

# Trends ....February 2021

Domestic steel prices started to show cooling off trends even though focus remained steady on ways and means to raise domestic demand to its pre-COVID levels. Budget 2021 came up with a host of measures to address both these issues and its focus on infra spending including rural infrastructure was a big bonus for steel industry. Markets remained steady and responded positively to the policy measures as well as to the onset of a massive vaccination drive in the country to deal with the COVID-19 pandemic.

## **WORLD ECONOMY AT A GLANCE**

- Market Economics reports indicate that February 2021 noted a slight growth acceleration in global manufacturing production, keeping the rate of expansion among the best registered over the past decade with the J.P.Morgan Global Manufacturing PMI reported at 53.9 in February 2021, up from 53.6 in January 2021 and reportedly reaching a three-year high.
- 23 out of the 29 nations for which February 2021 data were available had a PMI reading above the 50.0 mark as per the said Report with contraction being noticed only for Greece, Kazakhstan, Malaysia, Thailand, Mexico and Myanmar. The fastest improvement was signalled for Germany, followed by the Netherlands, the US and then Brazil. Growth in China (nine-month low) and Japan (first rise in almost two years) were both below the global average.
- Global manufacturing output rose at a slightly quicker pace in February and although the trend
  in international trade remained relatively subdued, the rate of expansion in new export business
  nonetheless gathered pace. However,inflationary pressures continued to persist.

Key Economic Figures						
Country	GDP 2020: %change*	Manufacturing PMI				
		January 2021	February 2021			
India	-7.0	57.7	57.5			
China	2.3	51.5	50.9			
Japan	-4.8	49.8	51.4			
USA	-3.5	59.2	58.6			
EU 28	-6.6	54.8	57.9			
Brazil	-4.1	56.5	58.4			
Russia	-3.1	50.9	51.5			
South Korea	-1.0	53.2	55.3			
Germany	-4.9	57.1	60.7			
Turkey	1.8	54.4	51.7			
Italy	-8.9	55.1	56.9			

### **GLOBAL CRUDE STEEL PRODUCTION**

World crude steel production stood at 162.92 million tonnes (mt) in January 2021, up 4.8% over same period of last year as per provisional data released by World Steel Association (worldsteel) and indicates a modest revival of global output with diminishing impact of COVID-19 at the level of the major countries during this period.

World Crude Steel Production: January 2021*					
Rank	Top 10	Qty (mt)	% change		
1	China	90.24	6.8		
2	India	10.01	7.5		
3	Japan	7.92	-3.9		
4	USA	6.90	-9.9		
5	Russia	6.67	6.5		
6	South Korea	6.02	4.9		
7	Turkey	3.40	12.7		
8	Germany	3.31	6.0		
9	Brazil	3.00	10.8		
10	Iran	2.65	10.2		
Total: Top 10		140.12	5.4		
	World	162.92	4.8		
Source: worldsteel; *provisional					

- China remained the leader in world crude steel production at the start of 2021 with production at 90.24 mt during January 2021, up 6.8% over same period of last year. The nation accounted for 76% of Asian and 55% of world crude steel production during this period.
- With a 6.1% share in total world production, India (10.01 mt) reported a yoy production growth of 7.5% during January 2021 and was the 2<sup>nd</sup> largest producer during this period.
- Japanese crude steel production (7.92 mt) was down by 3.9% yoy in January 2021 and the country was the 3<sup>rd</sup> largest crude steel producer in the world.
- USA remained at the 4<sup>th</sup> largest spot, with production (6.9 mt), down by 9.9% yoy while Russia (6.67 mt, up by 6.5% yoy) was the 5<sup>th</sup> largest crude steel producer during this period.
- Crude steel production in the EU (28) countries stood at 12.24 mt during January 2021, down by 0.4% yoy.
- At 118.45 mt, Asian crude steel production was up by 6.3% in January 2021 and the region accounted for 73% of world crude steel production during this period.
- The top 10 countries accounted for 86% of total world crude steel production during January 2021 and saw their cumulative production go up 5.4% yoy during this period.

### **NEWS AROUND THE WORLD**

### THE AMERICAS

- US steel buyers were keeping a close eye on potential supply disruptions as winter storms and cold temperatures caused power outages and transportation issues throughout the Central US and Texas.
- ArcelorMittal expects global apparent steel consumption in 2021 to rise between 4.5% and 5.5%, compared with a decline of 1% in 2020.
- Latin American crude steel production in 2020 reached 55.6 mt, down 8.4% yoy as per data released by regional steel organization, Alacero which pointed out that Chile (1.2 mt) stood out with an increase in crude steel output of 2.1% yoy.
- Usiminas' shipments reached 1.13 mt in Q4 2020, up by 21% yoy and was the highest quarterly sales volume since Q4 2015.
- Brazil's CSP will halt its blast furnace for eight days of maintenance in the second quarter of 2021 though there has been no finalisation of the schedule for same.

#### **ASIA**

- Hebei province's Tangshan city recently implemented strict short-term output reductions at local blast furnaces and sintering plants in an effort to improve air quality, leading to market anticipation that more stringent output cuts might follow through this year in line with China's carbon emissions reduction campaign.
- India's Jindal Stainless Ltd. plans to bring 0.7 mtpa of CRSS production capacity online at Odisha at the end of 2022.
- Japan's iron and steel product exports fell 4.9% year on year to 32.14 mt in 2020, as global demand weakened due to the pandemic.
- Nippon Steel expects its non-consolidated crude steel production for the financial year ending March 31, 2021, to fall to 33.20 mt from 41.85 mt a year ago, the decline attributed to weakened demand due to COVID-19.
- South Korea has made a preliminary determination that flat rolled SS products from China, Indonesia and Taiwan were dumped into the local market and proposed to impose antidumping duties of 49.04% on the products from China, 29.68% on Indonesia and 9.2%-9.51% on Taiwan.
- POSCO produced about 35.93 mt crude steel in 2020, down 5.5% yoy, due to steps taken to cope with a slowdown in demand resulting from the pandemic and a revamp of its No. 3 blast furnace at Gwangyang.
- Hyundai Steel posted a 10.1% yoy fall in its 2020 crude steel production at 19.07 mt, the steelmaker owing to weaker global demand due to the COVID-19 pandemic and streamlining activity.
- PT Dexin Steel Indonesia fired up its second of two 1,780 cu m blast furnaces at Morowali Industrial Park, Central Sulawesi on Feb. 3, 2021, taking its overall crude steel production capacity to 3.5 mtpa.

## RUSSIA, MID-EAST, AFRICA, AUSTRALIA

- Severstal is launching a 2 mtpa continuous strip pickling line enabling its flagship Cherepovets mill in northwest Russia to increase the offering of high quality extra wide coil.
- Evraz reported growth in its Q4 output and its full year output also remained stable Ithough the share of slab and billet expanded to close to 50% of total sales volumes.
- After a 3% drop in 2020, Severstal expects Russian steel demand to recover 3%-4% in 2021, driven by improved construction activity and recovery in the oil and gas sectors.
- ArcelorMittal South Africa saw full-year 2020 liquid steel production fall by 48% yoy to 2.3 mt.

### **EU AND OTHER EUROPE**

- Eurofer said in its Economic and Market Outlook report that it has adjusted its forecast 2020 decline in apparent steel consumption to 13%, from a previous 14.6% fall.
- Salzgitter, Germany's third largest steelmaker, has declared force majeure due to inclement winter weather conditions which have impacted transportation of its steel deliveries via road, rail and inland
- waterway.
- Sweden's SSAB is withdrawing its interest in acquiring the IJmuiden steel plant from Tata Steel, due to difficulties integrating the blast furnace works with the group's sustainability plans.
- SSAB has delayed achieving some of its strategic goals to 2023 from the previously planned 2022 target following a "turbulent" 2020. These include the target to ship 1.6 mt annually of special steels, compared to shipments of 1.1 mt in 2020.
- Arvedi, the second largest Italian steel producer, is going to invest around Eur227 million for the green conversion of steel mills in Trieste and Cremona.
- British Steel unveiled an upgrade to its Zinoco coated rail operation that will increase corrosion protection with a typical life extension of 5 to 10 times.
- Slovakia's US Steel Kosice restarted last month its blast furnace No.3 and is currently operating all three blast furnaces and other facilities.
- ArcelorMittal Italia has restarted its 1.9 mtpa BF No. 2 at its Taranto site following a delay due to technical reasons.
- ArcelorMittal has completed a project at its steel plant in Gijon, northwest Spain to inject coking
  gases into its B furnace, which will allow the steel plant to reduce its CO<sub>2</sub> emissions and reduce
  costs.
- The Eurasian Economic Commission is introducing ADD of 14.62%-17.28% on imports into the union of Chinese stainless-steel welded tubes and profiles for a period of five years.
- Thyssenkrupp has ended talks for selling its steel unit to Liberty Steel, focusing on restructuring the unit on its own.

[Source Credit: Metal Bulletin, Platts, leading news papers (India news)]

## **WORLD STEEL PRICE TRENDS**

After reaching record-breaking highs at the end of 2020, global steel prices continued to show signs of a return to "normalcy" with most markets reporting either a softening or a stability at a reduced level. Nonetheless, they remained on strong grounds, impacted by rising demand, stringent supply and a volatile raw material (read iron ore, scrap) market that too showed signs of cooling down. China as usual remained at the spotlight, with Hebei province's Tangshan city implementing strict short-term output reductions at local blast furnaces and sintering plants in an effort to improve air quality, leading to market anticipation that more stringent output cuts might follow through this year in line with China's carbon emissions reduction campaign. The latter sentiment proved to be a strong supporter to rising Chinese steel prices.

## **Long Product**

- Prices for US rebar continued to hold steady in February 2021 but analysts indicated a possible upsurge following scrap prices. Transaction as per Fastmarkets' Metal Bulletin (MB) reports were quoted around \$795/t at month-end.
- February 2021 European rebar prices remained steady in a market that saw limited transactions during the month. Prices as per Fastmarkets' MB reports were quoted around €640-660/t (\$778-802) in Northern Europe and around €585-600/t (\$711-729) in Southern Europe.
- Chinese rebar prices moved north in February 2021 despite the holiday lull but due to incessant rains suspending rebar trading and transportation. Prices as per Fastmarkets' MB reports were quoted around 4,620-4,650 yuan/t (\$716-721) in Shanghai and around 4,490-4,520 yuan/t in Beijing.
- Buying activity in the domestic rebar market in Russia remained low due to bad weather conditions in February 2021. Fastmarkets' MB assessed the price for steel rebar domestic, cpt Moscow, Russia, at 54,000-55,000 roubles/t (\$729-742) including 20% VAT at month-end.

## **Flat Products**

- HRC prices in the USA remained steady at around \$1,234.40/s.t. owing to stable demand from end-user segments in February 2021.
- February 2021 saw European HRC prices move north amdist stable demand and short supply. Transaction as per Fastmarkets' MB reports were quoted around €738/t (\$899.86) in Northern Europe and around €700-710/t in Southern Europe.
- Chinese HRC remained strong due to demand-supply imbalance in February 2021. Transaction as per Fastmarkets' MB reports were quoted around 4,880-4,900 yuan/t (\$756-760) in Shaghai and around 4,760-4,850/t in Tangshan at month-end.
- Russian market for flat steel remained subdued in February 2021 due to severe weather conditions. Fastmarkets' MB weekly price assessment for HR sheet, domestic, cpt Moscow, Russia was around 62,000-64,000 roubles/t (\$837-864), including 20% VAT at month-end.

[Source Credit: Fastmarkets' Metal Bulletin]

## **SPECIAL FOCUS**

# India remains leader in global DRI production in 2021

Provisional worldsteel report indicates that global DRI output stood at 7.83 mt in January 2021, down 4.2% over same period of last year. Global DRI production in January 2021 was driven by India (3.26 mt, 42% share) at the number one spot despite production showing a decline of 4.5% yoy while production stood at 2.5 mt for Iran (32% share), up by 7.9% over same period of last year. The two countries together accounted for 74% of global DRI output during this period. Together, the top five countries accounted for slightly nearly 90% of the world DRI production during January 2021 (89% in same period of last year) and saw their cumulative output decline by 2.1% over same period of last year.

Global DRI Production						
Rank	Country	Jan2021* (mt)	Jan2020 * (mt)	% change		
1	India	3.26	3.41	-4.5		
2	Iran	2.50	2.32	7.9		
3	Saudi Arabia	0.49	0.52	-6.3		
4	Egypt	0.43	0.50	-13.1		
5	Mexico	0.41	0.50	-17.2		
Top 5 7.09 7.24 -2.1			-2.1			
World		7.83	8.17	-4.2		
Source: worldsteel; *provisional						

## Impact of Budget 2021

Prior to Budget 2021, Indian steel industry, recovering from the long-drawn impact of COVID-19, was witness to a spate of rising domestic steel prices with indigenous supply picking up momentum and domestic demand showing initial signs of recovery. Budget 2021 however, has introduced some important policy measures for the domestic steel industry. These are as follows:

- i. It has reduced the Customs duty which was varying in the range from 10%-12.5% to an uniform 7.5% for semis, flat, and long products of non-alloy, alloy, and stainless steels.
- ii. To provide relief to metal re-cyclers, mostly MSMEs, import duty on steel scrap(previously at 2.5%) has been exempted for a period up to 31st March, 2022.
- iii. Raw materials for use in manufacture of CRGO steel has been reduced to nil (earlier at 2.5%) upto 31st March 2023.
- iv. Further, ADD and CVD have been temporarily revoked for the period commencing from. 2.2.2021 till 30.9.2021 for certain steel products like:

- Straight Length Bars and Rods of alloy-steel, originating in or exported from People's Republic of China,
- High Speed Steel of Non-Cobalt Grade, originating in or exported from Brazil, People's Republic of China and Germany,
- Flat rolled product of steel, plated or coated with alloy of Aluminium or Zinc, originating in or exported from People's Republic of China, Vietnam and Korea RP
- Certain Hot Rolled and Cold Rolled Stainless Steel Flat Products, originating in or exported from People's Republic of China
- Flat Products of Stainless Steel, originating in or exported from Indonesia
- Cold-Rolled Flat Products of Stainless Steel of width 600 mm to 1250 mm and above 1250 mm of non bonafide usage originating in or exported from People's Republic of China, Korea RP, European Union, South Africa, Taiwan, Thailand and USA
  - It is thus likely that reduction in import duty and other measures as mentioned above would open up doors to further imports of the relevant materials. While this would invariably raise the level of country's steel imports, but by enhancing /supplementing the overall supply side, such measures are also likely to exert a downward pressure on and hence, rationalise domestic steel prices. It is also likely to make markets more competitive, a plus sign for end-users.
  - ➤ Domestic steel production has been on the rise and over a period of time, is likely to gain further momentum. This would be specifically applicable for the scrap-DRI based IF-EAF routes of crude steel production, where the duty exemption would make availability of raw material (i.e. scrap), easier, competitive and more affordable in view of likely increased supply via the import route.
  - With global steel markets on the upswing, India's steel exports have been rising in the current fiscal so far but so has been domestic demand. Thus, going ahead, the enhanced supply in the domestic market including the likely rise in imported goods, has to be balanced to meet domestic requirements as well as export obligations, with priority given to the former. It also remains to be seen if and how, the changing exportimport flows impact India's current status as a net exporter of total finished steel.
  - The Budget 2021 has taken significant strides in creation of infrastructure (rail, ports, highways), ensure quantum jump in Manufacturing sector growth (PLI, MITRA, etc) and sustained focus on projects earmarked for urban development (Jal Jeevan, Urban Swachh Bharat Mission, Voluntary Vehicle Scrapping policy etc). The setting up of a Development Finance Institution (DFI) to act as a provider, enabler, and catalyst for infrastructure financing for infra projects will go a long way in augmenting fund flows for the real estate and infrastructure sector. The increase in agriculture credit target, increasedallocation to Rural Infrastructure Development Fund to Rs 40,000Cr, furthering of the Blue Economy, continued support from the Micro Irrigation Fund are among the many policy measures which indicate Government's continued emphasis on reinforcing growth in rural India. Needless to say, all these augur well for increase in domestic demand in the coming days.

- ➤ The focus on healthcare (Mission Poshan 2.0, overall outlay for 'Health and Wellbeing', pegged at Rs 2.23 lakh crore, 137% jump over 2020-21), MSMEs (collateral free loans, PMGKY, etc), agriculture (Agri Infra Fund, SWAMITVA Scheme), social sector (National Digital Health Blueprint) among others imply a better quality of life for the concerned segments and translates to significant steps for building an Atmanirbhar Bharat.
- Fiscal deficit has been kept at 6.8% for FY22 with a 35%hike in capital expenditure (pegged at Rs 5.54 lakh crore in the year, 34.5% higher than 2020-21) and together is likely to propel the economy out of the pandemic-induced weakness. Hike in capex is likely to directly benefit sectors like capital goods, infrastructure, steel and financials, followed by automobile as well as pharmaceutical because of higher overall expenditure. Steel demand is thus likely to be impacted both directly and indirectly via growth in demand in end-use sectors.
- An Agriculture Infrastructure and Development Cess has been proposed on specified goods at varying rates and also on petrol (Rs 2.5/litre) and diesel (Rs 4/litre). However, it has clarified that overall, there would be no additional burden on the consumer.
- ➤ Emphasis on skill creation, education and R&D and measures taken therein are expected to go a long way in creating and meeting industry-ready professionals and thereby bridge the demand-supply gap.

Expansionary by nature, Budget 2021 with its focus on infrastructure, healthcare, agriculture has its focus squarely on boosting growth and steer the economy out of the pandemic-ridden status in the coming days, in line with the vision of 11% growth rate in 2021-22 as laid down by the Economic Survey. For steel specifically, the policy measures indicate streamlining of domestic demand and supply with rationalisation of prices in the days ahead.

## **INDIAN STEEL MARKET ROUND-UP**

The following is a status report on the performance of Indian steel industry during April-January 2020-21, based on provisional data released by Joint Plant Committee (JPC) in its MIS Report for this period. It is to be noted that total finished steel includes both non-alloy and alloy (including stainless steel) and all comparisons are made with regard to same period of last year.

Item	Performance of Indian steel industry				
	April-January 2020-21* (mt)	April-January 2019-20(mt)	% change*		
Crude Steel Production	83.307	91.604	-9.1		
Hot Metal Production	56.074	60.776	-7.7		
Pig Iron Production	3.827	4.725	-19.0		
Sponge Iron Production	27.684	31.444	-12.0		
Total Finished Steel (alloy/stainless + non-alloy)					
Production	76.408	86.856	-12.0		
Import	3.792	5.991	-36.7		
Export	8.837	7.213	22.5		
Consumption	74.941	85.409	-12.3		
Source: JPC; *provisional; mt=million tonnes					

## **Overall Production**

- Crude Steel: Production at 83.307million tonnes (mt), down by 9.1%.
- Hot Metal: Production at 56.074mt, down by 7.7%.
- **Pig Iron:** Production at 3.827mt, down by 19.0%.
- **Sponge Iron**:Production at 27.684mt, down by 12.0%,led by coal-based route (82% share).
- **Total Finished Steel:** Production at 76.408mt, down by 12.0%.

## **Contribution of Other Producers**

- Crude Steel: SAIL, RINL, TSL Group, AM/NS (erstwhile Essar Steel), JSWL & JSPL together produced 52.741mt (63% share) during this period, down by 6.8%. The rest (30.567mt) came from the Other Producers, down by 12.7%.
- **Hot Metal:** SAIL, RINL, TSL Group, AM/NS, JSWL & JSPL together produced 50.754mt (91% share) down by 7.0%. The rest (5.32mt) came from the Other Producers, down by 14.3%.
- Pig Iron: SAIL, RINL, TSL Group, AM/NS, JSWL & JSPL together produced 1.132mt (30% share) upby 10.1%. The rest (2.695mt) came from the Other Producers, down by 27.1%.
- Total Finished Steel: SAIL, RINL, TSL Group, AM/NS, JSWL & JSPL together produced 44.388 mt (58% share) down by 13.0%. The rest (32.02mt) came from the Other Producers, down by 10.6%.

# **Contribution of Public Sector Units (PSU)**

- **Crude Steel:** With 81% share, the Private Sector (67.853mt, down by 8.9%) led crude steel production compared to the 19% contribution of the PSUs.
- **Hot Metal:** With 70% share, the Private Sector (39.203mt, down by 7.2%) led hot metal production, compared to the 30% contribution of the PSUs.
- **Pig Iron:** With 86% share, the Private Sector (3.295 mt, down by 21.5%) led pig iron

- production, compared to the 14% contribution of the PSUs.
- Total Finished Steel: With 86% share, the Private Sector (65.687mt, down by 10.8%) led production of total finished steel, compared to the 14% contribution of the PSUs.

# Contribution of Flat /Non-Flat in Finished Steel

- **Production:** Led by Flat steel (51% share; down by 8%) while the rest 49% was the share of Non-Flat steel (down by 16%).
- **Import:** Flat products accounted for 88% share (down by 37%), the rest12% was the share of non-flats (down by 32%).
- **Export:** Flat products accounted for 88% share (upby 22%), the rest 12% was the share of non-flats (up by 29%).
- Consumption: Led by Non-flats steel (53% share; down by 10%) while the rest 47% was the share of flat steel (down by 15%).

## **Finished Steel Production Trends**

- At 76.408mt, production of total finished steel declined by 12.0% in April-January 2020-21.
- Contribution of the non-alloy steel segment stood at 72.093mt (94% share, down by 12.6%), while the rest was the contribution of the alloy steel segment (including stainless steel).
- In the non-alloy, non-flat segment, in volume terms, major contributor to production of total finished steel was Bars & Rods (28.968 mt, down by 16.7%) while growth in the non-alloy, flat segment was led by HRC (33.438 mt, down by 7.1%) during this period.

# **Finished Steel Export Trends**

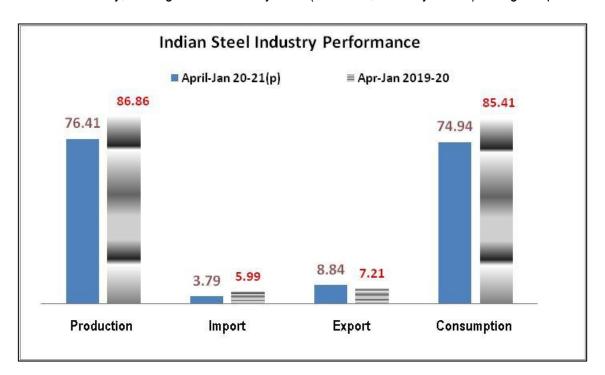
- Overall exports of total finished steel (8.836 mt) were up by 22.5%.
- Volume-wise, non-alloy HRC (5.681 mt, up by 35.6%) was the most exported item (70% share in total non-alloy).
- China (23% share) was the largest export market (2.05 mt) for India.

# Finished Steel Import Trends

- Overall imports of total finished steel (3.791 mt) were down by 36.7%.
- Volume-wise, non-alloy HR COIL/STRIP (0.641 mt, down by 56.7%) was the item most imported (25% share in total non-alloy).
- Korea (1.504 mt) was the largest import market for India (40% share in total).

## **Finished Steel Consumption Trends**

- At 74.941mt, consumption of total finished steel declined by 12.3% in April-January 2020-21.
- Contribution of the non-alloy steel segment stood at 70.054 mt (93% share, down by 11.9%), while the rest was the contribution of the alloy steel segment (including stainless steel).
- In the non-alloy, non-flat segment, in volume terms, major contributor to consumption of total finished steel was Bars & Rods (30.82mt, down by 8.9%) while growth in the non-alloy, flat segment was led by HRC (29.458mt, down by 13.6%) during this period.



### INDIAN ECONOMY - HIGHLIGHTS OF PERFORMANCE

**GDP:** The Central Statistics Office (CSO), Ministry of Statistics and Programme Implementation has released the estimates of Gross Domestic Product (GDP) for Q2 2020-21, both at constant (2011-12) and current prices. As per the Report, GDP at Constant (2011-12) Prices during Q3 2020-21 is estimated at Rs 36.22 lakh crore, showing a growth of 0.4%. Quarterly GVA at Basic Price at Constant (2011-12) Prices for Q3 of 2020-21 is estimated at Rs 33.37 lakh crore, a growth of 1%. *Mining and Quarrying, Trade, Hotels, Transport, Communication and Services related to Broadcasting* and *Public Administration, Defence and Other Services* were the only sectors to record a declining rate of growth during this period, as over same period of last year.

**Industrial Production:** Provisional CSO data show that the Index of Industrial Production (IIP) declined by 12.2% during April-January 2020-21 (prov.), dampened by declines in the indices of all the lead sectors during this period as compared to same period of last year.

**Infrastructure Growth:** Provisional data released by the DPIIT indicate that the Eight Core Infrastructure Industries saw a decline of 8.8% during April-January 2020-21 (prov.), dampened by significant declines in all lead sectors except Fertilisers.

**Inflation:** In January 2021 (prov.), the annual rate of inflation, based on monthly WPI, stood at 2.03% while the all India CPI inflation rate (combined) stood at 4.06% and compared to the previous month, the former reported an increase and the latter registered a decline.

**Trade:** Provisional figures from DGCI&S show that during April-January 2020-21, in dollar terms, overall exports were down by 13.58% while overall imports were down by 25.92%, both on yoy basis. During the same period, oil imports were valued at USD 63.09 billion, 42.5% lower yoy while non-oil imports were valued at USD 237.16 billion, 19.77% lower yoy. Overall trade deficit for this period is estimated at USD 1.87 billion as compared to the deficit of USD 72.4 billion in same period of last year.

**Prepared by: Joint Plant Committee** 

12