Growth (%)	**-3.4%**	**-3.8%**	**2.2%**	**0.5%**	**1.6%**

XXII. Synthetic Rubber

According sales data from the Society of Indian Automobile Manufacturers (SIAM), Indian manufacturers sold 2,773,575 passenger vehicles in the 2019-2020 financial year, a number that was already down from previous years of 3,288,581 in 2017-2018 and 3,377,389 in 2018-2019. Now, due to the unprecedented conditions created by the global COVID-19 crisis, that number will likely severely drop once again due to a current stretch of zero car sales whatsoever. Not selling a single unit in the domestic market has a multiplier effect. India stood as the fourth biggest automotive market in the world that contributed as much as 7.1% to the country's GDP and providing employment to over 35 million people (including the auto components industry), as per data provided by the Ministry of Commerce and Industry.

Automobile have links to different sectors of the economy from banking, insurance, oil, paints, plastics, rubber industry and more. A sudden halt will have a ripple effect that will take months to restart. The sector claims to be losing $ 0.3 bn (Rs 2,300 crore) per day.

Companies making cars, SUVs, commercial vehicles and two-wheelers such as Maruti Suzuki, Hyundai, Mahindra, Tata Motors, Ashok Leyland, Toyota, Hero MotoCorp and Honda reported zero deliveries even as some managed to export a few hundred units after port operations were allowed.

With things as they are, SIAM says the industry is losing more than $300 million per day, which has prompted the automakers to ask the government for tax relief assistance. This, after India's slowing auto industry was already in talks with the government for assistance before the coronavirus hit.

A vehicle manufacturer cannot commence operations if any of its suppliers is unable to undertake production. Further, production for a vehicle manufacturer would only amount to a adding inventory and thus blocking working capital in case dealers are unable to sell vehicles.

All tyre manufacturing facilities have stopped functioning and the industry now expects to resume operations only by mid-April. The abrupt stoppage has led to the accumulation of raw materials, semi-finished and finished goods in the supply chain process. It would take at least one month after resuming operations to restore normalcy in the production front. Tyre industry foresees a loss of about $ 0.66 bn (Rs 5000 crore) in six months to July.

On 7 February 2020, the Indian authorities initiated a sunset review of the antidumping duty imposed on imports of acrylonitrile butadiene rubber NBR from Germany and the Republic of Korea. This follows the application lodged by the Apcotex Industries Limited. Global rubber markets are also likely to bear the brunt of a slowdown in the world economy and the automobile industry. Tepid demand from the auto sector, global concern, and bearishness in crude oil are seen weighing on rubber prices.

A slowdown in the country’s automobile sector has also hit rubber prices. India’s automobile sector accounts for 65% of the country’s rubber consumption to manufacture tyres. Another 20% is used in the production of accessories for the auto sector. Prices of natural rubber take cues from those of crude oil as the latter is used in manufacture of synthetic rubber.

India has initiated a probe into an alleged increase in imports of a Korean synthetic rubber, used in tyre making, which is impacting domestic industry following a complaint by Reliance Industries Ltd. According to a notification of the Directorate General of Trade Remedies (DGTR), under the commerce ministry, an application has been filed by Reliance Industries Ltd alleging increased imports of Polybutadiene Rubber from Korea causing serious harm to the domestic producer.

After determining that there is prima facie evidence to justify initiation of the safeguard investigation, the directorate said it considers appropriate to initiate the investigation to determine whether the imports are increasing in such a way that it can hurt domestic industry.

Usually, the global supply remains low during February and March every year, due to the annual wintering of rubber trees. But the low supply could not evoke any positive sentiments in the markets due to the much stronger and dominant influence of the pandemic. More specifically, NR market has remained insensitive to the low supply during February and March.

Asian styrene-butadiene-rubber fell $60/mt week on 8th May 2020, hitting record lows. CFR China butadiene price, same day, was assessed unchanged at $350/mt showed S&P Global Platts data. The price spread between SBR and butadiene was calculated at $570/mt Friday, down $60/mt from a week earlier, showed Platts data. The spread was the widest at $630/mt last week. India extended its lockdown by another two weeks but eased regulations, allowing some businesses to restart in a few areas.

India's nationwide lockdown, which started on March 25, was due to end on May 3 but got extended to May end. The government divided the country into three zones -- red, orange and green, depending on the seriousness of COVID-19 infections. In these three zones, most business activities are being allowed, such as construction activities or goods transport as well as manufacturing. But stricter rules apply to restart businesses in the Red Zone.

However, some analysts believe India's productivity would unlikely hit full for the near-term as key business areas are located either in the red or orange zones. A market source said India's productivity in May would be around 30%-40%, increasing to around 70% in June.
The SEA Platts SBR prices showed a 34% decline in prices from July 2019 to April 2020. Inventory in India too witnessed a surge of 41% in the said period from owing to the lockdown and closure of plants. Prices crashed by 29% in the period from March 2020 to end of 1st week of May 2020 with an average operating rate of 50% for plants in India in April end 2020.

Similarly, in case of PBR, the SEA Platts prices showed a 38% decline in prices from July 2019 to April 2020. Inventory in India too witnessed a surge of 115% in the said period from owing to the lockdown and closure of plants. Prices crashed by 31% in the period from March 2020 to end of 1st week of May 2020.

The COVID-19 pandemic has been a bane to vehicle producers in Asia, but the industry's reaction is just the tip of a supply chain disruption as heightened demand destruction to component parts such as steel coils and foams are in the offing.

The trend of halting production among Asia-based car makers is starting to spread, threatening to dent metal and petrochemical requirements from the automobile sector.

India is the latest victim to the spread of the coronavirus with a nationwide lockdown which will last until April 14. Even before the lockdown, Indian carmakers were already struggling with poor buying interest amid concerns of a slowing economy.

The shutdown of an auto manufacturing plant translates to an abrupt reduction in demand for steel plates, foams and polypropylene, all of which are troubling given India's inability to import material from other countries.

As per the president of the Society of Indian Automobile Manufacturers, many automakers in India import about 10% of their raw materials from China, which has been reeling from the pandemic since January. SIAM estimated the domestic vehicle plant shutdowns could lead to a loss of more than Rupees 23 billion ($302.9 million) in turnover for each day of closure.

SIAM data showed that India produced 2.03 million vehicles in February, down 18.1% from a year ago and representing the 15th straight month of decline.

As the Indian automotive industry gears up to resume operations with the government announcing relaxations for some small-scale sectors from April 20, ensuring a seamless supply chain is going to be a big challenge for OEMs and suppliers. Also, while companies are working on 'restart manuals' to practice the new normal and adhere to social distancing norms after the end of the lock-down, return of migrant labour to the shop floor will be another key concern. Will production pick up and how will companies ensure employment during these troubled times remains to be seen.

The tyre maker has commenced production in a graded manner at its manufacturing facilities in Chennai (Tamil Nadu), Kankroli (Rajasthan) and Laksar (through Cavendish industries Ltd - subsidiary company, in Uttarakhand). The remaining manufacturing plants of the company in India and Mexico are in preparatory mode and will resume operations subsequently.

Tyre major MRF on 6th May 2020 announced that it has partially resumed operations in most of its plants with restricted manpower following relaxation of lockdown guidelines by the government. On March 25, the company had announced that operations of its head office, sales offices and plants across India will remain shut until the lockdown which was imposed to curb spread of the COVID 19 pandemic is lifted.

Apollo tyres plants have been opened. Gradually their sales have started going up, especially in the commercial vehicles segment because trucks are still ferrying essential goods back and forth. And in India also demand for agricultural tyres has started picking up. As per the Tyre manufacturers, this government has been talking about a scrappage policy for the past two years which has not come out yet. The second thing is to increase antidumping duties in India against all these Chinese products that are coming in. The automotive segment was down last year even before the virus came and now specifically needs a stimulus package.

Tyre makers are upbeat about the demand stemming from the replacement of tyres in the second quarter and reckon that original equipment (OE) sector will take more time to recover. Tyre companies have been operating some of their units with limited number of workers for over a week. The work is mostly to clear the inventory before the lockdown was declared and to produce agricultural vehicle tyres

A large number of tyre units are located in the western and southern parts of the country. But the tyre units are currently running at around 30% capacity as the demand is still weak. "The first quarter in 2020 has been a washout and in the second quarter, the replacement tyre demand is showing signs of revival

The replacement tyre demand is mostly from the truck tyres that brings bulk of the revenue for the sector. The OE segment contributes to around 50% of passenger cars and two wheelers but it has a share of 20% in the truck and bus tyre category.

Now the demand is largely for farm and mining vehicles and truck tyres. Once the lockdown is lifted, on can expect the replacement demand of passenger cars and two wheelers to go up.

SBR which accounts for 40% of the total synthetic rubber demand is consumed mostly in the tyre sector. Considering the large amount of SBR that is being consumed in the manufacture of tyres and tyre products, demand is very much dependent on the automotive industry and tyre sectors as a whole.

On a positive note, growing use of low-rolling-resistance tyres to reduce fuel consumption and decrease CO2 emissions should increase SBR demand. In 2017-18, synthetic rubber demand grew at a flat rate of 1% and is expected to maintain the same growth rate in next three fiscals. As shown in table, SBR demand registered a flat growth of 3.7% in 2018-19 and a negative growth of 3.5% in 2019-20 with automobile industry affected badly. It is expected to bounce back to 5.4% and 6.8% in the next two years.

EPDM demand rebounded and witnessed a robust growth of 17.4% in 2018-19 and witnessed a de-growth in 2019-20. It is forecasted to show a modest growth of 3.4% in 2020-21 and 4.7% in 2021-22.

Reliance is the only producer of PBR in India. PBR demand was 3% in 2018-29 before a negative growth of 4.6%. PBR demand growth rate is expected to improve to 2.9% in 2020-21 and jump to 5.3% in 2021-22. Mahansaria Tyres are setting up a new OTR facility in Gujarat, India. The plant will be operational mid-2020 with plans to supply tires into Europe and Americas. The greenfield OHT business focusing on the after-market for tires used in agriculture and construction / industrial / OTR machinery. The 127-acre manufacturing facility is located in Panoli Industrial area of GIDC.

Panoli lies in Bharuch district of Gujarat, about 320 Kms to the north of Mumbai and is about 80 Kms from the Hazira Port. The proposed facility is expected to have a manufacturing capacity of 70,000 MT built in two phases. The construction of Phase-1 with a capacity of 40,000 MT is underway and it is expected to be operational by June 2020. Investment for Phase-1 stands at approx. $ 107 million.

CEAT has inaugurated its new manufacturing plant located at Kanchipuram, Tamil Nadu, India. The facility can manufacture 28.5k PCR/day and 2.5k MCR/day. This is CEAT's sixth manufacturing location in India. Crude-based raw materials such as carbon black, account for close to 45% costs for tyre firms. Effectiveness of styrene butadiene rubber in affixing tyres to the wheel rims will continue to drive the sales in the coming years.

Demand is still slow due to the high inventories, but crude has gone up and expecting enquiries for SBR to pick up. China had earlier lifted lockdowns and eased restriction measures, prompting spot interest to pick up for SBR imports recently.

Butyl rubber demand nose-dived in 2019-20 to a negative 16.1% after clocking robust growth of 10.9% in 2018-19. It is expected to be in negative next year as well at around 7% before rebounding in 2021-22 to 9.2%.

Table 26: Demand Supply Balance of PBR, SBR, NBR, EPDM & BUTYL RUBBER

PBR	2017-18 A	2018-19 A	2019-20 A	2020-21 E	2021-22 E
Capacity	124	124	124	124	124
Production	114	122	130	133	136
Imports	78	82	79	74	75
Exports	7	13	20	20	12
Demand	187	193	184	189	199
Demand Growth (%)	**4.1%**	**3.0%**	**-4.6%**	**2.9%**	**5.3%**
SBR	**2017-18 A**	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Capacity	290	290	270	270	270
Production	185	220	219	231	241
Imports	78	66	52	59	65
Exports	23	28	24	18	18
Demand	247	257	248	261	279
Demand Growth (%)	**2.8%**	**3.7%**	**-3.5%**	**5.4%**	**6.8%**
NBR	**2017-18 A**	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Capacity	20	20	20	20	20
Production	18	18	20	20	20
Imports	40	38	40	43	46
Exports	0	0	0	0	0
Demand	58	56	60	63	66
Demand Growth (%)	**6.8%**	**-2.5%**	**7.7%**	**4.3%**	**4.8%**
EPDM	**2017-18 A**	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Capacity	0	0	0	0	0
Production	0	0	0	0	0
Imports	45	53	51	53	56
Exports	0	0	0	0	0
Demand	45	53	51	53	56
Demand Growth (%)	**2.4%**	**17.4%**	**-3.0%**	**3.4%**	**4.7%**
BUTYL RUBBER	**2017-18 A**	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Capacity	0	0	120	120	120
Production	0	0	15	62	108
Imports	101	112	89	54	38
Exports	0	0	4	31	52
Demand	101	112	94	87	95
Demand Growth (%)	**5.2%**	**10.9%**	**-16.1%**	**-7.4%**	**9.2%**

XXIII. Surfactants

Demand for key surfactant LAB witnessed an increase at 3.1% in 2017-18 and 2018-19, however in 2019-20 it dipped further below to 1.6%. Further expected to grow at a modest rate of 4.6% in 2020-21 and 4.3% in 2021-22. LAB import is was seen higher in 2019-20 as compared to previous year at 265 KT. While, no exports are also expected to take place in next two fiscals.

EO capacity stood at 279 KT in 2019-20 and is expected to climb to 282 by 2021-22. Demand for EO grew at 6.1% in 2017-18 and at a staggering rate of 11.5% in 2018-19 before a tad slower at 8.2% in 2019-20. It is forecasted to dip further to 6.6% in 2020-21 and further down to 3.7% in 2021-22.

Table 27: Demand & Supply of LAB & EO

LAB	2017-18 A	2018-19 A	2019-20 A	2020-21 E	2021-22 E
Capacity	550	550	550	550	592
Production	452	449	406	490	501
Imports	206	228	265	222	241
Exports	6	6	0	0	0
Demand	650	670	680	712	742
Demand Growth (%)	**3.1%**	**3.1%**	**1.6%**	**4.6%**	**4.3%**
EO	**2017-18 A**	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Capacity	271	269	279	279	282
Production	211	236	255	272	282
Imports	0	0	0	0	0
Exports	0	0	0	0	0
Demand	211	236	255	272	282
Demand Growth (%)	**6.1%**	**11.5%**	**8.2%**	**6.6%**	**3.7%**

XXIV. Carbon Black Feedstock & Carbon Black

Carbon black is an additive used in the making of rubber products like tyres, colouring pigment inks and also as electric conducive agents for high-tech devices.

As the global supply chain deals with the disruptions that the Covid-19 outbreak has caused, Indian tyre industry has the potential to lead in manufacturing on a global level. The Automotive Tyre Manufacturers Association (ATMA) has urged the Centre to come out with a policy to addresses the genuine needs of the tyre industry with utmost urgency so that it would lead to significant increase in exports from India. Amid the new geo-political warfare, China is fast losing currency as the factory of the world. Led by nations such as the U.S. and Japan, the world is keenly looking for alternatives to China, for sourcing a host of products.

This could be India's moment to seize the opportunity, as it had the potential to lead the march of manufacturing sector globally in the new world order. Today, India has some of the finest radial tyre manufacturing facilities in the world and the products are world class, as is evident from the rising demand of Indian tyres worldwide.

As the Indian tyre industry has built unique brand equity for itself, it's time the industry is encouraged with policy support, as per chairman and managing director of MRF Ltd and also chairman of ATMA. In this regard, ATMA urged the Centre to address two issues on urgent basis, imposing curbs on indiscriminate import of tyres into India and making available natural rubber at internationally competitive prices, through reduced duties. If policy enablers are in place, the tyre industry has the potential to see a significant increase in exports from India.

Indian manufactured tyres are being exported to over 100 countries in the world, including the most discerning regions such as US and European countries. With a strong Make in India spirit, not only has domestic tyre industry worked for a self-reliant India, with all the tyres being manufactured indigenously, but the industry has emerged as a major exporter too. Currently exports of tyres from India are in the range of over $ 1.5 bn (Rs 12,000 crore) per annum, which is nearly one-fifth of tyre industry revenues.

Global natural rubber consumption is seen lower due to a shutdown of most industrial activity across the world due to containment measures to curb the spread of Coronavirus. The automobile production has been severely hit by the lockdown, due to which demand for tyres is almost nil. Tyre production has continued, although at a minimum capacity of 20-25%, and there has been no offtake.

This has led to large quantities stockpiled at factory premises and tyre manufacturers are now facing difficulties with storage space. Inventories with tyre manufacturers has piled up, as stock lifting from factories and transporting it to auto manufacturers has stopped. Natural rubber demand from tyre manufacturers has vanished during the lockdown as manufacturing activity is at a standstill.

The loss in production arising from the lockdown is preliminarily estimated at 50,000 tonnes. Hence the production outlook for 2020 is scaled down to 730,000 tonnes, showing 4% increase from the previous year. The production outlook for 2020, as reported a month ago, was 780,000 tonnes.

From producing an average of 2.19 million units a month in 2019-20 these factories making two-wheelers, cars, SUVs, trucks and buses were brought to a complete halt in April. Vehicle dispatches to dealerships from factories (wholesales) came to a naught which are to be powered only by a Bharat Stage VI engine.

Prices of natural rubber take cues from those of crude oil as the latter is used to make synthetic rubber. As synthetic rubber is a major substitute of natural rubber and in India, manufacturer's use 60% of natural rubber and 40% of synthetic rubber in tyre manufacturing and the worry is that usage ratio situation might change after the lockdown, as prices of synthetic rubber is lower than natural rubber.

Crude oil prices are likely to remain under pressure as traders ran out of space to store excess oil in the market. Global demand for oil has fallen nearly 30% due to the pandemic, and rekindling of the conflict between the US and China is seen dragging prices lower.

The production and consumption of rubber in 2020-21 are projected provisionally at 710,000 tonnes and 900,000 tonnes, respectively, with a gap of 190,000 tonnes. The opening stock of rubber in 2020-21 is higher, at 334,006 tonnes, and the eligibility for duty-free import under the Advance Authorization Scheme is around 150,000 tonnes.The government in April reached out to more than 1,000 companies in the U.S. and through overseas missions to offer incentives for manufacturers seeking to
move out of China.

India is prioritizing medical equipment suppliers, food processing units, textiles, leather and auto part makers among more than 550 products covered in the discussions. They have also offered an assurance that India will consider specific requests on changes to labour laws, which have proved a major stumbling block for companies, and the government is considering a request from e-commerce companies to postpone a tax on digital transactions introduced in this year's budget.There are opportunities for India to try to gain a place in global supply chains, but this will require serious investments in infrastructure and governance. Apart from ensuring land, water and sewerage, the most important change India needs to make is to give a clear guarantee that the government will not introduce retrospective tax amendments.

Balkrishna Industries Limited (BKT) reported that it commenced trial production for the second phase of its carbon black facility in Bhuj, India on 12 March 2020. Trial production at the currently 80,000 tonne per annum facility began ahead of schedule.Coal tar derivatives company, Epsilon Carbon has invested $ 0.11 bn (Rs 900 crore) in setting up an integrated carbon black facility in Bellary region of Karnataka with a total capacity of 3,00,000 tonnes per annum.

The Mumbai-based company is planning to invest in two phases, with the first phase commissioning by Q3 of FY 21 with an investment of $ 0.05 bn (Rs 425 crores). Epsilon Carbon currently operates a 220,000 tpa coal tar distillation facility that caters to 40% of the pitch demand in the aluminum industry, with the new carbon black facility, the company will cater to the tyre, tubes and other rubber-based auto parts segments. They are looking at more rubber-based auto parts and not planning to venture into inks and toners in the phase 1 development. All other carbon black manufacturers burn oil as a fuel, but they will be using waste gas from JSW Steel and their existing coal tar derivative plants as a fuel in our new carbon black units. Covid-19 outbreak kept many chemical industries including carbon black companies in jitters as they were dependent on China for their raw material.

However, Epsilon is completely backward integrated and is positive about its new business growth. The company is claiming to import zero raw material and they are the only carbon black manufacturers who are completely backward integrated. They would be selling their products domestically and would capture the export markets as well. Operations of Philips Carbon Black plants at Palej and Mundra in the State of Gujarat and at Kochi in the State of Kerala had partially resumed by 5th May 2020 and the operations of their plant situated at Durgapur in the State of West Bengal had also partially resumed. With the approval of local authorities, BKT has restarted tyre production, albeit still on a partial basis, in all its plants in India. The off-highway tyre specialist has also resumed supply and delivery to both the OEM and aftermarket channels.

Table 28: Demand Supply Balance of CBFS & Carbon Black

	2017-18 A	2018-19 A	2019-20 A	2020-21 E	2021-22 E
CBFS (KT)					
Capacity	1925	2200	2633	2822	2822.
Production	1829	1935	2503	2632	2632
Imports	1389	1475	1687	1883	1883
Exports	240	480	650	480	480
Demand	1829	1935	2503	2632	2632
Demand Growth (%)	**10.8%**	**5.8%**	**29.3%**	**5.2%**	**0.0%**
Carbon Black (KT)	**2017-18 A**	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Capacity	1040	1190	1423	1542	1542
Production	988	1150	1284	1443	1443
Imports	150	85	45	0	0
Exports	300	110	117	183	183
Demand	1138	1235	1329	1443	1443
Demand Growth (%)	**12.8%**	**8.5%**	**7.6%**	**8.6%**	**0.0%**

Crude prices have come down from $60 to $25-30 therefore products like synthetic rubber, carbon black etc. are all cheaper now. The adverse effects of the fall in crude, interest rates, depreciation of INR and lockdown has been the maximum in the third and fourth quarter. There is no comfort that the rupee has weakened further. The problems the carbon black industry has faced in the last few years—short supply, logistics problems, difficulties in increasing capacity, competition from silica, and the costs of environmental compliance. Carbon black industry grew at a double digit of 12.8% in 2017-18 and 8.5% in 2018-19 before slowing to 7.6% in 2019-20. It is expected to pick-up demand in 2021-22 however report no growth in 2021-22 at all. Meanwhile, CBFS registered a robust growth of 10.8% in 2017-18 which dipped to 5.8% growth in 2018-19 before witnessing a robust growth of 29.3% in 2019-20. The same is however not going to continue in next year and is expected to come down to 5.2% and even no growth further ahead in 2021-22.

XXV. Other Key Petrochemicals

Overall other key petrochemicals demand in 2018-19 witnessed an average growth of 7.3% and 6.1% in 2019-20 and is expected to remain at 6.2% in next fiscal witness a slash in growth to 1.3% on an average for all key petrochemicals. Benzene demand witnessed a robust double-digit growth of 15.1% in 2018-19 and a tad slower at 11.5% in 2019-20, however with the current pandemic situation it is forecasted that this will see a steep decline to just 1.2% growth in next year i.e. 2020-21 and 2021-22.

Table 29: Demand Supply Balance of Benzene, Toluene, MXS & OX

(KT)	2017-18 A	2018-19 A	2019-20 A	2020-21 E	2021-22 E
Benzene					
Capacity	2415	2415	2470	2470	2470
Production	1667	2095	2140	2140	2140
Imports	0	0	0	0	0
Exports	1137	1485	1460	1450	1440
Demand	530	610	680	690	700
Demand Growth (%)	**5.2%**	**15.1%**	**11.5%**	**1.5%**	**1.4%**
Toluene	**2017-18 A**	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Capacity	175	175	175	175	175
Production	140	140	140	140	140
Imports	400	420	420	420	420
Exports	4	4	4	0	0
Demand	506	556	556	560	560
Demand Growth (%)	**-4.5%**	**9.9%**	**0.0%**	**0.7%**	**0.0%**
MXS	**2017-18 A**	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Capacity	90	90	90	90	90
Production	63	63	82	82	82
Imports	160	183	195	200	210
Exports	0	0	0	0	0
Demand	223	234	252	257	267
Demand Growth (%)	**19.3%**	**4.9%**	**7.7%**	**2.0%**	**3.9%**
OX	**2017-18 A**	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Capacity	420	420	420	420	420
Production	436	345	370	432	432
Imports	16	16	18	15	15
Exports	191	105	103	97	97
Demand	290	288	303	365	365
Demand Growth (%)	**0.3%**	**-0.6%**	**5.2%**	**20.5%**	**0.0%**

Toluene demand witnessed de-growth of 4.5% in 2017-18, however, saw a jump in demand at 9.9% in 2018-19. 2019-20, saw this huge jump in growth vanish and there was no growth at all. It is forecasted to be flat and nil in the coming two fiscals.

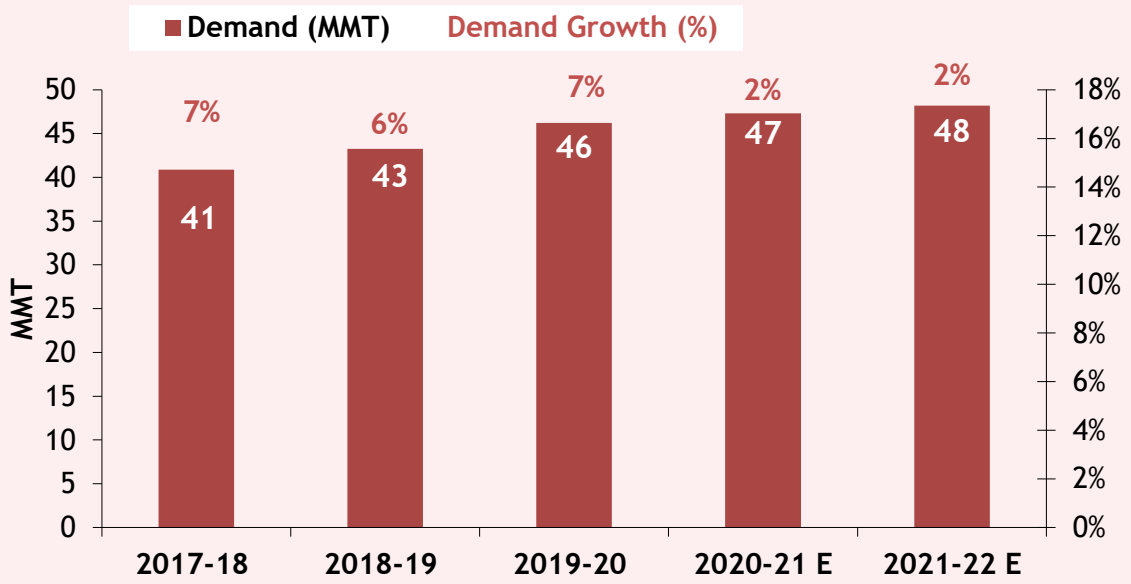
MXS had witnessed a double-digit growth in demand at 19.3% in 2017-18 which was subdued in 2018-19 at 4.9% before spiking again to 7.7% in 2019-20. It is forecasted that the growth would be slower in 2020-21 at just 2% before gradually rising to about 4% in 2021-22. Imports in case of MXS are expected to rise to 210 KT by 2021-22 from 195 KT in 2019-20.

Meanwhile, OX registered a flat demand growth of 0.3% in 2017-18 which slowed down even further to negative at 0.6% in 2018-19. In 2019-20, there was a modest growth of 5.2% which is expected to jump to a staggering 20.5% in 2020-21 before once again nose diving to no growth in 2021-22. There is no new capacity addition lined up for OX.

XXVI. Outlook for the Overall Indian Petrochemical Industry

India's aggregated demand for petrochemicals increased by 7% in 2017-18. Which saw a dip in 2018-19 to 6%, before again regaining 7% growth. However, with the current COVID-19 pandemic has created global demand supply disruptions and lockdown across countries and all supply chains have been affected, which is going to have an effect on the petrochemicals demand in next two years. It is forecasted that the overall industry would have a meagre 2% growth in next two fiscals with demand touching 48 MMT in 2021-22 from 46 MMT in 2019-20.

Figure 17: Aggregate Petrochemical Demand (All key segments – MMT)



Polymers are likely to register a negative growth in 2019-20 of 0.4%- and double-digit growth in 2021-22 respectively. Polyolefins are also expected to de-row at 2.5% in 2020-21 and rebound to a staggering 14.9% in 2021-22. Surfactants are projected to grow at ~5% in the same period. Synthetic rubbers are expected to register demand growth between 4% to 6% in the said period. Other key petrochemicals expected to grow at ~5% and 1% in the same period. How fast the economy rebounds will depend on how fast the war against COVID is won and also on the labour who are needed to run the factories.

XXVII. How Plastics is helping in the time of COVID

Everything has changed. The way we interact with each other, and the planet, is much different than it was two months ago.

The coronavirus pandemic (COVID-19) poses difficult short-term choices between health and the environment.
As COVID-19 hits, it seems to be shifting the tide toward single-use plastics. Supply chains are being strained to meet a surge in demand for single-use packaging and medical supplies. Several governments such as Tamil Nadu in India have suspended bans of single-use plastic bottles and bags in retail trade.

The United Kingdom has suspended the plastic bag charge for online deliveries, with Scotland delaying the introduction of a packaging deposit-return scheme. Some fast food and retail chains, including Starbucks, have banned the use of reusable cups and food containers.

The consulting firm Wood Mackenzie observed that tighter packaging regulations in China to deal with coronavirus would likely increase demand for flexible packaging, usually made of plastics.

In fact, demand for products such as disposable wipes, cleaning agents, hand sanitizer, disposable gloves and masks is at a record high. Researchers found the greatest spikes in demand for face masks and the thin film used in plastic wraps.

Plastic products which protect are crucial in the fight against the COVID-19 crisis across the globe. Medical devices and personal protection equipment are being produced with all available capacities, and are only the most obvious examples of how plastic products help to fight the pandemic. A closer look reveals that many more applications are making important contributions to the functioning of our society and economy in this crisis.

From anti-bacterial vinyl flooring in hospitals to cleaning equipment and packaging for soaps, disinfectants, and food, plastics are needed to help to fight the pandemic. Especially plastic packaging is extremely important to secure the functioning of our supply chains for food and other essential goods that could have been broken up during this crisis. In additional efforts, companies not previously involved in the manufacture of personal protection equipment or medical devices are changing their production lines to provide these much-needed goods.

In the US, lobbyists for the plastic industry have taken advantage of health fears by arguing single-use plastic bags are a more hygienic option than reusable ones. Plastic bag bans have since been rolled back in the US and elsewhere. New Hampshire and the city of Cambridge, Massachusetts, have banned reusable bags during the outbreak and ordered retail stores to use single-use paper or plastic bags.

Scotland's Environment Secretary Roseanna Cunningham confirmed earlier this month that the rollout of a national deposit return system for plastic containers has had to be pushed back from an original start date of April 2020 to January 2021, to enable the government, businesses and society to focus on the coronavirus.

Concerns around food hygiene due to Covid-19 could increase plastic packaging intensity, undoing some of the early progress made by firms," it stated.

As consumer taste started to shift against the $40 billion plastics industry, manufacturers added an additional argument to their arsenal: that their products are actually a boon to overall sustainability, despite being petroleum-based, nonbiodegradable, and difficult to recycle. Most of these claims are based on a handful of studies, the most significant of which was done for ACC by Franklin Associates in 2018.

It looked at the life cycle of products like water bottles, shrink wrap, and retail shopping bags and concluded that if they were made of alternative materials — say glass or aluminum or textiles — they would require five times the amount energy to manufacture and use more water in the process.

As the global economy struggles with the pressures of Covid-19, some industry groups are using the need for more protective equipment as a means to lobby for the removal of charges and bans on single-use plastics.

Shopper spend in Europe for packaging in food products is soaring, according to data from IRI POS, in Italy, for instance, consumer spend on packaged mandarins rose over 111% in the week ending 8th March 2020, versus a year ago. The knock-on is a jump in demand for plastics amid the virus pandemic.

Globally, plastics manufacturers are under tremendous pressure from the demand for plastic products urgently needed for the fight against Covid-19. Many of the plastics companies have managed to alter their typical manufacturing schedules to produce essential products at a rapid pace.
Companies like Cromwell Polythene are providing everyday but vital products such as refuse sacks and recycling sacks to key industries, as well as manufacturing clinical waste sacks, gloves and aprons.

INEOS announced on 24 March that it would build a hand sanitizer plant in just ten days that was capable of producing one million bottles per month.
SABIC has launched a non-chlorinated and non-brominated opaque sheet, LEXAN CLINIWALL AC6200. The sheet aims to provide a hygienic, sanitary solution for interior surfaces to several industries around the world. The launch comes as the rising need for infection prevention and sanitation control across the world continues to increase.

Nippon Paint and Corning Inc have developed a special coating to protect workers from picking up viruses from painted surfaces. Nippon Paint's Antivirus Kids Paint, developed specifically for frontline hospital use, incorporates Corning Guardiant Antimicrobial Particles – a nascent technology designed to safeguard against viruses from adhering to hospital surfaces. Experts estimate that viruses can remain viable on some surfaces for several days, depending on environmental conditions.

In additional efforts, companies not previously involved in the manufacture of personal protection equipment, or medical devices are changing their production lines to provide these much-needed products.

Over the last month, there have been more than a dozen companies from different sectors who have decided to foray into this space.

At the beginning of 2020, India's hand sanitiser market had only 3-4 prominent players like HUL, Himalaya Drug Company, GCPL and Reckitt Benckiser.

Sales of these hand sanitisers zoomed in early February and by the end of February hand sanitisers were out of stock.

Car manufacturers have started making ventilators and sanitisers are being made by paint companies like Asian Paints and JSW paints. Parle Products (biscuit manufacturer) forayed into a new category - hand sanitisers. This is not a temporary launch. Parle products, which sells close to a billion packs of Parle-G biscuits, plans to continue manufacturing hand sanitiser even in the post-COVID era.

Nielsen data indicated that hand sanitisers saw value growth of 53% in February 2020 versus an average growth of 11%.

Seeing a surge in demand, the Indian government had pronounced hand sanitizers and masks as essential commodities in March. It also placed price caps on sanitisers to make them more affordable and prevent companies from profiteering from them. In March, the government permitted distilleries and sugar mills to manufacture hand sanitizers in bulk to meet the demand.

Existing players in the hand sanitiser space have significantly ramped up capacity and also launched variants in the hand hygiene space. For instance, ITC converted the production line at a newly installed perfume plant in Himachal Pradesh to a sanitiser manufacturing unit.

It also launched the Savlon surface disinfectant spray. Himalaya had seen a 10x surge in demand for hand sanitisers in February and had decided to scale up the manufacturing of hand sanitisers in two additional facilities.

Other companies that decided to foray into the hand sanitiser space include the likes of Emami, Nivea, Dabur, Dukes India, Bajaj Consumer, Jyothy Labs, Cavin Kare, Patanjali Ayurved, Zydus Wellness, Celkon (mobile manufacturer), Sulekha Works, Cycle Pure Agarbathies, Nycil (Talcum brand) and many more. Many big alcobev companies also repurposed their lines to manufacture bulk quantities of hand sanitisers.
Kinetic Green has launched e-fogger, e-sprayer range apart from UV sanitiser. Defence Research Organization (DRDO) has developed equipment for sanitizing public spaces.

Facing an increased demand for sanitisers in the state, the Uttar Pradesh government has issued licences to 55 companies to produce up to 70,000 litres of the liquid per day. "Total number of sanitiser licenses issued in the state is 55.

This includes 22 sugar mills, as many sanitiser companies, nine distilleries and two other companies.

Deepak Fertilisers, the only Indian manufacturer of specialty chemical IPA (isopropyl alcohol), a key ingredient for sanitisers has increased its production from rising demand for cleansers amid the Covid-19 outbreak.

ExxonMobil said it has increased production of critical raw materials for masks, gowns and hand sanitisers used by medical professionals and first responders leading the efforts to combat the global Covid-19 pandemic. The company has increased its capability to manufacture specialized polypropylene, used in medical masks and gowns, by about 1,000 tonnes per month, which is enough to enable production of up to 200 million medical masks, or 20 million gowns. Monthly production of isopropyl alcohol – a key ingredient in many disinfectant and hand sanitiser products – has been increased by 3,000 tonnes, which is enough to enable production of up to 50 million four-ounce bottles of medical-grade hand sanitizer.

Reliance Industry Limited has donated 10,000 high quality personal protection equipment kits to Assam. Reliance has also distributed more than 10,00,000 Polypropylene NW masks (3 ply and 2 ply) and 5,000 PPE kits procured from our polymer processors / fabricators / women Self Help groups (source of income to women Below poverty line) and 5,000 number of Reliance Foundation dry ration kits in Maharashtra.

To help address the urgent need for personal protective equipment among healthcare professionals battling the Covid-19 pandemic, Dow has developed a simplified face shield design and is sharing its design through an open-source file to help accelerate production rates of this critically needed personal protective equipment. In addition, the company is collaborating to produce 100,000 face shields for donation to the state of Michigan for distribution to hospitals.

Since the COVID-19 outbreak, plastic items like PPE suits, masks, gloves, sanitiser / handwash / water bottles, shoe / head cover, etc. are proving to be the only protective shield for the frontline workers. Medical professionals and scientists have come forward to educate Indian citizens about the essential plastic items to prevent the further spread of COVID-19 virus while ensuring their safe disposal and recycling /treatment afterward.

As per Dr KK Aggarwal, Former President, Indian Medical Association and President – Confederation of Medical Associations of Asia and Oceania, to protect the medical workers from COVID-19 infection, we need protective gear which is made from an impermeable and non-porous material such as plastics.

Hence, the currently used masks, gloves, protective shields for eyes / face, head and shoe cover, apron etc. are made from plastics. Impermeable material stops viruses containing droplets from touching the skin and the viruses stay on the outer surface of the protective gear. It is also essential that healthcare workers change their personal protective equipment in every eight hours and regularly decontaminate the hospital surfaces. Currently, 40 lakh health workers are fighting against COVID-19 in India. We need 20-25 lakh protective equipment every day to protect the health workers from the infection.

Few examples how plastics is saving lives during COVID

The Covid-19 pandemic is severely devastating our entire society, global economy and industries. From personal protection equipment to medical devices, plastic products play a critical role in the fight against the fast-spreading virus. There are many more applications and solutions, which significantly contribute to the functioning of our society, economy and industries during this unprecedented crisis. From packaging for food, disinfectants and soaps, to cleaning equipment, anti-bacterial vinyl flooring for hospitals, medical packaging, components for ventilators, bottles, lids, and visors, as well as vital products such as refuse sacks, recycling sacks, clinical waste sacks, gloves and aprons, plastic solutions are essential in the fight against novel coronavirus. With more and more businesses being ordered to close during the pandemic crisis, it is critical that healthcare workers have access to plastic products.

Single-use plastics can literally be the difference between life and death.

Items such as IV bags and ventilator machines, which are of the utmost importance right now, have components made of single-use plastics

The need of the hour

As our society is bravely facing the Covid-19 pandemic, and its catastrophic impact on human life, industry and economy, the industry and governments need to direct their complete resources and attention to the management of the crisis, and mitigation of its further spread. Definitely, it is time to focus on the wellbeing of people around the world in the next 12 months.

We need to remain confident that we can rebuild what needs to be rebuilt after this unprecedented crisis. The need of the hour is some flexibility in the implementation of directives banning/regulating single-use plastics and any non-essential regulatory initiatives on plastic products by governments worldwide until we come out completely from the Covid-19 pandemic.

But, Covid-19 should not become a catalyst for the comeback of single-use plastics. Worldwide, plastics manufacturing industry should re-embark on its transition to a circular economy with renewed passion, post-Covid-19.

APIC 2020

ASIA PETROCHEMICAL INDUSTRY CONFERENCE

28TH - 29TH MAY, 2020 NEW DELHI, INDIA

(POSTPONED DUE TO COVID-19)

SECTION 3

STATISTICAL APPENDIX

Feedstock

Naphtha (MT)					
	2017-18 A	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Production	19993	19600	18654	--	
Imports	2212	2082	1775	--	
Exports	8951	6963	8897	--	
Apparent Demand	12889	14131	14436	--	
Demand Growth%	**-2.7%**	**9.6%**	**2.2%**	**--**	
Natural Gas (MMSCM)					
	2017-18 A	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Production	32649	32875	31359	--	
Imports	27439	28740	33613	--	
Exports	--	--	--	--	
Apparent Demand	59170	60798	64059	--	
Demand Growth%	**6.2%**	**2.8%**	**5.4%**	**--**	
Coal Bed Methane (MMSCM)					
	2017-18 A	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Production	735	710	651	--	
Imports	--	--	--	--	
Exports	--	--	--	--	
Apparent Demand	--	--	--	--	
Demand Growth%	**--**	**--**	**--**	**--**	
Methanol (KT)					
	2017-18 A	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Capacity	631	631	631	631	631
Production	200	203	222	263	313
Imports	1955	2084	2027	2057	2082
Exports	6	7	0	0	0
Apparent Demand	2044	2145	2249	2320	2394
Demand Growth%	**4.5%**	**4.9%**	**4.9%**	**3.1%**	**3.2%**

Building Blocks (KT)

Ethylene	2017-18 A	2018-19 A	2019-20 A	2020-21 E	2021-22 E
Capacity	7377	7477	7477	7477	8002
Production	6023	6546	6815	6520	6843
Imports	53	63	63	100	100
Exports	133	149	137	137	137
Net Availability	**5944**	**6460**	**6741**	**6483**	**6806**
Propylene	**2017-18 A**	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Capacity	6064	6394	6554	6554	6774
Production	4844	5022	5346	5619	5819
Imports	7	4	12	0	0
Exports	4	41	11	0	0
Net Availability	**4847**	**4985**	**5347**	**5619**	**5819**
Butadiene	**2017-18 A**	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Capacity	550	605	605	605	605
Production	420	485	501	506	520
Imports	2	0	0	0	0
Exports	104	167	172	166	165
Apparent Demand	298	318	329	340	355
Demand Growth%	**-1.4%**	**6.7%**	**3.6%**	**3.3%**	**4.4%**
Styrene					
Imports	790	817	840	851	920
Exports	0	0	0	0	0
Net Trade	790	817	840	851	920
Demand Growth%	**8.2%**	**3.4%**	**2.8%**	**1.3%**	**8.1%**
	2017-18 A	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
EDC					
Capacity	205	237	247	247	247
Production	188	229	248	244	244
Imports	521	498	484	471	490
Exports	0	0	0	0	0
Apparent Demand	709	727	732	715	734
Demand Growth%	**0.4%**	**2.5%**	**0.7%**	**-2.3%**	**2.7%**
VCM	**2017-18 A**	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Capacity	996	996	996	996	996
Production	928	950	1026	974	974
Imports	478	458	512	500	500
Exports	0	0	0	0	0
Apparent Demand	1406	1430	1559	1527	1527
Demand Growth%	**-0.4%**	**1.7%**	**9.0%**	**-2.1%**	**0.0%**
Aromatics	**2017-18 A**	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
PX					
Capacity	5643	5786	5860	5860	5860
Production	5028	5377	5604	5604	5604
Imports	889	762	676	676	718
Exports	1968	2262	2240	2241	2286
Apparent Demand	3959	3841	3841	3859	3859
Demand Growth%	**4.8%**	**-3.0%**	**0.0%**	**0.5%**	**0.0%**

Intermediates (KT)

Fibre Intermediates (KT)

	2017-18 A	2018-19 A	2019-20 A	2020-21 E	2021-22 E
ACN					
Capacity	0	0	0	0	0
Production	0	0	0	0	0
Imports	160	182	190	195	200
Exports	0	0	0	0	0
Apparent Demand	160	182	190	195	200
Demand Growth%	**14.3%**	**13.8%**	**4.4%**	**2.6%**	**2.6%**
Caprolactam	**2017-18 A**	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Capacity	70	70	70	70	70
Production	86	89	90	90	90
Imports	58	65	65	65	65
Exports	0	0	0	0	0
Apparent Demand	144	154	155	155	155
Demand Growth%	**4.3%**	**6.9%**	**0.6%**	**0.0%**	**0.0%**
PTA	**2017-18 A**	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Capacity	6230	6410	6420	6420	6420
Production	5604	5792	5734	6099	6099
Imports	469	420	840	750	1025
Exports	214	160	79	54	30
Apparent Demand	5859	6052	6494	6795	7094
Demand Growth%	**6.9%**	**3.3%**	**7.3%**	**4.6%**	**4.4%**
MEG	**2017-18 A**	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Capacity	1715	2215	2215	2215	2215
Production	1522	2067	1982	2025	2055
Imports	1016	632	737	750	800
Exports	139	232	122	80	72
Apparent Demand	2349	2467	2597	2695	2783
Demand Growth%	**9.3%**	**5.0%**	**5.3%**	**3.8%**	**3.3%**

Polymers, Fibres and Elastomers (KT)

	2017-18 A	2018-19 A	2019-20 A	2020-21 E	2021-22 E
LDPE					
Capacity	405	605	605	605	605
Production	334	556	625	643	644
Imports	500	274	260	210	224
Exports	76	126	115	54	24
Apparent Demand	738	723	766	799	844
Demand Growth%	**5.7%**	**-2.0%**	**5.9%**	**4.3%**	**5.6%**
EVA	**2017-18 A**	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Capacity	0	0	0	0	0
Production	0	0	0	0	0
Imports	183	178	196	200	205
Exports	0	0	0	0	0
Apparent Demand	183	178	196	200	205
Demand Growth%	**26.2%**	**-2.7%**	**10.1%**	**2.0%**	**2.5%**

LLDPE	2017-18 A	2018-19 A	2019-20 A	2020-21 E	2021-22 E
Capacity	1875	2395	2545	2545	2595
Production	1565	2157	2371	2607	2657
Imports	596	448	450	454	470
Exports	216	502	430	425	250
Apparent Demand	1916	2122	2391	2631	2876
Demand Growth%	**15.8%**	**10.8%**	**12.7%**	**10.0%**	**9.3%**
HDPE	**2017-18 A**	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
HDPE Capacity	2415	2605	2665	2665	2775
LLDPE Capacity	1875	2395	2545	2545	2595
Total Capacity	4290	5000	5210	5210	5370
Production	2008	2440	2481	2671	2777
Imports	607	530	500	490	510
Exports	183	431	437	471	427
Apparent Demand	2452	2448	2530	2690	2860
Demand Growth%	**9.5%**	**-0.2%**	**3.3%**	**6.3%**	**6.3%**
All PE	**2017-18 A**	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Capacity	4695	5605	5815	5815	5975
Production	3907	5153	5477	5921	6078
Imports	1703	1252	1210	1154	1204
Exports	475	1059	982	950	701
Apparent Demand	5106	5293	5687	6120	6580
Demand Growth%	**11.2%**	**3.7%**	**7.4%**	**7.6%**	**7.5%**
PP	**2017-18 A**	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Capacity	5247	5320	6100	6100	6600
Production	4598	5091	5191	5416	6340
Imports	709	680	855	484	410
Exports	525	765	519	1144	500
Apparent Demand	4756	5698	6114	5383	6660
Demand Growth%	**9.4%**	**19.8%**	**7.3%**	**-12.0%**	**23.7%**
Polyolefins	**2017-18 A**	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Capacity	9942	10925	11915	11915	12575
Production	8505	10244	10668	11337	12418
Imports	2595	2110	2261	1838	1819
Exports	1000	1824	1501	2094	1201
Apparent Demand	10044	11169	11997	11703	13445
Demand Growth%	**10.6%**	**11.2%**	**7.4%**	**-2.5%**	**14.9%**
PVC	**2017-18 A**	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Capacity	1557	1557	1579	1579	1579
Production	1378	1409	1464	1414	1437
Imports	1658	1813	1883	2162	2348
Exports					
Apparent Demand	3049	3199	3361	3568	3775
Demand Growth%	**2.0%**	**4.9%**	**5.1%**	**6.2%**	**5.8%**
PS	**2017-18 A**	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Capacity	490	490	490	490	490
Production	295	290	285	320	330
Imports	29	30	26	24	24
Exports	55	53	41	60	60

Apparent Demand	262	260	261	274	289
Demand Growth%	**2.7%**	**-0.8%**	**0.4%**	**5.0%**	**5.5%**
EPS	**2017-18 A**	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Capacity	132	139	143	157	160
Production	105	110	120	130	140
Imports	3	1	1	1	1
Exports	3	3	3	5	3
Apparent Demand	104	110	115	126	137
Demand Growth%	**4.0%**	**5.8%**	**4.5%**	**9.6%**	**8.7%**
Polymers	**2017-18 A**	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Capacity	12121	13111	14127	14141	14804
Production	10283	12052	12537	13201	14325
OR (%)	**85%**	**92%**	**89%**	**93%**	**97%**
Imports	4285	3953	4171	4025	4192
Exports	1058	1880	1545	2159	1264
Net Trade	**-3226**	**-2073**	**-2626**	**-1866**	**-2928**
Apparent Demand	13459	14738	15734	15671	17646
Demand Growth%	**8.3%**	**9.5%**	**6.8%**	**-0.4%**	**12.6%**

Vinyls (KT)

	2017-18 A	2018-19 A	2019-20 A	2020-21 E	2021-22 E
PVC					
Capacity	1557	1557	1579	1579	1579
Production	1378	1409	1464	1414	1437
Imports	1658	1813	1883	2162	2348
Exports					
Apparent Demand	3049	3199	3361	3568	3775
Demand Growth%	**2.0%**	**4.9%**	**5.1%**	**6.2%**	**5.8%**

Styrenics (KT)

	2017-18 A	2018-19 A	2019-20 A	2020-21 E	2021-22 E
PS					
Capacity	490	490	490	490	490
Production	295	290	285	320	330
Imports	29	30	26	24	24
Exports	55	53	41	60	60
Apparent Demand	262	260	261	274	289
Demand Growth%	**2.7%**	**-0.8%**	**0.4%**	**5.0%**	**5.5%**
ABS	**2017-18 A**	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Capacity	190	210	240	240	240
Production	140	145	140	150	162
Imports	84	90	95	100	105
Exports	0	0	0	0	0
Apparent Demand	224	235	235	250	267
Demand Growth%	**9.3%**	**4.9%**	**0.0%**	**6.4%**	**6.8%**

SAN	2017-18 A	2018-19 A	2019-20 A	2020-21 E	2021-22 E
Capacity	170	170	170	170	170
Production	110	121	133	143	153
Imports	6	7	9	10	11
Exports					
Apparent Demand	116	128	142	153	164
Demand Growth%	**8.6%**	**10.1%**	**11.0%**	**7.7%**	**7.2%**

PET (KT)

PET	2017-18 A	2018-19 A	2019-20 A	2020-21 E	2021-22 E
Capacity	1975	1925	1975	2020	2020
Production	1624	1624	1679	1700	1717
Imports	141	183	240	190	160
Exports	867	793	769	640	517
Demand	898	1014	1150	1250	1360
Demand Growth (%)	**4.5%**	**12.9%**	**13.4%**	**8.7%**	**8.8%**

Synthetic Fibres (KT)

	2017-18 A	2018-19 A	2019-20 A	2020-21 E	2021-22 E
PSF					
Capacity	1242	1282	1391	1391	1391
Production	980	955	1009	1010	1061
Imports	45	36	59	50	50
Exports	146	168	211	220	220
Demand	881	821	832	840	890
Demand Growth (%)	**-3.5%**	**-6.8%**	**1.3%**	**1.0%**	**6.0%**
ASF					
Capacity	106	106	106	106	106
Production	82	91	92	93	94
Imports	33	19	27	23	23
Exports	25	17	16	16	16
Demand	106	107	108	109	109
Demand Growth (%)	**13.0%**	**0.5%**	**1.1%**	**0.9%**	**0.0%**
PPSF					
Capacity	13	13	13	13	13
Production	3	3	3	3	3
Imports	2	2	2	2	2
Exports	11	0	0	0	0
Demand	5	5	5	5	5
Demand Growth (%)	**4.2%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**
PFY					
Capacity	4620	4942	5209	5320	5426
Production	3076	3338	3686	3877	4075
Imports	34	38	62	56	36

Exports	146	140	152	132	124
Demand	2966	3215	3578	3759	3960
Demand Growth (%)	**6.6%**	**8.4%**	**11.3%**	**5.1%**	**5.3%**
PPFY					
Capacity	18	18	18	18	18
Production	10	11	12	13	13
Imports	1	1	1	1	1
Exports	2	2	2	2	2
Demand	9	10	11	12	12
Demand Growth (%)	**-18.2%**	**11.1%**	**10.0%**	**9.1%**	**0.0%**
VSF					
Capacity	566	566	566	566	788
Production	510	529	565	580	605
Imports	35	30	42	56	49
Exports	148	154	79	74	76
Demand	396	503	547	565	585
Demand Growth (%)	**0.6%**	**27.0%**	**8.9%**	**3.2%**	**3.5%**
VFY					
Capacity	82	82	82	82	82
Production	60	58	55	57	57
Imports	10	12	16	25	20
Exports	6	6	6	6	6
Demand	63	63	66	66	67
Demand Growth (%)	**1.5%**	**0.2%**	**3.8%**	**0.8%**	**1.1%**
NFY					
Capacity	108	108	114	114	114
Production	105	105	105	105	105
Imports	3	23	26	25	25
Exports	3	6	8	7	7
Demand	125	121	123	124	126
Demand Growth (%)	**-3.4%**	**-3.8%**	**2.2%**	**0.5%**	**1.6%**

Synthetic Rubber (KT)

PBR	2017-18 A	2018-19 A	2019-20 A	2020-21 E	2021-22 E
Capacity	124	124	124	124	124
Production	114	122	130	133	136
Imports	78	82	79	74	75
Exports	7	13	20	20	12
Demand	187	193	184	189	199
Demand Growth (%)	**4.1%**	**3.0%**	**-4.6%**	**2.9%**	**5.3%**
SBR	**2017-18 A**	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Capacity	290	290	270	270	270
Production	185	220	219	231	241
Imports	78	66	52	59	65
Exports	23	28	24	18	18
Demand	247	257	248	261	279
Demand Growth (%)	**2.8%**	**3.7%**	**-3.5%**	**5.4%**	**6.8%**
NBR	**2017-18 A**	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Capacity	20	20	20	20	20
Production	18	18	20	20	20
Imports	40	38	40	43	46
Exports	0	0	0	0	0
Demand	58	56	60	63	66
Demand Growth (%)	**6.8%**	**-2.5%**	**7.7%**	**4.3%**	**4.8%**
EPDM	**2017-18 A**	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Capacity	0	0	0	0	0
Production	0	0	0	0	0
Imports	45	53	51	53	56
Exports	0	0	0	0	0
Demand	45	53	51	53	56
Demand Growth (%)	**2.4%**	**17.4%**	**-3.0%**	**3.4%**	**4.7%**
BUTYL RUBBER	**2017-18 A**	**2018-19 A**	**2019-20 A**	**2020-21 E**	**2021-22 E**
Capacity	0	0	120	120	120
Production	0	0	15	62	108
Imports	101	112	89	54	38
Exports	0	0	4	31	52
Demand	101	112	94	87	95
Demand Growth (%)	**5.2%**	**10.9%**	**-16.1%**	**-7.4%**	**9.2%**

Other Key Petrochemicals (KT)

	2017-18 A	2018-19 A	2019-20 A	2020-21 E	2021-22 E
Benzene					
Capacity	2415	2415	2470	2470	2470
Production	1667	2095	2140	2140	2140
Imports	0	0	0	0	0
Exports	1137	1485	1460	1450	1440
Apparent Demand	530	610	680	690	700
Demand Growth%	**5.2%**	**15.1%**	**11.5%**	**1.5%**	**1.4%**
Toluene					
Capacity	175	175	175	175	175
Production	140	140	140	140	140
Imports	400	420	420	420	420
Exports	4	4	4	0	0
Apparent Demand	506	556	556	560	560
Demand Growth%	**-4.5%**	**9.9%**	**0.0%**	**0.7%**	**0.0%**
MXS					
Capacity	90	90	90	90	90
Production	63	63	82	82	82
Imports	160	183	195	200	210
Exports	0	0	0	0	0
Apparent Demand	223	234	252	257	267
Demand Growth%	**19.3%**	**4.9%**	**7.7%**	**2.0%**	**3.9%**
OX					
Capacity	420	420	420	420	420
Production	436	345	370	432	432
Imports	16	16	18	15	15
Exports	191	105	103	97	97
Apparent Demand	290	288	303	365	365
Demand Growth%	**0.3%**	**-0.6%**	**5.2%**	**20.5%**	**0.0%**

Surfactants (KT)

	2017-18 A	2018-19 E	2019-20 E	2020-21 E	
LAB					
Capacity	550	550	550	550	592
Production	452	449	406	490	501
Imports	206	228	265	222	241
Exports	6	6	0	0	0
Apparent Demand	650	670	680	712	742
Demand Growth%	**3.1%**	**3.1%**	**1.6%**	**4.6%**	**4.3%**
EO					
Capacity	271	269	279	279	282
Production	211	236	255	272	282
Imports	0	0	0	0	0
Exports	0	0	0	0	0
Apparent Demand	211	236	255	272	282
Demand Growth%	**6.1%**	**11.5%**	**8.2%**	**6.6%**	**3.7%**

Carbon Black & CBFS (KT)

CBFS	2017-18 A	2018-19 A	2019-20 A	2020-21 E	2021-22 E
Capacity	1925	2200	2633	2822	2822
Production	1829	1935	2503	2632	2632
Imports	1389	1475	1687	1883	1883
Exports	240	480	650	480	480
Demand	1829	1935	2503	2632	2632
Demand Growth (%)	**10.8%**	**5.8%**	**29.3%**	**5.2%**	**0.0%**
Carbon Black					
Capacity	1040	1190	1423	1542	1542
Production	988	1150	1284	1443	1443
Imports	150	85	45	0	0
Exports	300	110	117	183	183
Demand	1138	1235	1329	1443	1443
Demand Growth (%)	**12.8%**	**8.5%**	**7.6%**	**8.6%**	**0.0%**

CPMA
Chemicals & Petrochemicals Manufacturers' Association

Chemicals & Petrochemicals Manufacturers' Association

CPMA is the apex forum representing the Indian Petrochemical Industry, Established in 1993, and the Association offers its members a podium to collectively present their ideas, voice their concerns and offer suggestions on relevant issues. It provides a linkage between the industry, the Government and society. It interacts with policy makers and industry associations to develop and maintain harmonious and conducive business conditions.

The Association, registered under the Indian Societies Act, is widely recognized as one of the national apex bodies of the Indian Petrochemical Industry by all Ministries and Departments of Government of India, apex Chambers of Commerce and Industry and other related Associations in India and abroad. CPMA is affiliated to the Confederation of Indian Industry (CII). The Association is also a Steering Committee Member of the Asia Petrochemical Industry Conference (APIC) and had successfully hosted the annual APIC 2010 conference on May 13-14, 2010 in Mumbai.

CPMA has various sub-committees constituted to effectively focus on key areas within petrochemicals like Polyolefins, Vinyl's, Styrenics, Glycols, Elastomers, Fibre Intermediates and Surfactants. CPMA has also taken the lead to set up and promote the India Centre for Plastics in the Environment (ICPE) to deal with all environmental issues connected with the usage of plastics.

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