FIPI

Federation of Indian Petroleum Industry

Policy & Economic Report
Oil & Gas Market

JUNE
2022

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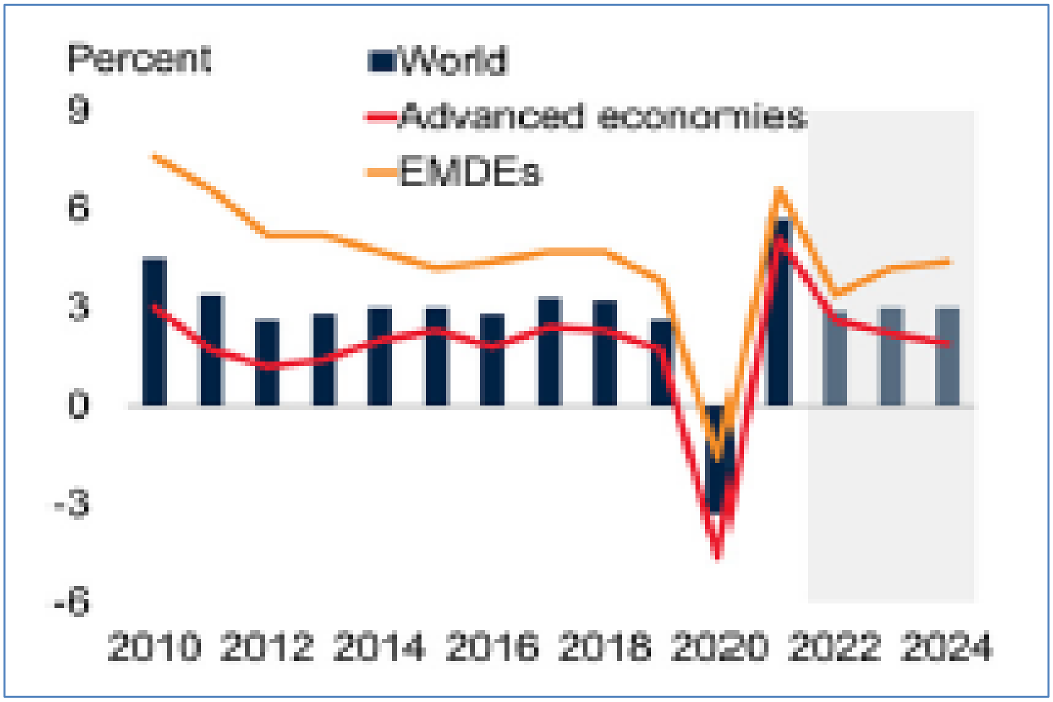
Executive Summary

According to Global Economic Prospects released by World Bank in June 2022, spill overs from the Russian's invasion of Ukraine has downgraded the global growth forecasts to 2.9 % in 2022-23 and 3% in 2023-24.

The war in Ukraine is leading to high commodity prices, adding to supply disruptions, increasing food insecurity and poverty, inducing inflationary pressures, contributing to tighter financial conditions, and heightening policy uncertainty.



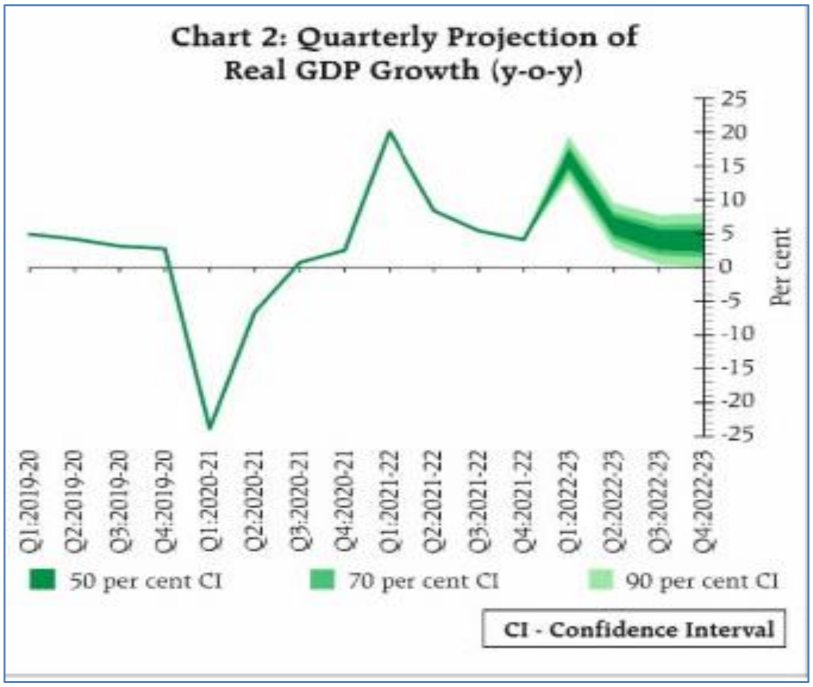
SOURCE- World Bank

In advanced economies, activity is being dampened by rising energy prices, less favorable financial conditions, and supply chain disruptions. As a result, growth in these economies is projected to decelerate from 5.1 % in 2021 to 2.6 % in 2022 and 2.2 % in 2023.

Global median headline CPI inflation rose to 7.8 % in April 2022, its highest level since 2008. Aggregate Emerging Markets and Developing Economies (EMDEs) inflation reached over 9.4 %—its highest level since 2008—while inflation in advanced economies, at 6.9 %, is the highest since 1982. Persistent rise in inflation is attributed to rise in demand for goods, supply chain bottlenecks, and rising commodity prices including energy and food prices. Further, the increase in prices was particularly pronounced for commodities of which Russia and Ukraine are large exporters, including energy and wheat, as the war resulted in major disruptions to production and trade. As a result, World Bank predicts the energy prices to rise 52 % in 2022-23.

According to the RBI, India's GDP growth projection is set at 7.2% for financial year 2022-23 and the real GDP growth for the four quarters has been estimated at 16.2%,6.2%, 4.1%, and 4.0% for Q1, Q2, and Q3 and Q4, respectively.

The worsening external environment, elevated commodity prices and persistent supply bottlenecks pose rising inflation risks in India. Accordingly, the Monetary Policy Committee has decided to increase the policy repo rate by 50 basis points to 4.90 per cent.



SOURCE- RBI

Inflation in consumer prices declined to 7.04 per cent in May 2022 from 7.79 per cent in April. Fuel and light which saw inflation at 9.54 per cent and food at 7.97 per cent are the principal components of non-core inflation. The overall non-core inflation in May was 8.2 per cent. Owing to persisting global uncertainties, RBI has revised the inflation projection to 6.7 percent for the FY 2022-23, with Q1 at 7.5 per cent; Q2 at 7.4 per cent; Q3 at 6.2 per cent; and Q4 at 4 5.8 per cent. According to RBI deputy governor, inflation is expected to drop below six per cent in the fourth quarter of 2022-23 and ease to four per cent over a span of two years.

The CMIE data for June suggest that the quantum of employment continues to remain a challenge, with pressure on the labor market as the unemployment rate rose to 7.90% in the month of June 2022 with urban unemployment rate at 7.54% and the rural unemployment rate is 8.08 % in June 2022.

Oil prices soared after the United States announced new sanctions on Iran, Beijing began easing COVID-19-related restrictions and the EU announced plans to cut its Russian oil imports by 90% by the end of the year. Brent crude futures settled at $117.97, while West Texas Intermediate (WTI) crude ended up at $115.

OPEC+ decided to raise output by 648,000 barrels per day in both July and August to cool down rising crude prices. According to OPEC, the forecast for non-OPEC supply growth in 2022 is revised down by 0.25 mb/d to 2.1 mb/d. Russia's liquids production for 2022 is revised down by 0.25 mb/d. The US liquids supply growth forecast for 2022 remains marginally unchanged at 1.3 mb/d. The main drivers of liquids supply growth in 2022 are expected to be the US, Brazil, Canada, Kazakhstan, Guyana and China, while declines are expected mainly in Russia, Indonesia and Thailand.

Natural gas spot prices at the U.S. Henry Hub benchmark averaged $8.14 per million British thermal units (MMBtu) in May 2022. U.S. natural gas prices remained relatively high mainly because of lower-than-average natural gas inventories resulting from factors affecting both supply and demand. For the year, U.S. natural gas prices are now up 181.7 % from a year ago, which is adding to inflationary concerns across the economy.

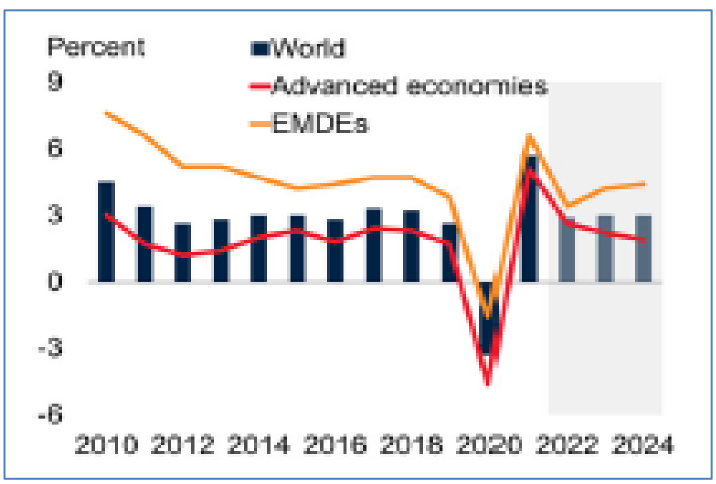
In Europe, Spot gas prices have soared to record highs as country moves away from dependence on Russian energy. The natural gas spot price at the Title Transfer Facility (TTF) in the Netherlands in Europe has been trading at averaged $29.85 per MMBtu

Economy in Focus

Global GDP growth

According to Global Economic Prospects released by World Bank in June 2022, spill overs from the Russian's invasion of Ukraine has downgraded the global growth forecasts to 2.9 % in 2022-23 and 3% in 2023-24.

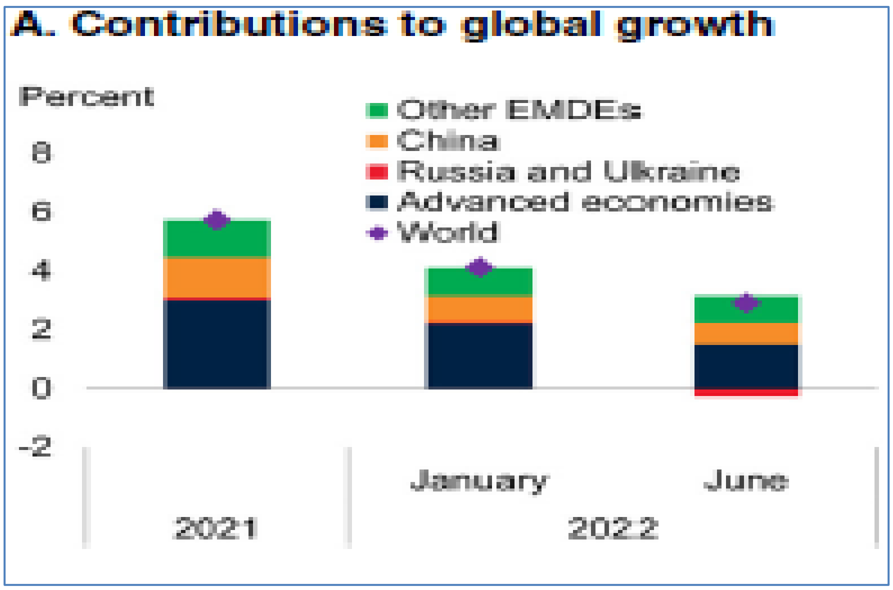
The war in Ukraine is leading to high commodity prices, adding to supply disruptions, increasing food insecurity and poverty, inducing inflationary pressures, contributing to tighter financial conditions, and heightening policy uncertainty.



Source- World Bank

In advanced economies, activity is being dampened by rising energy prices, less favorable financial conditions, and supply chain disruptions. As a result, growth in these economies is projected to decelerate from 5.1 % in 2021 to 2.6 % in 2022 and 2.2 % in 2023.

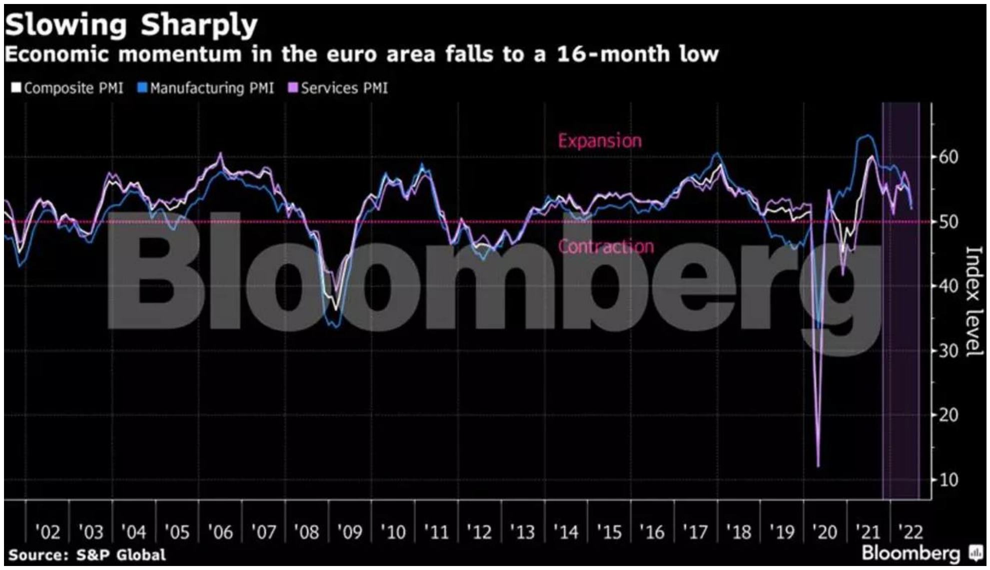
Growth in emerging market and developing economies (EMDEs) this year has been downgraded to 3.4 %, as negative spill overs from the invasion of Ukraine persists which have led to commodity price volatility, higher input costs, trade disruptions, and weaker confidence. EMDE growth is anticipated to an average of 4.3 % in 2023-24, as the lingering effects of the war abate.



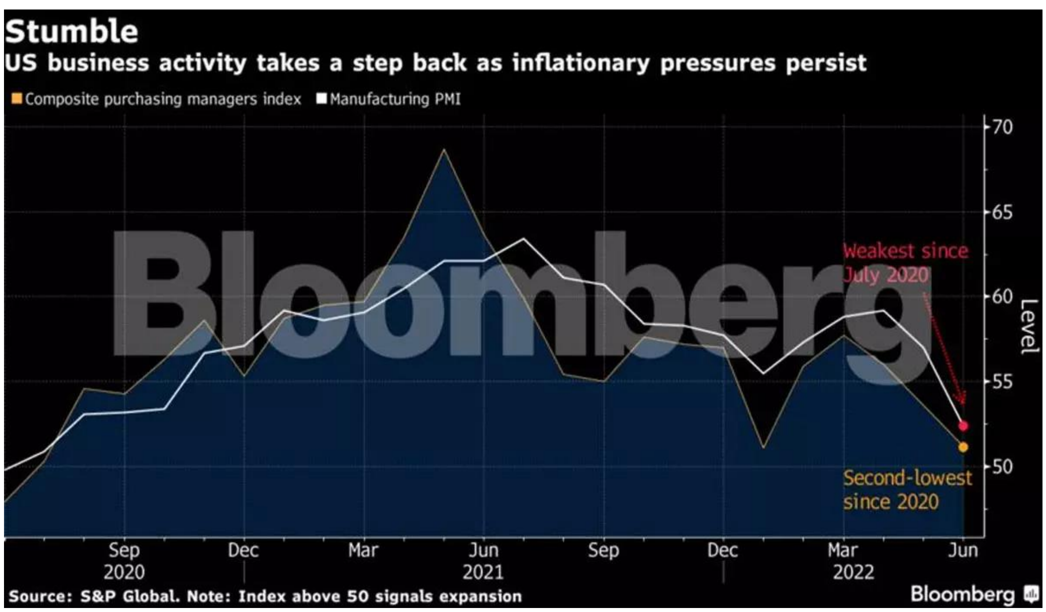
Source- World Bank

Some of the key economic developments taken place in the world are as below: -

- Business activity in Europe and the US stumbled this month as high inflation, lingering supply constraints and rising borrowing costs took a bigger toll.
- Euro-area economic expansion slowed sharply as surging prices curbed the rebound from pandemic restrictions and factories continued to suffer from supply shocks. The economic momentum in Euro Zone fell in June, driven by rampant inflation, concerns over energy and rising borrowing costs.



- U.S. growth is forecast to slow to 2.5 % in 2022-23, reflecting sharply higher energy prices, tighter financial conditions, and additional supply disruptions caused by the invasion of Ukraine. Business activity took a decisive step back in June as rapid inflation reduced demand for services and led to contractions in factory orders and production.



- China is expected to grow 4.3 % in 2022 and 5.2 % in 2023. The forecast has been downgraded 0.8 % point, reflecting damage from Covid related lockdowns.

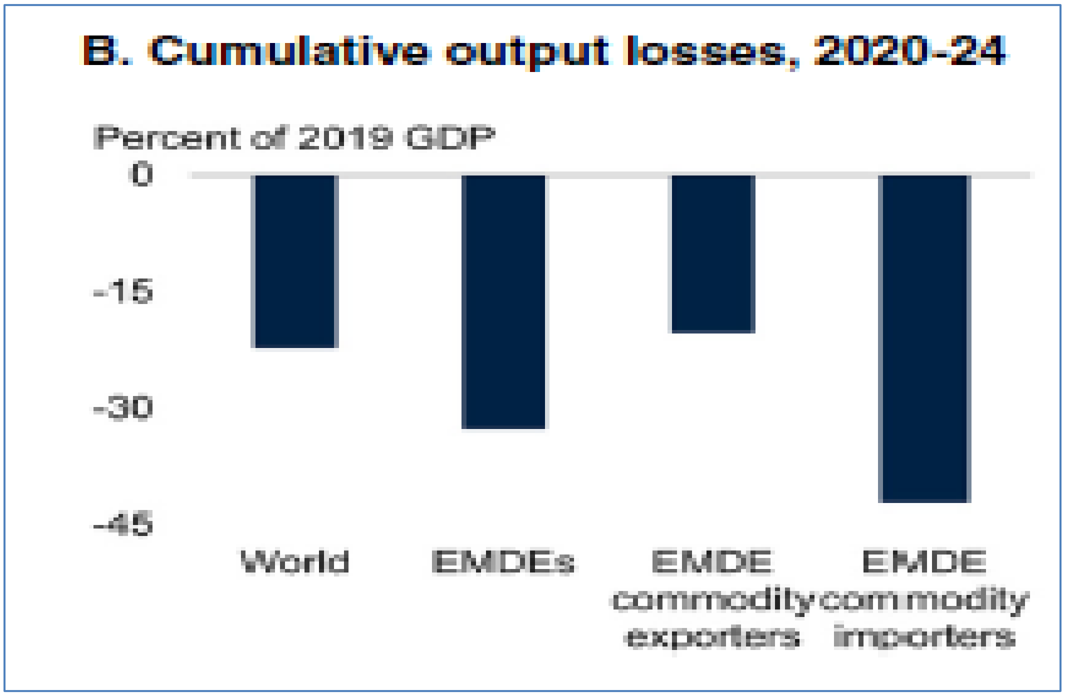
- High inflation and disruptions to global food markets have worsened food insecurity in many Emerging market and developing economies (EMDEs), especially low-Income countries (LICs).

Further, trade disruptions feed through value chains, as many EMDEs heavily depend on both Russia and Ukraine for key commodity imports and intermediate goods. As a result, the EMDE's new export orders have fallen and point to a contraction of business activity.

Global output

- The cumulative losses to global activity relative to its pre-pandemic trend are expected to continue mounting, especially among EMDE commodity importers.

- The global manufacturing growth has weakened amid ongoing supply constraints and soaring prices.

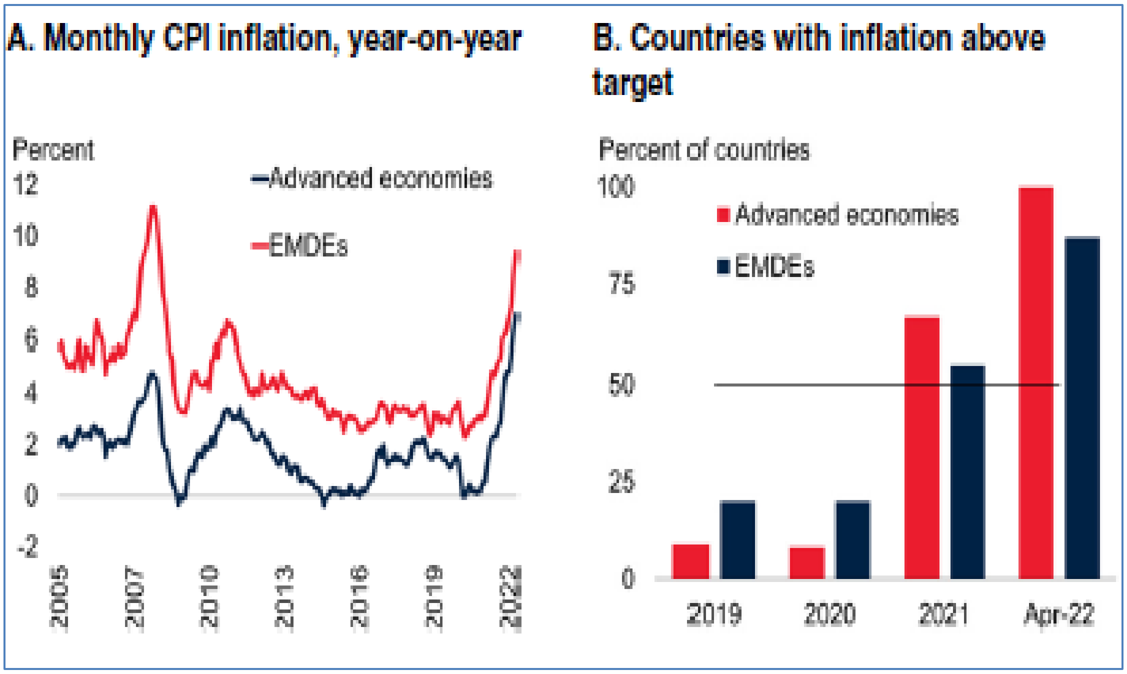


Source- World Bank

Global Inflation

- Global median headline CPI inflation rose to 7.8 % in April 2022, its highest level since 2008. Aggregate EMDE inflation reached over 9.4 %—its highest level since 2008—while inflation in advanced economies, at 6.9 %, is the highest since 1982.

- Persistent rise in inflation is attributed to rise in demand for goods, supply chain bottlenecks, and rising commodity prices including energy and food prices.



Source- World Bank

- Further, the increase in prices was particularly pronounced for commodities of which Russia and Ukraine are large exporters, including energy and wheat, as the war resulted in major disruptions to production and trade.

- Supply gets further aggravated as G7 and the EU have announced that they would ban or gradually phase out their imports of Russian oil.

- As a result of above, World Bank predicts the energy prices to rise 52 % in 2022-23.

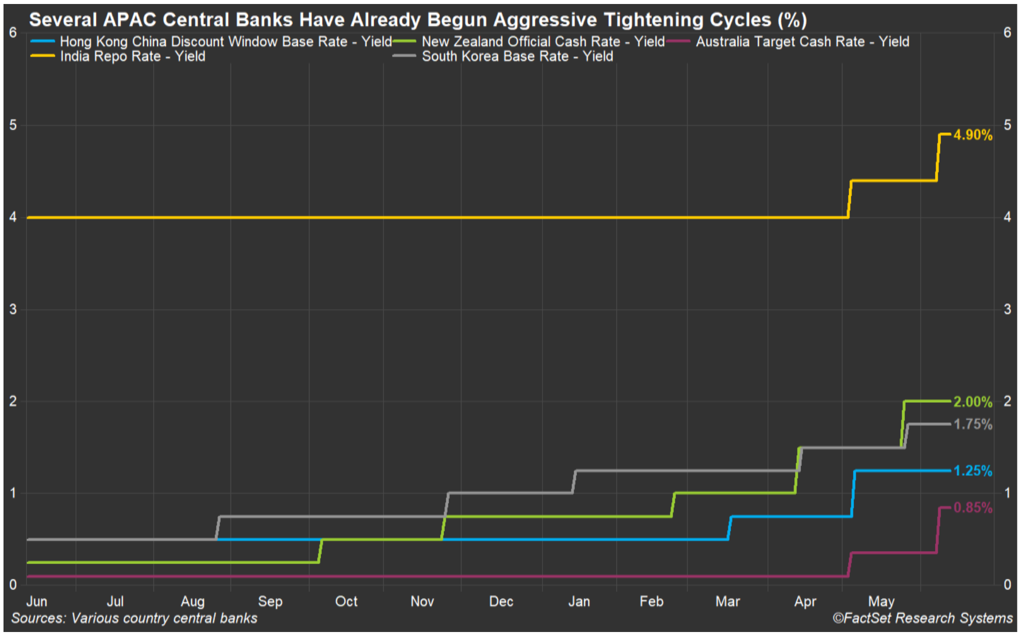
- US consumer prices are climbing at their fastest annual rate in over four decades, with gasoline prices hitting a record high and food costs soaring. Consumer prices rose by 8.6% in May – the largest year-on-year increase since December 1981 – following an 8.3% jump in April.

Central Banks stance on inflation

Addressing the price challenges many Central Banks have raised their policy rates.

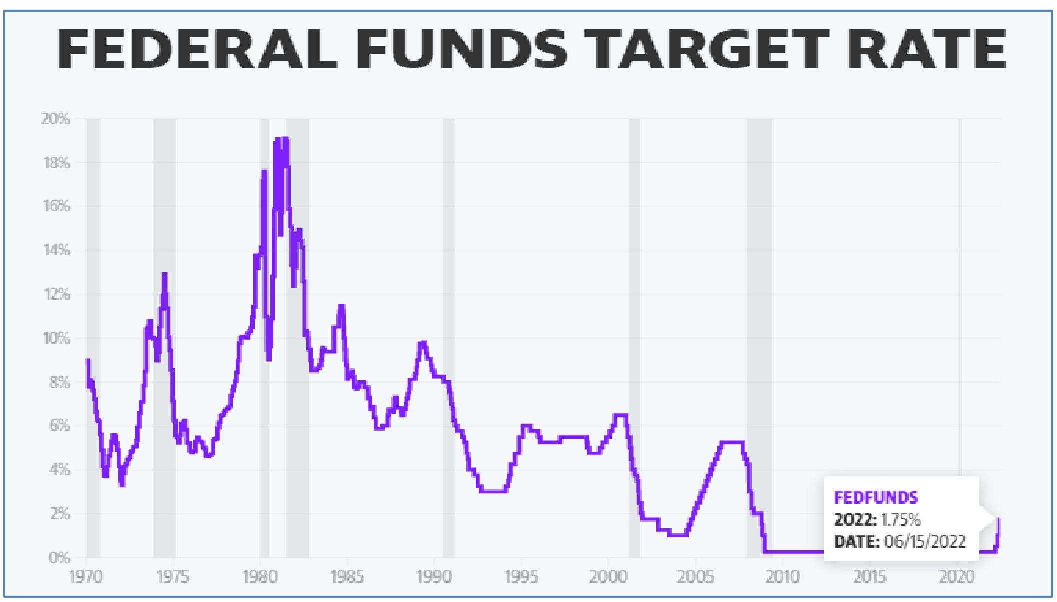
- US Fed Reserve Federal Reserve have raised interest rates by 0.75%, most since 1994, amid effort to slow inflation.
- According to BBC, the European Central Bank will raise its key interest rates by 0.25% in July and plans further increases later this year.
- The UK's central bank has raised interest rates for the fifth month in a row.
- The Bank of England increased the key rate by 0.25%, pushing it to a 13-year high of 1.25%.
- Brazil and Hong Kong, and China, have also raised interest rates.

- New Zealand and South Korea have already seen five interest rate hikes in this cycle, with the actions by the Reserve Bank of New Zealand totaling 175 basis points since October 2021



Federal Reserve raises interest rates by 0.75%, most since 1994, amid effort to slow inflation

The Federal Reserve raised interest rates by 0.75%, the largest move it has made in a single meeting since 1994. The central bank said that further interest rate hikes will come this year, as the Fed leans on higher borrowing costs to dampen demand and work to slow faster-than-expected inflation. The Fed decision lifts short-term borrowing costs to a target range between 1.50% and 1.75%.



Source- Federal Reserve

The central bank also downgraded expectations on other key economic measures, expecting the U.S. economy to grow by only 1.7% this year, compared to the 2.8% it had forecast in March.

Fed officials also suggested they could see unemployment rise this year, with the median member now forecasting a 3.7% headline unemployment rate by the end of the year.

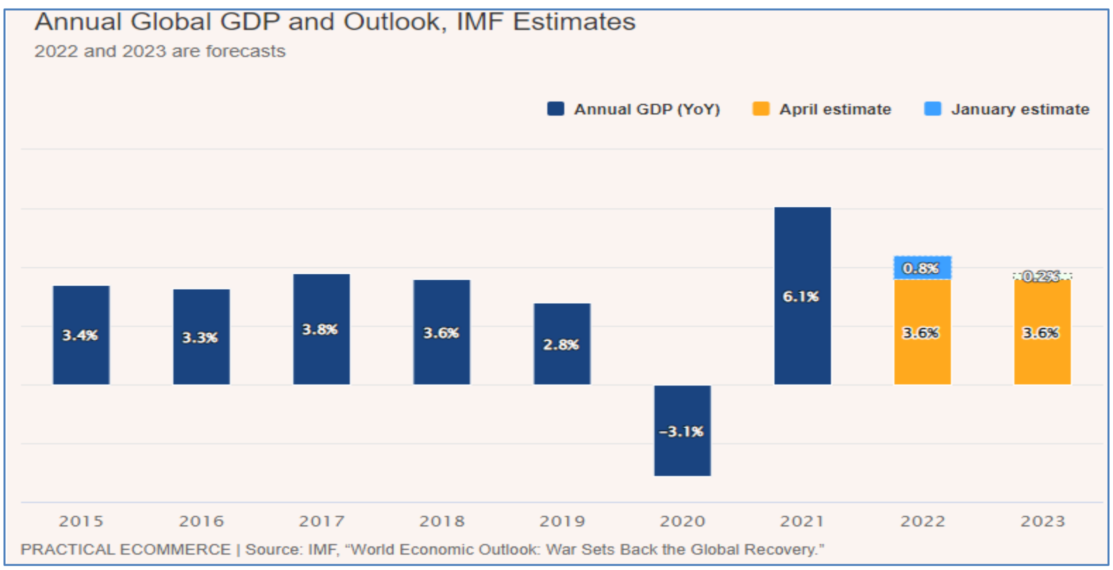
Impact of Ukraine War on World Economy- IMF

The conflict in Ukraine has generated a humanitarian disaster with economic consequences that will slow down the global economy and elevate inflation. Fuel and food prices have risen significantly.

According to IMF estimates, the worldwide economy will decelerate from 6.1% growth in 2021 to 3.6% in 2022 and 2023 — 0.8 and 0.2 percentage points lower than its January 2022 forecast.

The IMF's inflation predictions for 2022 are 5.7% in advanced economies and 8.7% in emerging market and developing economies.

According to the IMF forecast, the global economy will effectively flatline this year as Europe enters a recession, China slows substantially, and U.S. financial conditions tighten. On a purchasing power parity basis, the growth of global gross domestic product is expected to be 3.6% in 2022.



OECD slashes global growth prediction on Ukraine war and China's zero-Covid policy

The OECD estimates that global GDP will hit 3% in 2022 — a 1.5 %-point downgrade from a projection done in December.

According to OECD, the invasion of Ukraine, along with shutdowns in major cities and ports in China due to the zero-COVID policy, has generated a new set of adverse shocks.

Russia's invasion of Ukraine is having massive consequences on the global economy, along with China's zero-Covid policy which is also posing a drag on global growth given the importance of the country in international supply chains and overall consumption.

According to OECD, the Euro zone is projected to grow 2.6% and the U.S. will expand by 2.5% in 2022-23. For the United Kingdom, GDP is seen at 3.6% this year before slumping to zero next year. Further, OECD forecasted inflation in U.K. will keep rising and peak at over 10% at the end of 2022 due to continuing labour and supply shortages and high energy prices, before gradually declining to 4.7% by the end of 2023.

For emerging-market economies, OECD projected growth of 4.4% for China, 6.9% for India and 0.6% for Brazil.

Global oil demand set to rise 2% to new high in 2023, says IEA

According to IEA, world oil demand will rise more than 2% to a record high of 101.6 million barrels per day (bpd) in 2023.

IEA said in its monthly report supply was being constrained because of sanctions on Russia over its invasion of Ukraine. "Economic fears persist, as various international institutions have recently released downbeat outlooks," the IEA said, forecasting demand would rise 2.2 million bpd, or 2.2%, in 2023 compared to 2022 and would exceed pre-pandemic levels.

Also, tightening central bank policy, the impact of a soaring U.S. dollar and rising interest rates on the purchasing power of emerging economies mean the risks to our outlook are concentrated on the downside.

Advanced economies in the Organisation for Economic Co-operation and Development (OECD) would account for most demand growth in 2022, while China would lead the gains in 2023 as it emerges from COVID-19 lockdowns. China's recent COVID-19 curbs put the world's largest oil importer on track for its first fall in demand this century, the IEA said.

The overall demand recovery and constraints on supply because of sanctions on Russia and cautious production increases by OPEC+ pushed oil prices above $139 a barrel in March. Brent crude was trading around $120 in June.

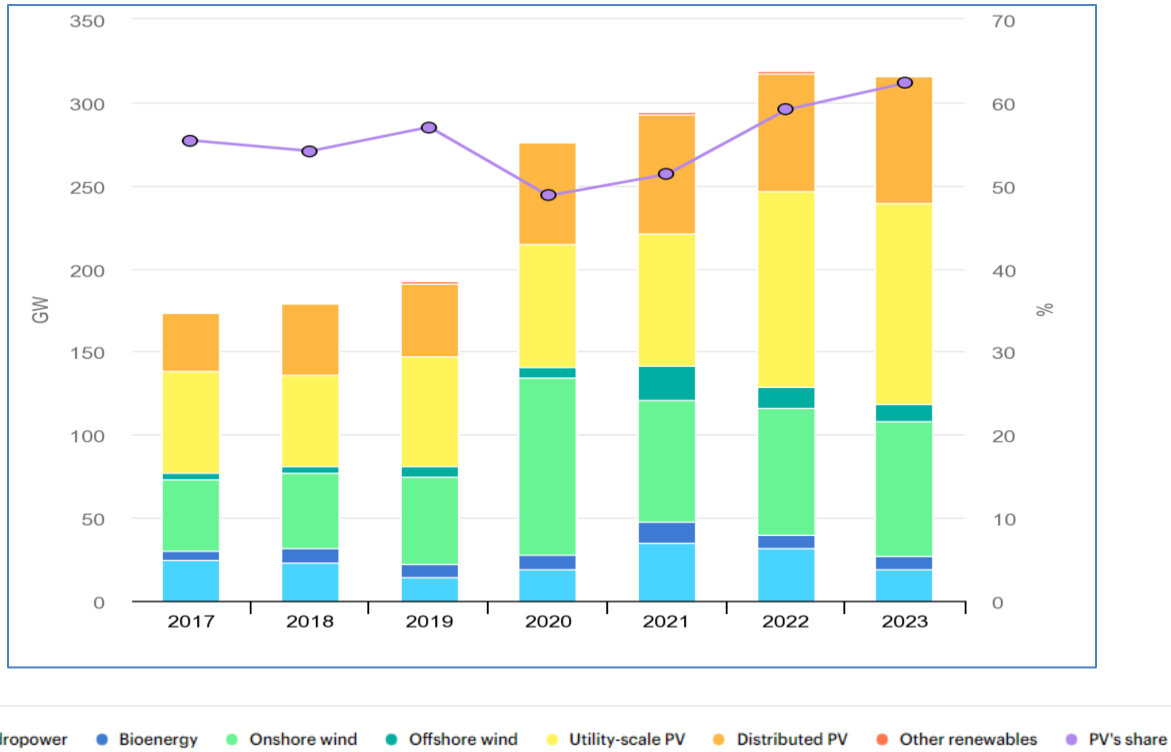
But the IEA said supplies would soon match demand, as after seven consecutive quarters of hefty inventory draws, slowing demand growth and a rise in world oil supply through the end of the year should help world oil markets rebalance.

Global Renewable energy installations broke new records in 2021, - International Energy Agency

According to IEA, a record amount of renewable capacity was installed in 2021, despite post-pandemic delays and rising raw material costs.

Renewable energy growth means the world has 295 gigawatts of green generating capacity, demonstrating by World Economic Forum's Fostering Effective Energy Transition 2021 report as its "unprecedented acceleration" in recent years.

Figure- Net renewable capacity additions by technology



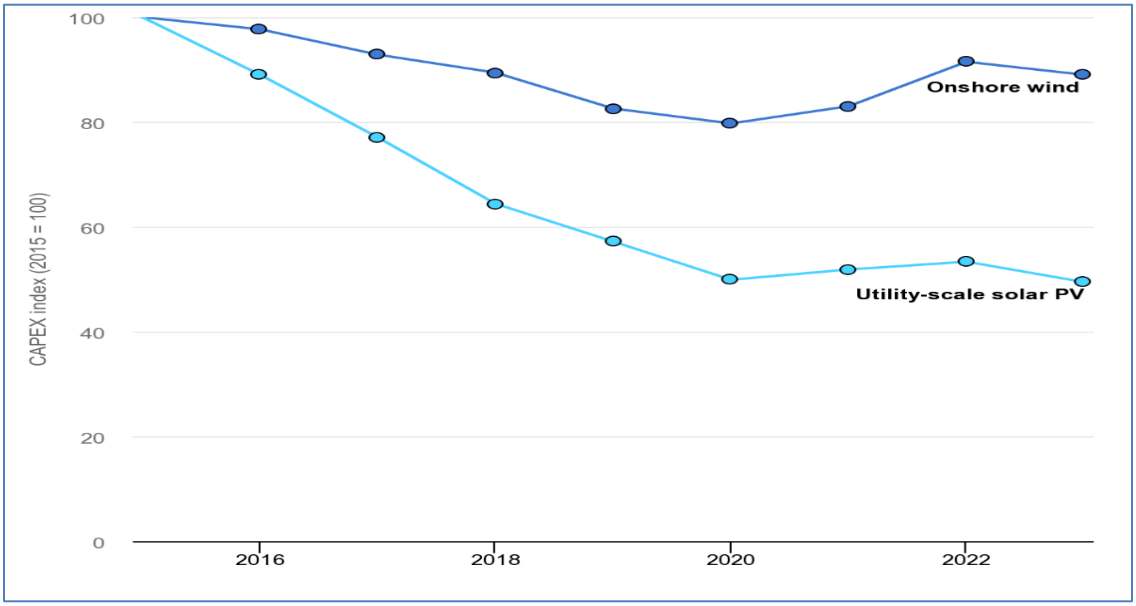
Source- IEA

According to IEA, 6% growth in 2021 will be followed by an 8% rise in installed capacity in 2022, led by a surge in solar power. However, progress has been uneven, with a 17% decline in new wind installations in 2021 offset by the rise in solar and hydropower.

In India, the rate of growth in renewable energy doubled in 2021 after a record slowdown in 2020 caused by the impact of COVID-19 on projects. Brazil's incentives led to a growth in rooftop solar and onshore wind also accelerated, the IEA said.

The power of government initiatives to help or harm renewable roll-outs was demonstrated in Vietnam, where the ending of a feed-in tariff for rooftop solar saw a dramatic slowdown; while in South Africa, the completion of pre-approved wind and solar led to resumed growth.

Figure- Solar's price advantage



Source- IEA

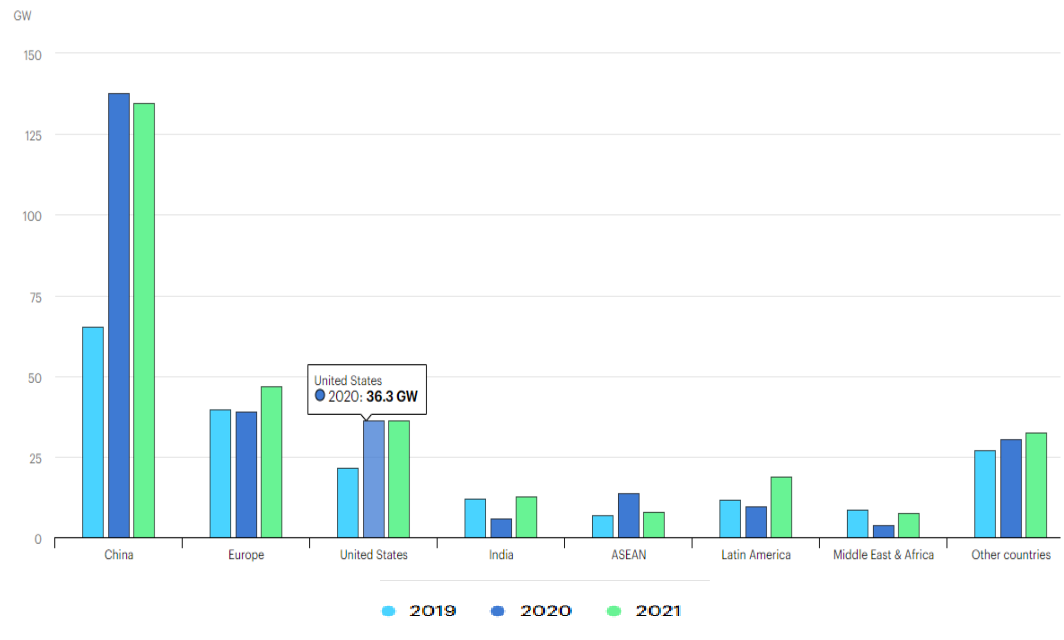
According to IEA, even if current high energy prices are maintained, the solar will retain and even increase its cost advantage over the next two years. This is despite the rising cost of raw materials used to construct renewable energy installations.

In the past 12 months, the cost of polysilicon used in solar panels has more than quadrupled, says the IEA, while the price of steel rose by 50% and copper by 70%. Overall, raw material costs for all types of renewable energy were 15% to 25% higher.

China accounted for 46% of the new generating capacity added in 2021, with subsidies encouraging record-breaking rises in the amount of offshore wind which increased sixfold. In Europe, solar accounted for most of the growth, with projects in Spain, France, Poland and Germany.

The IEA expects Russia's invasion of Ukraine to lead to increases in renewable energy capacity, particularly in Europe. Russia, which supplies around 45% of the European Union's gas, has already cut supplies to Bulgaria, Finland and Poland.

Figure- Renewable net capacity additions by country and region 2019-2021

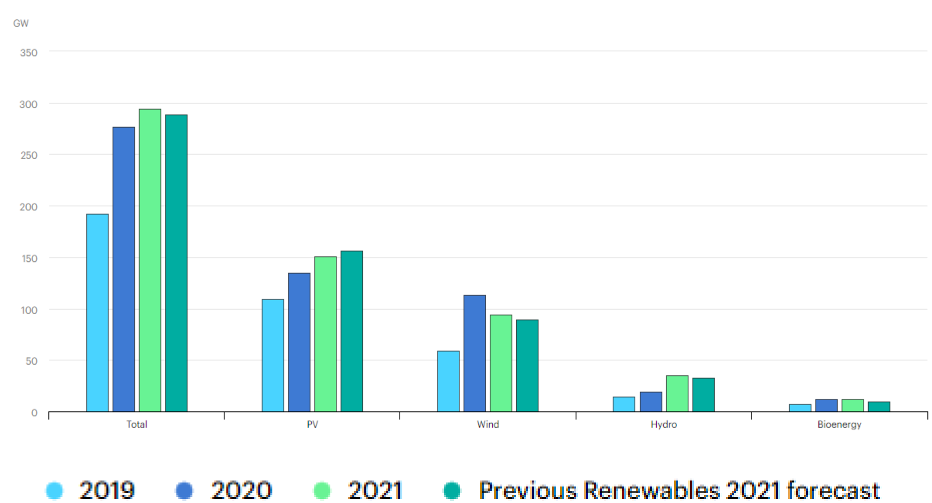


Source- IEA

Solar is expected to account for 60% of the increase in global renewable capacity in 2022, taking the global total to more than 300 gigawatts. Two-thirds will be large-scale projects encouraged by policies in China and the European Union, according to IEA.

New onshore wind capacity is also expected to recover after slipping back in 2021, but the global rate at which new offshore wind installations are built will slow significantly, reflecting the end of subsidies in China which drove a record capacity surge in 2021.

Figure- Renewable net capacity additions 2019-2021.



Source- IEA

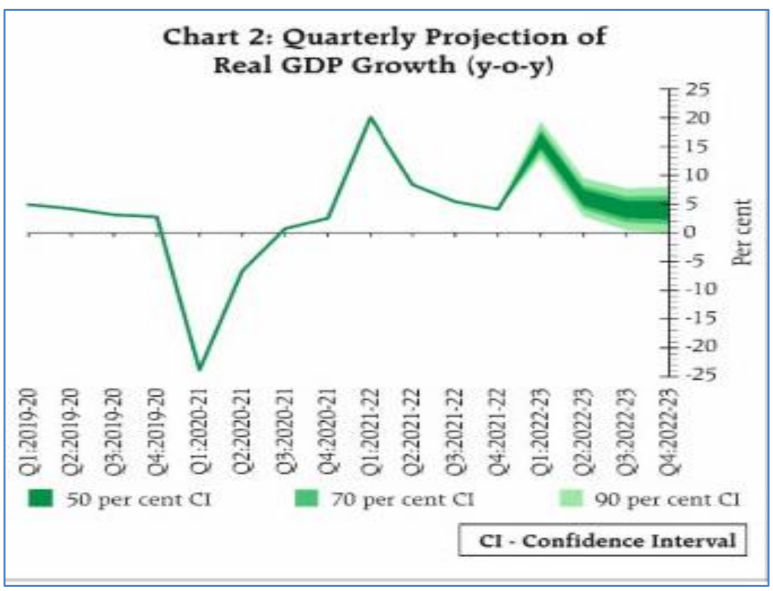
As the largest player in renewables, events in China have an effect on global totals. According to IEA additions to the world's hydropower capacity will be 40% lower in 2022 as the number of new projects in China falls.

India

According to the RBI GDP growth projection is set at 7.2% for financial year 2022-23 and the real GDP growth for the four quarters has been estimated at 16.2%,6.2%, 4.1%, and 4.0% for Q1, Q2, and Q3 and Q4, respectively.

According to RBI, the following factors determine India's GDP growth in FY 2023: -

- Domestic economic activity stabilized in March-April with the ending of third wave of COVID-19 and the easing of restrictions.
- Urban demand appears to have maintained expansion and rural demand is improving with onset of monsoons and expected improvement in agricultural prospects.
- Investment activity have been on a rise with improving capacity utilization, stronger corporate balance sheets and better financial conditions.
- Merchandise exports recorded double digit expansion for the fifteenth consecutive month in May. Non-oil non-gold imports also grew robustly on the back of improving domestic demand.
- The worsening external environment, elevated commodity prices and persistent supply bottlenecks pose rising inflation risks in India. Accordingly, the Monetary Policy Committee has decided to increase the policy repo rate by 50 basis points to 4.90 per cent.



Source- RBI

Inflation

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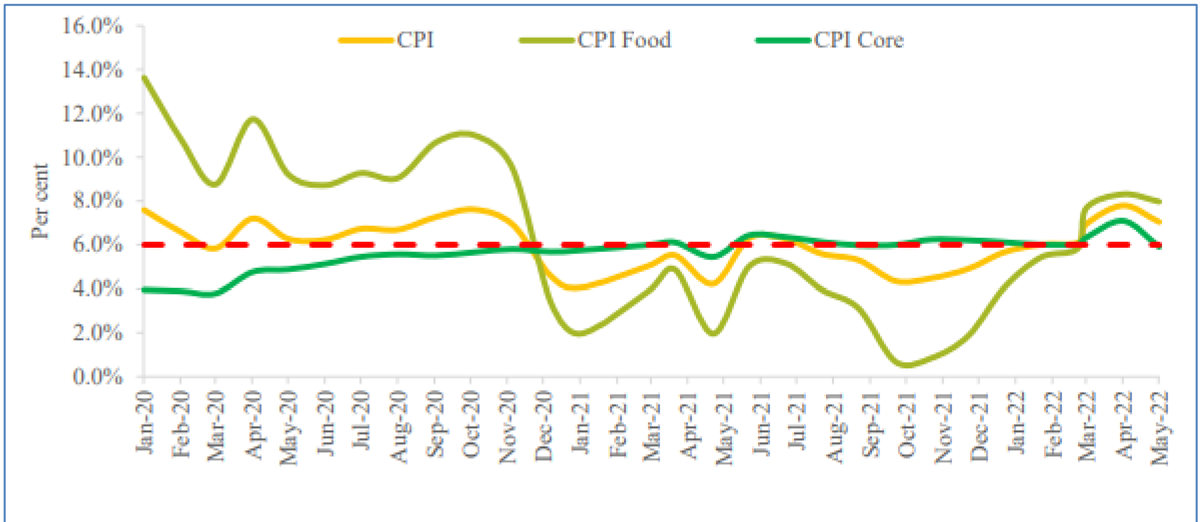


Source: MOSPI

- Fuel and light which saw inflation at 9.54 per cent and food at 7.97 per cent are the principal components of non-core inflation. The overall non-core inflation in May was 8.2 per cent.

RBI stance on inflation

- Owing to persisting global uncertainties, RBI has revised the inflation projection to 6.7 percent for the FY 2022-23, with Q1 at 7.5 per cent; Q2 at 7.4 per cent; Q3 at 6.2 per cent; and Q4 at 4 5.8 per cent.

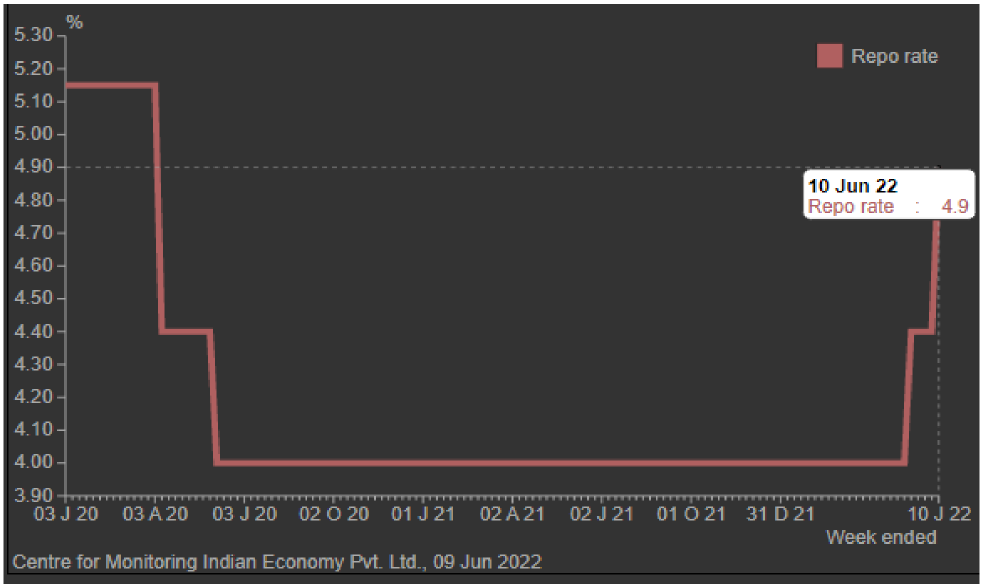
- According to RBI deputy governor, inflation is expected to drop below six per cent in the fourth quarter of 2022-23 and ease to four per cent over a span of two years.

- Reserve Bank of India (RBI) raised the interest rate for second time in 2 months by 50 basis points to a two-year high of 4.9 per cent to tame inflation.

- Consequently, the standing deposit facility (SDF) rate stands adjusted to 4.65 per cent and the marginal standing facility (MSF) rate and the Bank Rate to 5.15 per cent.

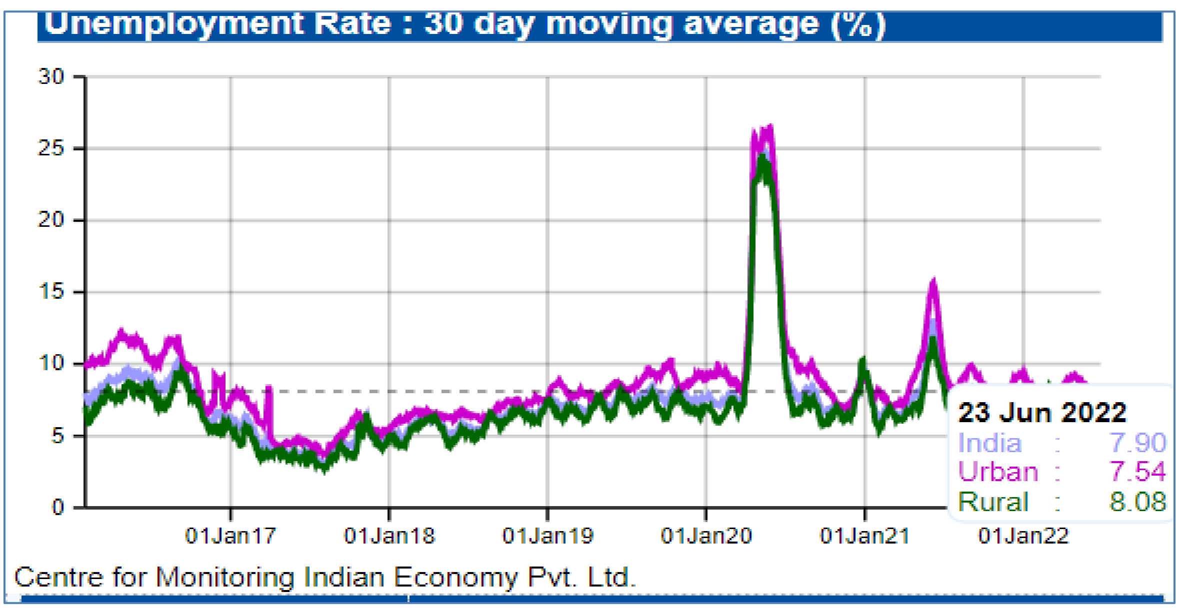
- The RBI also decided to remain focused on withdrawal of accommodation to ensure that inflation remains within the target going forward, while supporting growth.

- These decisions are in consonance with the objective of achieving the medium-term target for consumer price index (CPI) inflation of 4 per cent within a band of +/- 2 per cent, while supporting growth.



Unemployment in India

The CMIE data for June suggest that the quantum of employment continues to remain a challenge, with pressure on the labor market as the unemployment rate rose to 7.90% in the month of June 2022 with urban unemployment rate at 7.54% and the rural unemployment rate is 8.08 % in June 2022.



India's external sector

- India's exports have performed exceptionally well despite weakening recovery across major trading partners.

- The impact of rising crude oil prices on petroleum, oil and lubricants (POL) import bill has been partly offset by export of petroleum products, which also benefitted from better price realisations in recent months.

- Optimism on exports of both goods and services and remittances help contain the current account deficit (CAD) at a sustainable level, which can be financed by normal capital flows.

- As on June 3, 2022, India's foreign exchange reserves were of the order of US$ 601.1 billion, which are further supplemented by a healthy level of net forward assets of the RBI.

Rupee falls to all-time low of 78.29 against U.S. dollar

The rupee slipped to its all-time low of 78.29 against the U.S. dollar tracking the strength of the American currency overseas as investors flocked to the safe-haven currency amid an overall risk-averse sentiment.

The elevated global crude oil prices, strengthening dollar and a continuous outflow of foreign funds from the local market, have kept the domestic currency under pressure for the last few sessions. Dollar gained strength amid the toxic mix of rising costs and slower growth.

Centre aims to limit fiscal deficit at 6.7% in 2022-23

The estimate for fiscal deficit in 2022-23 is 6.4 per cent. However, the fiscal deficit is expected to increase because of the central government's efforts to control inflation and also to support vulnerable sections of society.

One of the biggest fiscal measures the government took to arrest rising inflation is the excise duty cut of Rs.8 per litre on petrol and Rs.6 per litre on diesel announced on May 22, 2022. The Centre also decided to provide a subsidy on LPG of Rs.200 per cylinder to the beneficiaries of PM Ujjwala Yojana. The Centre, on November 3, 2021, had also slashed excise duty on petrol by Rs.5 per litre and on diesel by Rs.10 per litre.

On May 24, 2022, the Centre exempted 2 million tonne imports of crude soyabean oil and sunflower oil from customs duty and agri cess till March 2024. Earlier in February 2022, the Centre had reduced the effective duty on crude palm oil imports to 5.5 per cent from 8.25 per cent. These measures are likely to result into a revenue loss for the Government.

India's FDI rank one notch up in 2021, inflows shrink: UNCTAD

India jumped to attain the seventh position among top recipients of foreign direct investment (FDI) in calendar year 2021 despite fall in flows to $45 billion from $64 billion in 2020, according to the United Nations Conference on Trade and Development (UNCTAD).

In its World Investment Report, the agency said that global FDI recovered to pre-pandemic levels in 2021 reaching nearly $1.6 trillion but this course is unlikely to be sustained in 2022.

"Flows to India declined to $45 billion. However, a flurry of new international project finance deals was announced in the country: 108 projects, compared with 20 projects on average for the last 10 years. The largest number of projects (23) was in renewables. Large projects include the construction in India of a steel and cement plant for $13.5 billion by ArcelorMittal Nippon Steel (Japan) and the construction of a new car manufacturing facility by Suzuki Motor (Japan) for $2.4 billion.

Outward FDI from South Asia, mainly from India, rose 43% to $16 billion. The top 10 economies for FDI inflows in 2021 were the US, China, Hong Kong, Singapore, Canada, Brazil, India, South Africa, Russia and Mexico but among them only India witnessed a decline in inflows. The top recipient of FDI was the US at $367 billion followed by China at $181 billion and Hong Kong at $141 billion. China, Hong Kong, Singapore, India, the United Arab Emirates and Indonesia accounted for more than 80% of FDI to South Asia.

International project finance announcements in industrial real estate grew in 2021 and deal numbers tripled to 152 projects with a value of $135 billion. Large projects include the construction of a steel and cement manufacturing plant in India for $14 billion.

Of R&D investment in developing economies, India captured almost half of all projects, UNCTAD said. American digital MNEs targeted India in 8% of the deals, mostly buying minority stakes to gain access to the market and to local innovative solutions.

IMF's 17.7 billion SDR support masks extent of slowdown in reserves pile-up in FY'22

India added $47.5 billion to the foreign exchange reserves last fiscal, down nearly half the previous year. But a drill down of the data reveals that nearly $26 billion of those incremental reserves were due to the sanction of Special Drawing Rights by the IMF and revaluation of gold reserves. Net of valuation losses only $ 4 billion worth hard foreign currency assets were added to the forex kitty.

A $17.7 billion addition to the reserves was provided by the IMF in terms of SDR allocation and close to $9 billion addition to the value of gold. Even excluding the SDR gains- which is a one-off ($17.4billion) and changes in gold $8.67billion, the gains in foreign currency assets stand at $20bn.

An analysis of data in RBI's Half Yearly Report on Management of Foreign Exchange Reserves, of the $30.3 billion addition to reserves in FY'22 to $ 607.3 billion, only $ 4 billion was on account accretion to hard currencies in reserves, $8.7 billion due to revaluation in gold and $17.4 billion due to rise in SDRs.

Net Addition to Reserves in FY22

	Mar '22	Mar '21	Change ($ m)
FCA	5,40,724	5,36 693	**4,031**
Gold	42,551	33,880	**8,671**
SDRs	18,891	1,486	**17,405**
Reserves (IMF)	5,143	4 925	**218**
Total	6,07,309	5,76,984	**30,325**

SOURCE: Compiled from issues of the RBI's Half Yearly Report on Management of Foreign Exchange Reserves

Movements in the foreign currency assets occur mainly on account of purchase and sale of foreign exchange by the RBI, income arising out of the deployment of the foreign exchange reserves, external aid receipts of the Central Government and changes on account of revaluation of the assets.

The slowdown in the pile-up in reserves assumes significance as foreign investment is slowing as central banks of advanced economies raise rates to fight rising inflation and a prospect of wider current account deficit would put further pressure on the reserves and rupee.

International agencies lower India's GDP growth rate for FY 2023.

World Bank

The World Bank has cut India's economic growth forecast for the current fiscal to 7.5 % and 7.1 % in 2023-24 as rising inflation, supply chain disruptions, and geopolitical tensions taper recovery.

According to the World Bank report, growth in India slowed in the first half of 2022 as activity was disrupted both by a surge in COVID-19 cases, accompanied by more-targeted mobility restrictions and by the war in Ukraine. The recovery is facing headwinds from rising inflation. The unemployment rate has declined to levels seen prior to the pandemic, but the labour force participation rate remains below pre-pandemic levels and workers have shifted to lower-paying jobs.

Moody's Investor Service

Moody's Investors Service trimmed the GDP projection to 8.8 per cent for the calendar year 2022 from 9.1 per cent earlier, citing high inflation especially among crude oil and fertilizer.

IMF

The International Monetary Fund (IMF) projected that India would grow by 8.2 per cent in 2022-23, which is a sharp downward revision from its earlier projection of 9 per cent. Its downward revision hinges mainly on the impact of Russia-Ukraine war global supply chains and prices.

Organization for Economic Cooperation and Development (OECD)

OECD revised India's FY23 economic growth projection to 6.9 per cent from the earlier projected 8.1 per cent. OECD's projection is the lowest by any agency or bank and it said that it was because India has been adversely affected by Russia's invasion of Ukraine.

S&P Global Ratings

S&P Global Ratings too had cut India's growth projection for 2022-23 to 7.3 per cent, from 7.8 per cent earlier, on rising inflation and longer-than-expected Russia-Ukraine conflict.

Asian Development Bank (ADB)

Asian Development Bank (ADB) has pegged India's growth at 7.5 per cent, while RBI in April cut the forecast to 7.2 per cent from 7.8 per cent amid volatile crude oil prices and supply chain disruptions due to the ongoing Russia-Ukraine war.

Fitch Ratings

Fitch Ratings lowers India's GDP growth forecast to 7.8% from 8.5% for 2022-23 citing inflationary impacts of the global commodity price shock. Further, citing diminished downside risks to medium-term growth, Fitch Ratings upgraded its outlook on India's long-term foreign currency Issuer Default Rating (IDR) to "Stable" from "Negative". The rating agency has also affirmed India's Issuer Default Rating (IDR) at 'BBB-'. Fitch Ratings has pegged India's inflation for the financial year 2022-23 at 6.9 %. Also, Fitch forecasted the current account deficit to rise to 3.1 per cent of GDP in FY23 from 1.5 per cent in FY22 on the back of a higher oil import bill.

India turns 10 % of its petrol green; targets a fifth by 2025

India has achieved the target of supplying 10 per cent ethanol-blended petrol five months ahead of schedule and is aiming to double the blend by 2025-26 in order to cut oil import dependence and address environmental issues.

The original target for doping 10 per cent ethanol, extracted from sugarcane and other Agri commodities, in petrol originally was November 2022

This, it added, translates into a forex impact of over Rs 41,500 crore, reduced greenhouse gas (GHG) emissions of 27 lakh tonnes and has also led to the expeditious payment of over Rs 40,600 crore to farmers.

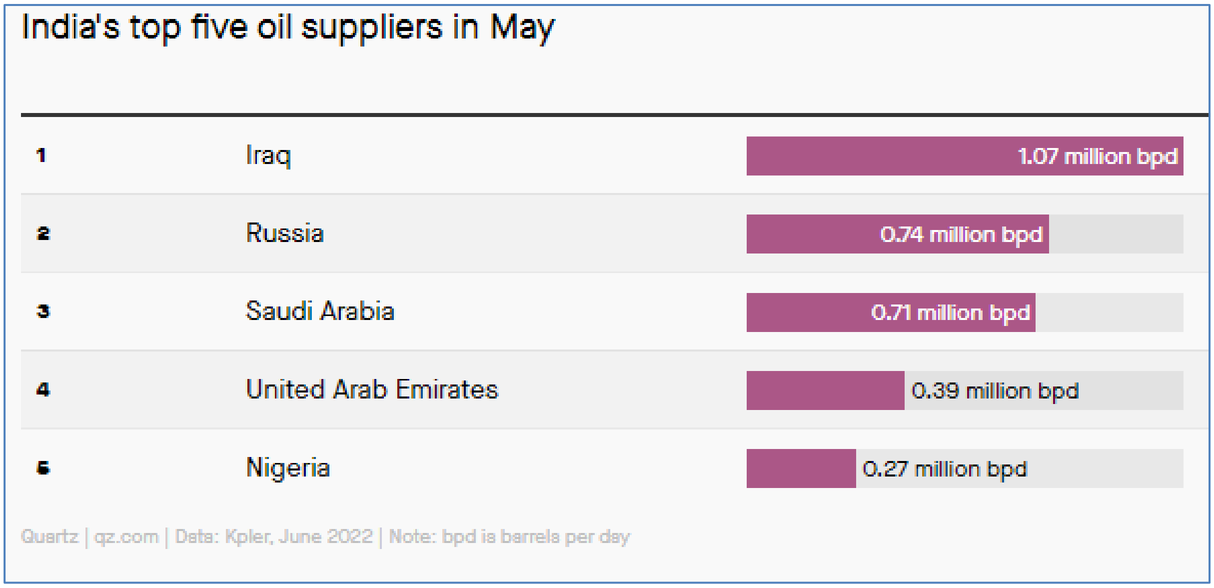
India is the world's fifth-largest producer of ethanol after the US, Brazil, EU and China. Ethanol worldwide is largely used for consumption but nations like Brazil and India also dope it in petrol.

The Government of India, with the aim to enhance India's energy security, reduce import dependency on fuel, save foreign exchange, address environmental issues and give a boost to the domestic agriculture sector, has been promoting the Ethanol Blended Petrol (EBP) Programme. It has advanced the nation's target of making petrol with 20 per cent ethanol by five years to 2025 in a move that's expected to save USD 4 billion annually.

Russia is now India's second largest crude oil supplier

Russia is now India's second-biggest source of crude oil, after Iraq. Until February, only around 2% (12 million barrels of Urals crude) of India's total crude oil imports came from Russia. Now, India's contracts stand at around 66.5 million barrels, according to data analytics firm Kpler.

This figure is for the period from March to June 2022, along with estimated deliveries in July and August. It exceeds India's Russian crude oil imports for all of 2021.



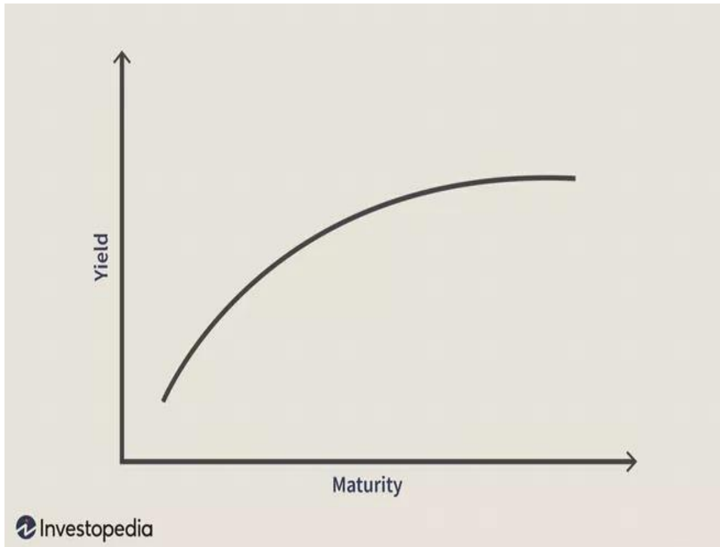
The reason for this spike is an almost $25-per-barrel discount offered by Russia following supply disruptions since the Ukraine war.

Lesson from economics

Yield Curve

- The term yield curve refers to the relationship between the short- and long-term interest rates of fixed-income securities issued by the Government.
- Yield curves plot interest rates of bonds of equal credit and different maturities.
- The government securities yield curve contains important clues on the likely behaviour of the economy.
- The slope of the yield curve gives an idea of future interest rate changes and economic activity.
- The three key types of yield curves include normal, inverted, and flat.
    1. A normal or up-sloped yield curve indicates yields on longer-term bonds may continue to rise, responding to periods of economic expansion. A normal yield curve thus starts with low yields for shorter-maturity bonds and then increases for bonds with longer maturity, sloping upwards. This is the most common type of yield curve as longer-maturity bonds usually have a higher yield to maturity than shorter-term bonds.

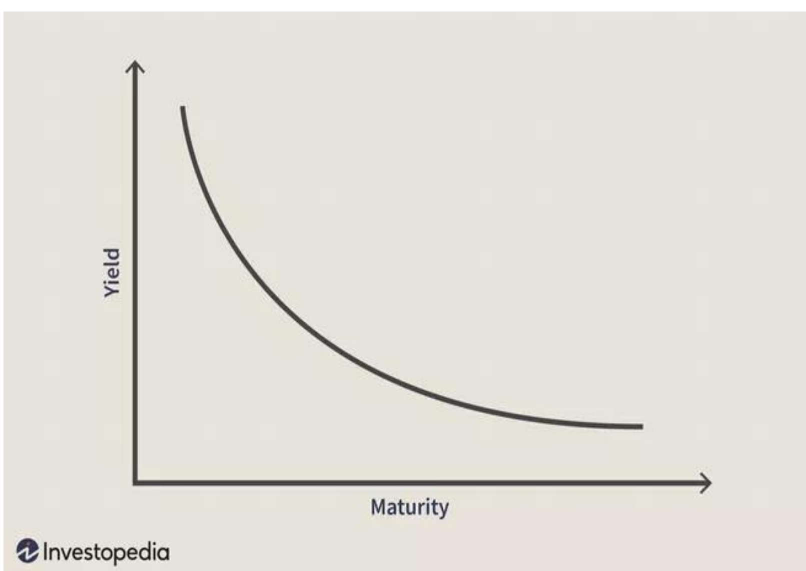
Figure- A normal upward sloping yield curve



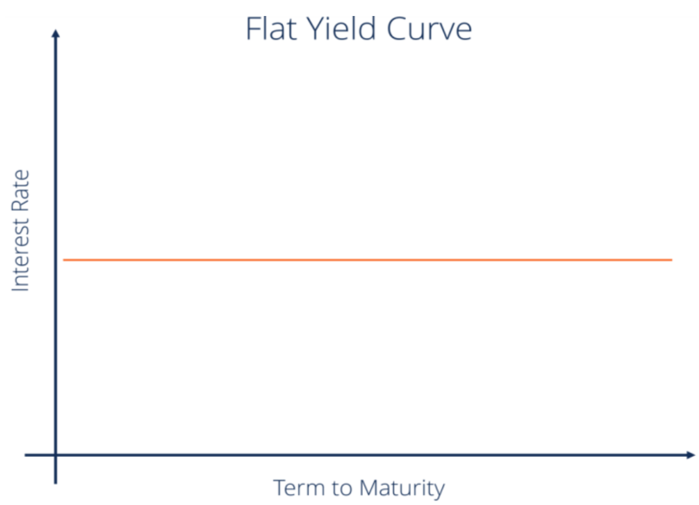
A steep yield curve implies strong economic growth in the future—conditions that are often accompanied by higher inflation, which can result in higher interest rates.

2. An inverted yield curve instead slopes downward and means that short-term interest rates exceed long-term rates. Such a yield curve corresponds to periods of economic recession, where investors expect yields on longer-maturity bonds to become even lower in the future.

Figure- An inverted yield curve



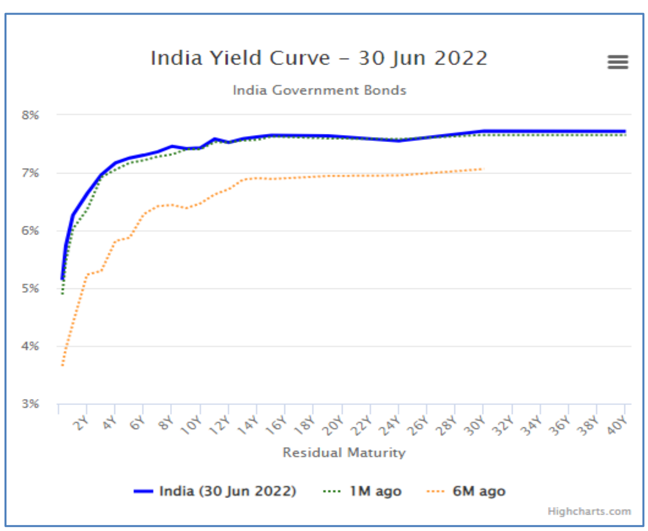
3. A flat yield curve is defined by similar yields across all maturities. there is little difference in yield to maturity among shorter and longer-term bonds. Such a flat or humped yield curve implies an uncertain economic situation. It may come at the end of a high economic growth period that is leading to inflation and fears of a slowdown. It might appear at times when the central bank is expected to increase interest rates. In times of high uncertainty, investors demand similar yields across all maturities.



India Yield Curve Analysis

Normally, longer-duration interest rates are higher than short-duration. So, the yield curve normally slopes upward as duration increases. For this reason, the spread (i.e., the yield difference) between a longer and a shorter bond should be positive. If not, the yield curve can be flat or inverted.

1. The India 10Y Government Bond has a 7.431% yield.
2. 10 Years vs 2 Years bond spread is 79.5 bp.



India's bond yield has climbed more than 100 basis points this year, tracking a global rise in borrowing costs after higher inflation in US let to monetary tightening by Central Banks. On the domestic front, the Reserve Bank of India also raised the key interest rate by 50 bps in June, after a surprise 40bps off cycle rate-hike in May, tracking most other central banks.

The yield curve is indicating an improvement in long-term growth prospects and an upshift in inflation expectations. At the same time, the fact that the yield curve has become steeper and concave reconfirms expectations of tighter monetary policy in the period ahead.

Oil Market

Crude oil price – Monthly Review

Oil prices soared after the United States announced new sanctions on Iran, Beijing began easing COVID-19-related restrictions and the EU announced plans to cut its Russian oil imports by 90% by the end of the year. Brent crude futures settled at $117.97, while West Texas Intermediate (WTI) crude ended up at $115.

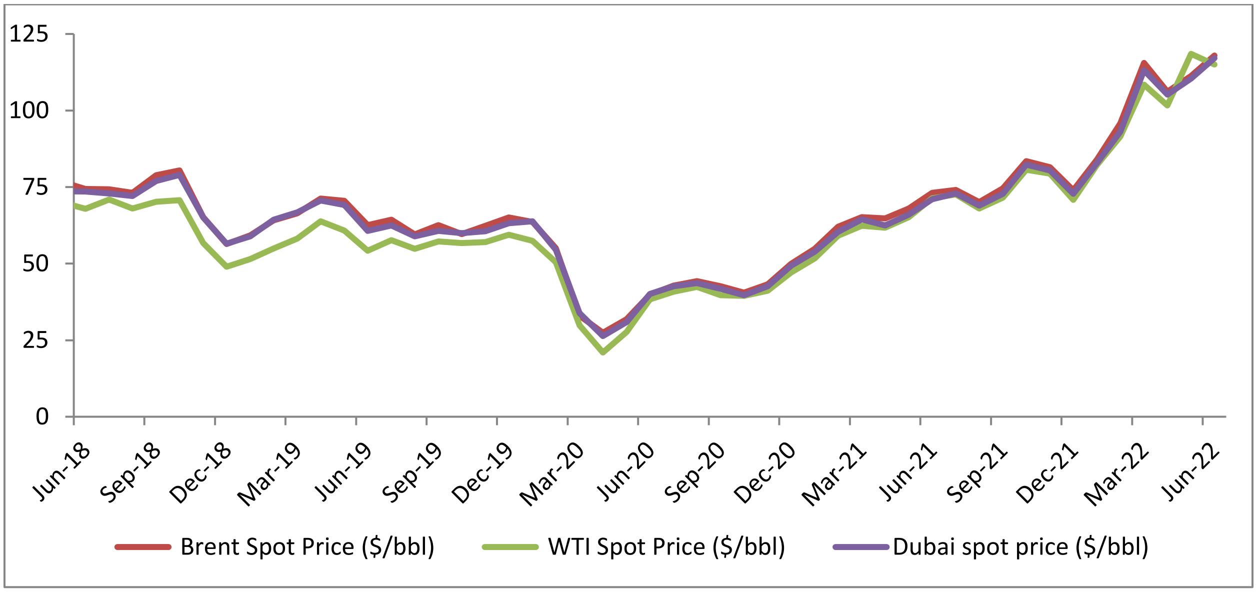
According to International Energy Agency, demand is expected to rise further in 2023, growing by more than 2% to a record 101.6 million barrels per day. There is strong optimism that China's oil demand will rebound as it eases COVID-19 restrictions which will further put pressure on rising prices.

In addition, Libya's oil output has collapsed to 100,000-150,000 bpd, and thus the country could have ongoing problems delivering oil amid unrest. Political unrest in Libya and Ecuador has also threatened to further restrict the world's oil supply.

On the supply side, OPEC+ producers agreed to increase their collective production by 0.65 MMb/d in each of July and August, rather than by 0.4 MMb/d per month to September as per the previous targets.

Therefore, demand for oil has soared while supply has remained stagnant, thereby putting upward pressure on crude oil prices.

Figure 1: Benchmark price of Brent, WTI and Dubai crude



Source: WORLD BANK

- Brent crude price averaged $ 117.97 per bbl in June 2022, up by 6.0% on a month on month (MoM) and 61.4% on year on year (YoY) basis, respectively.
- WTI crude price averaged $ 115.00 per bbl in June 2022, down by 3.0% on a month on month (MoM) and up by 61.1% on year on year (YoY) basis, respectively.
- Dubai crude price averaged $ 117.11 per bbl in June 2022, up by 6.1 % on a month on month (MoM) and 64.9% on year on year (YoY) basis, respectively.

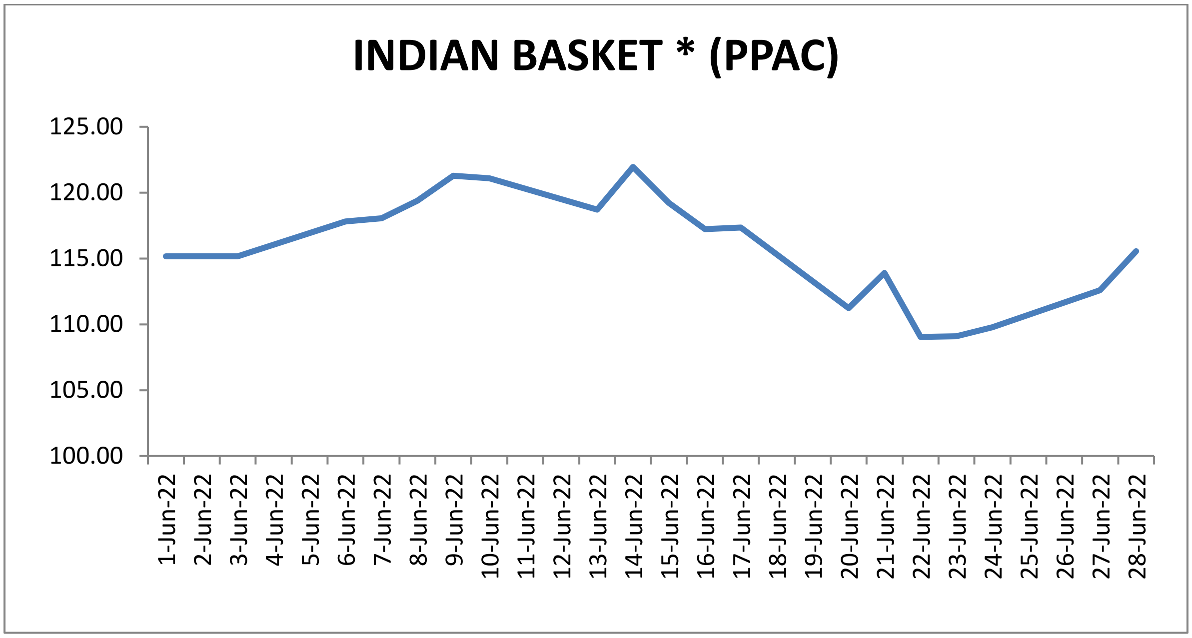
Table 1: Crude oil price in June, 2022

Crude oil	Price ($/bbl)	MoM (%) change	YoY (%) change
Brent	117.97	6.0%	61.4%
WTI	115.00	-3.0%	61.1%
Dubai	117.11	6.1%	64.9%

Source: WORLD BANK

Indian Basket Crude oil price

Figure 2: Indian crude oil basket price in $ per bbl



Source: Petroleum Planning & Analysis Cell

- Indian crude basket price averaged $ 115.94 per barrel in June 2022, up by 6.7% on Month on Month (M-o-M) and by 61.5% on a year on year (Y-o-Y) basis, respectively.

Oil production situation

- OPEC+ decided to raise output by 648,000 barrels per day in both July and August to cool down rising crude prices.
- According to OPEC, the forecast for non-OPEC supply growth in 2022 is revised down by 0.25 mb/d to 2.1 mb/d. Russia's liquids production for 2022 is revised down by 0.25 mb/d. The US liquids supply growth forecast for 2022 remains marginally unchanged at 1.3 mb/d. The main drivers of liquids supply growth in 2022 are expected to be the US, Brazil, Canada, Kazakhstan, Guyana and China, while declines are expected mainly in Russia, Indonesia and Thailand.

Oil demand situation

- According to OPEC monthly report, for 2022, world oil demand growth is broadly unchanged to stand at 3.4 mb/d. In 1Q22, world oil demand recorded robust growth of 5.2 mb/d, mainly due to a strong economic rebound supported by further easing of COVID-19 containment measures, particularly in OECD countries. Within the quarters, the 2Q22 is revised down, reflecting the lockdown in some part of China leading to lower-than-expected demand, while 2H22 is revised up on expectations of higher demand during the summer holiday and driving season. Oil demand growth in 2022 is forecast at 1.8 mb/d in the OECD and 1.6 mb/d in the non-OECD.

Table 2: World Oil demand in mbpd	2021	1Q2022	2Q2022	3Q2022	4Q2022	2022	Growth	%
Total OECD	**44.77**	**45.77**	**45.26**	**47.23**	**47.84**	**46.53**	**1.77**	**3.95**
~ of which US	*19.93*	*20.30*	*20.57*	*21.19*	*21.21*	*20.82*	*0.90*	*4.50*
Total Non-OECD	**52.16**	**53.50**	**52.92**	**53.62**	**54.94**	**53.75**	**1.60**	**3.06**
~ of which India#	*4.77*	*5.18*	*4.85*	*5.01*	*5.39*	*5.11*	*0.33*	*7.01*
~ of which China	14.94	14.67	15.16	15.42	15.97	15.31	0.37	2.48
Total world	**96.92**	**99.28**	**98.19**	**100.85**	**102.77**	**100.29**	**3.36**	**3.47**

Source: OPEC monthly report, June 2022

 # During 2022 rising oil demand will be supported by increasing requirements in all main petroleum product categories, however, some downside risks pertain relating to rising COVID-19 cases, new variants and their associated containment measures, as well as fuel substitution.

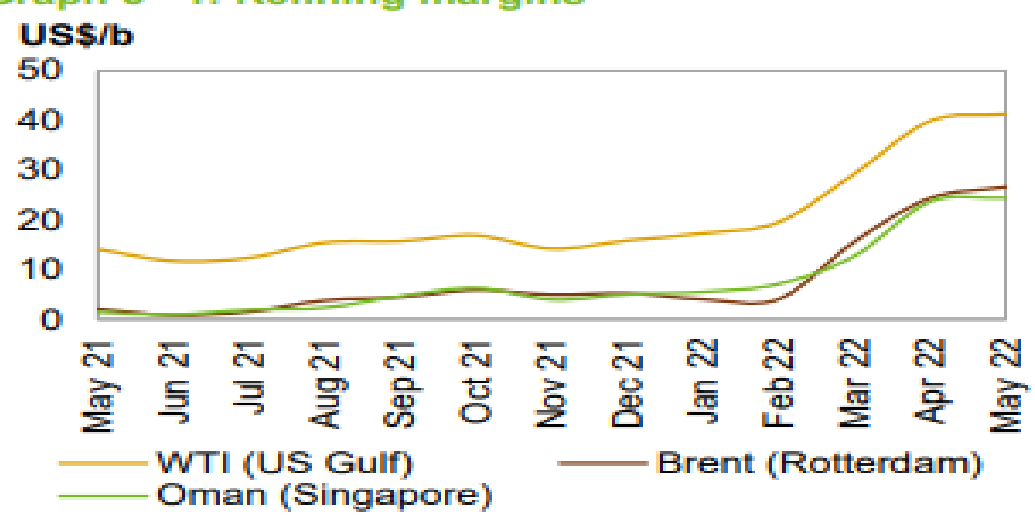
*Note: *2021=Estimation and 2022 = Forecast. Totals may not add up due to independent rounding*

Global petroleum product prices

US Gulf Coast (USGC) refining margins against WTI rose further, despite showing the lowest monthly gain since November 2021. Gasoline was the sole positive performer and margin driver across the barrel as gasoline inventories continued to decline throughout the month. Meanwhile, rising US utilization rates as refineries return from major turnarounds and, consequently, higher refinery outputs weighed on crack spreads for all other products across the barrel.

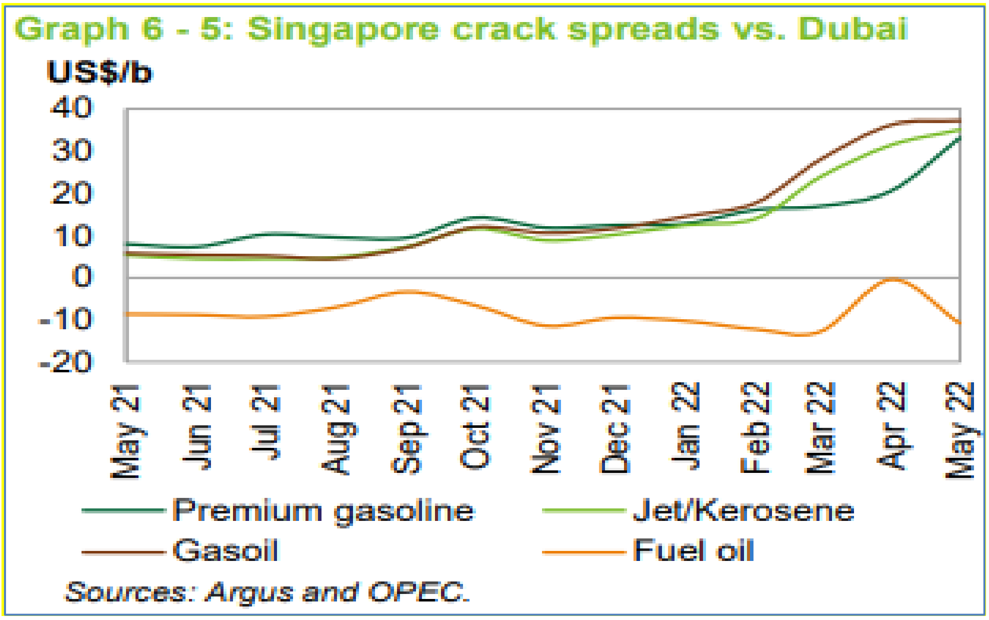
Refinery margins in Rotterdam against Brent increased and exhibited the largest monthly gain relative to other main trading hubs. Strong gasoline exports exerted pressure on inventory levels and exacerbated the gasoline market amid, reportedly, healthy gasoline flows to the US. Over the month, product prices rose again following the decline registered in the previous month, which reflected a m-o-m uptick in the Brent price.

Graph 6 - 1: Refining margins



Sources: Argus and OPEC.

The Asian gasoline 92 crack spread was relatively unchanged as the lifting of COVID-19 lockdown and mobility restrictions led to an improvement in gasoline demand in Southeast Asia. However, the most recent COVID outbreaks in China and South Korea partially offset the strength of the region's fuels markets. The Singapore gasoline crack spread against Oman in May averaged $33.16/b, up by $12.62 m-o-m and by $25.19 y-o-y.



The Singapore gasoil crack spread soared to a new record-breaking high. This reflected strong regional demand, firm industrial and manufacturing activity, as well as a contraction in regional gasoil availability amid expectations for an even tighter market going forward. The Singapore gasoil crack spread against Oman averaged $37.25/b, up by 98¢ m-o-m and by $31.55 y-o-y.

Table 3: Singapore FOB, refined product prices ($/bbl)

Singapore product prices	Price ($/b) in May 2022	MoM (%) change	YoY (%) change
Naptha	95.76	-2.0%	45.2%
Premium gasoline (unleaded 95)	146.88	15.9%	93.0%
Regular gasoline (unleaded 92)	140.99	14.2%	89.6%
Jet/Kerosene	142.90	6.4%	99.3%
Gasoil/Diesel (50 ppm)	152.90	3.1%	107.5%
Fuel oil (180 cst 2.0% S)	143.96	4.9%	100.2%
Fuel oil (380 cst 3.5% S)	96.91	-5.4%	68.0%

Source: OPEC

Petroleum products consumption in India

Monthly Review:

- Overall consumption of all petroleum products in May 2022 with a volume of 18.3 MMT registered a growth of 20.83% on volume of 15.1 MMT in May 2021.
- MS (Petrol) consumption during the month of May 2022 with a volume of 3.01 MMT recorded a growth of 51.52% on volume of 1.99 MMT in May 2021.

- HSD (Diesel) consumption during the month of May 2022 with a volume of 7.3 MMT recorded a growth of to 31.54% on volume of 5.5 MMT in the month of May 2021.
- LPG consumption during the month of May 2022 with a volume of 2.16 MMT registered a de-growth of 0.13% over the volume of 2.17 MMT in the month of May 2021
- ATF consumption during May 2022 with a volume of 0.598 MMT registered a growth of 123.09% over the volume of 0.268 MMT in May 2021.
- Bitumen consumption during May 2022 with a volume of 0.7 MMT registered a growth 6.06% over volume of 0.66 MMT in the month of May 2021.
- Kerosene consumption registered a de-growth of 50.33% during the month of May 2022 as compared to May 2021.

Table 4: Petroleum products consumption in India, May 2022

CONSUMPTION OF PETROLEUM PRODUCTS (P)	*Consumption in '000 MT*	*MoM (%) change*	*YoY (%) change*
LPG	2,165	0.1%	-0.1%
Naphtha	908	-16.3%	-27.1%
MS	3,017	7.8%	51.5%
ATF	598	8.3%	123.1%
SKO	68	-6.3%	-50.3%
HSD	7,285	1.1%	31.5%
LDO	54	4.6%	-29.4%
Lubricants & Greases	352	-1.5%	37.9%
FO & LSHS	535	2.4%	13.9%
Bitumen	703	-7.8%	6.06%
Petroleum coke	1,235	-5.6%	-20.4%
Others	1,348	1.8%	52.2%
TOTAL	**18,269**	**0.4%**	**20.8%**

Source: PPAC

Natural Gas Market

Natural Gas Price – Monthly Review

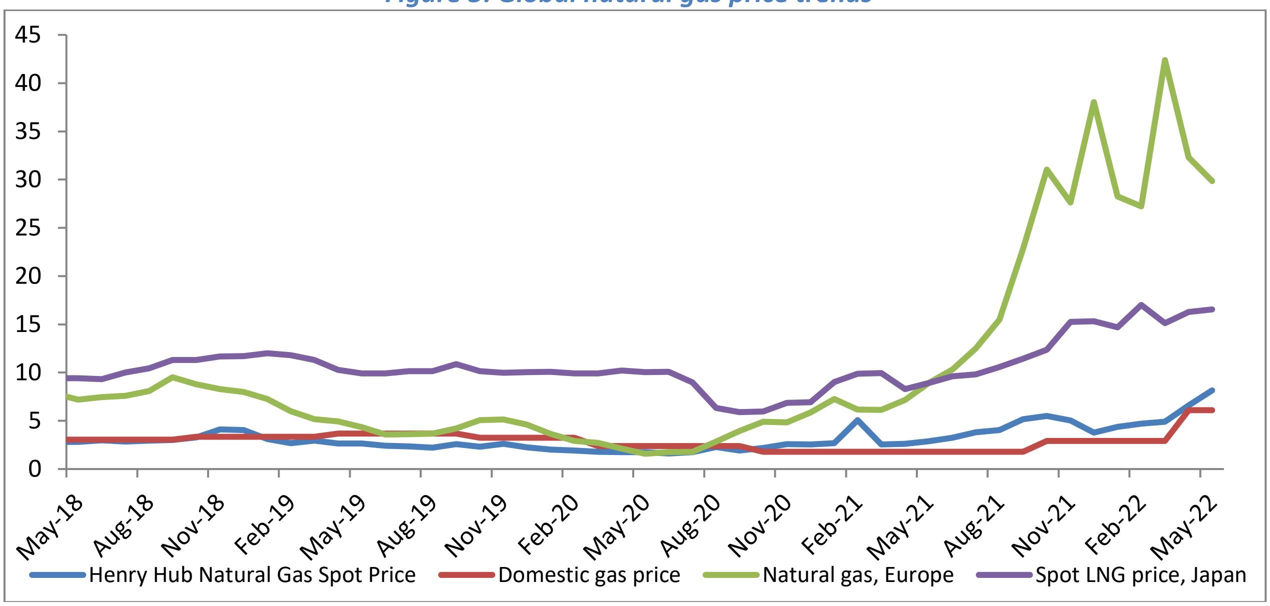
- Natural gas spot prices at the U.S. Henry Hub benchmark averaged $8.14 per million British thermal units (MMBtu) in May 2022. U.S. natural gas prices remained relatively high mainly because of lower-than-average natural gas inventories resulting from factors affecting both supply and demand. For the year, U.S. natural gas prices are now up 181.7 % from a year ago, which is adding to inflationary concerns across the economy.

- In Europe, Spot gas prices have soared to record highs as country moves away from dependence on Russian energy. The natural gas spot price at the Title Transfer Facility (TTF) in the Netherlands in Europe has been trading at averaged $29.85 per MMBtu

- Japan Liquefied Natural Gas Import Price is averaging at $ 16.53 per MMBtu for May 2022, up from $ 16.29 per MMBtu last month. The rise in prices is a result of persistent cold weather conditions in Japan that results in increase in natural gas heating expenditures during winter.

- The price of domestically produced natural gas is $6.10 per million British thermal unit (MMBtu) from April1, 2022 to September 30, 2022. The price of domestic gas price has been hiked by 110 percent from the previous revision which was $2.90 per MMBtu for October 1, 2021, to March 31, 2022. The domestic gas price increase was driven by the significant run-up in the prices of gas at global gas hubs. Further, the maximum sale price allowed to natural gas production from deep-water, ultra-deep-water, high pressure and high-temperature discoveries was increased from $6.13 per MMBtu to $9.92 per MMBtu.

Figure 3: Global natural gas price trends



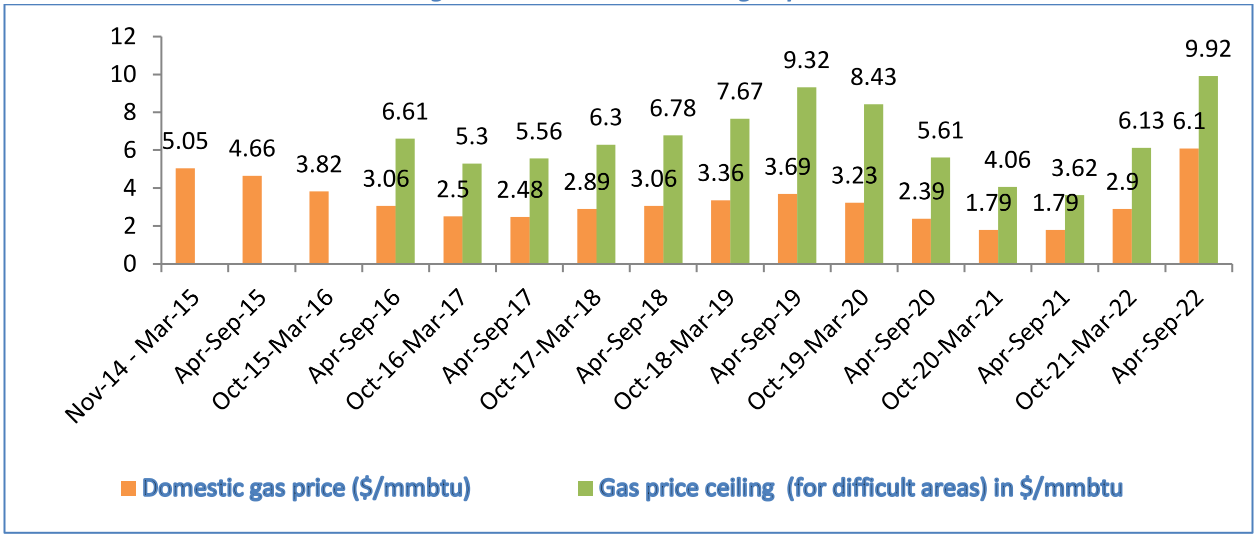
Source: EIA, WORLD BANK

Table 5: Gas price

Natural Gas	Price ($/MMBTU) in May 2022	MoM (%) change	YoY (%) change
India, Domestic gas price	6.10	0.0%	240.8%
India, Gas price ceiling – difficult areas	9.92	0.0%	174.03%
Henry Hub	8.14	23.3%	181.7%
Natural Gas, Europe	29.85	-7.6%	235.0%
Liquefied Natural Gas, Japan	16.53	1.5%	85.5%

Source: EIA, PPAC, World Bank

Figure 4: Domestic natural gas price



Source: PPAC

Indian Gas Market

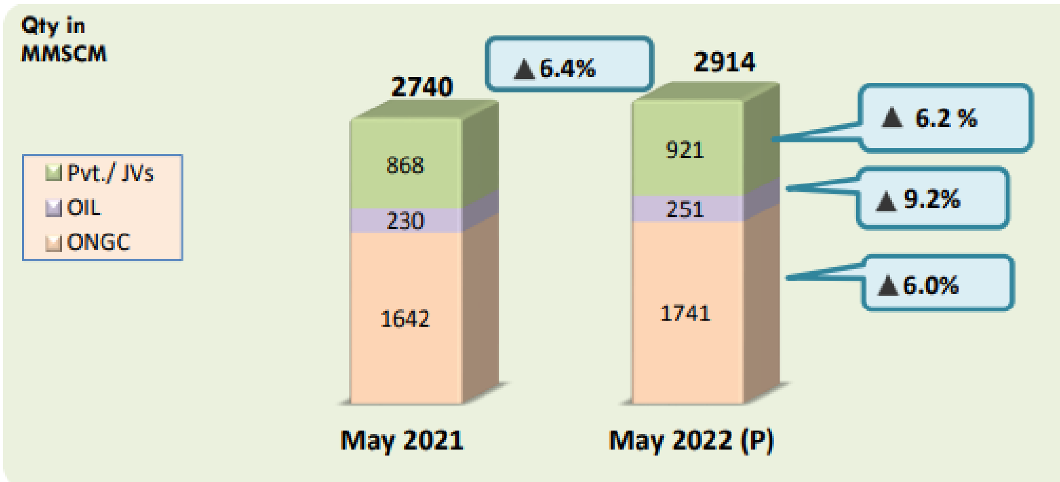
- Gross production of natural gas for the month of May, 2022 was 2914 MMSCM (increase of 6.4% over the corresponding month of the previous year).
- Total imports of LNG (provisional) during the month of May 2022 were 2534 MMSCM (decrease of 3.5 % over the corresponding month of the previous year)
- Natural gas available for sale during May 2022 was 4892 MMSCM increase of 1.8 % over the corresponding month of the previous year).
- Total consumption during May 2022 was 4981 MMSCM (provisional). Major consumers were fertilizer (35%), City Gas Distribution (CGD) (21%), power (13%), refinery (7%) and petrochemicals (4%).

Monthly Report on Natural gas production, imports and consumption – May 2022

1. Domestic Natural Gas Gross Production:

Domestic natural gas gross production for the month of May, 2022 was 2914 MMSCM (increase of 6.4 % over the corresponding month of the previous year).

Figure 10: Domestic natural gas Gross production (Qty in MMSCM)

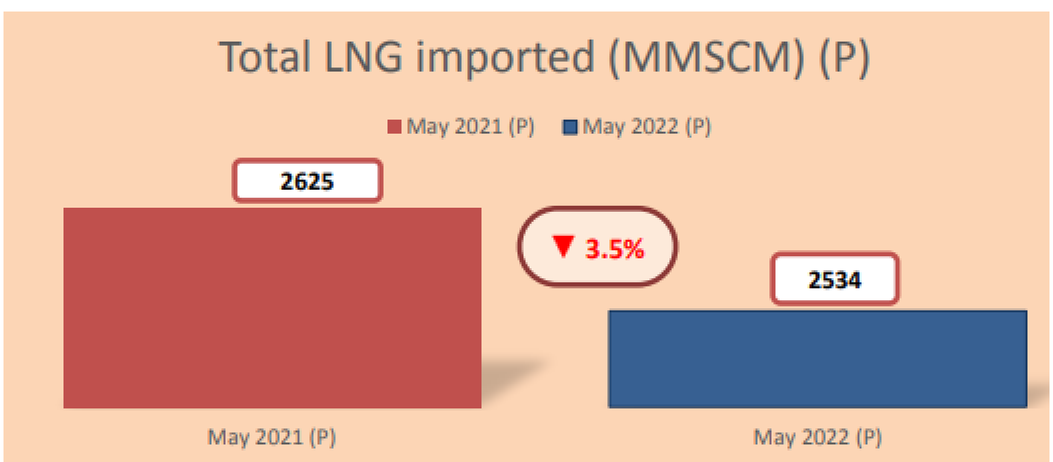


Source: PPAC

2. LNG imports:

Total imports of LNG (provisional) during the month of May 2022 were 2534 MMSCM (decrease of 3.5 % over the corresponding month of the previous year 2625 (MMSCM).

Figure 11: LNG imports (Qty in MMSCM)

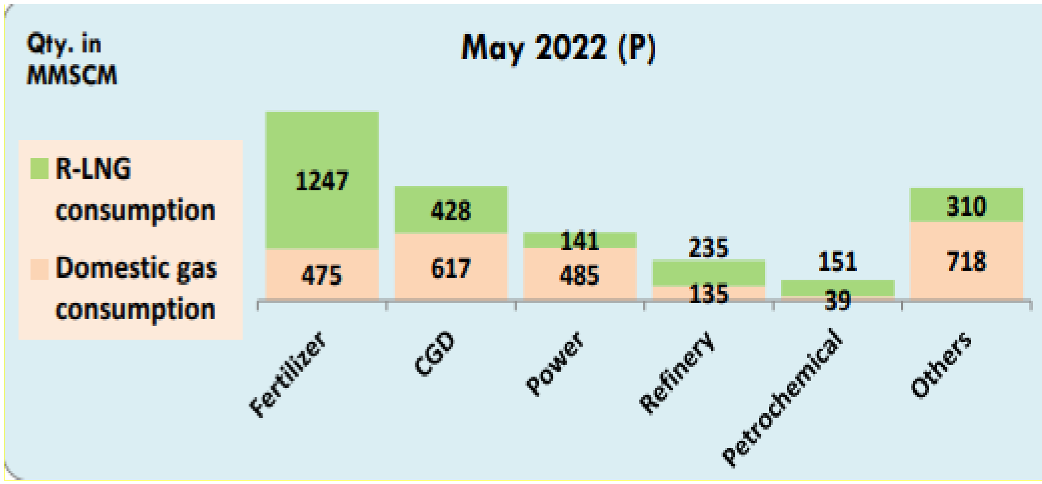


Source: PPAC

3. Sectoral Consumption of Natural Gas:

Total consumption of natural gas during May 2022 was 4981 MMSCM. Major consumers were fertilizer, CGD, power, refinery, others and petrochemicals.

Figure 12: Sectoral Consumption of Natural Gas (Qty in MMSCM) in May 2022



Source: PPAC

Key developments in Oil & Gas sector during May 2022

- **Monthly Production Report for May, 2022**

1. Production of Crude Oil

Indigenous crude oil and condensate production during May 2022 was higher by 4.6 % than that of May 2021 as compared to a de-growth of 0.9 % during April 2021. OIL registered a growth of 4.8 % and ONGC registered a growth of 9.0 % during May 2022 as compared to May 2021. PSC registered de-growth of 6.4 % during May 2022 as compared to May 2021. Growth of 1.8 % was registered in the total crude oil and condensate production during April - May 2022 over the corresponding period of the previous year.

2. Production of Natural Gas

Gross production of natural gas for the month of May 2022 was 2914 MMSCM which was higher by 6.4% compared with the corresponding month of the previous year. The cumulative gross production of natural gas of 5740 MMSCM for the current financial year till May 2022 was higher by 6.5% compared with the corresponding period of the previous year.

3. Crude Oil Processed (Crude Throughput)

Crude oil processed during May 2022 was 22.6 MMT, which was 19.4 % higher than May 2021 as compared to a growth of 8.5 % during April 2021.

4. Production of Petroleum Products

Production of petroleum products saw a growth of 16.7 % during May 2022 over May 2021 as compared to a growth of 9.2 % during April 2021.

Key Policy developments in Energy sector

India has achieved the target of 10 percent ethanol blending, 5 months ahead of schedule

Government of India, with the aim to enhance India's energy security, reduce import dependency on fuel, save foreign exchange, address environmental issues and give a boost to domestic agriculture sector, has been promoting the Ethanol Blended Petrol (EBP) Programme. The 'National Policy on Biofuels' notified by the Government in 2018 envisaged an indicative target of 20% ethanol blending in petrol by year 2030. However, considering the encouraging performance, due to various interventions made by the Government since 2014, the target of 20% ethanol blending was advanced from 2030 to 2025-26.

A "Roadmap for Ethanol Blending in India 2020-25" was also released by the Hon'ble Prime Minister in June, 2021 which lays out a detailed pathway for achieving 20% ethanol blending. This roadmap also mentioned an intermediate milestone of 10% blending to be achieved by November, 2022.

However, due to the coordinated efforts of the Public Sector Oil Marketing Companies (OMCs) the target of 10% blending under the programme has been achieved much ahead of the targeted timelines of November, 2022 wherein the Public Sector OMCs have attained an average 10% ethanol blending in petrol across the country.

This achievement in the course of last 8 years has not only augmented India's energy security but also translated into a forex impact of over Rs.41,500 crores, reduced GHG emissions of 27 lakh MT and also led to the expeditious payment of over Rs.40,600 crores to farmers.

Government expands the horizon of Universal Service Obligation by including all Retail Outlets including Remote Area Ros

The Government of India had relaxed the criteria for grant of authorization for marketing of transportation fuel by issuing Resolution dated 8.11.2019, with an objective to ensure greater participation of private sector in the fuel retail business. Simultaneously, it also ensured setting up Retail outlets (ROs) in Remote Areas by these entities.

It has been an endeavor of the Government that for Remote area ROs the authorized entities provide quality and uninterrupted fuel supply services to the consumers by way of Universal Service Obligation (USO).

These USO include: - maintaining supplies of MS and HSD throughout the specified working hours and of specified quality and quantity; making available minimum facilities as specified by the Central

Government; maintaining minimum inventory levels of MS and HSD as specified by the Central Government from time to time; providing services to any person on demand within a reasonable period of time and on non-discriminatory basis and ensuring availability of fuel to the customers at reasonable prices.

The Government has now expanded the horizon of USO by including all ROs including Remote Area ROs under their ambit. Now the Authorized entities have been obligated to extend the USO to all the retail consumers at all the retail Outlets. This has been done with an objective to ensure higher level of customer services in the market and to ensure that adherence to the USO forms a part of the market discipline.

Cabinet approves Deregulation of Sale of Domestically Produced Crude Oil

The Cabinet Committee on Economic Affairs, chaired by the Prime Minister Shri Narendra Modi, has approved 'Deregulation of Sale of Domestically Produced Crude Oil', whereby Government has decided to cease allocation of crude oil and condensate w.e.f. 01.10.2022. This will ensure marketing freedom for all Exploration and Production (E&P) operators. The condition in the Production Sharing Contracts (PSCs) to sell crude oil to Government or its Nominee or Government Companies shall accordingly be waived off. All E&P companies will now be free to sell crude oil from their fields in domestic market. Government revenues like Royalty, cess, etc. will continue to be calculated on uniform basis across all Contracts. As earlier, exports will not be permissible.

This decision will further spur economic activities, incentivize making investments in upstream oil and gas sector and builds on a series of targeted transformative reforms rolled out since 2014. The policies relating to production, infrastructure and marketing of oil and gas have been made more transparent with a focus on ease of doing business and facilitating more operational flexibility to operators/industry.

Major Reform to promote Renewable Energy through Green Energy Open Access

In order to further accelerate our ambitious renewable energy programmes, with the end goal of ensuring access to affordable, reliable, sustainable and green energy for all, Green Open Access Rules, 2022 have been notified on 06.06.22.

These rules are notified for promoting generation, purchase and consumption of green energy including the energy from Waste-to-Energy plants.

The notified Rules enable simplified procedure for the open access to green power. It will enable faster approval of Green OA, Uniform Banking, Voluntary purchase of RE power by commercial & industrial consumers, Applicability of OA charges etc.

Commercial and Industrial consumers are allowed to purchase green power on voluntarily basis. Captive Consumers can take power under Green Open Access with no minimum limitation. Discom Consumers can demand for supply of green power to them.

The salient features of the Rules are as under:

- The Green Open access is allowed to any consumer and the limit of Open Access Transaction has been reduced from 1 MW to 100 kW for green energy, to enable small consumers also to purchase renewable power through open access.
- Provide certainty on open access charges to be levied on Green Energy Open Access Consumers which includes transmission charges, wheeling charges, cross-subsidy surcharge and standby charges. Cap on increasing of cross-subsidy surcharge as well as the removal of additional surcharge, not only incentivize the consumers to go green but also address the issues that have hindered the growth of open access in India.
- Transparency in the approval process of the open access application. Approval to be granted in 15 days or else it will be deemed to have been approved subject to fulfilment of technical requirements. It will be through a national portal.
- Determination of green tariff: The tariff for the green energy shall be determined separately by the Appropriate Commission, which shall comprise of the average pooled power purchase cost of the renewable energy, cross-subsidy charges if any, and service charges covering the prudent cost of the distribution licensee for providing the green energy to the consumers.
- The Rules will help to streamlining the overall approval process for granting Open Access including timely approval, to improve predictability of cash flows for renewable power producers. It will also bring Uniformity in the application procedure.
- Banking of surplus green energy with the distribution licensee mandated.
- There shall be a uniform renewable purchase obligation, on all obligated entities in area of a distribution licensees. It has also included the Green Hydrogen/Green Ammonia for fulfilment of its RPO.
- Consumers will be given the green certificates if they consume green power.
- Cross subsidy surcharge and additional surcharge shall not be applicable if green energy is utilized for production of green hydrogen and green ammonia.

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