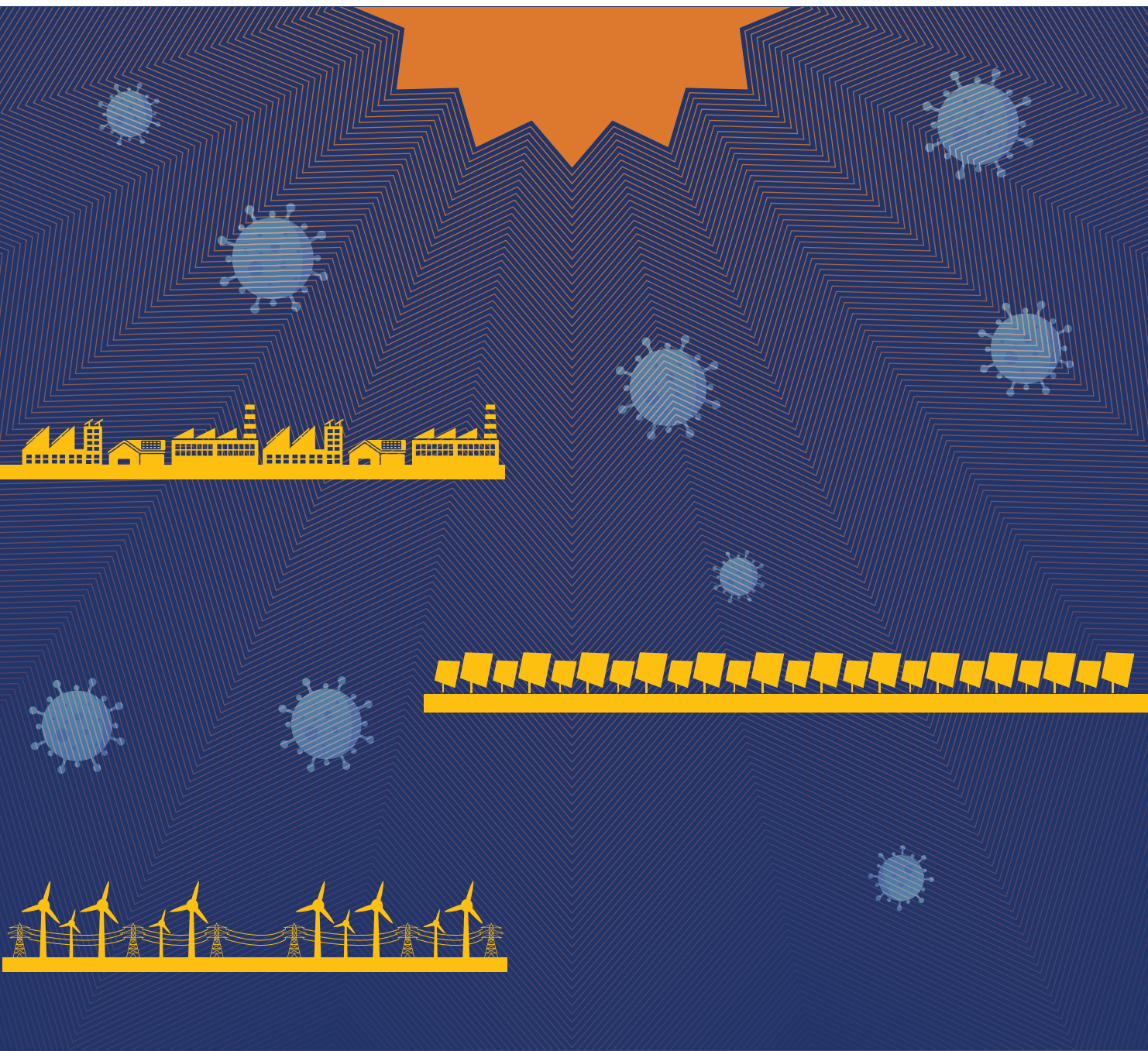
BRIDGE
TO
INDIA

COVID-19: IMPACT ON INDIAN RENEWABLES May 2020



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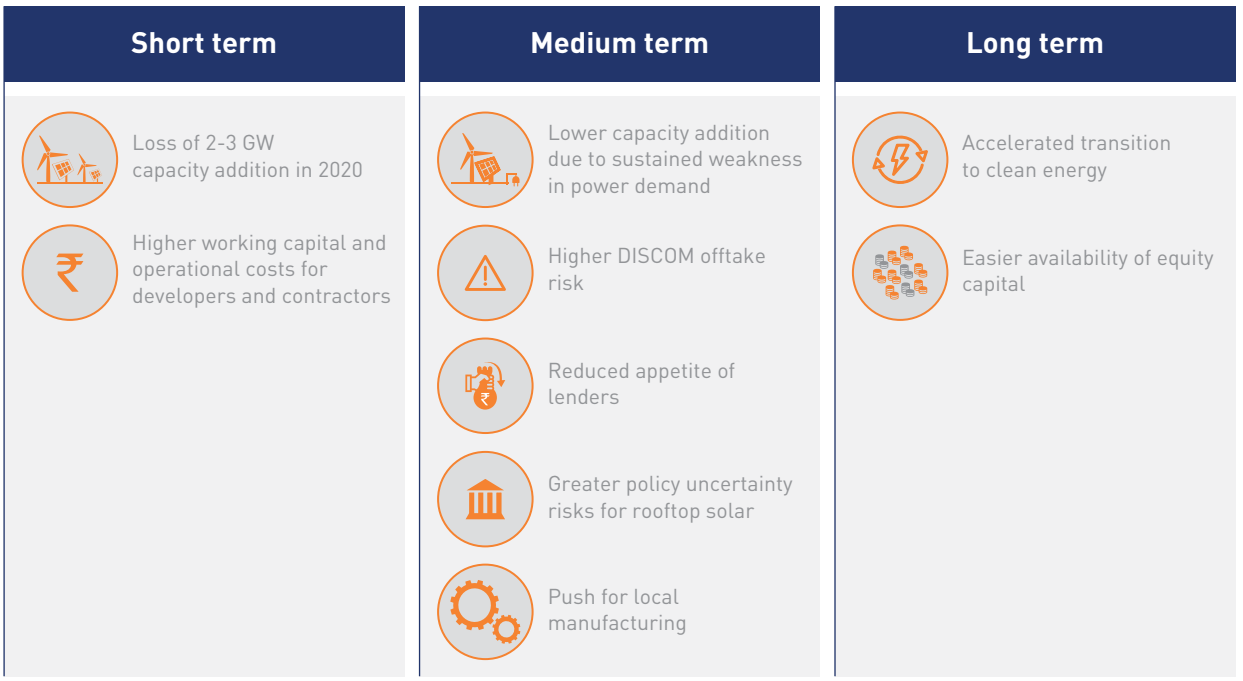
Executive summary

With number of infections in India still rising rapidly, considerable uncertainty remains over economic outlook. The energy sector has been hit by multiple demand and supply shocks. Short-term impact on the renewable power sector has been relatively mild following a series of ad hoc relief measures announced by the government. But outlook over the next few years appears gloomier due to weakening power demand growth, deteriorating financial condition of DISCOMs and further constraints in debt financing.

We have accordingly revised our base case solar and wind power capacity addition estimate over 2020-2024 to 35 and 12 GW, down from our previous estimate of 43 GW and 15 GW respectively.

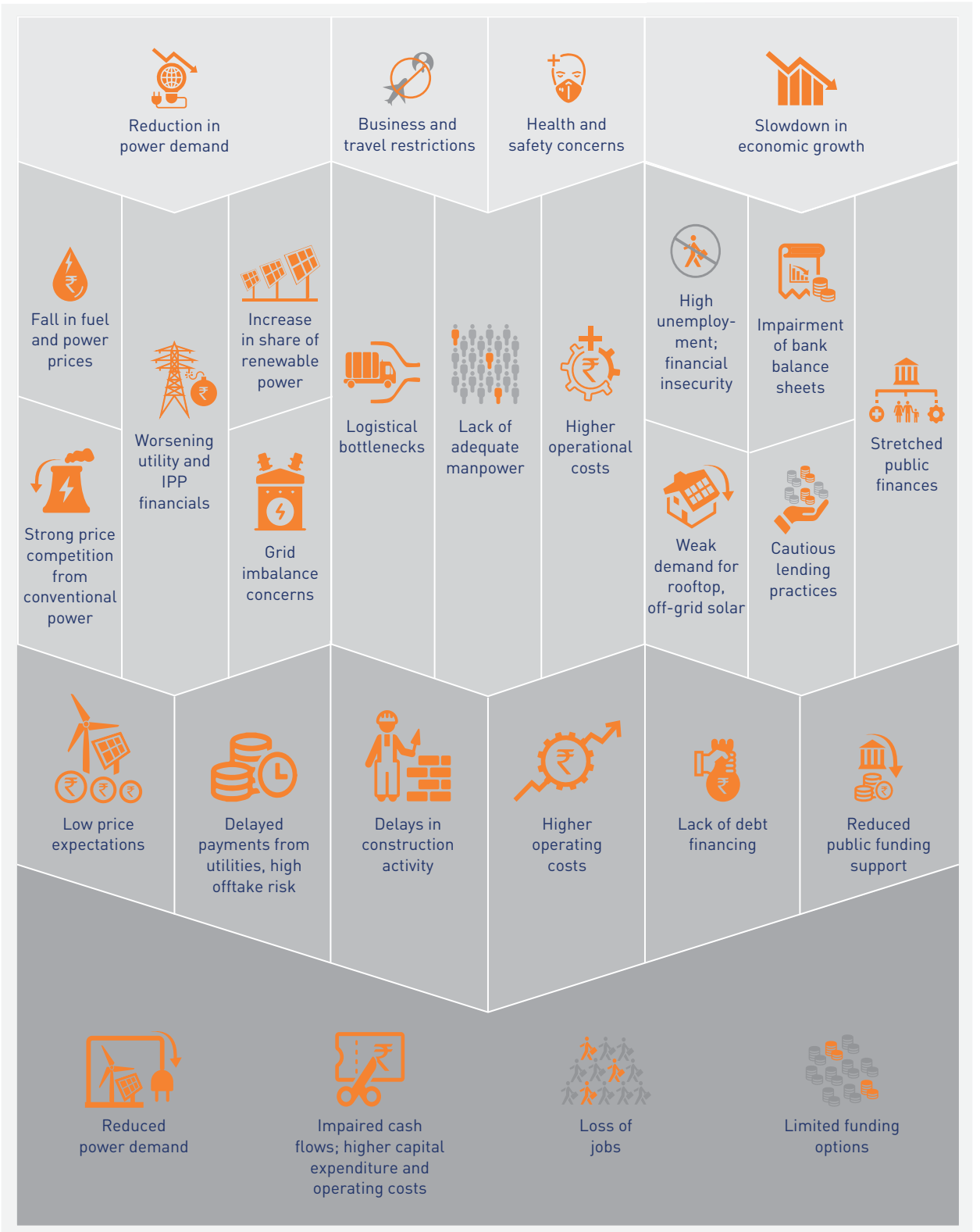
Figure: Overall impact of COVID-19 on renewable sector



Unfortunately for the sector, already grappling with a series of vexatious issues over the last few years, the pandemic comes at an inopportune time. The sector has seen a significant loss in growth momentum over last two years. There is need for a robust roadmap for future growth giving due regard to long-term structural benefits of the sector – improved air quality, energy access and job creation. The government should focus specifically on reforming power distribution sector, easing land and transmission constraints, and accelerating adoption of storage and distributed renewable solutions. Solar industry's overdependence on imports has also cast spotlight on domestic manufacturing.

On a positive note, there is huge optimism about future prospects of renewable power. The crisis has refocused attention of governments and policy makers worldwide to fight climate change and localise energy supply. Both these priorities play to renewable power's advantage.

Figure: Negative fallout of COVID-19 for renewable sector



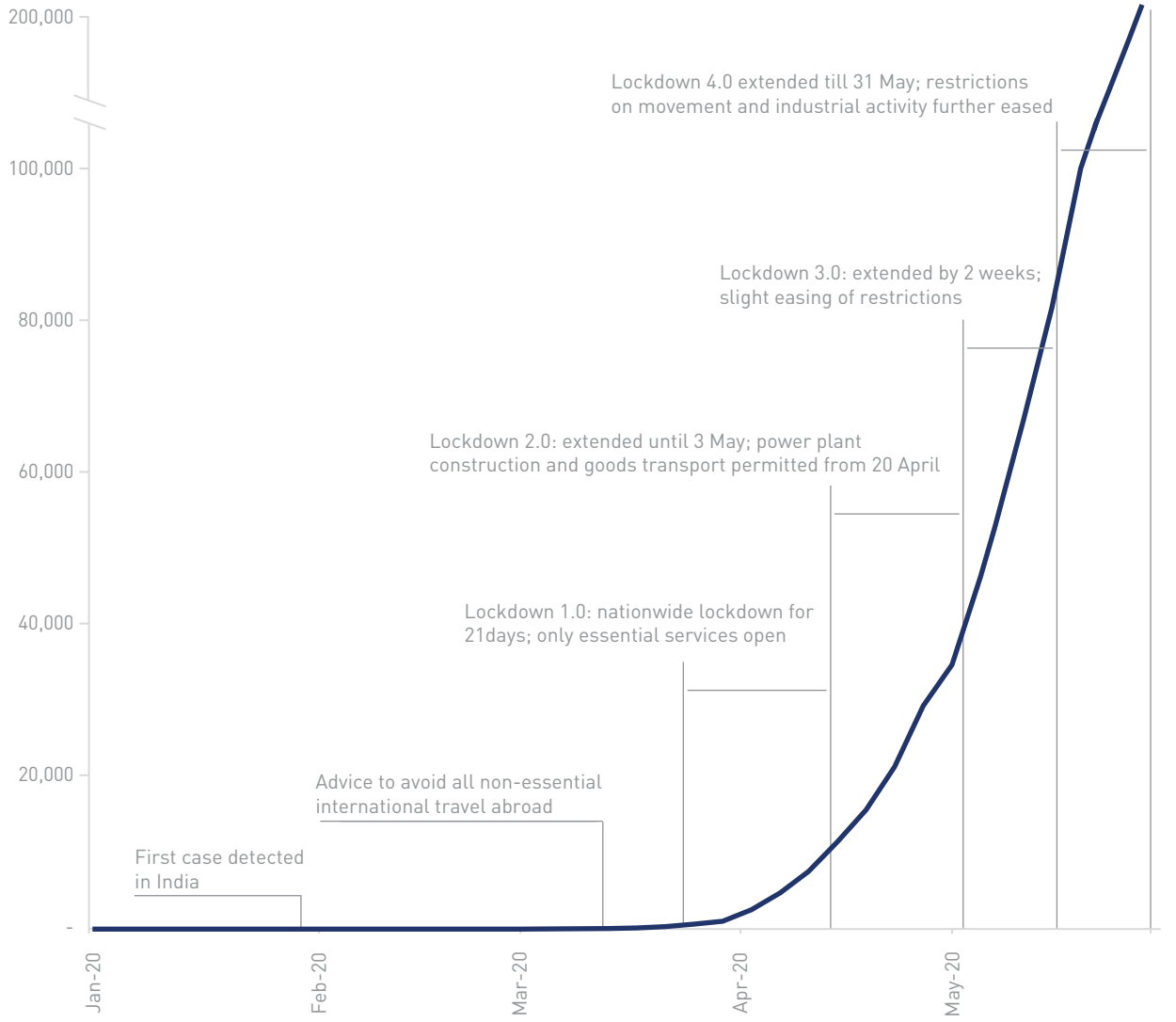
Source: BRIDGE TO INDIA research

1. Introduction

COVID-19 has caused unprecedented turmoil across the world. Wide-scale suspension of economic activity, supply chain disruption and employee health concerns have led to a collapse in energy demand and created significant risks for the entire value chain.

In India, the rate of infections has been relatively low so far. But sentiment remains extremely cautious as infections were still growing as of mid-May. The government imposed one of the most stringent lockdowns anywhere in the world beginning 25 March 2020 banning all 'non-essential' commercial and social activity including international and domestic travel. Since then, limited exemptions have been provided for construction activities and freight services. Goldman Sachs, a US-based investment bank, has projected India's GDP to fall by 5% in this fiscal year.

Figure 1: COVID-19 infection growth in India



Source: Johns Hopkins University, Coronavirus Resource Tracker

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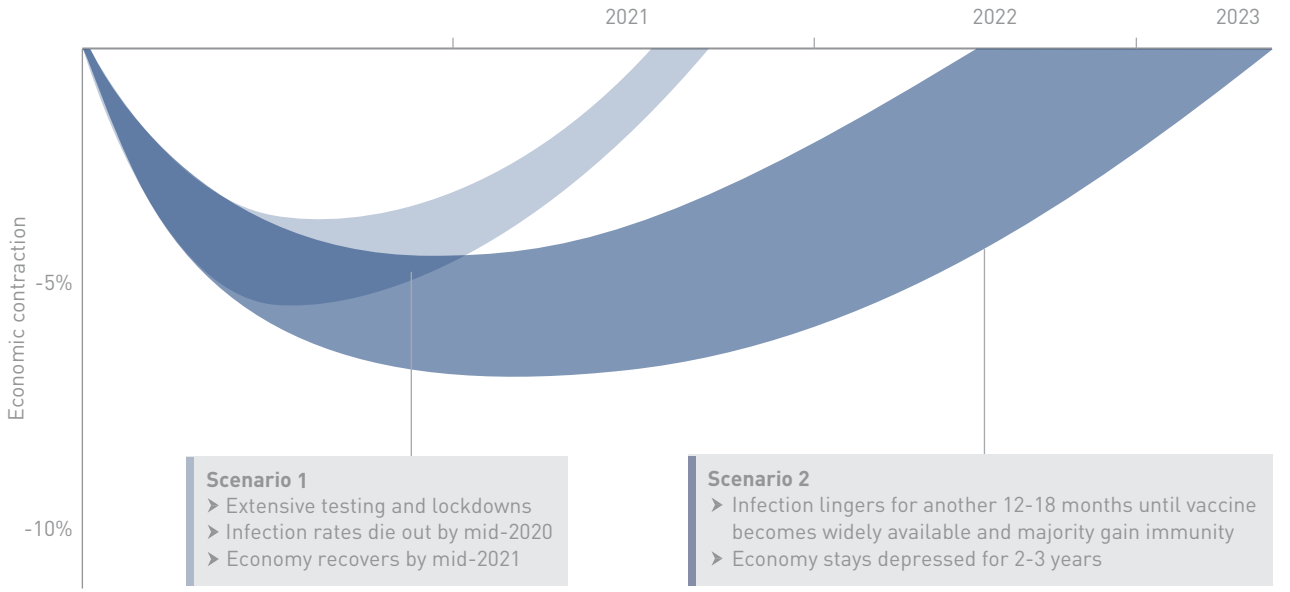
There is enormous uncertainty around when and if the situation would return to normal. The crisis could morph in innumerable ways and a plausible range of scenarios is shown in the figure below. But consensus seems to be emerging that economic recovery would take at least 2-3 years as a permanent vaccine is unlikely to be available for another 18-24 months. The macro-economic impact of such a scenario - destruction in industrial demand, job losses, strain in public finances and banking system - and repercussions for the power sector are extremely harmful.

The dilemma for government, regulators and private sector players is how to manage this period of uncertainty and plan for future.

Figure 2: COVID-19 infection and economic recovery scenarios



Source: BRIDGE TO INDIA research

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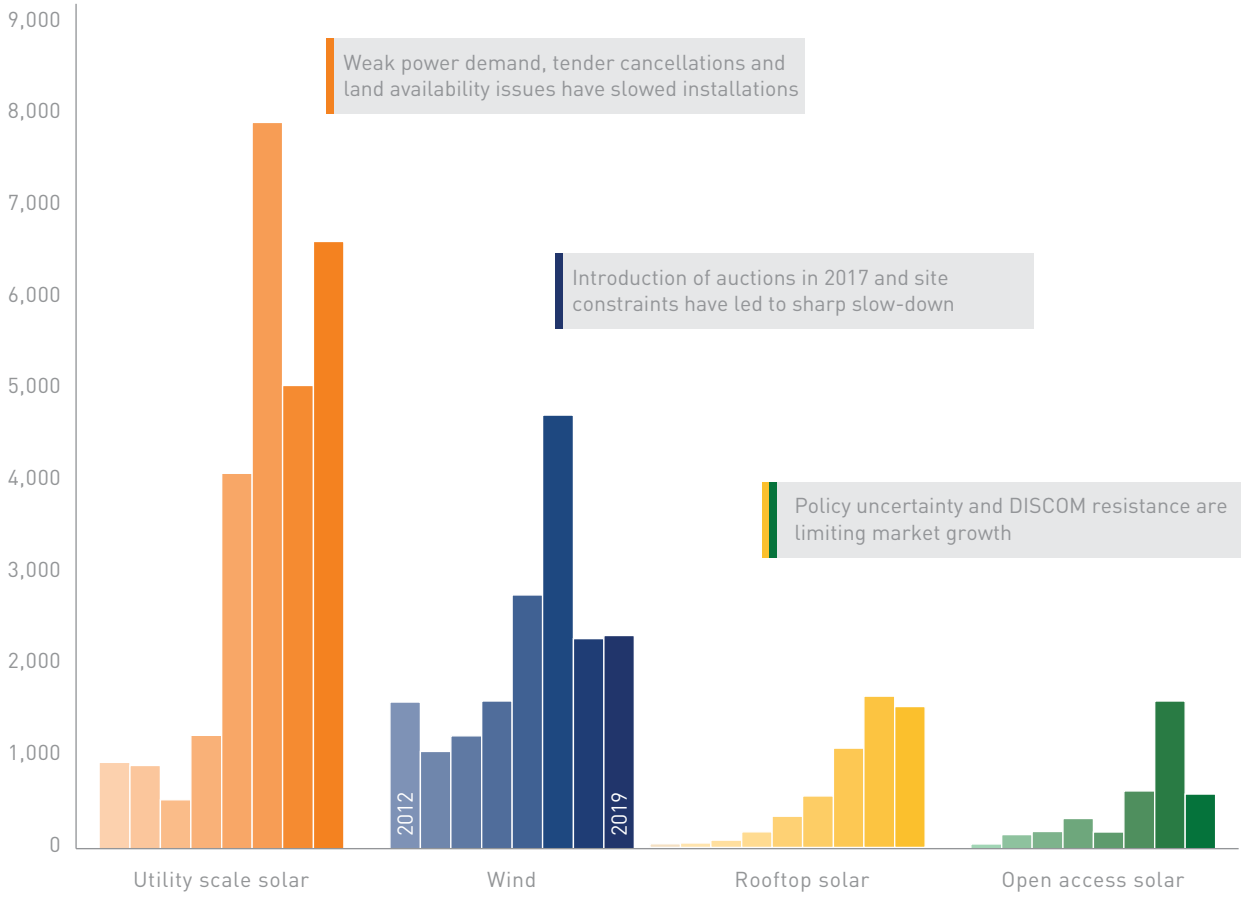
2. Impact on renewable sector

Unfortunately, the Indian renewable sector has been grappling with a series of vexatious issues on both demand (weak power demand growth, poor financial condition of DISCOMs) and supply (land, transmission capacity, debt financing) sides over the last two years. Combined with increasing policy uncertainty (tender cancellations, withdrawal of net-metering and open access connectivity, PPA renegotiation, grid curtailment, lack of clarity over GST and safeguard duty related change in law claims), the sector has seen a significant loss in growth momentum.

Figure 3: Capacity addition during 2012-2019, MW



Source: BRIDGE TO INDIA research
Note: All capacity figures in this report are stated in AC MW, unless noted explicitly otherwise.

In fact, India has slipped from 3rd to 7th place in EY's latest global 'Renewable Energy Country Attractiveness Index' rankings[1]. COVID-19, therefore, has struck the sector at a very inopportune time. It has created further supply and demand shocks across the power sector and added to pressure on all stakeholders.

[1]Renewable Energy Country Attractiveness Index (RECAI), EY, 2019 https://www.ey.com/en_uk/recai

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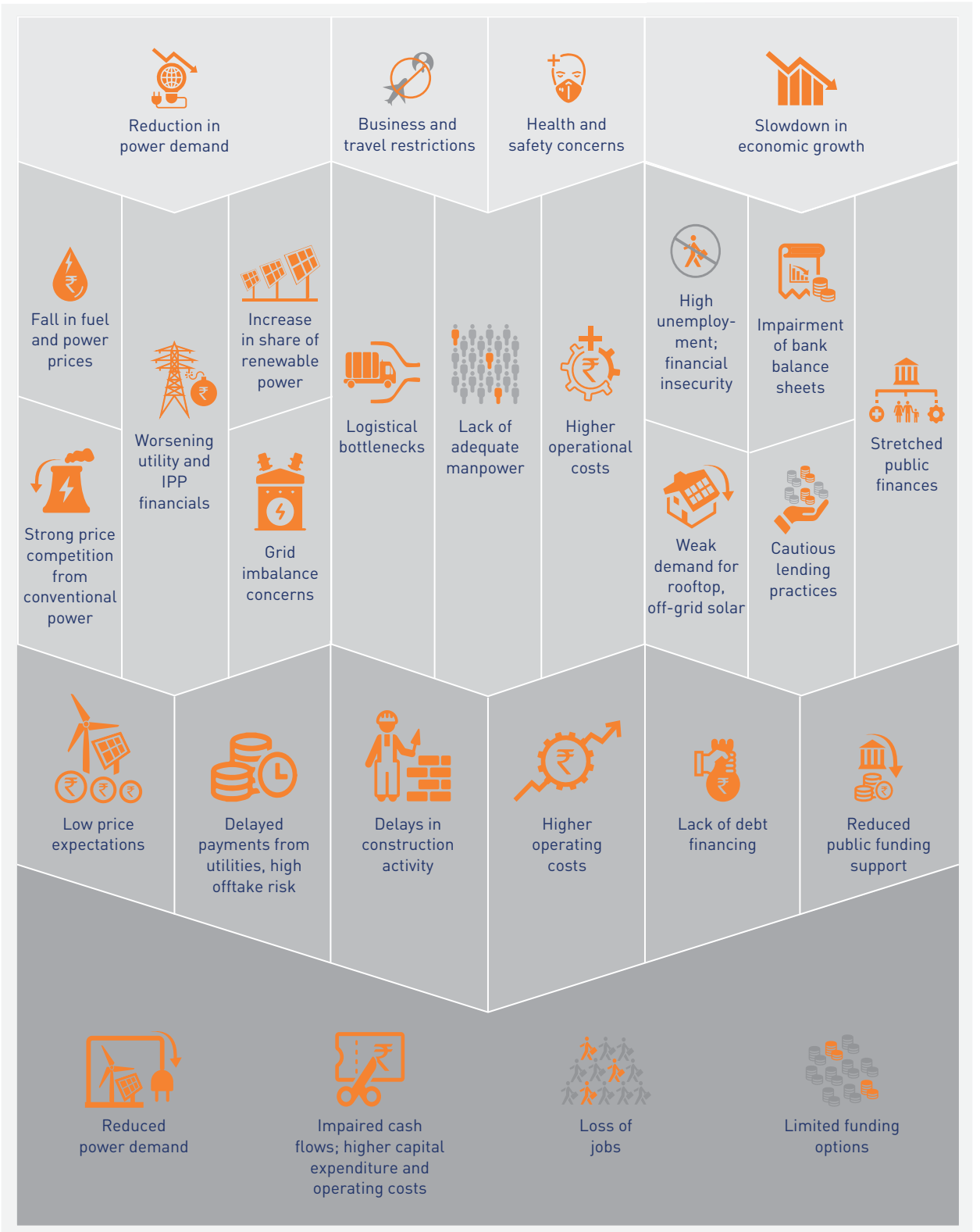
Figure 4: Negative fallout of COVID-19 for renewable sector



Source: BRIDGE TO INDIA research

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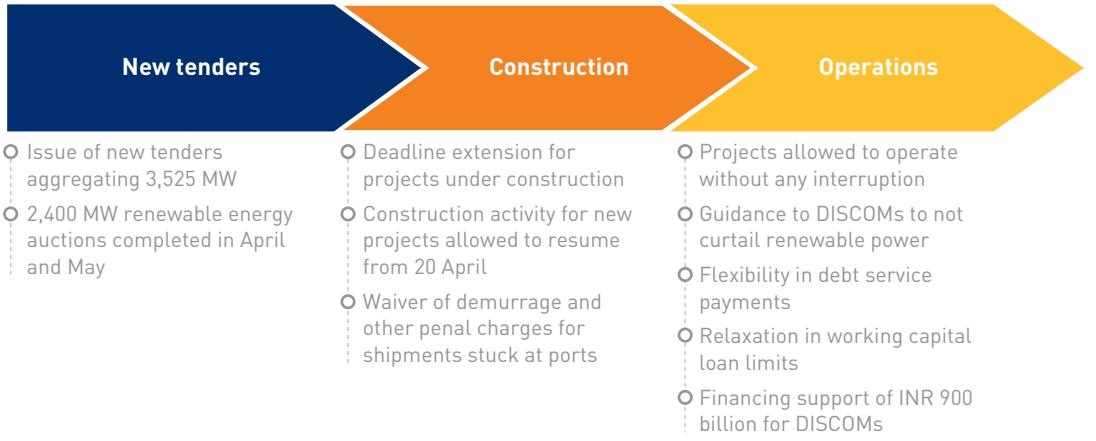
The Indian government has been proactively dealing with the pandemic. It has announced a series of measures to mitigate impact on the renewable sector.

Figure 5: Policy measures to mitigate COVID-19 impact

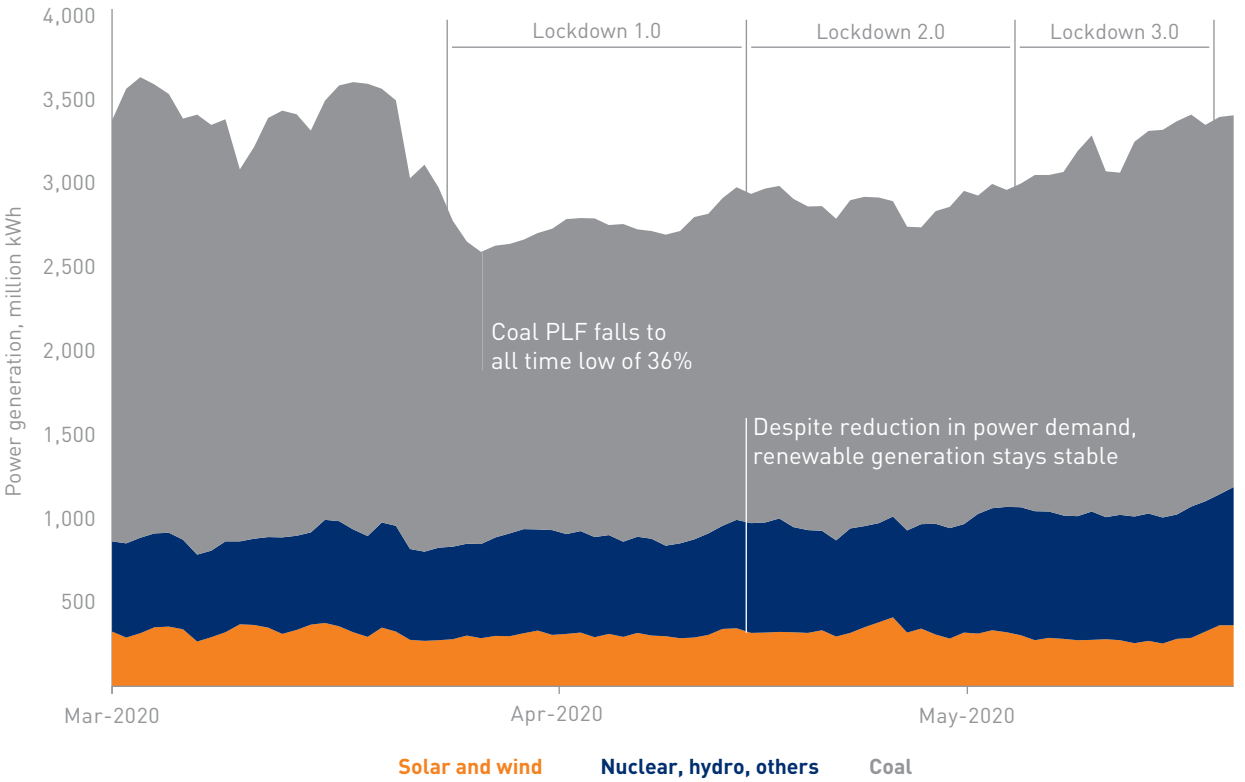


Source: BRIDGE TO INDIA research

2.1. Power demand reduction

With most business activity coming to a virtual stand-still, there has been a precipitous drop of up to 30% in power demand which, in turn, has led to 25% fall in exchange prices.

Figure 6: Changes in India's power generation mix during lockdown



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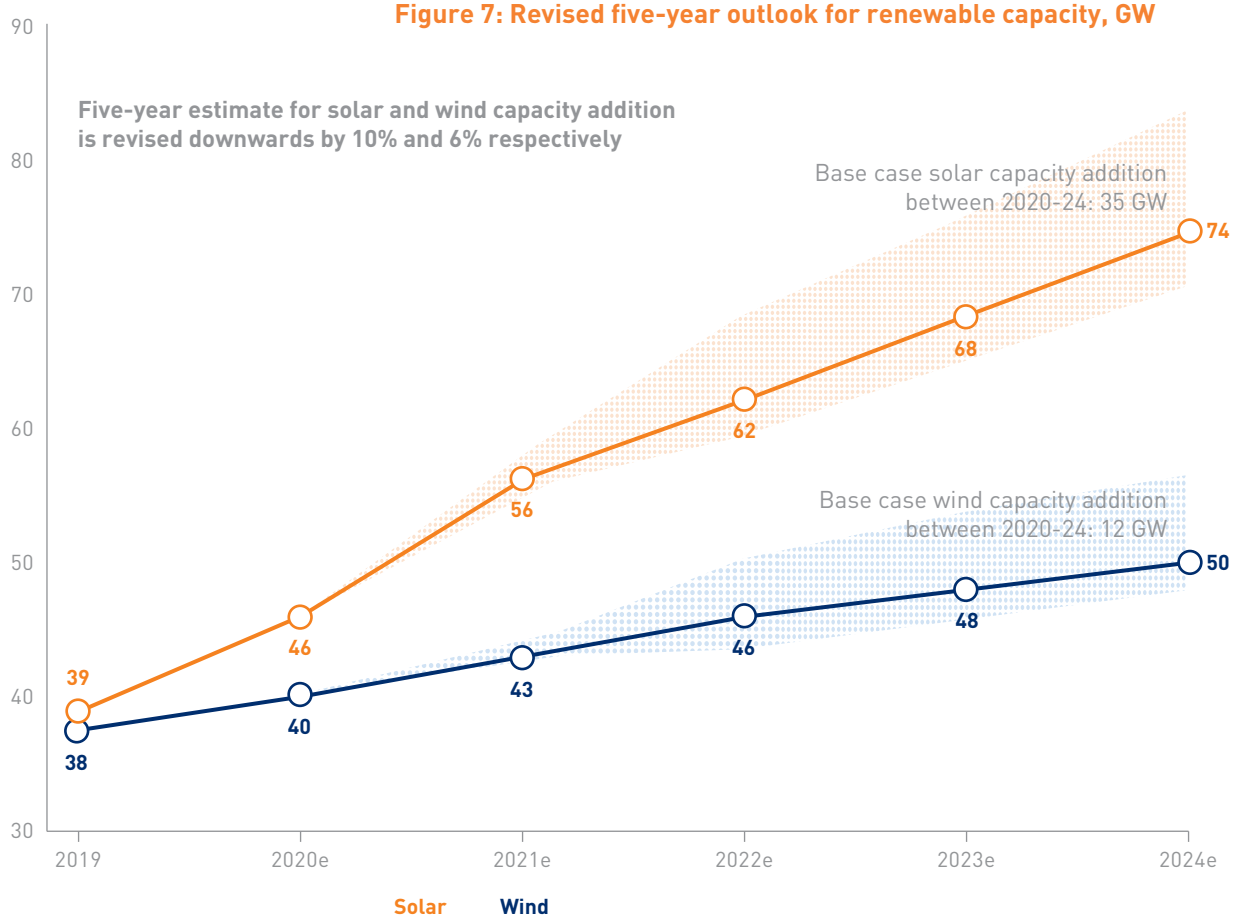
Demand contraction has exacerbated the supply glut position. Average thermal power plant PLF fell to a record low of 36% in April 2020. At the same time, there has been a spike in power generation from solar and wind plants due to favourable weather conditions. Share of non-fossil based power has touched all-time highs in the range of 27-29%.

Since growth of renewable power in India is critically dependent on growth in demand, the concern is whether the DISCOMs would pause efforts to procure new renewable power. If demand weakness persists, the DISCOMs may be reluctant to sign new PPAs. Recently completed auctions where execution of PPAs and/ or regulatory tariff approvals are still pending (4,000 MW manufacturing-linked tender, 1,200 MW peak power tender and 400 MW round-the-clock power tender, amongst others) are all at risk in our view. Meanwhile, depressed market prices and demand uncertainty may also weaken case for rooftop solar and open access renewables (see Section 2.3. below).

We have revised our base case renewable power capacity addition estimate for the next five years (2020-2024) assuming power demand growth of -6% in 2020, +6% in 2021 and 3-5% per annum in the three subsequent years. Our revised estimate for total solar and wind power capacity addition during the next five years is 35 and 12 GW, down from our earlier estimate of 43 GW and 15 GW respectively.

Figure 7: Revised five-year outlook for renewable capacity, GW



Source: BRIDGE TO INDIA research

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2.2. Deteriorating financial condition of DISCOMs

DISCOM financial condition has been a mounting concern for last few years. The government has just announced a liquidity support package of INR 900 billion (USD 12 billion) but that is expected to be inadequate in view of the damage caused by COVID-19. Losses in FY 2021 are expected to rise sharply due to fall in demand, higher Aggregate Technical and Commercial (AT&C) losses, fixed charge waivers and delayed payment collections.

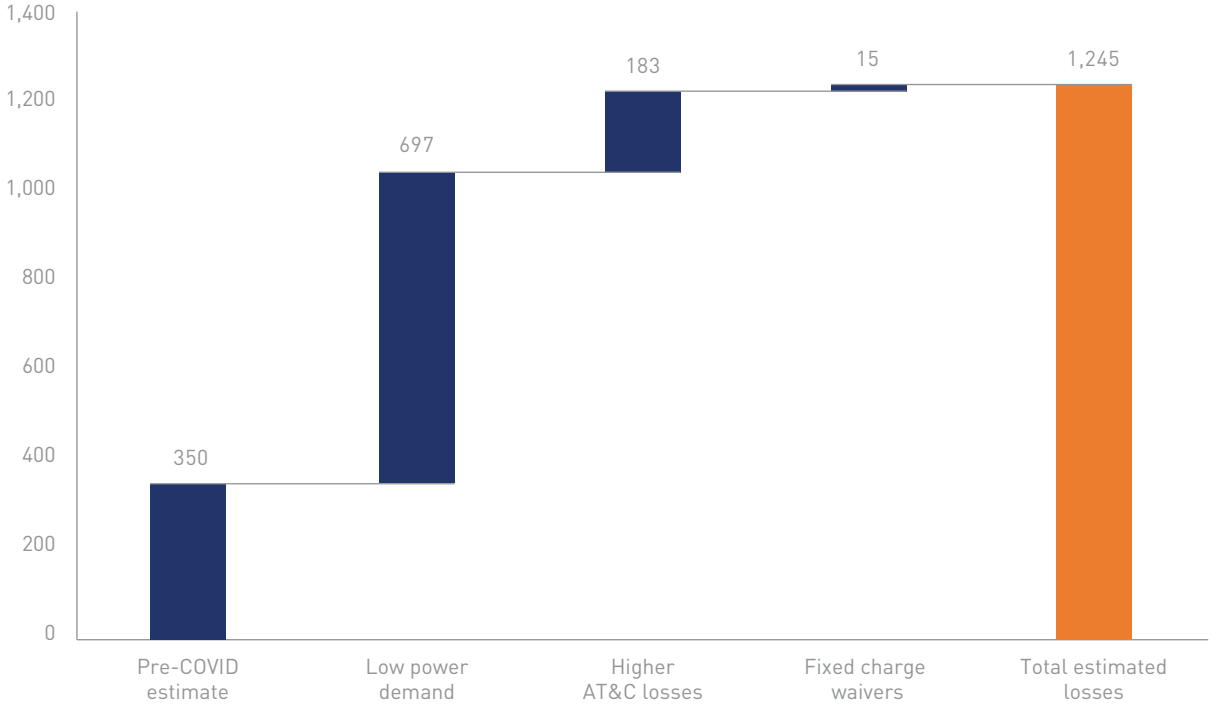
Demand contraction and change of consumer mix

Besides contraction in demand, the consumer mix has changed unfavourably. We estimate that demand from commercial and industrial consumers (C&I, average tariff INR 7.50-9.60/ kWh) would fall this year by about 18-20%, but increase from residential consumers (INR 4.80/ kWh) by about 5-7%.

Higher AT&C losses

The lockdown has vastly affected billing and payment collection performance of DISCOMs. Example: Andhra Pradesh and Rajasthan DISCOMs saw 80% decline in collections in April. Increase in power sales to agricultural and domestic consumers (lower technical, billing and collection efficiency) is set to increase AT&C losses. CRISIL has estimated average AT&C losses to rise by 2.5% in FY 2021[2].

Figure 8: Estimate of DISCOM losses in FY 2021, INR billion



Source: BRIDGE TO INDIA research

[2]CRISIL Ratings Webinar on Power Sector: A gigawatt problem

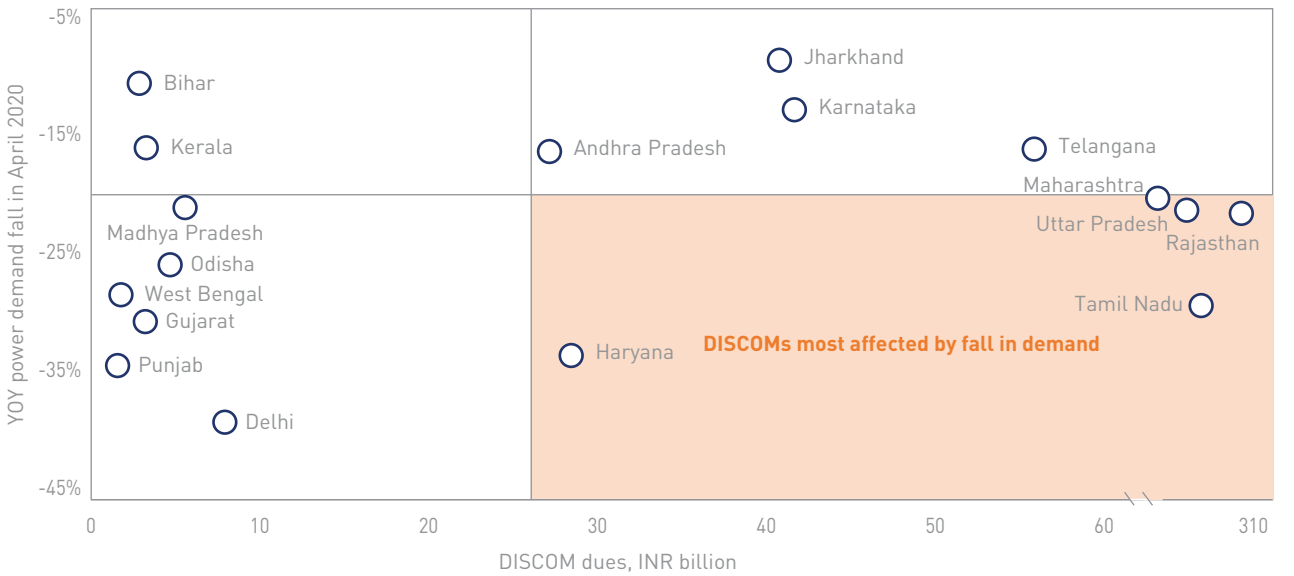
Billing and payment relaxations

Many states have offered sops to select consumers by way of waiver (Andhra Pradesh, Karnataka, Gujarat, Uttar Pradesh, Maharashtra) or reduction/ deferred payment of fixed charges (Rajasthan, Punjab, Tamil Nadu, Haryana and Telangana). Some other states including Rajasthan, Punjab and Haryana have allowed 1-2 month deferment in payment of electricity bills without penalty.

We estimate net total impact of the pandemic on DISCOM finances at about INR 895 billion (USD 11.8 billion) in FY 2021. Unless tariffs are raised quickly and commensurately, losses on this scale would exacerbate delay payment and curtailment risk faced by renewable projects. DISCOMs in Andhra Pradesh, Uttar Pradesh and Punjab are reported to have issued Force Majeure notices to curtail power and/ or wriggle out of power purchase commitments. MNRE pressure on DISCOMs to honour 'must run' status of renewable power has kept curtailment in check in the last two months, the risk is bound to get worse in the next few years.

We have categorised states on the basis of aggregate DISCOM payables and fall in power demand in April 2020. This analysis shows that DISCOMs in Haryana, Rajasthan, Tamil Nadu, Uttar Pradesh and Maharashtra are amongst the worst affected.

Figure 9: Relative position of DISCOMs



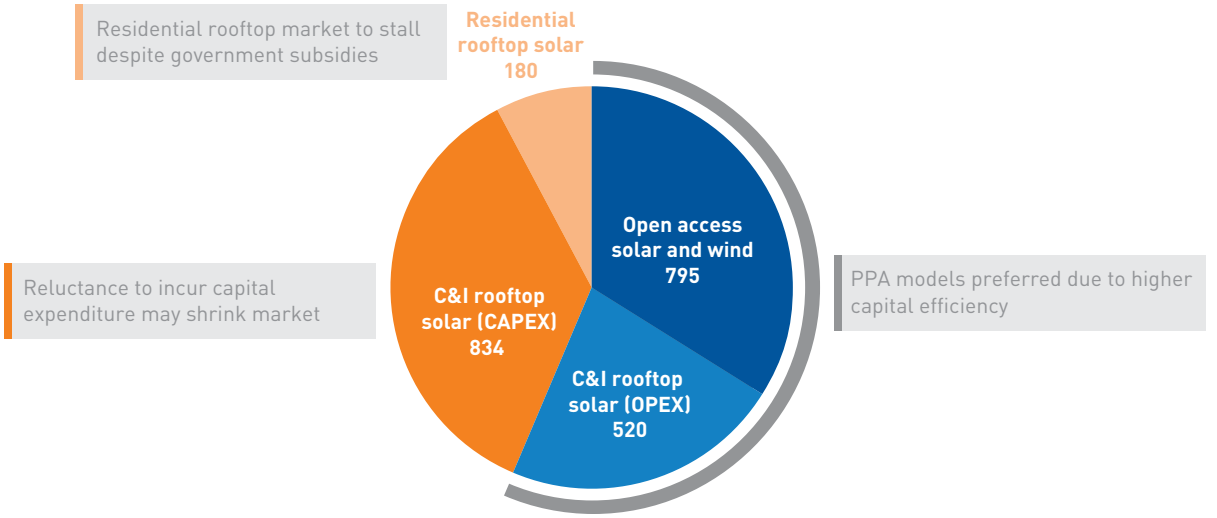
Source: National Load Dispatch Centre, PRAAPTI
Note: The DISCOM payables data, usually reported as per Ministry of Power's PRAAPTI portal (total outstanding of INR 915 billion as on 25 May 2020), is incomplete as it only includes data submitted by private IPPs on voluntary basis. Actual outstanding amount is higher by up to 2-3x (INR 1,854 billion as of 31 March 2018[2]).

[2]Power Finance Corporation, Report on Performance of State Power Utilities, 2017-18

2.3 Sharp downturn in end consumer driven markets – rooftop solar and open access renewables

C&I consumers account for a dominant share of distributed renewables in India. We see no diminution in their interest due to the very attractive cost saving potential of rooftop solar. Indeed, there is some evidence that pressure to shore profitability and progressive fall in cost is accelerating the push towards solar power. However, preference for OPEX or PPA model is increasing due to stressed balance sheets and greater reluctance to incur capital expenditure.

Figure 10: Rooftop solar and open access capacity addition in 2019, MW



Source: BRIDGE TO INDIA research
Note: C&I includes public sector consumers.

The main challenge for distributed renewable market comes from consumers reliant on the CAPEX model – corporates with poor creditworthiness, SME businesses and residential consumers. Faced with economic uncertainty and risk of loss to incomes, such consumers are likely to postpone or abandon plans to install solar systems. The biggest blow would be to the residential market, which was expected to take off this year due to greater government support and availability of 20-40% capital subsidies. MNRE has sanctioned capital subsidies for 470 MW of residential rooftop solar capacity due to be installed in a year's time. But we now expect little growth over last year.

We expect rooftop and open access installations in 2020 to fall by about 15-20% to 1,200 MW and 600 MW respectively.

DISCOM backlash and growing policy uncertainty

DISCOM backlash to distributed renewables is expected to grow in a bid to retain profitable C&I consumers. Policy uncertainty – denial or delay in approvals, abrupt changes, withdraw of net metering connectivity, levy of banking and other grid usage charges – facing these markets is expected to increase.

Financial distress for local installers

Small, local installers account for nearly 50% share of the rooftop solar market. Facing financial distress as a result of contraction in demand, higher working capital and payment delays, many of these players may struggle to survive.

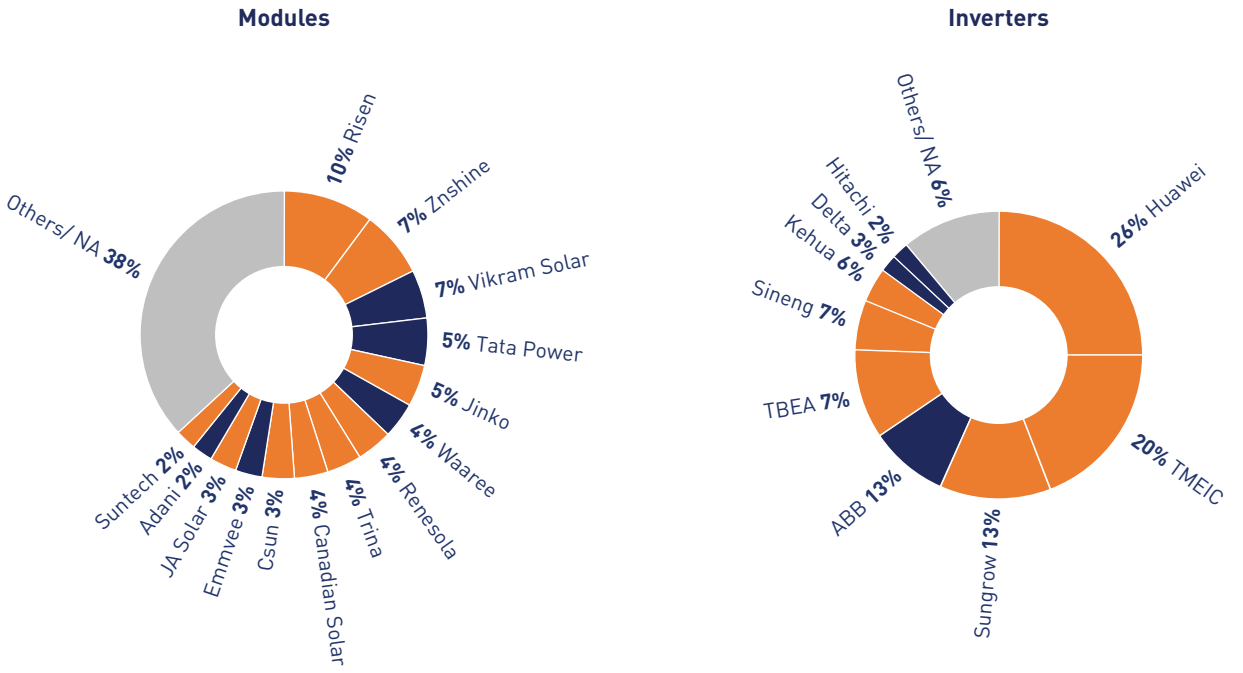
2.4 Pressure on domestic manufacturers

Solar

Total international module manufacturing capacity was estimated at 160 GW at the end of 2019 with another 20 GW slated to come online by end 2020. Most of the Chinese plants, accounting for nearly 80% of global supply, are already reported to be running at full capacity. The huge oversupply position – global demand estimates for 2020 have been revised downward from 130 GW pre-COVID to 100-110 GW – is already causing prices to fall steadily. Latest prices for monocrystalline and multicrystalline modules have been recorded at US cents 19.5 and 18.0, down 16% and 18% respectively over prices a year ago.

The 'super league' of manufacturers, mostly from China, is expected to withstand pressure from lower prices due to their superior technology, better economies of scale and international diversification. It is worth noting that share of top ten module suppliers has increased steadily from 50% in 2016 to about 70% in 2019 (average shipment in 2019: 80 GW). In contrast, the Indian manufacturers are much smaller in size with capacity usually in the range of 50-500 MW. Notwithstanding the various government initiatives to support domestic manufacturing, the Indian manufacturers are likely to struggle to compete with Chinese majors and raise funds for expansion.

Figure 11: Module and inverter suppliers for utility scale solar projects commissioned, 2019



Source: BRIDGE TO INDIA research

India remains dependent on Chinese suppliers for nearly 80% of its module and inverter requirements. Supply disruption over last few months has cast spotlight on securing control over equipment supplies. There is renewed government focus on domestic manufacturing with potential support for capital subsidies and customs duty. The Indian government has already adopted 'Atma-nirbhar' or self-dependence as a key plank in its COVID-19 policy relief package wherein solar manufacturing has been identified as a policy priority. The risk facing the sector is that such moves could: i) make solar power costly for DISCOMs and curb demand even further; and ii) create uncertainty for projects under construction (timelines, rates and compensation process).

Wind

There are currently eight domestic wind turbine suppliers with total operational capacity of 7 GW (down from 15 numbers, 10 GW in 2015). Average annual installation in the last two years was only 2.3 GW. Reduction in volumes and margin compression post transition to auction regime has caused severe financial stress to the suppliers. Continued depression in demand would further add to the industry's financial troubles.

2.5 Disruption in construction activity and higher costs

Construction activity for new projects has been severely impacted by COVID-19. Goods transport and site construction activity were allowed to resume from 20 April 2020. But equipment shortages (particularly mounting structures), logistical bottlenecks and labour movement restrictions are expected to last for at least 3-4 more months. Delays are also expected in obtaining permits and financial closures. The biggest difficulty faced by project developers and contractors is getting workforce remobilised at site. Contract workers have migrated back to their native places in large numbers and may not be available until after end of the monsoon or even the festival season (around October-November). Labour related construction costs are believed to have risen by as much as 75%.

Consequently, we expect construction time-tables to shift back by as much as six months. We expect a loss of about 2 GW and 2.5 GW in new utility-scale solar and wind installations respectively for 2020. Our revised estimate for utility scale renewable capacity addition the year is 7.8 GW. MNRE has permitted blanket extensions in project completion deadlines by 57 days (initial lockdown period plus 30 days). However, we believe that the government would be willing to consider further time extensions based on evidence of difficulties in mobilising workforce or resolving shipment blockages.

Project developers and contractors also face higher costs on several accounts: higher working capital and interest costs due to project delays, more restrictive working practices (logistics and labour costs, greater focus on health & safety) and Rupee depreciation. Rupee fell by 5% against US Dollar in just three months (March-May 2020). Meanwhile, projects under three utility scale tenders amounting to around 900 MW capacity also face risk of tariff reduction if completion is delayed beyond July 2020 because of expiry of safeguard duty on module imports.

Larger developers with strong cash reserves are well equipped to absorb risk of construction delays and additional costs. But smaller developers would be edged out of the market in these circumstances leading to further market consolidation.

2.6 Financing at risk

Mounting losses in thermal power projects have already driven many commercial banks away from the sector. With the pandemic causing widespread losses in bank loan books, liquidity is expected to stay tight notwithstanding monetary easing by The Reserve Bank. We expect lenders to stay extremely cautious and debt financing to remain as one of the biggest challenges for renewable sector.

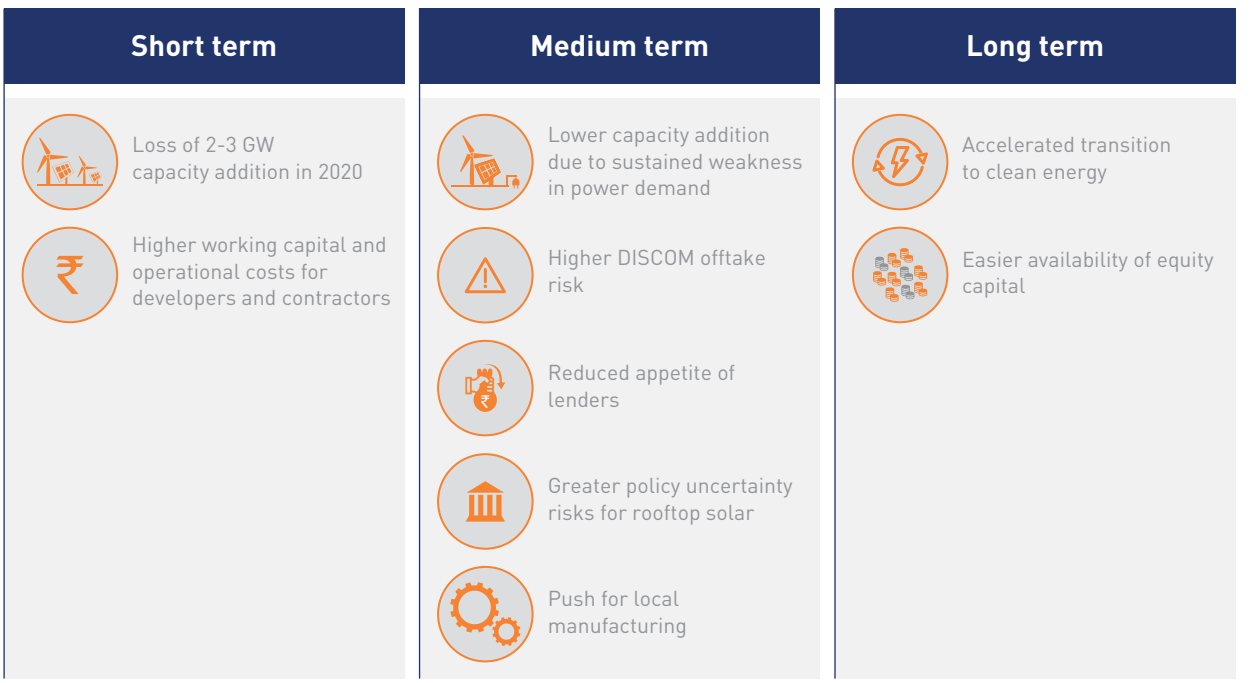
3. Conclusion

The pandemic's short-term impact on the renewable sector has been relatively mild. Assuming that travel restrictions are lifted progressively, utility scale project construction should largely catch up in the next 6-9 months. Meanwhile, renewable projects have managed to sustain power production with minimal interruption. Renewables share in total power production has gone up to record levels and curtailment has been relatively low across states. We expect rooftop and open access installations in 2020 to fall by about 20% to 1,200 MW and 600 MW respectively. These markets would also be at risk in 2021 and 2022 from increasing policy uncertainty.

Mid-longer term, however the sector faces critical challenges arising from weak power demand growth, perilous financial condition of DISCOMs and shortfall in debt financing.

So far, the Indian government has announced a series of ad hoc relief measures for the sector. But there is need for a robust roadmap for future growth in order to rebuild growth momentum.

Figure 12: Overall impact of COVID-19 on renewable sector



Specific priorities needing urgent attention are listed below.

- Strengthen the DISCOMs and regulatory framework;
- Ease supply side constraints (land, transmission capacity) for renewable projects;
- Provide long-term policy visibility and stability to distributed renewable business;
- Provide long-term vision and policy roadmap for domestic manufacturing;
- Accelerate adoption of grid-scale storage and distributed renewables through Viability Gap Funding (VGF) or other incentive mechanisms;
- Build flexibility in the power system by making coal plants more flexible, deepening ancillary services market and introducing demand side management measures.

On a positive note, there is huge optimism about future prospects of renewable power. The crisis has refocused attention of governments and policy makers worldwide to fight climate change and localise energy supply. Both these priorities play to renewable power's advantage. Investors in conventional energy, suffering huge losses due to reduction of output and lower prices, are expected to accelerate shift towards renewable power. Lastly, valuable lessons have been learnt by grid managers in coping with increasing variability in power demand-supply.

 |

Acronyms

AT&C	Aggregate Technical & Commercial
CAPEX	Capital Expenditure
C&I	Commercial and Industrial
COVID-19	Coronavirus Disease 2019
CRISIL	Credit Rating Information Services of India Limited
DISCOMs	Distribution Companies
EPC	Engineering Procurement and Construction
FY	Financial Year
GST	Goods and Services Tax
IPP	Independent Power Producer
KWh	Kilowatt Hour
MNRE	Ministry of New and Renewable Energy
NHPC	National Hydroelectric Power Corporation
OPEX	Operating Expenditure
PLF	Plant Load Factor
PPA	Power Purchase Agreement
SECI	Solar Energy Corporation of India
SME	Small and Medium Enterprise
UDAY	Ujjwal DISCOM Assurance Yojana
USD	United States Dollar

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BRIDGE TO INDIA

BRIDGE TO INDIA is a renewable energy focused consultancy and research services company. Our aspiration is to enable innovative and viable clean energy solutions in India.

Operational since 2009, we have a unique vantage point on the market dynamics, combining 360-degree view from our market intelligence and consulting businesses. We work on wide-ranging consulting and research assignments with all industry stakeholders including technology companies and contractors, project developers and investors, financial institutions, government agencies, think-tanks and developmental institutions.

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