

**COVID-19 LOCKDOWN AND INDIAN AGRICULTURE:
OPTIONS TO REDUCE THE IMPACT**

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SUMMARY

1. The first priority of the Government should be ensuring the uninterrupted flow of essential food products and manage the panic buying. There is no short supply of foodgrains, fruits and vegetables and therefore panic purchase will be counterproductive in the form of artificial jacking up of the retail prices. This is true for other products also.
2. Farm operations are normal and harvesting of rabi crops is near normal. The areas where harvesting takes place in April like Punjab, migrant labour might not reach and therefore may face some problem. Partly this could be compensated by more use of family labour and machines. The result could be an extended period for harvesting. The problem shall be more serious if migrant labour does not come back for paddy transplanting.
3. There is a need to schedule marketing of crops like wheat which come just after harvest. This can be done through scheduling of market arrivals through traders, who have direct contact with farmers, procurement centres in the villages, and price incentives for farmers to bring the produce in May or later.
4. For vegetables, this is nearly a slack season and whatever produce is available should be allowed to terminal markets. There are fixed market channels and only transport needs to be allowed and linked with the availability of the product in the producing centres like HP, Uttarakhand, and eastern India. The marketing of offseason vegetables shall start after some time and their supply can be planned. This is essential to control their prices which are usually higher than seasonal vegetables.
5. Harvesting of sugarcane is normal with proper safety measures like social isolation. There is some problem with harvesting and marketing of grapes, particularly of the late crop. One response could be allowing transport in different parts of the country with cold storage facilities.
6. Milk is another product which may face marketing problem as a significant proportion of milk (25 percent) is purchased and distributed by the vendors. The expansion of the reach of organized dairies for milk collection, processing and distribution can be explored to reduce the pain of farmers. Secondly, farmers may shift to ghee making to reduce income loss.
7. Input supply (seed, fertilizers) for the next season can be planned now and there is adequate time to ensure timely availability of seed and fertilizers to farmers. Private companies can deliver inputs in villages through the network of their dealers.
8. The Government is often criticized by economists for excess stock of foodgrains. They are proved wrong in this lockdown. It is always desirable to have adequate stock of foodgrains for such emergencies, or managing short supply in the drought years. There should be adequate stock of foodgrain and resources for public distribution until normalcy is achieved. If necessary, the Government may review the target beneficiaries and distribution of ration should be preferred over cash transfer as the former has internal self-selection of targeted beneficiaries.

Opportunity

There is an opportunity in the lockdown. There is a lot of inefficiency in the supply chains of agricultural commodities, which can be best addressed by establishing compact supply chains, at least for the perishables. Once these supply chains start working, farm production shall be linked to the market and the losses during product handling can be minimum. The restrictions under APMC can also be abolished, allowing farmers to sell their produce even outside the market directly to consumers, aggregators, or processors.

COVID-19 LOCKDOWN AND INDIAN AGRICULTURE: OPTIONS TO REDUCE THE IMPACT

Indian agriculture has done pretty well during the recent period. The annual growth has been 3.5 to 5 percent during the last five years and the growth broad-based both in terms of the production and regions. The advanced estimates of agricultural production for 2019-20 are optimistic and the growth is likely to be more than 3.5 percent. Foodgrain production is likely to be 292 million tonnes (2.4 percent higher than 2018-19), as per the second advance estimates. Also, the horticulture production in 2019-20 is expected to be 0.84% higher than 2018-19. But it is to be noted that any deviation in normal operation may give some set-back to these estimates, particularly the impact of late rains and hailstorm on rabi crops. Further, as per the FCI as in March 2020, the stocks of wheat and rice in the central pool stand at 58.49 million tonnes, which is more than double the operational buffer-cum-strategic stock of 21.04 million tonnes. All these points to more than adequacy of the food supply in the country.

The lockdown in the wake of COVID-19 has disrupted economic activities and the supply chains significantly. The millions of people are infected with COVID-19 globally and the death toll is rising fast. It is expected the lockdown shall flat the infection curve soon and essential economic activities and services shall be in place. In India, the rate of infection, fortunately, is not that rapid due to timely interventions by the government, but the impact of COVID-19 coincides with the economic slowdown. It is expected that the lockdown shall further reduce the economic growth about 10 percent or more. This is likely to have an impact on demand for agricultural products, dislocation of labour force and disruption of supply chains. These developments shall have implications for the social safety net programs of the government. This article discusses some of the impacts of lockdown within agriculture. The impacts of economic slowdown on agriculture are also discussed.

Harvest and Post-harvest Operations

The immediate implications of the lockdown are for crop harvesting and marketing of agricultural commodities. It appears that harvesting operations might have seriously affected by the lockdown which is not true. Crop harvesting is near completion in the southern and central India and it will start in the middle of April in northern India. There is a possibility of labour scarcity, particularly in the north-west India, where operations are done through contractual arrangements between farmers and labour contractors. However, two factors indicate that harvesting operations shall not be affected. First, labour from cities has gone back to the villages and for them agriculture can be now a major source of income. Even there is labour scarcity, it will be compensated by family labour—farmers use more family labour during peak agricultural operations. Since more than 80 percent of the holdings are small and marginal, family labour should be adequate for harvesting operations. Secondly, the use of machine labour is rising and all the medium and large farmers use machines for harvesting. As shown in Table 1, the level of farm mechanization varies from 19.59 percent in paddy to 39.17 in wheat. Therefore, farmers shall be able to complete farm operations and the maximum harvesting may be extended about one week by use of machinery on a custom-hiring basis.

Table 1. Level of mechanization of farm operations

Crop	Mechanization Index in percent (All India)	Max. (%)
Wheat	39.17	59.78 (Punjab)
Rice	19.59	30.41 (Tamil Nadu)
Maize	21.34	30.38 (Maharashtra)
Gram	28.97	42.1 (Chhattisgarh)
Arhar	23.3	29.49 (Karnataka)
Lentil	32.46	40.09 (Madhya Pradesh)
Soybean	33.1	43.24 (Chhattisgarh)
R&M	25.81	36.86 (Haryana)
Groundnut	19.39	31.77 (Rajasthan)
Cotton	13.31	17.82 (Punjab)
Sugarcane	7.66	26.50 (Maharashtra)

Source: NIAP

The major problem is with the marketing of farm produce in the wake of lockdown. The Government has now exempted marketing from the lockdown but still there are not many buyers in the market and there are transport bottlenecks. This is partly non-availability of buyers and largely due to market uncertainty and misinformation. Therefore, the government should disseminate information about markets, good practices for social distancing and movement of products to ensure supply chains. The following are some specific recommendations.

- a) The movement of farm produce does not necessarily involve the movement of a large number of people. There are well-established market channels and transactions can take place without the physical presence of farmers. Therefore, transportation logistics are more important. These can be arranged by farmers' groups or traders for reliability, and the new guidelines help address this bottleneck.
- b) Procurement of wheat can be staggered through price incentives and scheduling of market arrivals. Traders have the contact of farmers for such scheduling. Produce can be delivered at the intended destinations, markets or warehouses.
- c) The Government, under e-NAM, has initiated new provision to provide the database of logistic providers to traders. Using these links, traders would be able to get access of over 3.75 lakhs trucks across the country. However, the reluctance of truck operators could pose hurdles to this initiative.

- d) There is a need to notify a large number of warehouses as deemed markets to increase the coverage and reach among the farmers. In this regard, all Central Warehousing Corporation (CWC) and State Warehousing Corporation (SWC) along with PAC warehouses should be notified as deemed markets, at least for the next three to six months.
- e) **Credit:** Farmers storing their produce in these accredited warehouses would also be able to get finance through electronic Negotiable Warehouse Receipts (e-NWRs). After notifying the CWC and SWC warehouses as deemed mandis, Central/State government(s) should also provide the necessary support and resources to strengthen the ecosystem. Moreover, farmers should be encouraged to use these warehouses to store at lower storage costs along with getting finance through e-NWRs at a subsidized finance cost.
- f) For perishables like fruits and vegetables, a compact marketing channel can be evolved and products can be delivered directly in the terminal markets or to the bulk buyers. This shall reduce wastage and foster links with farmers. In the process, the IT-enabled marketing system shall evolve which shall be more efficient and transparent.
- g) In the case with a limited purchase during the lockdown, product diversification may be attempted by farmers. Some examples are ghee making from milk, raisin making from grapes, and oil extraction from rapeseed and mustard. This can be an opportunity to diversify the product range and the beginning of processing by farmers.

At this point, it is important to note that the prices of some of the commodities tend to increase during this period because of their non-availability or low production. Examples are milk and vegetables and therefore moderate price increase is normal. The price of offseason vegetables is also comparatively higher. This means the focus should be on the supply of the product which is available with farmers or traders.

Agricultural Commodity Prices

The impact on agricultural commodity prices shall be determined by the availability, expected change in demand and disruption in the supply chains. As discussed above, the supply of foodgrains and other important commodities is likely to be normal because of a good agricultural year. There is not much change in the demand except lower demand from the bottom income group primarily because of loss of income during the lockdown. It is therefore expected that domestic prices of essential food commodities are likely to be stable during the lockdown and after. The wholesale and retail prices of cereals and edible oil in the four metros have risen moderately (less than 10 percent) and for pulses, the price increase was 10-20 percent. It was only in case of vegetables, potato in Chennai and Kolkata and tomato in Delhi, the price increase was 30 percent or more (Table 2). The same might be true for other vegetables. Partly the price increase could be attributed to the disruption of supply chains and a large part of the price change is because of the off-season for vegetables like tomato. The supply of vegetables from hills in the off-season usually will start at some times in May-June.

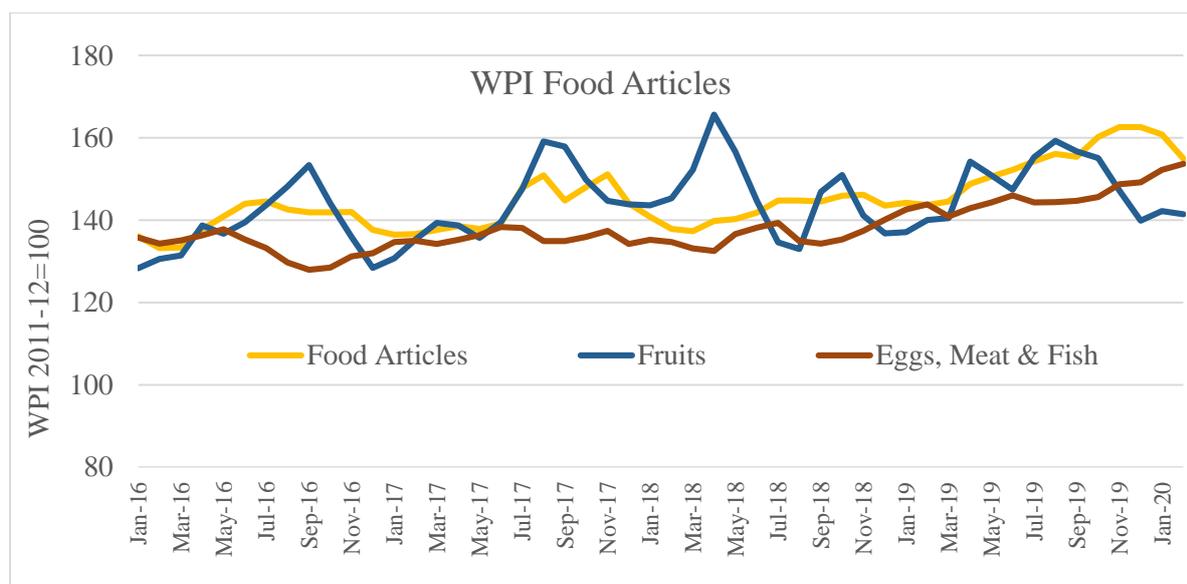
Table 2. Change (%) in wholesale and retail prices of essential food items in the post-lockdown over the pre-lockdown period

Centre	Prices	Wheat	Wheat flour	Gram dal	Tur dal	Groundnut oil	Potato	Onion
Chennai	Wholesale	5.0	0.0	10.8	15.1	-	29.6	-0.2
Chennai	Retail	6.1	0.0	10.3	8.8	4.8	30.0	10.0
Delhi	Wholesale	0.0	2.9	0.7	8.6	0.0	10.4	-27.0
Delhi	Retail	0.0	6.5	13.2	2.4	5.6	14.1	-0.4
Kolkata	Wholesale	-	5.7	11.0	2.1	0.7	36.9	0.0
Kolkata	Retail	-	9.6	9.2	2.3	0.8	30.8	0.0
Mumbai	Wholesale	-4.0	0.0	16.7	13.7	1.7	10.5	-13.4
Mumbai	Retail	0.0	-2.4	18.3	12.9	4.3	20.3	13.2

Note: change in Post-Lockdown Week 3 (5-11 April, 2020) over Pre-Lockdown Week (15-21 March, 2020).
Wholesale: Wholesale price.

The trend in the wholesale price until February 2020 shows a moderating trend, except for meat, egg and fish which are moving upward (Fig 1). If this trend continues during the lockdown, there may not be much change in wholesale prices of essential commodities, except for milk and meat which otherwise also show some increase in their prices during this period. The international prices of agricultural commodities have been moderate because of near-normal production. In fact, the prices showed a declining trend since the last few years, which should have continued in the absence of the lockdown. Because of the disruption of the export value chains, domestic prices in some of the importing countries might face an upward trend temporarily. The normalcy of the prices shall be restored with the normalcy of the supply in both the exporting and the importing countries. An example of this is the export of shrimp to China (see the sectoral study).

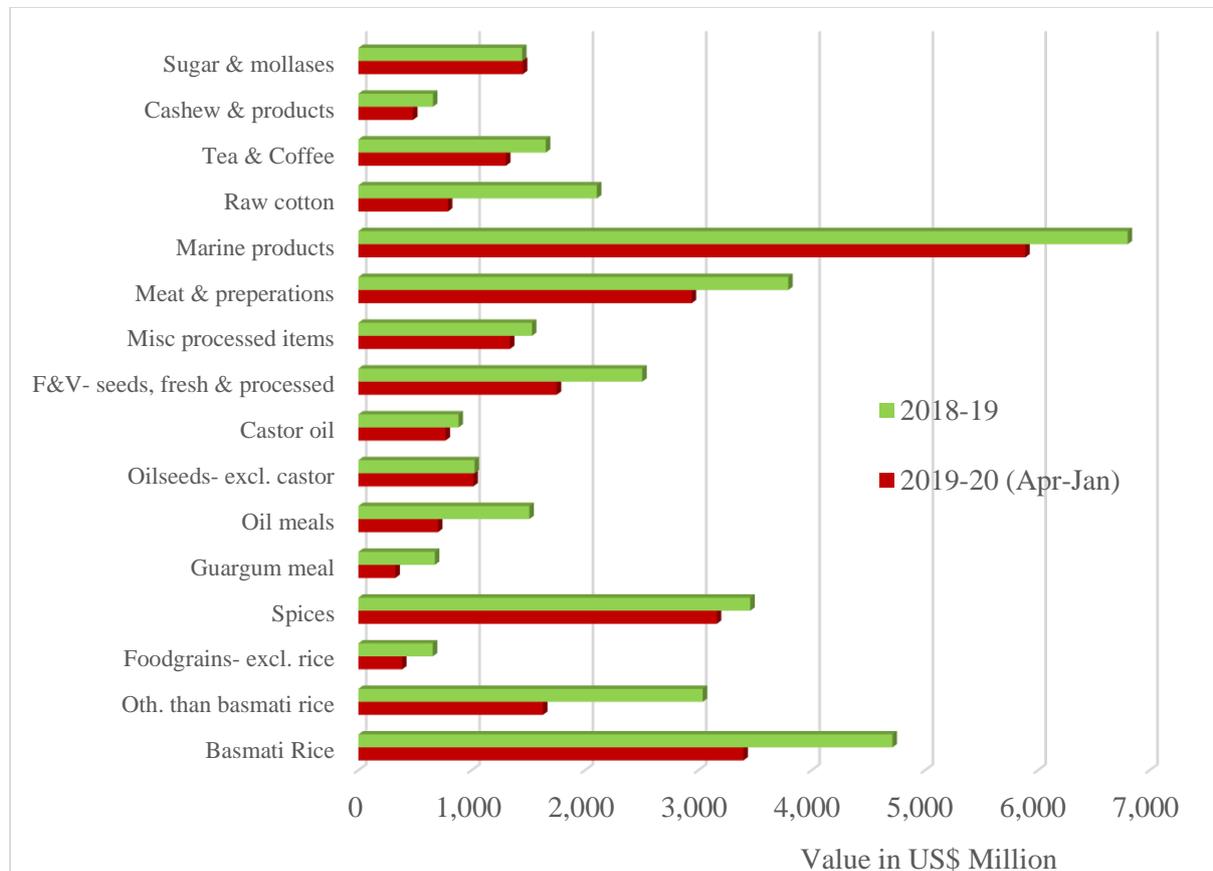
Fig 1. Trends in the wholesale price index of major commodity groups



Commodity prices in major wholesale markets of wheat, grams, rapeseed and mustard, potato and onion were also projected for six weeks beginning from the third week of April. The time series models were applied for the forecasts. The projected price showed a fair amount of stability during the lockdown period and beyond. This is in spite of the fact that market arrivals of rabi crops may be delayed for a week or so. This stability shows that there is confidence in the market and the traders visualize no shortage of product and market imperfections.

One major factor which can influence domestic prices are exports of agricultural commodities and the data for the lockdown period are not available. But the information collated through different sources indicate exports have taken place for important commodities like fruits, aquaculture and cereals during February-March and not much produce is accumulated to depress the domestic prices. The available data upto January 2020 (Fig 2) also indicate that agricultural exports in value terms in 2019-20 were comparable to those in 2018-19 for most of the products. The value of exports of sugar, spices, tea and coffee in 2019-20 (upto January) was almost equal to their exports in 2018-19. The value of exports of marine products and meat was close to the previous year. However, the export values of cotton, rice, oil meal and fruits & vegetables were much lower in 2019-20 in comparison to 2018-19. Since export of rice and cotton, major export commodities, is not seasonal and therefore may catch up in February-March or after the lockdown. Thus, there may not be much pressure on the domestic prices due to exports, and it the disruption in the supply chains in domestic markets which may have larger impact on the domestic prices. Hopefully, a similar export scenario shall prevail for other commodities like mangoes.

Fig 2. Value of Agricultural exports from India



Commodity Prices and Farm Income

The government's new schemes and strengthening of ongoing schemes are bringing focus on needed backward and forward linkages. Pradhan Mantri Kisan Sampada Yojana for agro/marine processing and development of agro-processing clusters was launched under the Ministry of Food Processing Industries with an allocation of Rs. 6000 crores during the period 2016-17 to 2019-20. RKVY has been restructured as RKVY-RAFTAAR, which lays down that a major share of allocation shall be apportioned for developing infrastructure namely (50 percent for infrastructure and assets, 30 percent for value-addition linked production projects, and rest 20 percent to be used as flexi-funds). Thereby, both production and post-production related infrastructure get suitable focus. Besides, 10 percent of the RKVY-RAFTAAR budget has been reserved for promoting enterprise and supplementary incubation facilities in various ICAR centres, KVKs, SAUs, etc. Also, the doubling farmers' income (DFI) strategy has focused on productivity based production gains, resource use efficiency and sustainable practices. In this regard, it has specifically recommended a focus on certain neglected crop domains like pulses, oilseeds and nutri-cereals (millets). The strategy has paid dividends in terms of sustainable agricultural growth with record production of foodgrains and a growth rate of 3.5 percent or more in 2019-20.

Market reforms

The DFI strategy has stressed on market reforms as a prerequisite to enable the farmers to realize remunerative prices on their products across a unified national market. The Government has decided to bring on-board 415 more *mandis* beyond the 585 already on-boarded. It is also recommended to strengthen the supply chain for sensitive products, namely tomato, onion and potato. In this regard, the government has announced the initiation of 'Operation Greens', to develop and promote streamlined communication of the fresh produce (greens) from farm-gate to the consumer. A budgetary allocation of Rs 500 crore has been made for 2018-19 for this purpose. MoFPI has begun the work for launching this initiative. The supply chains are however disrupted and this time to promote these supply chains and make eNAM fully operational. In the absence of these reforms, there would be an adverse impact on farm gate prices which in turn will impact the farmers' income. These facts are highlighted in the case studies on grapes, aquaculture and livestock products.

Impact on market arrivals

The impact of COVID-19 on agricultural markets reveals that the market arrivals declined significantly during the first March to 10th April. India's cereals, pulses and potato arrivals declined enormously in this period in 2020 as compared to the same duration in 2019. It was noticed that wheat arrival declined by 59 percent; Bengal gram arrivals declined by 78 percent; urad and green gram also declined by more than 50 and 60 percent, respectively (Table 3). A part of the decline in the arrivals of wheat and gram could be attributed to excess rains in March, delaying harvesting of these crops. Overall the movements of essential commodities have been stuck due to lockdown which is affecting both farmers as well as consumers. A decrease in the market arrivals should not be considered as low income of farmers as the productivity levels of these crops are normal and the product shall be brought by the farmers after normalcy or relaxation in the movement of farm produce, which is announced by the government.

Table 3. Market arrivals for major states during 1st March to 10th April, '000 tonnes

Crops	2019	2020	% changes
Wheat	2,543	1,031	-59
Paddy common	1,035	851	-18
Potato	1,494	837	-44
Arhar	96	79	-17
Lentil	104	91	-12
Bengal gram	591	128	-78
Urad	51	24	-53
Green gram	31	12	-62

Source: AGMARKNET

The prices of agricultural commodities are moderate up to February 2020 because of good harvest and these are likely that this trend should not be impacted by the lockdown much. The wholesale prices of livestock products are moving upward during the last few months which may continue albeit at a moderate scale mainly because of low production during summer (Fig 3). In case the supply chains are disrupted for a longer period, farmers may find difficult to sell these products during the lockdown. The price data monitored by the Department of Consumer Affairs indicate some increase in the prices of pulses and vegetables during the lockdown period.

Fig 3a. Wholesale Price Index for major pulses (March-2017 to February 2020)

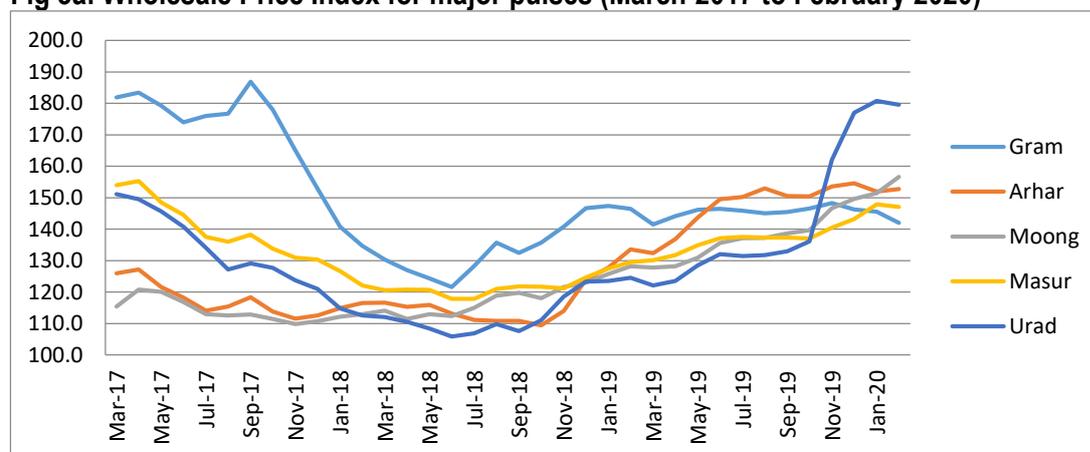


Fig 3b. Wholesale Price Index for major vegetables (March-2017 to February 2020)

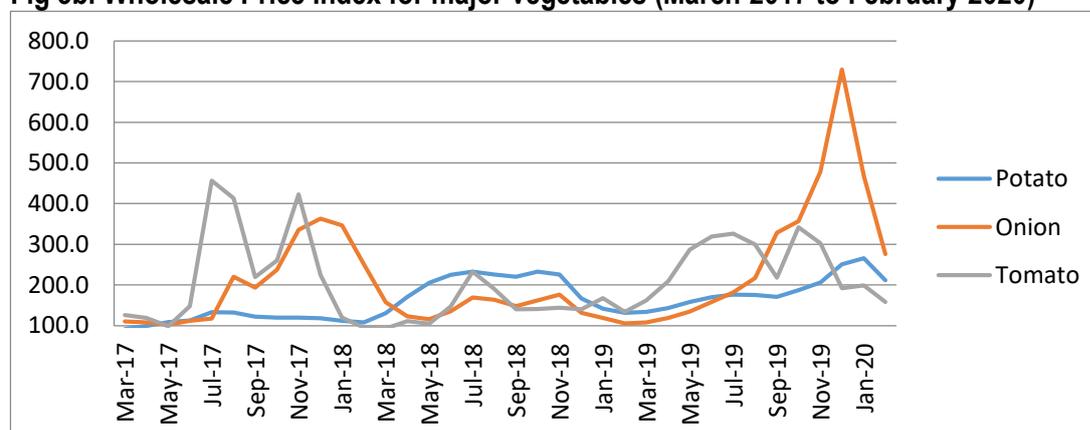
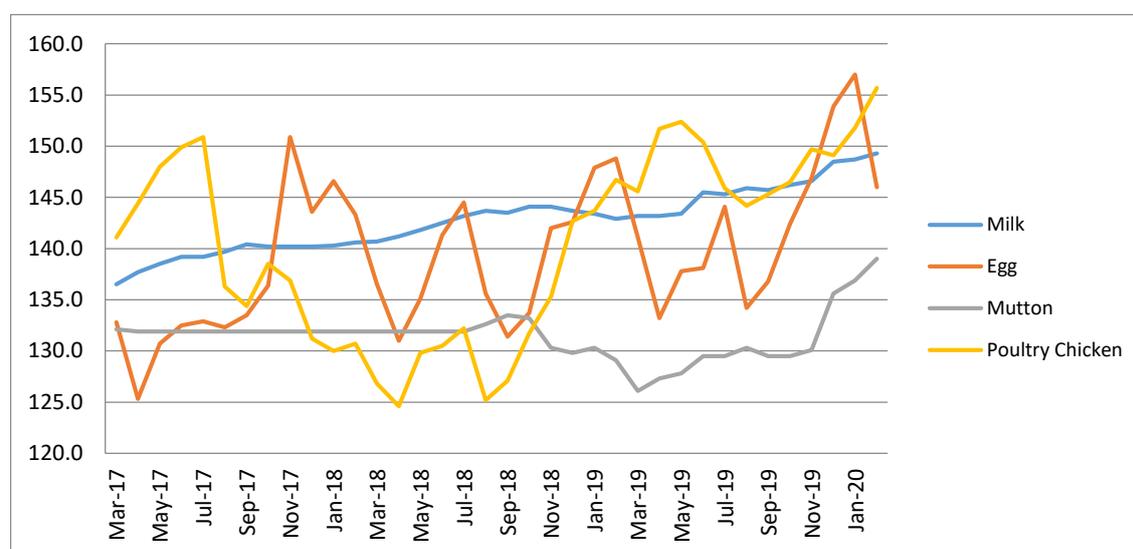


Fig 3c. Wholesale Price Index for livestock products (March-2017 to February 2020)



Source: Office of the Economic Adviser

Demand for Food

As per the formulation developed by FAO (2011), ‘food and nutritional security exist when all people at all times have physical, social, and economic access to food of sufficient quantity and quality in terms of variety, diversity, nutrient content, and safety to meet their dietary needs and food preferences for an active and healthy life, coupled with a sanitary environment, adequate health, education and care’. Depending on the conditions of the lockdown, food and nutritional security are likely to be adversely affected due to demand and/or supply-side shocks in the food system. The magnitude of adverse effects will depend on the duration and severity of the outbreak in the country. In the short run, the supply shocks may arise due to disruptions in the supply chain of food commodities on account of movement restrictions imposed by the authorities or profiteering activities of errant traders. Augmentation in Public Distribution System (PDS) supplies of foodgrains may however partly negate the supply shock in staple food commodities. If the outbreak remains for a longer time, the physical availability of food commodities may shrink due to slow-down in agricultural operations for the upcoming crop season. Farmers may also reduce the marketed surplus in anticipation of a possible shortage of food commodities in the market. At present, the possibility of such a scenario is rather weak.

The demand-side shocks may arise due to reduced affordability to food particularly by poor and lower-middle income class households, and change in food consumption patterns from high to low perishable commodities. Wage-earners of the informal sector would be adversely affected due to the shutdown of economic activities. In the short run, retail markets may experience a spurt in food demand for household consumption due to panic buying by the consumers. However, this demand may vanish gradually over time. The cut down in out of home consumption would have dampening effects on overall food demand in the economy. Consumption patterns of the consumer may be altered and more expenditure may be allocated towards low-perishable food commodities. The longer-run impacts on food demand will depend on to what extent markets conditions are restored and economic activities are resumed.

The social security contingency schemes of the government and philanthropist activities of civil societies may have cushioning effects on the food and nutritional security.

Household food demand at the national level

The expected production of foodgrains, horticultural and livestock products is sufficient to cover the household food demand. It is worth noting that household food demand does not include food consumed outside the home and other indirect demand (seed, feed, wastage, etc). During the lockdown period, demand due to food consumed away from home will be negligible. Further, it is advised to consume a balanced diet to boost immunity to fight against the novel coronavirus. National Institute of Nutrition, Hyderabad has suggested Recommended Dietary Allowance (RDA) of foods for different age groups and activity status (sedentary/moderate/heavy) to supply required nutrition (NIN, 2011). The weighted average of age-wise RDA of foods using the population of respective age group (2011 census) as weight is presented in Table 4. Using estimated average norms for moderate activity status, normative demand of food items has been projected for the base year 2016-17. The production is also found to be sufficient to meet the normative demand for food commodities except for pulses, milk, vegetables, and non-vegetarian products. The analysis reveals that the country has sufficient availability of food to meet the actual household demand for all food items and normative demand of calorie-supplying food items. Change in food intake, if any will be due to constraints in the distribution of food at the regional and local level, and household-specific economic and non-economic factors.

Table 4. Production, household consumption and requirement of food in 2016-17

Food item	Production (mt)	Actual household consumption (mt)	NIN norms [#] (grams/capita/day)	Normative food demand (mt)
Cereals & millets	253	175	326	154
Pulses	23	12	71	34
Animal Food	24	10	118	56
Milk	165	68	377	179
Vegetables	178	108	432	205
Fruits	93	24	100	47
Fat	23	11	30	14
Sugar	31	12	27	13
Overall	790	421	-	702

Minimum balanced food norms of National Institute of Nutrition (ICMR) for moderate activity

Access to food at the household level

The availability of food may be necessary but not sufficient condition for ensuring food security. The actual intake of food by individuals may depend on a variety of household-specific factors. Among others, income is the most important factor affecting economic access to food. Expenditure elasticities of calories-intake is 0.23 for rural areas and 0.14 for urban areas which implies a positive association between income and food intake. Thus, a reduction in income of the wage earners due to the shutdown of economic activities will have an adverse impact on food intake. This should be compensated through public distribution and other welfare programs.

The impact of COVID-19 will be much stronger for relatively poor households who spend a comparatively large share of income on food as compared to rich counterparts. The marginal propensity to consume food for the households belonging to the bottom expenditure class in rural areas is 61 percent as compared to only 16 percent for the households belonging to top expenditure class. Further, the incidence of undernourishment is significantly higher among poor households. The evidence suggests that supplementing the income of the poor households will have a larger positive impact on food and nutritional security. The recent packages of extending financial support to poor households through PM-KISAN and other welfare schemes of the Central and State Governments may lead to desirable outcomes.

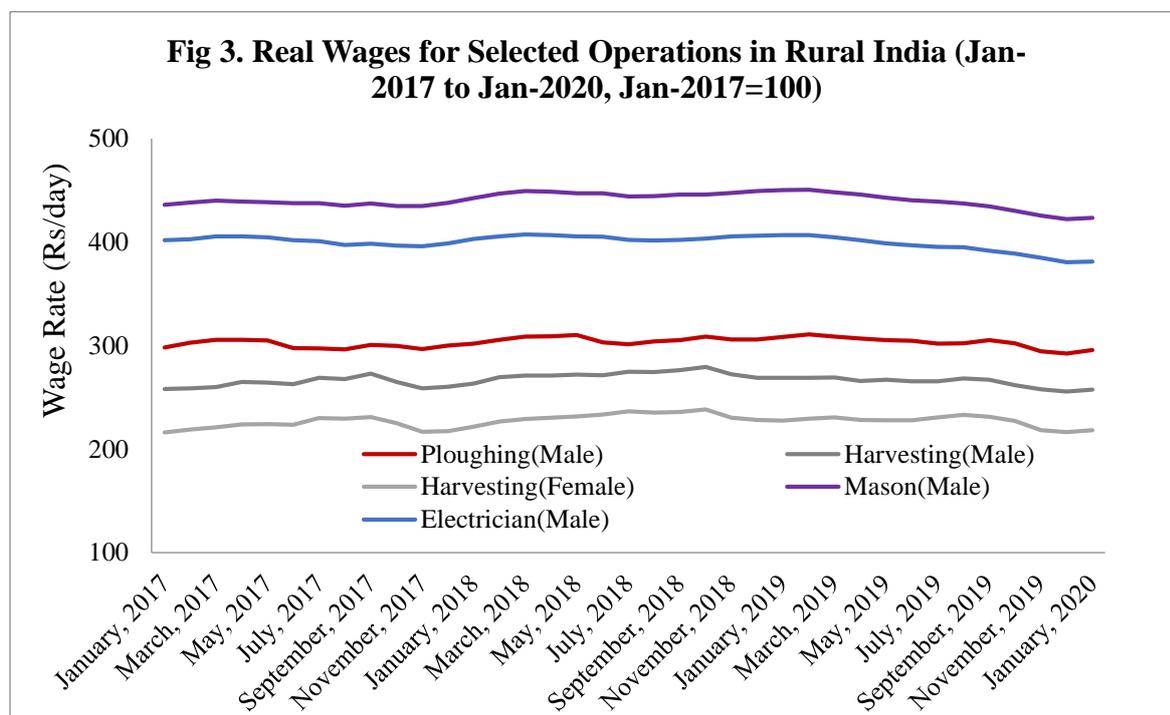
Apart from income, price is another factor that adversely affects the purchasing power of poor households. Due to negative price elasticities, any rise in prices of food commodities will lead to a decline in consumption. The impact of price rise will not be uniform and it will be stronger for poor households and high-value agricultural commodities. These factors necessitate supplementing the food demand of poor households from PDS supplies. The effect of in-kind PDS supplies on calorie-intake is 3.5 to 3.9 times higher than of direct cash transfer of food subsidy even at the existing level of losses and leakages in PDS supply (Srivastava et al, 2017). In the situation of lockdown and disruption in the existing supply chain, the importance of PDS increases manifolds.

Employment and the Rural Poor

In India, the estimate by ILO, CMIE and other researchers have pointed to a challenging unemployment situation, which further deteriorated by the current lockdown in the country (Bloomberg Quint 2020). There are no data available to assess the current labour market scenario and its effect on their income. The data available upto early 2020 indicate slighting weakening trend in the real wages of rural workers since 2019. This trend is true for real wages of farm and non-farm workers (Fig 3). If during the lockdown period, rural non-farm workers are back in the villages, the wages may remain stagnant. But in the areas where rural migrant workers are important, there could be increase in the wages of farm workers during the period of lockdown and beyond.

The ILO has undertaken a global assessment and classified the different sectors as high, medium-high, medium, low-medium and low based on the impact of the crisis on economic output (ILO 2020). Sectors such as accommodation, food, manufacturing, wholesale and retail trade, which are labour intensive, are classified as high risk. Though agriculture, forestry and fishing are classified as low-medium risk, the scale of employment in this sector and dependence of such households on non-farm employment would lead to higher risk among these households. Based on our analysis for rural India based on unit-level data from the PLFS 2017-18, we observe that 15.98 percent of the working population is employed in sectors that are considered to be high risk, 58.66 percent in low-medium risk, and 6.28 percent at low risk. The agricultural sector, which consists of about 59 percent of overall rural employment, also contributes to three-fourths share in overall female employment. Within the agricultural sector,

about 28 percent of the workers are female. Most of these women are often involved in precarious work and are thus devoid of any form of labor protection.



The share of households and the incidence of poverty in rural and urban India by different employment categories are given in Table 6. Since the latest poverty estimates are not updated, the estimates for 2011-12 are used. These data indicate that the share of rural and urban households working as casual labour in non-farm sector was 13 and 12 percent, respectively in 2011-12. In addition, there are 21 percent of households working as casual labour in agriculture in 2011-12 which reduced to 12 percent in 2017-18. The share of casual workers in rural non-farm and urban sector has however remained 25 percent in 2017-18. The immediate short-run impacts of the lockdown would be felt most among these casual workers. Here it may be noted that some of small and marginal farmers and casual agricultural labour also work in the rural non-farm sector and these may also be affected to the extent of employment lost. The incidence of poverty is high among these casual workers in rural and urban areas, which may further deteriorate if income loss is not compensated. A lockdown for one month would severely affect and shift a significant proportion of the casual workers (about 10 million) below the poverty line. This increase in the incidence of poverty is subject to the condition of no income transfer or higher public distribution by the Government. The Government has however taken several steps to support the agricultural and allied sector by exempting the sector from the lockdown, undertaking public distribution of foodgrains and direct cash transfer (see Annexure I). Therefore, the poverty impact may be a temporary phenomenon and long-term impact may occur through a lower rate of growth in other sectors.

Table 5. Employment shares across sectors in rural India and global sectoral risk assessment, 2017-18

Sector	Global sectoral assessment of risk	Share (%) in total employment	Share (%) of women workers
Manufacturing	High	7.82	8.31
Wholesale and retail trade	High	6.84	3.20
Accommodation and food service activities	High	1.25	1.02
Real estate activities	High	0.07	0.02
Transportation and storage	Medium-high	3.88	0.19
Arts, entertainment and recreation	Medium-high	0.17	0.04
Mining and quarrying	Medium	0.40	0.20
Construction	Medium	12.38	4.68
Financial and insurance activities	Medium	0.45	0.21
Agriculture, forestry and fishing	Low-Medium	58.66	72.41
Other services, education, health, administration etc.	Low	8.08	9.73

Note: Employment statistics are based on principal status (the economic activity in which the person spent relatively long time (major time criterion) during the 365 days preceding the date of survey).

Source: ILO (2020) and Authors' estimation based on Periodic Labour Force Survey data, 2017-18.

Table 6. Employment categories and the incidence of poverty in India

Rural				Urban			
Household Type	Share of households (%)		Poverty headcount ratio (%), 2011-12	Household Type	Share of households (%)		Poverty headcount ratio (%), 2011-12
	2011-12	2017-18			2011-12	2017-18	
<i>Self-employed in agriculture</i>	34.3	37.8	22	<i>Self-employed</i>	35.3	32.4	15
<i>Self-employed in non-agriculture</i>	15.5	14.3	19				
<i>Regular wage/salary earning</i>	9.6	12.7	11	<i>Regular wage/salary earning</i>	41.7	41.4	7
<i>Casual labour in agriculture</i>	21.0	12.1	40	<i>Casual labour</i>	11.8	11.8	33
<i>Casual labour in non-agriculture</i>	13.5	12.9	33				
<i>Others</i>	6.1	10.1	18	<i>Others</i>	11.2	14.4	8
<i>Overall</i>	100	100	25	<i>Overall</i>	100		14

Note: State-level poverty line estimated using Tendulkar methodology for 2011-12 (GoI 2014).

Source: Authors' estimation based on Consumer Expenditure Survey data, 2011-12, PLFS data 2017-18.

Policy Implications

We don't anticipate a major long-term impact of the lockdown or lower economic growth on Indian agriculture. A normal agricultural growth in 2019-20 and exemption of farm operations during the lockdown period shall contribute to better farm income. For marketing of agricultural produce also, special efforts are made to ensure smooth functioning of supply chains of the perishable commodities. These direct interventions are further strengthened by a positive forecast of IMD for a normal monsoon in 2020 which is extremely important for the coming kharif season. Agriculture shall also support some migrant labourers who are back in the villages, provided they are willing to work on the farm. The return of migrant labor to the cities may take some time and therefore expected loss of employment and income particularly in the rural non-farm sector and urban casual workers which form about 15-20% of the total workforce, may be worst affected. Therefore, providing a social safety net in the form of food, health and other essential commodities should be the priority of the government. Some sectors like tourism, hospitality, transport, and real estate may bear the impact for an extended period and therefore these sectors will need special attention, particularly measures for the welfare of the casual workers.

The following are some of the priorities of the Government for the agricultural sector:

1. Upscaling of farmer advisories for the lockdown period, particularly for farm operations and social distancing. This should be in local languages with simple messages. KVK network of ICAR is a great strength in this respect.
2. Farmers should be advised for delayed marketing of those products which are storable like foodgrains, rapeseed and mustard, and some overstocking of aquaculture and meat animals. The use of meat and fish should be examined and tested for safety at different levels.
3. Facilitate supply chains of perishable commodities like milk, eggs, fruits and vegetables. The movement of commodities does not mean the movement of a large number of people. Digital contacts can help reduce the movement of people as farmers and traders have direct and repeated transactions.
4. The central and State Governments can plan procurement of wheat and gram and the products can be delivered at the place these are needed. Also, make eNAM operational in all the mandis.
5. There is adequate time to plan for the next kharif season for the supply of seeds and fertilizers. Similarly, the supply chain of mango and litchi can be planned to avoid any income loss to the farmers.
6. Promote farm mechanization like adoption of paddy transplanters following custom hiring models. Also promote drum seeded rice to cope with shortage of labour. Promote clusters of pulses and oilseeds for higher production through price incentives and procurement logistics
7. Strengthen research on biosecurity, zoonotic diseases, microbiome, and natural barriers to plant and animal diseases and natural calamities.
8. Credit delivery for agriculture and allied sectors appears to be normal until January 2020, but more liquidity should be injected in agriculture, particularly for commercial and processing activities.

THE SECTORAL IMPACTS

Fruits

India is the second largest producer of fruits and vegetables in the world after China with a share of 12.2 and 10.7 per cent, respectively, of the global production. The major fruits grown in India are mango, banana, grapes, guava and papaya, pomegranate, sapota and aonla. For many years, horticulture has emerged as the growth driver of Agriculture in India contributing nearly one-third to Agricultural GDP with annual growth of 9.5% and 7% in fruits and vegetables, respectively (1991-92 to 2018-19). The impact of Indian Horticulture sector is quite visible now. The fruits of grapes and banana are in the market and mango has started in the southern states and it will soon be available in northern India. These fruits are also exported and therefore the lockdown is likely to have major impact on the marketing and prices of these fruits. The impact on some of the major crops, namely Mango, Banana and Grapes is discussed below.

Grapes

As grape is a highly commercialized crop, the lockdown has affected the grapes farmers in various ways. Most of the farmers from Nashik and Sangli districts of Maharashtra grow grapes for export purposes. This year till the first two weeks of March, operations were normal. Farmers got a price of 60-80 per kg (Modal price) by exporting their products and about 30-50 Rs per kg in the domestic market. The Government announced a lockdown on 22nd March which effectively prevented the movement of vehicles and labours. The most significant problem occurred during the initial 10-12 days of lockdown, as there was confusion among the farmers and traders. Traders were not getting demand and were not able to send their produce to destinations across India and outside the country. Delayed harvesting would have increased TSS thereby deteriorating the quality for table purposes and accelerated the drying for raisin making. As the price was very low, most of the farmers converted grapes into raisins (about 25 %) and some sold their produce at a very low price.

Farmers who cultivated the grapes for the export purpose were most affected by almost nil export during the lockdown period. The price received by the farmers reduced to Rs. 30-40 /kg. Some companies in Nashik like PC foods are giving the price of Rs 25-30 per kg. Moreover, they were procuring very less quantity. Still, about 25-30 percent of the product is with the farmers in Maharashtra. About 15-20 percent in Sangli where crop duration and harvesting are early as compared to other districts of Maharashtra. The Maharashtra State Grape Growers' Association reported that the number of containers for exports this year has almost matched with the previous years and thus total quantity exported is not affected. However, if the Corona crisis had not occurred, export would have been increased by 25-30 percent.

As of now, fresh demand for the product is there from the European countries, and other competitor countries like South Africa, Chile, Peru etc. are finding it difficult to export their produce. Now European Union has agreed to accept the field packs (as against earlier pack-house or cold storage packing only) of 40 kg each. Therefore, harvesting can be done by following social distancing norms on farmers' field which is difficult to follow in pack-house

and cold storages. Therefore, exporters have started their operations in some parts of Sangli. The containers which were departed from India before lockdown in other countries were kept at ports only, which are slowly releasing now as the product was accepted by buyers as such. One container takes around 45 days to reach the destination. Produce can be kept in a container for another 1.5 months. Therefore, there was not complete rejection and loss to farmers.

During the lockdown period, most of the grapes in fields are converted to raisins. The inputs required for this, Potassium Bi Carbonate and Ethyl Oleate are being made available to farmers with the help of state government. Most of the farmers who are converting grapes into raisin would store it in cold storages on rent (40 paise/kg/month) till price becomes normal. Some persons have started the business where they would wash the raisins, grading and packaging (all mechanized) of them at 7 Rs/kg rate. One noteworthy thing here is that converting raising is not giving more benefits to the farmers as the export of fresh grapes. A farmer in Nashik told that from 2.5 acre of land he earned 21 lakhs by exporting grapes before 28 Feb, now after the lockdown produces from 2.5 acre area is converted into raisins for which at the normal rate he would get about Rs 9 lakh only, i.e. Rs 11 lakh less than the normal year.

Domestic product was fetching a price of Rs 30-50 per kg before the lockdown. Which has reduced to 10-20/kg. Transport to markets in UP, Bihar, West Bengal is hit by strict lockdown followed by these states. Some farmers are even making packing of 1-2 kg and selling indirectly in villages and nearby cities. Farmers who do not have net shades and space for raisin preparation are selling grapes at a lower price. About 30-40 % traders have started operations now after lockdown, but they are procuring less quantity. Another important constraint is labour availability. Only about 100 labour is available when 1000 would be there normally. The rest of the demand is met by family labour. After all, farmers have to ensure that the product which is there on the plant for six months is harvested and pruning is carried out for the next season.

Mango

The lockdown and COVID thread has brought fear among the farmers of all the mango producing states, namely UP, Gujarat, Karnataka, Andhra Pradesh, Bihar etc. relating to the harvesting, sale and export. Sporadic rains and hailstorms during the flowering cause pests and diseases, and the lack of availability of labourers and timely pest control measures are likely to cause sizable production losses across the northern and eastern regions, particularly in Uttar Pradesh, West Bengal, Bihar and Odisha. In the southern states, harvesting of mangos has already commenced. The famous Alphonso mango particularly from Ratnagiri and Sindhudurg districts in Maharashtra has been suffering low picking up to an extent of 30-40% due to lockdown and low sale in the market followed by disruption in the supply chain. In Andhra Pradesh, mango crop is ready to harvest in most of the districts. However, unavailability of labourers, plummet in prices due to low market demand and lack of transport facilities are causing hindrance to the mango trade.

Measures to strengthen the supply chain

- As highlighted, there is lack of sufficient transporting facilities to carry mango from production zone to the market yards and also for the exports. The Government may provide

incentive and rebate in tax for transporters engage in transport of far commodities to markets.

- Creation of temperature-controlled parcel vans in the Indian Rail for the transport of mango under the present scenario effectuate deliveries. Government may also use/ attach idle AC tier coaches.
- In case there are enough buyers in the market, direct selling of fruits to consumers and processing for juice should be encouraged.

Banana

During the lockdown period covering March to April months, about 30% (10.0 million tonnes) of total banana production is expected to come from the major banana growing states (AP, TN, Maharashtra, Gujarat, Karnataka). There were not enough buyers during the lockdown period, and the price of the commodity slashed to less than Rs 5/kg in many parts of India, causing massive disruption in the supply chain. With the steep drop in the price, roughly Rs. 6000 crores are lost as normally the farmers used to sell his produce at Rs. 15/ kg.

Measures to strengthen the supply chain

- Developing methodologies based on input-output models which provide information about the cluster wise production of banana and could identify the major catchments for supplying the fresh produces. This will allow in calculating the impact of any change in the supply chain.
- Commodity based cluster formation or co-operative farming for procurement of all the inputs on collective basis, better implementation of the technologies, credit approval, better price realization.
- Aggressive, cost competitive marketing of fresh banana by the nodal agencies and FPOs through the formation of farm clusters. Developing contingency plans for the export of banana to individual countries through bilateral agreements
- Manipulation of post-harvest life of fresh banana through tailor made approaches and exploitation of new Greener methodologies for the export of traditional varieties
- Providing banana under welfare scheme of the Government for the poor people and ensuring the movement to the consumption areas on priority. The option of converting banana into healthy powder, puree and chips could be used in functional food markets.

Livestock and Poultry

There are four possible channels through the lockdown may affect livestock production: (i) disruption in supply/value chains of outputs, (ii) reduced supply of feeds and fodders, (iii) disruption in livestock services including breeding and health, and (iv) depreciation in animal stock.

Dairying

The immediate effect of lockdown on dairying is through the disruption in milk supply chains. Of the total milk production more than half finds way to markets through the cooperatives,

private processors and milk vendors, and the rest is consumed by the producer-households. Milk is a perishable commodity and requires immediate transportation to the market centres or refrigerated storage or processing into less-perishable forms. Even exemption for transport of milk, the lack of availability of labour for collection, transport, processing, packaging and distribution the milk supply chains will be adversely affected. Approximately half of the marketed surplus of milk is accounted for by the informal sector buyers including the milk vendors who aggregate and supply milk to urban consumers and sweat-makers. While the urban household consumption demand for milk is unlikely to remain unchanged at pre-lockdown period, the demand from informal urban milk processors has been hardly hit by the lockdown, and it might have put a downward pressure on milk prices, and hence on the incomes of farmers and informal processors.

The prolonged lockdown might have adversely affected milk yields by disrupting the supply chains for feeds and fodders, more so, for the urban and peri-urban industrial production systems, also even for the large rural dairies that depend on manufactured feeds. In India, largely dairying in India is practiced as a component of mixed farming system deriving its feed requirements from crop by-products and residues, and hence the rural dairy production is unlikely to face scarcity of feeds and fodders during the lockdown period.

The disruption in the movement of personnel engaged in provision of breeding and health services will result in the reduction of production or reproduction potential of animals in the long-run. For example, an animal in heat requiring insemination if not attended to in time will lose about a month of its productive life. Likewise, lack of animal health services may result in morbidity and mortality losses to farmers.

The poor nutrition and health ultimately result in depreciation in the economic value of the animals. The high-producing animals that require better feeding and health care and depend on artificial insemination will suffer the most.

In the post-lockdown period, the need is to strengthen (i) local processing and storage of feeds and fodders, say creating village feed-fodder banks, (ii) strengthen integrated formal value chains by the cooperatives, FPOs and private processors encompassing both the backend and forward activities.

Poultry

India's poultry sector is primarily dualistic in nature represented by (i) subsistence oriented small-scale production systems including the backyard poultry, and (ii) industrialized commercial production systems. These two differ in their capital and input requirements, riskiness and market linkages. The impact of lockdown is therefore will be different on different segments.

The lockdown events have reduced the demand for poultry products, which is mainly to the consumers belief that the Coronavirus has its origin in animals and the disease is zoonotic, i.e., it has spread in humans through consumption of meat. The extended lockdown causing disruption in supply chain led further decline in the demand for poultry meat. The broiler production was hit by lack of availability of feed. The backyard poultry is the least affected by the lockdown. Bulk of broiler production in India takes place through contract farming, with a complete integration of its backward and forward activities. The industrialized production is

the most affected by the lockdown. The independent small-scale producers engaged in broiler production for the market are hard hit by these developments, forcing many of them to kill the chicks and close the business. Even those farmers who produce under contracts have been forced to close down.

The solution lies in dispelling the belief that Coronavirus disease is zoonotic, and provision of finances for revival of the broiler industry.

Aquaculture: Shrimp Farming, source: CIBA

Seed Production

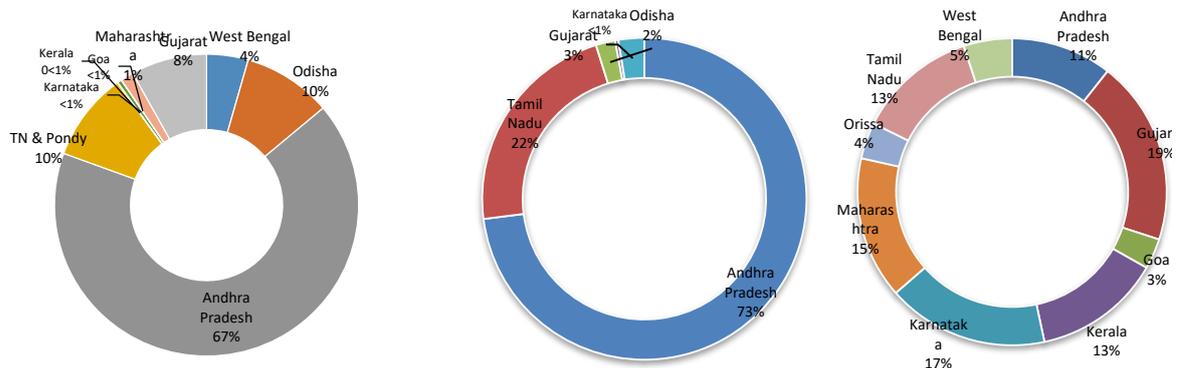
Presently 90% of the farmed shrimp is the exotic vannamei, hence the movement of SPF brood to the hatcheries through the Govt Quarantine facility from the overseas suppliers, and the transport of hatchery-produced to the farms from the hatcheries are the basic in the shrimp farming. Covid 19 related restrictions across the globe have almost halted the Global air cargo system, severely affecting the import of further consignments of SPF shrimp broodstock. Hatcheries not only need SPF broodstock but also artemia, special larval feeds, and many other products used in the hatcheries. The April month is the stocking season in the Indian shrimp farming, while the Covid 19 lockdown has brought the whole process to stand-still. Though the government has permitted the movement of aquaculture related inputs including shrimp seeds, the majority of farmers, say 75% have not initiated the stocking process due to many other restrictions impacting the regular working of farms.

Formulated Feed

Feed mill sector dependent on the farming operations, and the poor stocking activity in the farm, lead to the scaling down or stoppage of feed mills, which produce the formulated feeds for the farmed shrimp. The further lockdown has affected the movement of raw materials such as fish meal, soybean meal and other specialized inputs such as fish oils, krill etc, compelling the feed mills to scale down or lockdown of the operation

Processing and Marketing of the Produce

The global lockdown has seriously affected the normal processing chain catering to the shrimp export. Uncertainties in the importing countries, and the issues related to orders and export process, have put the Indian exporters in dilemma, and they are keeping a wait and watch policy. The effects quickly trickled down from exporters to retailers to processors farms and hatcheries. As many of the links of the export value chain has been broken, farmers with shrimp stock in the farm, could not harvest their produce, and the scope of finding domestic market too is very much limited, in the 'lockdown mode'.



Distribution of farm area

Location of hatcheries

Processing infrastructure

To understand likely impacts of lockdown and social distancing in the shrimp value chain one has to understand the structure of the shrimp aquaculture sector including the spread of hatchery, farming, and processing infrastructure in India. Inter-state movement of seed, inputs and products for processing and finally export facilities are of utmost importance for sustaining shrimp aquaculture in India. Shrimp farming is concentrated in Andhra Pradesh, Tamil Nadu, Gujarat and Odisha, while most of the hatcheries are in Andhra Pradesh and Tamil Nadu and processing infrastructure are available in Gujarat, Karnataka, Maharashtra, Kerala and Tamil Nadu.

Hatcheries reported large quantities of seed wastage due to poor demand in March 2020. This may lead to the aquaculture sector to reduce the output as the farmers expect reduced consumer demand and price loss. This may lead to failure to meet targets at processing and export nodes. Exporters may predict reduced orders and may fail in meeting orders in hand. Hence the overall reduction in the sector's output is expected.

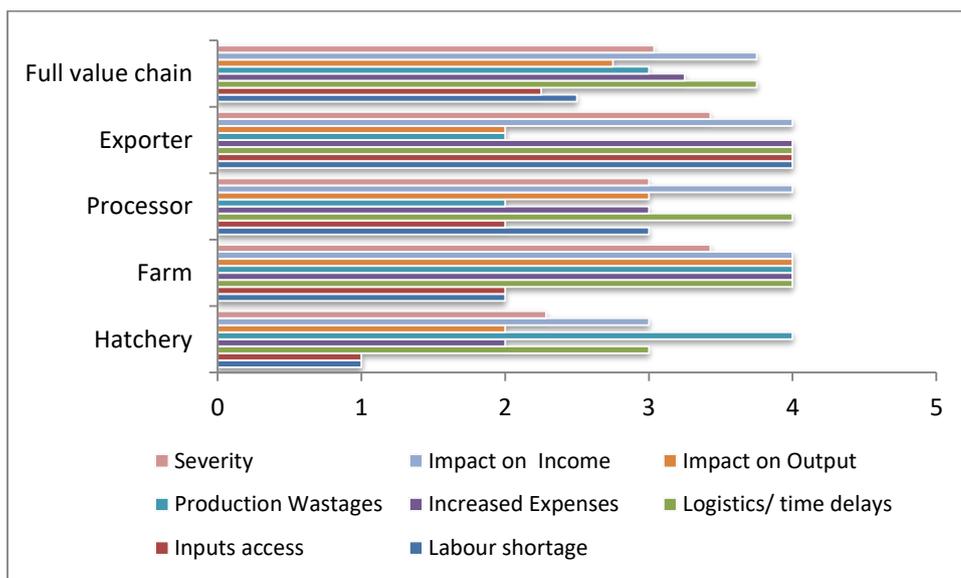


Figure.1. Heat map of impact on production to consumption shrimp value chain

Though some unskilled labour resides at hatchery and farm itself, still technicians and executives commute from nearby towns or cities. Many of whom are not able to visit farms regularly. Though mobile phones do help to a certain extent the difficulties in obtaining farm inputs do constrain the efficiency of operation of farming. Many state government fisheries departments have passed government orders permitting the transport of animal feeds by road during lockdown small farmers may not be able to get a small proportion of their requirement. Improper functioning of godowns and stock points due to rail and road transport networks along with very limited labour availability severely affect the volume of items being handled through the system. The animals are to be fed in time for healthy and disease-free growth. Delays or inadequacies in feeding may also affect the final average bodyweight of the animals and ultimately the total biomass harvested. The curtailments placed on road movement will hinder the smooth supply of inputs to aquaculture, particularly to small farmers who require smaller quantum of inputs in more frequent intervals. The money circulation system is also undergoing a severe strain as shrimp farmers depend on the private money circulation system.

Seafood exports to China during April-December 2019 stood at 2,42,218 tons valued at US\$ 1032 million as against 1,65,950 tons valued at US\$ 589 million in the same period last year. The increase is 46 percent in terms of quantity and 75 percent in terms of value”. Around 500 exporters are exporting seafood from India to China and the exporting community, in general, has not raised any issue about exports to that country. Moreover, large India- China trade balance may help Indian shrimp imports to be continued by China. Shipping shrimp to China may be affected to a certain extent as the shrimp consumption might reduce. But there is a strong possibility of the Chinese consumers switching to healthier seafood options leaving behind other low-value items.

Table.1. Simulated losses of *P. vannamei* shrimp farming

Parameter	Normal (Triennial Avg 2018-20)	25% less than normal	50 % less than normal
Farm area Lakh ha	0.97	0.73	0.49
Seed Billion	43.08	32.31	21.54
Feed Million tonnes	1.16	0.87	0.58
Productivity Kg/ha	7.63	5.72	3.82
Total shrimp production Lakh tonnes	6,22,327	4,66,745	3,11,164
Economic value production/loss Rs.crores	18,669	- 4,667	- 9,334
Export price loss by 25%	14,002	-3,500	-7,001
Combined loss scenario	- 4,667	-8,167	16,495

Farm area changes will reduce the demand for seed and later requirement of feed. The cumulative factors of seed, feed and other input use will result in productivity losses and lead to reduced production. Under three different scenarios of normal, 25 and 50 percent reductions the sector may end up in losses as given in table.1. In the worst scenario of both production and

price losses the combined loss may reach to the tune of Rs. 8,167 to Rs.16, 495 Crores in 2020-2021 financial year.

Interventions:

- Use of exemptions of the lockdown for ensuring the supply of feed and seed stock to farmers
- Restricted transport of shrimp to maintain essential supply chains including exports with strict isolation and sanitization measures
- Restricted harvesting of shrimp to the extent that overgrowth does not adversely affect the prices.

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The Welfare Schemes of the Government for the Poor

The Central Government announced Rs 1.70 Lakh Crore relief package under **Pradhan Mantri Garib Kalyan Yojana** on March 26, 2020 for the poor to help them fight the battle against Corona Virus. The components of Pradhan Mantri Garib Kalyan Package are given below:

I. Insurance scheme for health workers fighting COVID-19 in Government Hospitals and Health Care Centres

- Safai karamcharis, ward-boys, nurses, ASHA workers, paramedics, technicians, doctors and specialists and other health workers would be covered by a Special insurance Scheme.
- Any health professional, who while treating Covid-19 patients, meet with some accident, then he/she would be **compensated with an amount of Rs 50 lakh under the scheme.**
- All government health centres, wellness centres and hospitals of Centre as well as States would be covered **under this scheme. Approximately 22 lakh health workers would be provided insurance** cover to fight this pandemic.

II. PM Garib Kalyan Ann Yojana

- **80 crore individuals**, i.e. roughly two-thirds of India's population would be covered under this scheme. Each one of them would be provided **5 kg of wheat or rice** (double of their current entitlement) over next three months. This additionality would be free of cost.
- To ensure **adequate availability of protein** to all the above mentioned individuals, **1 kg per family**, would be provided pulses according to regional preferences for next three months. These pulses would be provided **free of cost** by the Government of India.

III. Benefit to farmers under PM KISAN

- The first instalment of Rs 2,000 due in 2020-21 will be front-loaded and paid in April 2020 itself under the PM KISAN Yojana. It would cover 8.7 crore farmers.

IV. Cash transfers Under PM Garib Kalyan Yojana

Help to Poor:

- Total of **20.40 crores PM Jan Dhan Yojna (PMJDY) women account-holders** would be given an ex-gratia of **Rs 500 per month for next three months.**

Gas cylinders:

- Under **PM Garib Kalyan Yojana, gas cylinders, free of cost**, would be provided to 8 crore poor families for the next three months.

Help to low wage earners in the organised sector:

- **Wage-earners below Rs 15,000 per month in businesses having less than 100 workers** are at risk of losing their employment. Under this package, government has proposed to pay **24 percent of their monthly wages into their PF accounts for next three months**. This would prevent disruption in their employment.

Support for senior citizens (above 60 years), widows and *Divyang*:

- There are around 3 crore aged widows and people in *Divyang* category who are vulnerable due to economic disruption caused by COVID-19.
- Government will **give them Rs 1,000 to tide over difficulties during next three months**.

MNREGA

- Under PM Garib Kalyan Yojana, **MNREGA wages would be increased by Rs 20 with effect from 1 April, 2020**. Wage increase under MNREGA will provide an additional Rs 2,000 benefit annually to a worker. This will benefit approximately 13.62 crore families.

V. Self-Help groups:

- Women organised through 63 lakhs Self Help Groups (SHGs) support 6.85 crore households.
- Limit of collateral free lending would be increased from Rs 10 to Rs 20 lakhs.

VI. Other components of PM Garib Kalyan package

Organised sector:

- Employees' Provident Fund Regulations will be amended to include Pandemic as the reason to **allow non-refundable advance of 75 percent of the amount or three months of the wages, whichever is lower, from their accounts**.
- Families of four crore workers registered under EPF can take benefit of this window.

Building and Other Construction Workers Welfare Fund:

- Welfare Fund for Building and Other Constructions Workers has been created under a Central Government Act.
- There are around 3.5 Crore registered workers in the Fund.
- **State Governments will be given directions to utilise this fund to provide assistance and support to these workers to protect them against economic disruptions.**

District Mineral Fund:

The State Government will be asked to utilise the funds available under District Mineral Fund (DMF) for supplementing and augmenting facilities of medical testing, screening and other requirements in connection with preventing the spread of COVID-19 pandemic as well as treating the patients affected with this pandemic.

Progress of the scheme (as on April 13, 2020)

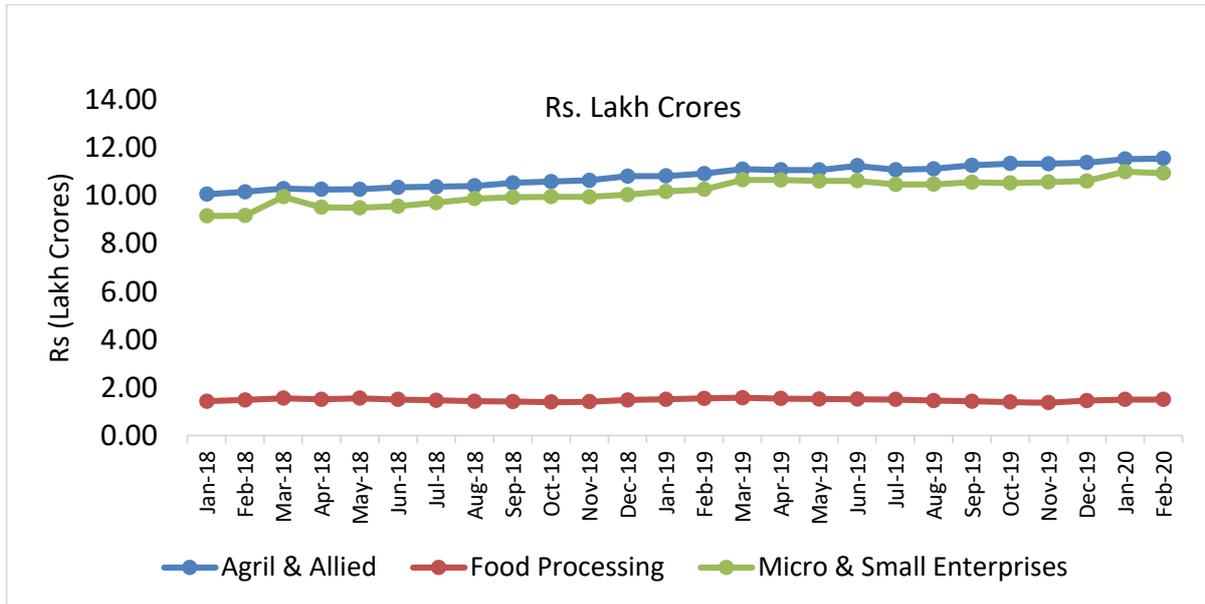
As on April 13, 2020, the progress of the scheme is given below:

- More than 32 crore poor people received financial assistance of Rs 29,352 crore through DBT
 - Support to PMJDY women account holders: Rs 9930 crore (97% of targeted 20.40 crore beneficiaries)
 - Support to Aged widows, Divyang, Senior citizen : Rs 1405 crore (100% of targeted 2.82 crore beneficiaries)
 - Front-loaded payments to farmers under PM-KISAN: Rs. 14946 crore (93.4% of targeted 8 crore beneficiaries)
 - Support to Building & Other Construction workers: Rs. 3071 crore (62% of registered workers in the welfare fund)
- 5.29 Crore beneficiaries distributed free ration of food grains under Pradhan Mantri Garib Kalyan Ann Yojana
- 97.8 Lakh free Ujjwala cylinders delivered
- 2.1 Lakh members of EPFO taken benefit of online withdrawal of non-refundable advance from EPFO account amounting to Rs 510 crore

(Source: PIB)

<https://pib.gov.in/newsite/PrintRelease.aspx?relid=202210>

Gross bank credit to agriculture, food processing and micro-small enterprises

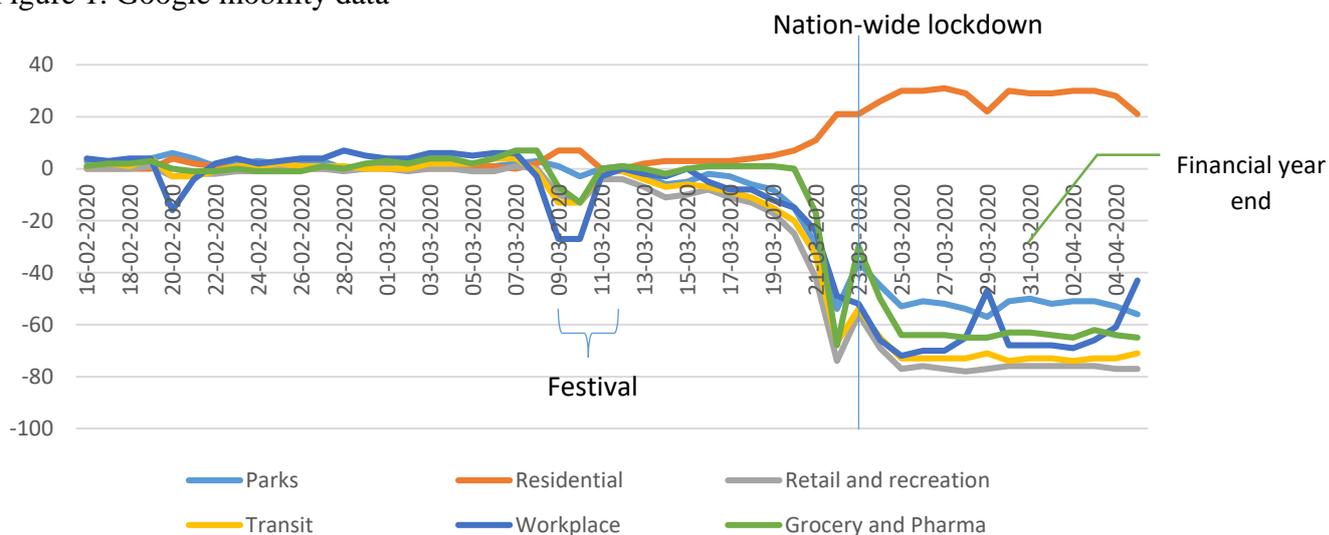


COVID 19 Lockdown- mobility Response in India

With the spread of COVID-19 pandemic, the Government of India has resorted to measures such as lockdown and social distancing to slow down the rate of transmission. We looked into the mobility data published by Google Mobility data (see <https://www.google.com/covid19/mobility/>). Though Google reports provide a snapshot view of the data, we tried to provide further insights into the changes in mobility after the lockdown. These reports are aggregated and anonymized data on the visits and length of stay in different places on Google Maps through the GPS data collected by Google through its devices. The values are percent change from the baseline data; median value corresponding to the day and week for the period from January 3rd to February 6th 2020.

Trends in mobility by location (parks, residential, retail and recreation, transit, workplace, grocery and pharma) for the period 16th February to 5th April 2020 are shown in Figure 1.

Figure 1. Google mobility data



Note: The data might have an error range of $\pm 2\%$

Source: Based on Google mobility data, extracted by Shubham Kanodia

(<https://github.com/pastelsky/covid-19-mobility-tracker>)

The negative values show lower mobility or footfall in those locations. Higher negative values (eg: for the workplace) in dates such as 9th to 10th March coincide with festival holidays (Holi, Holi Dahana). Several states have declared lockdowns at different periods. On 22nd March 2020, a voluntary lockdown (Janata curfew) was declared by Government and as a result, the mobility across different locations declined. The mobility diverged to an extent of -54% in the park, +21% in residential, -74% in retail and recreation, -67% in transit, -49% in the workplace and -68% in grocery and pharma from its baseline period. Followed by this, on 23rd March 2020, a nation-wide lockdown was imposed. This has led to a slight jump in mobility, especially in places such as retail and recreation (-56%), transit (-54%), grocery and pharma (-30%). Though the lockdown was declared late evening by the Prime Minister, the jump in

mobility in these places could be attributed to an anticipatory frenzy purchasing of essential commodities (food, medicines) and travel to home towns. From the next day, when the lockdown was in effect, the mobility values were similar to that in the voluntary lockdown period. In the following lockdown period, the values remained more or less similar with few exceptions. Compared to the baseline period, the data shows that as on 5th April the mobility in parks is -56%, residential is +21%, retail and recreation is -77%, transit is 71%, grocery and pharma is -65%, and the workplace is -43%. There was a slight increase in mobility in the workplace on 29th March, 2020. This coincides with the last working day of the financial year (April to March in India). The data also shows increasing mobility in workplaces, indicating that people are returning back for work. The mobility value declined from -66% to -43%.

The key insights from the data are

- Voluntary (Janata curfew) had a similar impact as a nation-wide lockdown. Would it have been the same in the long-run is unknown (counterfactual).
- The data shows on average the extent of lockdown affected the mobility in locations to an extent of -52% in parks, -76% in retail and recreation, -67% in transit, -64% in the workplace and -68% in grocery and pharma.
- The data shows, despite the lockdown, in the later period, an increase in mobility is observed in the case of the workplace.

These insights are intended to help policymakers and officials to understand the response of COVID-19 pandemic lockdown in India.