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COVID-19 IMPACT REVIEW:

Impact of COVID-19 on EU businesses in India in sectors of on-going EU-India policy dialogues

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Table of Contents

Executive Summary

The COVID-19 outbreak has been a “black swan” event for most of the world, characterized by fear of life and well-being among people all over the world. Global trade has seen among the biggest adverse effects of the crisis - a result of the fall in economic activity, travel bans and lockdowns. The WTO forecasts a fall in global trade of between 13% and 32% in 2020. At the same time it will also be the cornerstone of the global recovery. As governments formulate policy and fiscal responses to the challenges, it gives an opportunity to re-imagine a post-COVID-19 world -giving impetus to slow projects, reviving partnerships and entering into new collaborations. The Government of India, in its fight against the pandemic, has set out a stimulus package of EUR 250 billion, roughly about 10% of the country’s GDP.

Despite impressive economic figures and the tremendous potential as an export market for EU businesses, the Indian market remains largely untapped as India accounts for only 2.3% of EU trade and only ranks ninth among EU trading partners.[1] The 15th European Union-–India Summit, held on 15th July 2020, endorsed a common roadmap to guide joint action and further strengthen the EU-India Strategic Partnership over the next five years to make measurable and meaningful impact in the lives of citizens through cooperation in safety, sustainable growth, limiting effects of climate, better trade, improved people to people connect and innovation.

This Impact Review Report is designed to help EU businesses to understand the impact of COVID-19 in India across various evolving scenarios and the nature, intensity and duration of economic and developmental rebound and will help identify business opportunities in the sectors of:

- *Renewable Energy*
- *Water Management*
- *Waste Management*
- *Sustainable Urbanisation (including mobility and urban infrastructure)*
- *ICT based solutions*

Figure i: Impact Report Objectives

Getting out of the Curve

The question uppermost in peoples’ minds is: when will GDP recover and at what rate will it grow? Most forecasters predict a V-shaped recovery and a sharp rebound. This would be the case if we are able to contain the infection and there would be no further lockdown. In the event of rising infections and additional lockdowns, the recovery could be W- or L-shaped, leading to further contraction of the GDP and delaying the rebound.

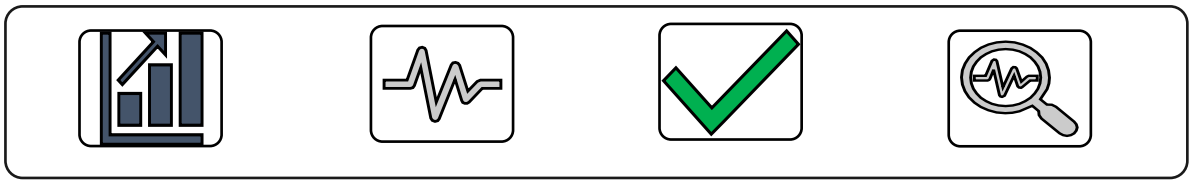
The trajectory of the disease and the infection rates have been one of the most difficult issues to predict mainly due to the fact that there are no past data or models that can capture the assumptions or variables accurately to make any meaningful prediction. While the pandemic may well leave some permanent scars on economies, at this stage the consensus seems to show an overall fairly sharp recovery in the next fiscal year. Indications are that the downturn would bottom out in the current quarter, with four out of five forecasters expecting positive growth in the quarter July-September 2020. Experts have suggested several

[1] https://www.europarl.europa.eu/RegData/etudes/STUD/2020/642841/EPRS_STU(2020)642841_EN.pdf

channels through which supply-side measures can revive growth in the economy; demand-side measures are, however, virtually absent in India's fiscal package and firms' rebound expectations.

The Migration Conundrum: Reverse migration of labour from urban centres to villages in India has created massive labour shortage in the states where they were employed, leading to delays in re-starting industrial activity. Industries that employ the most migrant and casual labour are construction, steel, textiles, apparels, fabricated metal products, operating motor vehicles, and more.

Figure ii: Getting Out of the curve



GDP growth forecast

GDP forecast: Most forecasts point to a GDP contraction of 5% during FY20-21

Recovery type: Recovery dependent on disease mitigation. Recovery V-shaped, if no further lockdown. W or L shaped recovery in case of further lockdowns

Horizon: Recovery to pre-COVID levels expected in Q4, FY20-21but can move to Q4 21-22 if further lockdown or effect of stimulus is weak

Trajectory of disease

Flattening of curve is not visible yet

Disease prediction: Predictions have been lower than actual. Medium and long term trends unreliable

Massachusetts Institute of Technology predicts that by Q4, FY 20-21, India to have daily infection rate of 2,87,000 a day

Positives: Low mortality rates and demography helpful factors in disease control

Path to recovery

Consulting firms/invetsment banks : Global trade shift and supply chain diversification

Ratings agencies: Recovery predicted on picking up of private investment Demographics, competitive unit labour costs to help

Governmental/ multilateral agencies: Consumption, government spending, livelihood support for people, soft infrastructure and use of technology

Impact of stimulus

Immediacy of relief: Most analysts feel the stimulus of EUR 250 billion, which has proposed broad economic reforms, is insufficient in terms of the immediacy of relief

Ranking India's response: Oxford University Index ranks India at 80 % in their stimulus effectiveness index., Rabo Bank feels the package, which covers land, labour, law and liquidity reforms, addresses India's structural weaknesses and could help the economy emerge stronger.

Covid-19: Setting the New Normal

Supply Chains: COVID-19 has brought into focus the downsides of the globally integrated economy and questions the wisdom of 'just-in-time' stocking by industry. The pandemic also redefined trade equations between various countries including USA and China, and its effect on the global supply chains and regional economies can become very significant. Between 2019 and 2023, the change in value of trade of goods, between major corridors (in billion EUR) is forecast as follows:[2]

Table i: Change in Value of Trade of Goods, 2023 vs 2019 (Major Corridors, EUR billion)

EU – India	**0.89**
US – India	**10.62**
China – India	**7.08**
US – China	**-113.24**
EU – China	**-26.54**

Despite impressive economic figures and the tremendous potential as an export market for EU businesses, the Indian market remains largely untapped as India accounts for only 2.3% of EU trade and only ranks ninth among EU trading partners.[3] The 15th European Union-–India Summit, held on 15th July 2020, endorsed a common roadmap to guide joint action and further strengthen the EU-India Strategic Partnership over the next five years.

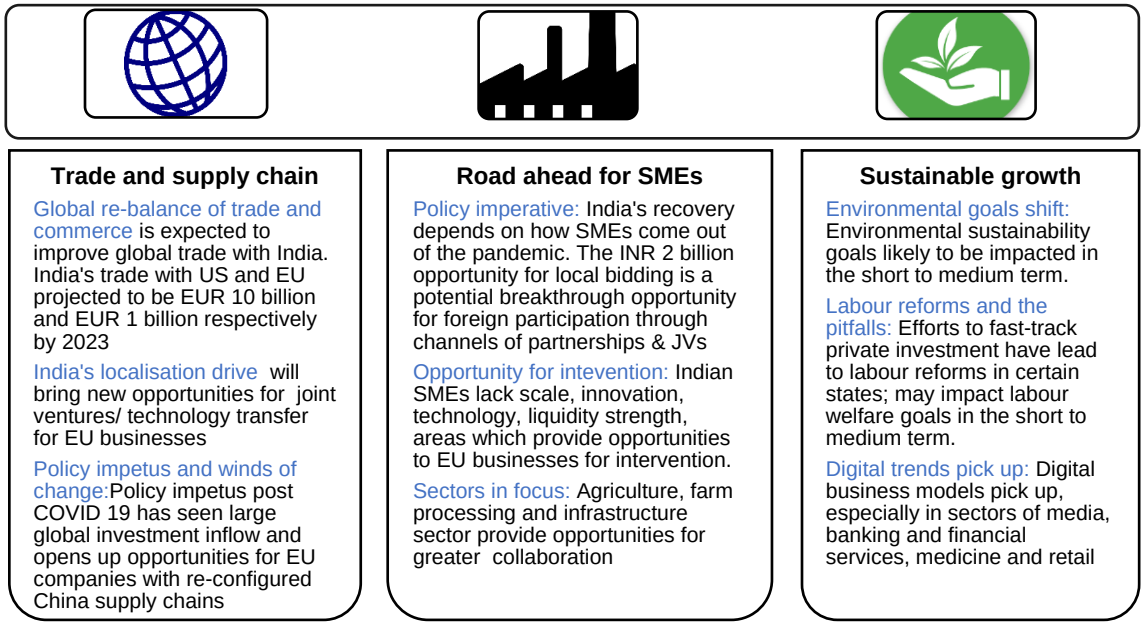
[2] "Future of Global Trade and Supply Chains", COVID-19 BCG Perspectives, Boston Consulting Group (June 9, 2020)
[3] https://www.europarl.europa.eu/RegData/etudes/STUD/2020/642841/EPRS_STU(2020)642841_EN.pdf

Localization and supply chains: Many elements of the Indian government's economic response to COVID-19 are toward building and bolstering local manufacturing and reducing imports. Any such localization will create new dimensions and options to supply chains in India and globally. The India - EU trade volume has remained nearly constant between 2017- 2019 between EUR 73 billion and EUR 77 billion with no significant imbalance of trade between the partners.[4] COVID-19 becomes a watershed moment, where the trade and supply chains could get reconfigured and reimagined.

Small and Medium Enterprises: In India, the share of SMEs in total Gross Domestic Product (GDP) during 2016-17, 2017-18 and 2018-19 was 29.3%, 29.7% and 30.3% respectively,[5] which is dominated by grassroots entrepreneurs who have low capital base, with businesses generally not scalable. COVID-19 and its after effects have hit the SMEs hard, both in India and elsewhere, and the need to scale and innovate with technological collaboration is key to survival. EU-India SME partnerships can provide technology, markets and scale that also create alternative supply chain options and resilience.

Sustainability matters: The COVID-19 crisis has unleashed headwinds that threaten to limit the corporate response to the sustainability imperative. Many companies now find themselves in a difficult cash position, deeming anything not critical for survival as unnecessary. In India, issues of environment laws, labour laws, water and sanitation and a sharp digital divide are challenges that must be tackled to ensure that sustainable business models remain in the forefront.

Figure iii: The New Normal & What May Follow



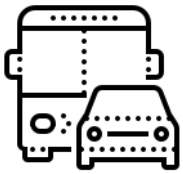
Sectoral Review

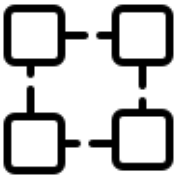
This impact review report analyses the five identified sectors mainly on secondary research and data and presents alternative paths to recovery and development in the short (12 months), medium (up to 24 months) and long (between 24-36 months) term.

Given below is a matrix combining the impact of various business environment elements/pillars, the effect of COVID-19, government response and priorities to the challenges of the pandemic across the range of identified sectors of EU businesses in India to provide a visual at-a-glance assessment of sectoral threats and opportunities.

[4] https://ec.europa.eu/trade/policy/countries-and-regions/countries/india/
[5] Rajya Sabha question number 3298 dated 20 March 2020, Mr. Nitin Gadkari, Minister for Micro, Small and Medium Enterprises, Government of India

Figure iv: Matrix of Threats & Opportunities

Sector	Short Term	Medium Term	Long Term	Rationale
Renewable Energy 	⬇	⟷	⬆	• Low Demand for power/ depressed economy • Liquidity constraints of operators • On-going investments delayed due to slow demand offtake • Delays in construction activities and restriction of inventory movement • Supply chain disruption • Government priority for RE and achieving SDGs
Waste Management 	⬇	⬇	⬆	• Shortage of labour • Fragmented sectors • Lack of comprehensive policies • National imperative especially in bio-medical waste, recycle/re-use wastewater for industrial use • Consolidation, innovation in technology, momentum for impact investment/green bonds
Water Management 	⬇	⬇	⬆	• COVID-19 induced requirement for water & sanitation • Shortage of labour for completing water infrastructure • Fragmented local-level authorities; no comprehensive water governance policies • Investment in smart irrigation, rainwater harvesting, urban and industrial water use • Government priority for achieving SDGs • National policy on reuse of treated wastewater (drafting phase)
Sustainable Urbanisation- Mobility, automotive and transportation 	⬇	⟷	⬆	• WFH, lower use of public transportation due to social distancing • Postponing purchases - lower auto sales and components for the medium term • Financial distress of car manufacturers - reduced spends on EV R&D • Depressed global oil prices - postponing R&D for EV at least over medium term • Government spending on urban transport including metro/ local loops / smart transportation resumes in medium/long term in line with the National Investment Plan, creating new opportunities for EU
Sustainable Urbanisation- Infrastructure 	⬇	⬇	⬆	• GDP contraction - muted government outlays for urban infrastructure in the short / medium term • Lower GST allocations and collections in states limiting investments • Significant boost in stimulus package for affordable housing in urban and rural areas (results over long term) • Investments in Smart Cities to pick up in the long term. Urban workplaces and their ecosystems significantly altered due to COVID-19; new private investments for both office and

Sector	Short Term	Medium Term	Long Term	Rationale
				home will be deferred till a new paradigm is defined.
Information, Communication and Technology (ICT) 	⬆	⬆	⬆	• Significant government initiatives to use technology and automation as immediate priority • Acceleration of adoption of new technologies in AI, digitisation, remote working, block chain. Due to COVID-19 (1 nation-1 ration card, e-Vidya, e-medicine, command centres) • Technology solutions opportunities for EU collaboration—smart irrigation, farm to fork, waste and water management, circular economy, smart transport • Make in India and other localisation projects will see absorption of technologies brought about by modern manufacturing protocols. • Government commitment to ICT impetus—National Infrastructure Pipeline has an outlay for digital infrastructure of INR 3,100 billion (EUR 39 billion) between 2020-2025 • Short and medium term growth for key telecom infrastructure deployment is contingent upon availability of technology, policy support including availability of spectrum • Depressed economic conditions could impact government funding for key projects

⬇(negative), ⟷ (neutral), ⬆ (positive).

Moreover, considering the current focus on increasing the percentage of locally-produced components in government procurement and restrictions of imports, a number of new opportunities present themselves for EU companies in India in the short to medium term in the following areas where there has been a sharp increase in production and output:

- Automotive and mobility,
- Non- metal building materials,
- Electrical and mechanical machinery,
- Agriculture and farm business products and machinery.

COVID-19 provides an opportunity to pause, re-set and re-imagine a more equitable, efficient and sustainable world. In India, multi-pronged government response involved, among others, protecting vulnerable sections against starvation, ramping up COVID-19 healthcare facilities and for the economy, an energised approach which has already seen inflow of large-ticket foreign investments. The recently held EU-India Summit sets the tone for greater cooperation in security, trade, people to people contact, sustainable development and innovation to deliver concrete and measurable benefits to people of EU and India. This creates the backdrop for greater opportunities for collaboration and investment in several sectors.

Glossary of Terms

ADB	Asian Development Bank
AI	Artificial Intelligence
AIMO	All India Manufacturers' Organisation
BIS	Bank of International Settlements
BRICS	Brazil, Russia, India, China and South Africa
CDDEP	The Centre for Disease Dynamics, Economics & Policy
CII	Confederation of Indian Industry
CMIE	Centre for Monitoring Indian economy
COVID-19	The coronavirus disease of 2019, by the abbreviated name of COVID-19 given by the WHO on February 11, 2020
ECR of EU	European Conservatives and Reformists Group
EIU	European Investment Bank
ESG	Environment, Social and Governance
EU	The European Union
EV	Electric Vehicle
FDI	Foreign Direct Investment
FTA	Free Trade Agreement
GDP	Gross Domestic Product
GST	Goods & Services Tax
ICMR	Indian Council of Medical Research
ICT	Information and Communication Technology
IEA	International Energy Agency
IIG	India Investment Grid
IIP	Index of Industrial Production
ILO	International Labour Organisation
IMF	International Monetary Fund
IoT	Internet of Things
MNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MSME/SME	Micro, Small & Medium Enterprises also can be read as SMEs in the report
NASA	National Aeronautics and Space Administration
NCAER	National Council of Applied Economic Research
NIP	National Infrastructure Pipeline
NIPFP	National Institute of Public Finance and Policy
OECD	Organisation for Economic Cooperation and Development
O&M	Operations & Maintenance
PPA	Power Purchase Agreement
PM	Prime Minister
PPE	Personal Protective Equipment
R&D	Research & Development
RBI	Reserve Bank of India
RE	Renewable Energy
SDG	Sustainable Development Goals
TERI	The Energy and Resources Institute
TFP	Total Factor Productivity
WB	World Bank
WFH	Work from home
WHO	World Health Organisation

Chapter 1. Introduction and Setting the Context

Chapter 1. Introduction and Setting the Context

The COVID-19 outbreak has been a "black swan" event for most of the world and Indians have seen devastation of status quo across the country and all sections of society. Unfortunately, the scale and complexity of the disease creates challenges that no Indian government has faced before and interventions made often cannot be based on past data, trends or evidence for high probability outcomes.

The EU which was in the epicentre of the battle with COVID-19 in March and mid-April have reported 1.6 million cases with 180,000 fatalities till 17 July, 2020.[6] However, most countries in the EU have controlled the spread and have been able to resume economic activities since then. To support EU citizens, businesses and countries in the recovery from the economic downturn caused by the COVID-19 pandemic, EU leaders agreed to work on a recovery plan for Europe and committed to establishing an EU recovery fund aimed at mitigating the effects of the crisis with a long-term EU budget and a temporary reinforcement of EUR 750 billion (Next Generation EU). These elements, subject to approval of the European Parliament,[7] are in addition to the three safety nets of EUR 540 billion already put in place by the EU to support workers, businesses and countries, while also investing in sustainable growth by integrating green transition and digital transformation.

Despite declaration of an early national lock down on March 24, 2020 in India, infection spread across the country does not seem to be flattening and by 10 July, 2020, India had reported, despite lower tests, about 0.74 million cases resulting in 20,642 deaths, the cases doubling at the rate of 20.87.[8] While there has been a significant increase in the number of tests more recently, as well as a sharp rise in the number of cases, the fatality rate has been on a decline. The government has been fighting on several battlefronts simultaneously, looking to limit the loss of human lives and disruption to economic engines.

Apart from the humanitarian impact that COVID-19 unleashed in India, the effect on the economy is profound and is still unfolding.

> *"Domestic economic activity has been impacted severely by the 2 months lockdown. The top 6 industrialised states that account for about 60% of industrial output are largely in red or orange zones (of disease spread). High frequency indicators point to a collapse in demand beginning March 2020 across both urban and rural segments. The double whammy in terms of losses of both demand and production has, in turn, taken its toll on fiscal revenues. Investment demand has been virtually halted by a decline of 36% in the production of capital goods in March, which was coincident with a contraction of 27% in imports of capital goods in March and 57.5% in April. The biggest blow from COVID-19 has been to private consumption, which accounts for about 60% of domestic demand. The production of consumer durables fell by 33% in March 2020, accompanied by a 16% decline in the output of non-durables."*
>
> Mr Shaktikanta Das, Governor, Reserve Bank of India (May 22, 2020)

Standard & Poor (S&P) India puts the overall impact into perspective by saying that COVID-19 would create the fourth recession since independence in 1947 and the worst till date, and estimates that there could be a 10% permanent loss to the GDP due to the pandemic by 2022.[9]

The fundamental principles on which the government has been fighting the pandemic was articulated by Prime Minister Mr Narendra Modi as "*Jaan hai to jahaan hai*" which, in this context, means "survival comes before economic prosperity". As incomes plummeted and economic distress started to get worrisome, the guiding philosophy to end lockdown was articulated as *"Jaan bhi, jahaan bhi"* – which means "time to seize survival, good health and economic prosperity", signalling the resumption of economic engines.[10]

The Government of India, in its fight against the pandemic, has set out a stimulus package of EUR 250 billion, roughly about 10% of the country's GDP. The management of the pandemic is supervised by high-level empowered groups to identify, strategize and implement interventions focused on health, logistics, economic and welfare measures, coordination with states and other players, information, communication and technology/ data management. These measures are designed to minimise the effect of the disease,

[6] https://www.ecdc.europa.eu/en/cases-2019-ncov-eueea
[7] https://www.consilium.europa.eu/media/45109/210720-euco-final-conclusions-en.pdf
[8] https://news.google.com/covid19/map?hl=en-IN&mid=/m/02j71&gl=IN&ceid=IN:en
[9] https://www.crisil.com/en/home/our-analysis/reports/2020/05/minus-five.html
[10] https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1613317

create a food and livelihood safety net for the vulnerable, besides creating protocols for testing, managing movement, re-starting economic activities and establishing continuity of essential services.

However, currently there is little visibility on how long the pandemic will last and what its impact will be on the economy and its constituents. All stakeholders including businesses, investors, citizens, lenders, analysts are keen to evaluate the impact of COVID-19 on their interests and future.

European Union and India – partners in progress

Speaking in New Delhi before India's Republic Day on 26 January, 2020, EU Foreign Policy Chief Josep Borrell, said "The relationship between India and Europe must become more strategic given the importance of the Indo-Pacific region (…). That is why it is essential that we develop a new roadmap for our strategic partnership, covering cooperation in areas from security, to digital or climate change."[11] The other driving issue that leads to a closer EU-India association is the polarisation of the Sino-USA relationship and trade wars between the two countries.

According to the principles of the EU-India Strategy as adopted on 28 November, 2018 by the European Commission "an enhanced EU-India partnership on sustainable modernisation should contribute to deepening the existing relationship and foster investment and trade, while accelerating India's move up the value chain; its research and technological development; resource efficiency and green growth, expansion of the tax base; and fostering of entrepreneurship. The EU should project its dynamic bilateral cooperation on modernisation to the global stage, thereby engaging more actively with India on these issues to secure an effective global approach."[12]

The size of the engagement between EU and India sets the context of the future of business opportunities, into perspective:

- *EU-India trade between 2018 and 2019 was at similar levels at EUR 77 billion, and over 90% of the trade is in manufactured and industrial products. EU is India's second largest trading partner but the growth in trade has been sluggish*
- *In services, the value of trade in 2018 was EUR 29.6 billion rising from EUR 22.36 billion in 2015.*
- *In terms of capital flows, EU companies are one of the largest investors with a direct investment in stocks in 2018 of EUR 69 billion. This investment is significant but way lower than the investments made by EU businesses in 2018 in China at EUR 175 billion and Brazil at EUR 312 billion.*
- *Some 6,000 European companies are present in India, providing directly, 1.7 million jobs and indirectly 5 million jobs in a broad range of sectors.*
- *Indian companies have invested over EUR 50 billion in Europe since 2000*

Source: https://ec.europa.eu/trade/policy/countries-and-regions/countries/india/

An EU paper[13] says that economic cooperation and trade between the EU and India are central issues, as both are major players in the international economic and political arena and together encompass one fifth of the world's population. Despite the impressive economic figures and the tremendous potential as an export market for EU businesses, the Indian market remains largely untapped as India accounts for only 2.3% of EU trade and only ranks ninth among EU trading partners.[14]

The first India-EU Summit took place in Lisbon in June 2000 and marked a watershed in the evolution of the relationship between India and EU. On 15 July, 2020 the EU- India Summit reiterated the commitment from both sides to bolster economic, human and environmental cooperation in a manner which is measurable and impactful.

[11] https://www.theparliamentmagazine.eu/news/article/the-future-of-euindia-relations
[12] https://eeas.europa.eu/sites/eeas/files/jc_elements_for_an_eu_strategy_on_india_-_final_adopted.pdf
[13] https://www.europarl.europa.eu/RegData/etudes/STUD/2020/642841/EPRS_STU(2020)642841_EN.pdf
[14] Ibid

Review of the impact caused by COVID-19 on EU businesses in India

The purpose of this impact review report is to evaluate the effect of COVID-19 in India particularly on EU businesses, mainly in sectors which are in line with EU priorities based on the articulated EU-India Strategy, viz:

- *Renewable Energy*
- *Water Management*
- *Waste Management*
- *Sustainable Urbanisation (including mobility and urban infrastructure)*
- *ICT based solutions*

Based on research and data, this impact report presents alternative paths to recovery and development in the short (12 months), medium (up to 24 months) and long (between 24-36 months) term.

The report is designed to help EU businesses to understand the impact of COVID-19 in these sectors across various evolving scenarios and the nature, intensity and duration of economic and developmental rebound.

The output will also articulate indicative opportunities and engagements presented by the pandemic to businesses and government from EU and India.

Figure 1. Impact Report Objectives

Methodology of the review

The methodology to achieve the objective of this review is to make an assessment of impact of COVID-19 on EU businesses in India in the five sectors mentioned above based on secondary research, evidence, data and reports issued by the Government of India, multilateral and bi-lateral agencies, global and Indian ratings agencies, global consultancy organisations, reputed academic organisations, press and other independent sources. The report presents convergent and diverse standpoints and views of these organisations on different themes and subjects to enable the user to view the overall business landscape of the effect of COVID-19 from various lenses. We supplement the secondary research and data with interviews of experts in various sectors to provide additional perspectives.

Overview of key contents of the review

The report is structured in the following manner:

Chapter 1: Introduction and Setting the Context

The chapter sets out the effect of COVID-19 on the global and Indian economy and briefly reviews the EU-India economic partnership and its growth potential. It identifies the sectors of EU business interests which will be further analysed and defines the report objectives.

Chapter 2: Getting Out of the Curve

The chapter deals with macro-economic and other variables that affect the economy due to COVID-19. We use various forecast data of global organisations to understand the effect of COVID-19 on GDP growth over the next few fiscal years, the drivers and perspectives on rebound of economy, assessment of the trajectory of the disease or infection, effectiveness of the stimulus package and assess the impact of labour shortage due to internal migration on economic revival.

Chapter 3: COVID-19: Setting the New Normal

The chapter analyses specific aspects of changes brought about by COVID-19 and changing geo-political situations in business and its supporting ecosystems such as the challenges from break-down and re-organisation of supply chains and new opportunities for EU-India partnership in this area; small and medium enterprises in India and how EU SMEs can collaborate and evaluate the effect on sustainability and green growth due to economic responses to COVID-19.

Chapter 4: Sectoral Review

The chapter helps to understand the potential impact of COVID-19 and government response on EU business interests in India with a view to empower business decision-making in the sectors of renewable energy, waste management, water management, sustainable urbanisation-mobility, sustainable urbanisation-infrastructure and ICT. Each sector identifies negative, neutral and positive business effects of COVID-19 over the short, medium and long term as well as suggests key opportunities for enhancing EU business engagement in India.

Chapter 5: Wrap up-Learning from the Past, Gazing into the Future

The chapter ties up different strands of the report and provides a matrix combining impact of various business environment elements/pillars across the range of identified sectors to provide a visual at-a-glance assessment of sectoral threats and opportunities.

Chapter 6: Voices of Key Influencers

The chapter contains a summary of structured discussions and interviews of leaders of EU-owned businesses in key sectors for a sense of on-ground thinking of business influencers.

The report is prepared with a view to present data and insights of various reputed organisations and subject matter experts. Often views on a subject may be conflicting and counter intuitive. The users should read the report as a compilation of information and draw their own inferences from data and perspectives.

Chapter 2. Getting Out of the Curve

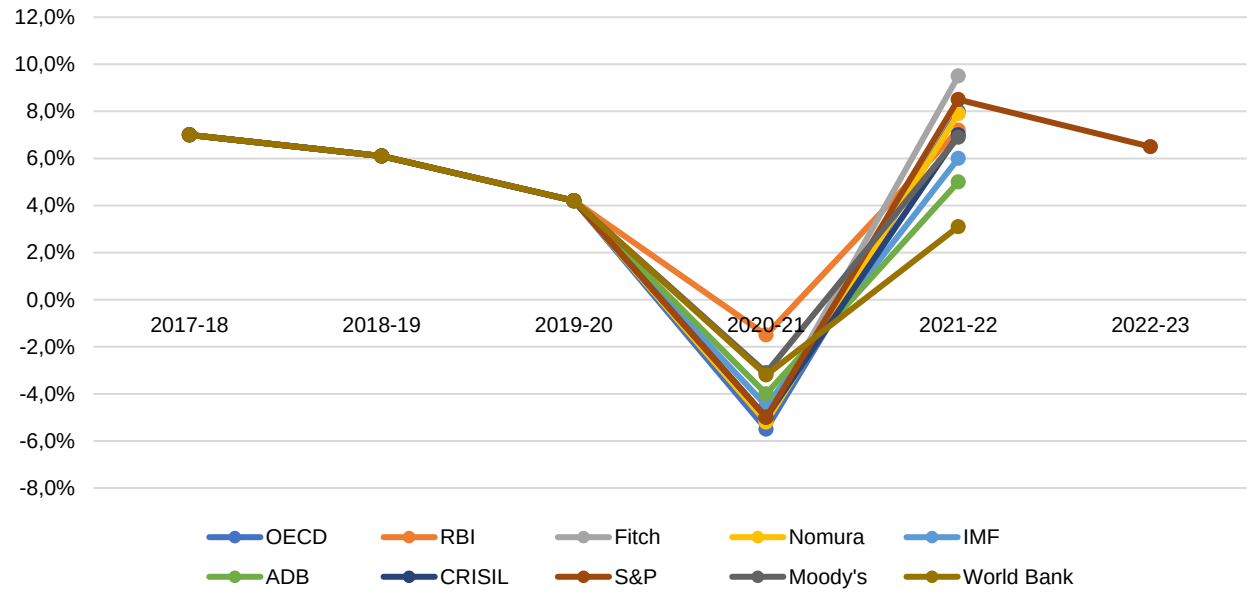
Chapter 2. Getting out of the Curve

Forecasted Gross Domestic Product (GDP) for India- Growth Rates and Scenarios

The question uppermost in peoples' minds is: when will GDP recover and at what rate will it grow? Different agencies have forecast GDP growth rates for India taking into account their assessment of change in infection rate, time of reopening of lockdown and normalization, effect of government stimulus and spending. Since the variables are diverse, forecasts are also widely different—such as, for FY 2020-21, estimates range from a positive growth rate of GDP of 2.5% to negative of over 7% making the narrative on mode, path and drivers of recovery of the economy very varied and divergent. Hence, reliability of the forecasts for the economy in relation to the COVID-19 disruption is inherently imprecise and can only be indicative and not conclusive.[15]

How do we grow and when do we see rebound?

Figure 2. Annual Growth Rate Forecasts



Source: Individual Reports

A majority of the forecasts point to a GDP contraction of about 5% in India during FY 2020-21. The combined graph suggests that the Indian economy, already slowing over the past two years, will see a much sharper fall in the current fiscal year; however, in the next one, all forecasts point to a sharp recovery.

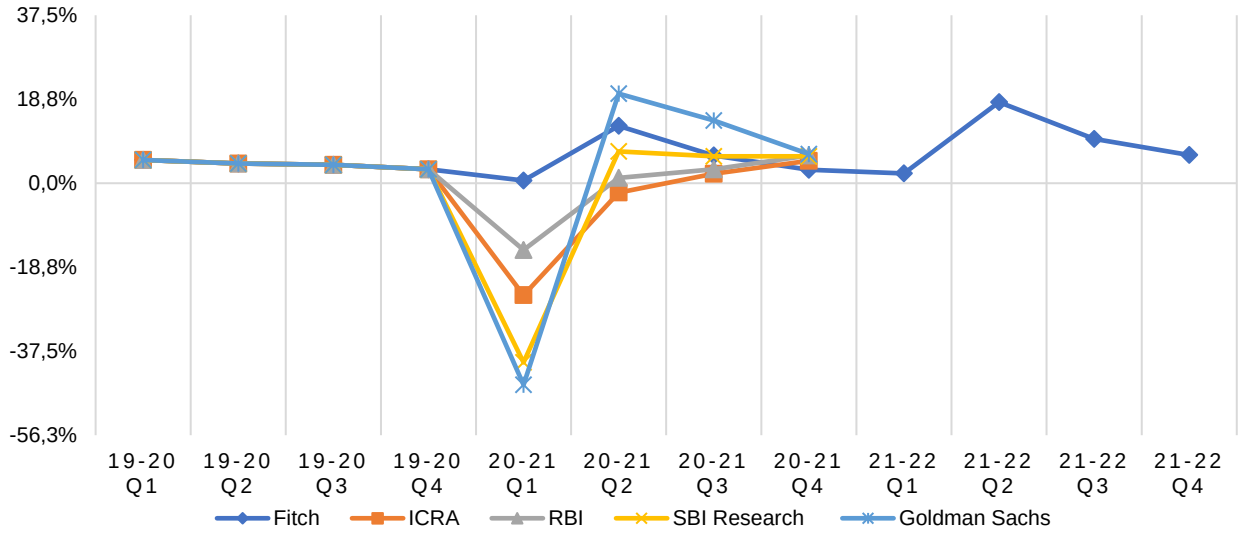
> *Most forecasters predict a V-shaped recovery and a sharp rebound. This would be the case if we are able to contain the infection and there would be no further lockdown. In the event of rising infections and additional lockdowns, which is being seen sporadically in some cities but not across the country, the recovery could be W-or L-shaped, leading to further contraction of the GDP and delaying the rebound.*

Quarterly annualised growth-rate projections suggest a deep output contraction in the first quarter (April-June 2020), from 15% up to a 45% downturn, on account of the complete economic standstill in a majority of the sectors. The actual numbers for the quarter ended June 2020 are not yet published as on the date of this report, but significant contraction is expected. The RBI on 10 June, 2020 reported that the Index of Industrial Production (IIP) had seen a reduction of nearly 17% in March 2020 compared to the same month last year, which supports a trend of lower overall GDP growth.[16]

[15] Bibek Debroy: The public policy dilemma: There is indeed tension between lives and livelihoods. https://indianexpress.com/article/opinion/columns/the-public-policy-dilemma-coronavirus-india-lockdown-6377938/
[16] https://www.rbi.org.in/Scripts/BS_ViewBulletin.aspx?Id=19020

However, RBI expects the rebound period to start in the July-September quarter of 2020-21 with varying growth rates, but largely positive, finally converging at about 6-7% in the last quarter of January-March 2021.

Figure 3. Quarterly Forecasts of Growth



Source- Individual Reports

How does consensus vary across agencies?

Despite a fairly deep recession being the consensus, investment banks, research and consulting firms such as McKinsey & Co., Goldman Sachs, BCG, KPMG, Deloitte, EY, SBI Research show a sharper decline of 6% contraction on an average, with a sharp rebound.

In contrast, governmental / multilateral agencies:

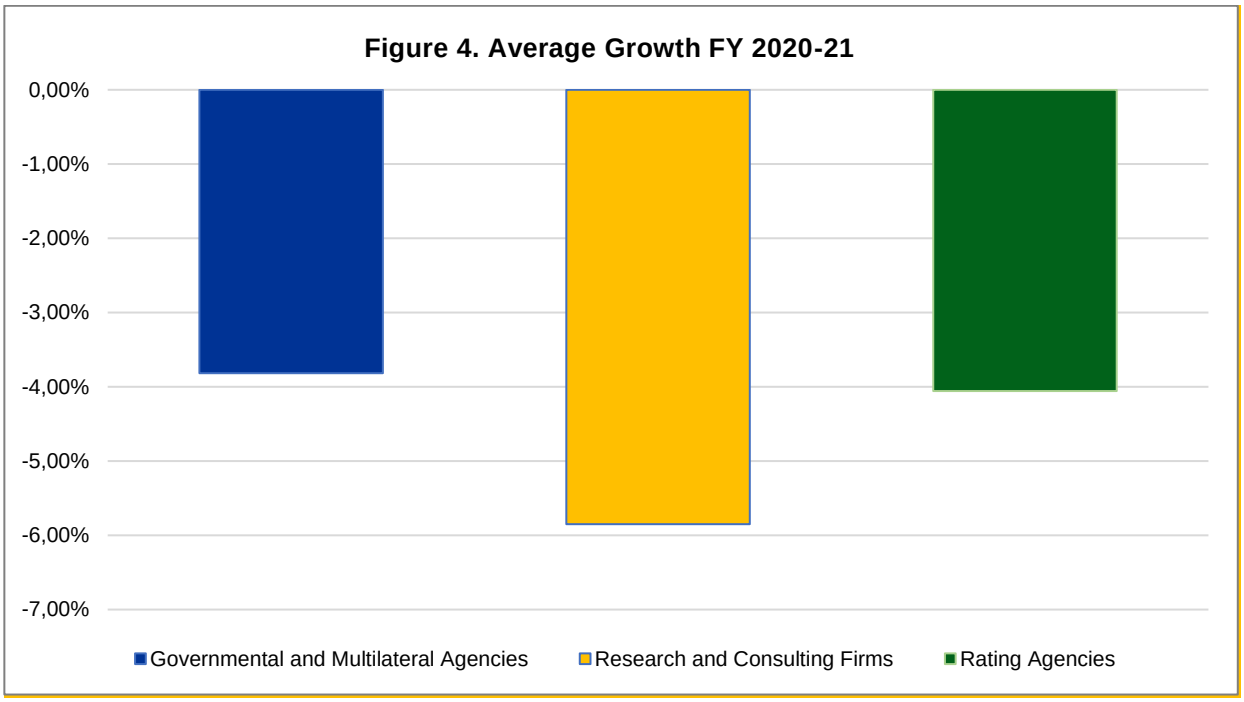
- Asian Development Bank (ADB), World Bank (WB), Organisation of Economic Cooperation and Development (OECD), Reserve Bank of India (RBI), National Council of Applied Economic Research (NCAER), International Monetary Fund (IMF)

and ratings agencies:

- CRISIL Ltd (a subsidiary of S&P), ICRA Ltd, (a subsidiary of Moody's Investor Services), Fitch Ratings and its subsidiary India Ratings Ltd.,

predict corresponding values of GDP contraction averaging between 3% and 4%

There is significant heterogeneity within the governmental and multi-lateral agencies as well, with the RBI's prediction of the dip and surge for the Indian economy far less dramatic than OECD and the World Bank.



Source- Individual Reports

Can we expect a double-dip in infection and recovery?

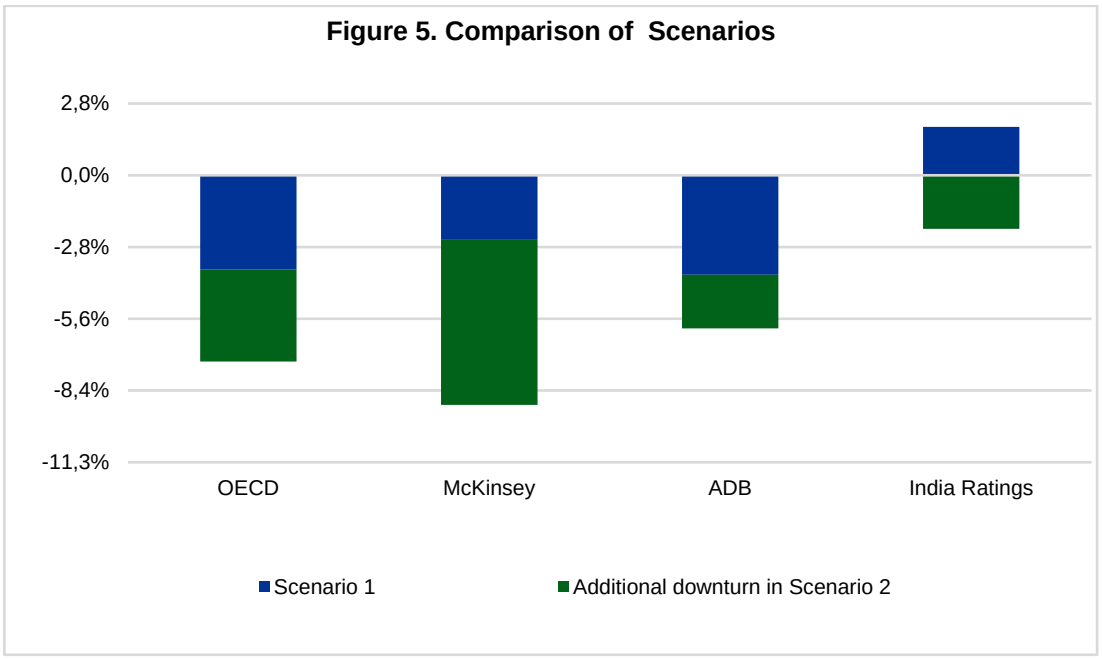
In the event of a strong resurgence of the disease and imposition of further lockdowns, there could be further slowing down of the economy, as predicted by some agencies, taking into account different assumptions of recovery periods.

ADB predicts that under a short-containment scenario (where it takes 3 months from the point when the outbreak intensifies to getting the outbreak under control and start normalising economic activity), India would lose 3.9% of its GDP without policy responses. Conversely, in case of a long-containment scenario where the same process takes 6 months, the corresponding figure jumps to a loss of 6% of GDP.[17]

OECD[18] and McKinsey,[19] forecasted the GDP growth rates assuming a single 8-10 week lockdown but in case a second but less intensive virus resurgence takes place in a later quarter of the year requiring repeated imposition of 2-3 week lockdowns, it would result in a further reduction in growth. ICRA too suggests the possibility of a second wave of infections, which would result in demand uncertainty and supply chain disruptions once again.[20] In July, 2020 ICRA Ltd (a Moody's subsidiary) re-estimated their earlier forecast of GDP contraction from –5 to – 9.5 % in 2020-21 due to increased infection, slower than expected economic activities and increasing lockdowns in the states.[21]

These agencies assume that both scenarios of single or double dip in growth are equally likely and would manifest into a W-shaped recovery as opposed to a V-shaped recovery. However, they refrain from providing scenario-wise estimates due to the inability to gauge the inflection points of the recovery curve at this stage

[17] An Updated Assessment of the Economic Impact of COVID-19. *Asian Development Bank*, May 2020.
[18] Tackling COVID.19. *OECD iLibrary*, 10 June 2020. Available at https://www.oecd-ilibrary.org/sites/0d1d1e2e-en/1/3/3/22/index.html?itemId=/content/publication/0d1d1e2e-en&_csp_=bfaa0426ac4b641531f10226ccc9a886&itemIGO=oecd&itemContentType=
[19] Getting Ahead of Coronavirus: Saving lives and livelihoods in India. *McKinsey & Co.*, 9 April 2020. Available at https://www.mckinsey.com/featured-insights/india/getting-ahead-of-coronavirus-saving-lives-and-livelihoods-in-india#
[20] Indian Economy. *ICRA*, May 2020.
[21] https://www.icraresearch.in/research/ViewResearchReport/3117

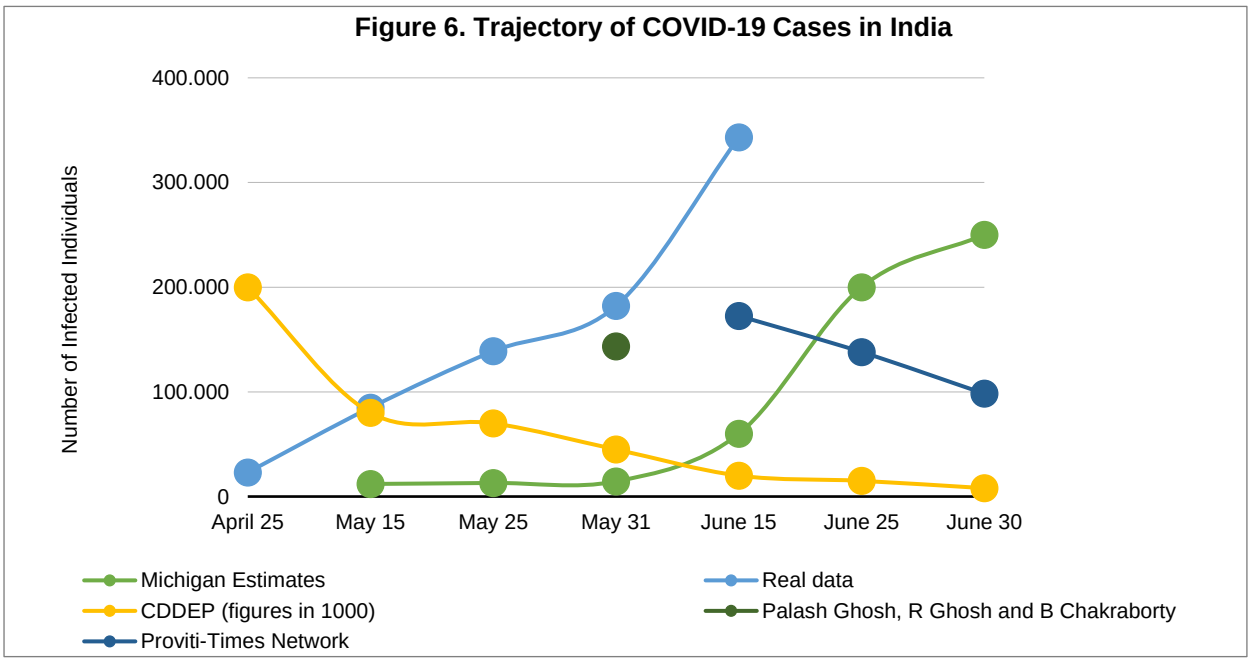


Source - Individual Reports

[**Note:** Figure5: GDP estimates of ADB, McKinsey, OECD and ICRA assume both scenarios equally likely]

Trajectory of COVID-19 Cases— An Unresolved Puzzle

The trajectory of the disease and the infection rates have been one of the most difficult issues to predict mainly due to the fact that there are no past data or models that can capture the assumptions or variables accurately to make any meaningful prediction. However, all calculations for forecasting economic rebound are based on the premise of a reasonable determination of the timing of the *"flattening of the curve"* and resumption of economic activities.



The findings of these select studies, namely the study by the University of Michigan,[22] the CDDEP study in collaboration with Princeton University and Johns Hopkins,[23] Ghosh et al,[24] and Protiviti-Times Now model,[25] differ significantly from each other, owing mainly to the different assumptions upon which each of the models is based, with all predicting the curve flattening due to the lockdown. Infection continues at much higher rates than predicted and the doubling rate of the infection in July, 2020 is still 20.87, with cases having crossed 1 million, making India the third largest affected country in terms of overall infections.

While there is a positive correlation of real cases with the short-term projections, long term predictions are more difficult to make with reasonable accuracy in July, even after four months or more than 100 days of lockdown. Therefore, the medium-and long-term predictions are unreliable and consequently their attendant conclusions on resumption and sustenance of economic activities may be subject to errors and hence be reviewed with caution.

What will help us rebound? Alternative pathways to growth

While the pandemic may well leave some permanent scars on economies, at this stage the consensus seems to show an overall fairly sharp recovery in the next fiscal year. It also indicates that the downturn would bottom out in the current quarter, with four out of five forecasters expecting positive growth in the current quarter (July-September 2020).

Figure 7. Post-COVID-19, Growth Drivers in India

Views from Consulting Firms: The rebound expectation of these firms primarily arises from companies learning to count on the unexpected, as they seek to minimize dependence on one particular country or part of the world and de-risk their supply chains. This adaptation process already seems to be in effect, as Japan earmarked $2.2 billion (EUR 1.95 billion) in April to push local firms to move manufacturing out of China, and similar calls have taken shape in the US and Australia. Thus, the post-COVID-19 world is likely to see many countries taking efforts towards rebuilding and rebooting their industries and protecting essential supplies.[26] These firms share the premise that it may be possible for India to emerge as the next manufacturing hub and a key node of the global value chain, illustrating the need for new manufacturing capacity to be attracted in India.[27]

Views from Ratings Agencies: A few ratings agencies have negated the proposition of supply chain shifts driving growth. The immediate aftermath of the pandemic will have economies and businesses operate in a 'restart and rebuild' mode with primary considerations on business continuity and near-term sustenance

[22] Ray, D et al. *Predictions, Role of Interventions and Effects of a Historic National Lockdown in India's Response to the COVID-19 Pandemic: Data Science Call to Arms.* Available at https://www.medrxiv.org/content/10.1101/2020.04.15.20067256v1.full.pdf.
[23] Klein, E et al. *COVID-19 for India Updates.* Available at https://cddep.org/wp-content/uploads/2020/03/covid19.indiasim.March23-2-eK.pdf.
Kotwal, A et al. *Predictive models of COVID-19 in India: A Rapid Review*. Medical Journal, Armed Forces India, 17 Jun. 2020. Available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7298493
[24] Ghosh, P et al. *COVID-19 in India: State-wise Analysis and Prediction*. Available at https://www.medrxiv.org/content/10.1101/2020.04.24.20077792v3.full.pdf
[25] Ray, A et al. Protiviti COVID Prediction Case Study. Protiviti Data Solutions. June 2020.
[#]Kotwal, A et al. *Predictive models of COVID-19 in India: A Rapid Review*. Medical Journal, Armed Forces India, 17 Jun. 2020. Available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7298493/
[26] COVID-19: Briefing Materials. *McKinsey & Co.*, 1 June 2020.
[27] COVID:19 Following up on the immediate economic response. *Deloitte*, 1 April 2020.

rather than immediate shifts in supply chains for long-term resilience. The belief is that shifts would take time to gain momentum.[28]

According to Moody's, the move to shorter supply chains, coupled with greater supply chain friction due to higher trade barriers, will conversely limit the efficiencies of manufacturing, trigger adjustment costs such as building new factories and training workers, which would raise costs in both the shorter and longer term.[29]

The paths to recovery described by ratings agencies for India are fairly long, with continuously weakening growth prospects. These underline the heightening risks for India, where factors like high reliance on external debt, volatile commodity prices and higher long-term unemployment would affect growth prospects even in the coming fiscal year. Moody's highlights that the key for India to surmount these risks and boost growth potential lies in harnessing its large and diverse population – the prospects for population-driven consumption and catch-up in productivity are instrumental in boosting economic growth.[30]

S&P highlights structural trends which could work in favour of India's growth path, like healthy demographics and competitive unit labour costs. S&P also forecasts India's growth to rebound at the rate of 8.5% resulting in the country's 10-year weighted average GDP per capita growth being well above the average of its peers.[31] However, this growth is predicated on the necessity of private investment picking up.

Views from Governmental and Multilateral Agencies: Multilateral agencies largely point to government support as the primary means to address both urgent and long-term priorities to fuel growth. A key takeaway is the necessity of preserving liquidity, while another crucial channel is government-backed credit guarantee schemes. While such targeted support is an essential priority, for it to be efficacious, the benefits of the stimulus must adequately reach people and smaller firms. Despite large credit support for SMEs in the INR 20 trillion (EUR 250 billion) economic package, a nationwide survey revealed that SMEs are struggling to avail its benefit due to restrictive eligibility criteria, unclear methodology of allocation, and lack of adequate cash support.[32] Ensuring that benefits trickle down to SMEs, which are crucial components of supply chains of even larger corporations, as well as an increased focus on demand through government policy, are key factors that can kick start economic activity across the country. There is an assumption that SMEs will be able to avail credit and use it for survival; however, unless there is a revival of demand, reopening businesses will not be sufficient to safeguard solvency.

While the virus persists, agencies and firms have repeatedly pointed to investments in hard and soft infrastructure including creation of community assets that absorb large labour to help the economy reopen without risking more waves of infections. India's rural employment guarantee scheme, Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA) works, are one way of achieving this. Early data released by the CMIE has already indicated a big jump in rural employment largely driven by this scheme after the large job losses and peaking unemployment until early May 2020.[33]

ADB advocates higher use of ICT in work arrangements, delivery of health services and education / training, payment systems, and international trade and global supply chains.[34]

Experts have suggested several channels through which supply-side measures can revive growth in the economy; demand-side measures are, however, virtually absent in India's fiscal package and firms' rebound expectations. While an uptick in demand is definitely a more complex challenge to address and will depend on several factors like development of a vaccine and subsequent market sentiments, the lack of measures to support it are likely to be a significant barrier to recovery even for the next 2-3 years. In another context, in a Fortune 500 CEO survey on the question of when economic activity will get back to pre-COVID-19 levels, 52.8% said Q1 of 2022, while 25% said Q1 of 2023, making any determination of the rebound period challenging.

Source: Fortune Magazine, May 2020

[28] Global Supply Chains and Trade in a post-COVID paradigm. *India Ratings & Research*, 11 June 2020. Available at https://www.indiaratings.co.in/PressRelease?pressReleaseID=41275&title=global-supply-chains-%26-foreign-trade-in-a-post-covid-paradigm
[29] Credit Conditions – Global. *Moody's Investors Service*, 18 June 2020.
[30] Credit Conditions – India. *Moody's Investors Service*, 4 June 2020.
[31] Economic Research: India's COVID-19 Recovery Will be Key to the Sovereign Ratings. *S&P Global Ratings*, 12 June 2020. Available at https://www.spglobal.com/ratings/en/research/articles/200612-economic-research-india-s-covid-19-recovery-will-be-key-to-the-sovereign-ratings-11483986
[32] Stimulus has not helped MSMEs: AIMO. *The Hindu*, 8 June 2020. Available at https://www.thehindu.com/business/stimulus-has-not-helped-msmes-aimo-survey/article31781847.ece
[33] Demand for works under MGNREGA rises in May 2020. *Centre for Monitoring Indian Economy*, 8 June 2020. Available at https://www.cmie.com/kommon/bin/sr.php?kall=warticle&dt=2020-06-08%2013:13:30&msec=200
[34] An Updated Assessment of the Economic Impact of COVID-19. *Asian Development Bank*, May 2020.

COVID-19 Recovery Stimulus: Will it put us back on track?

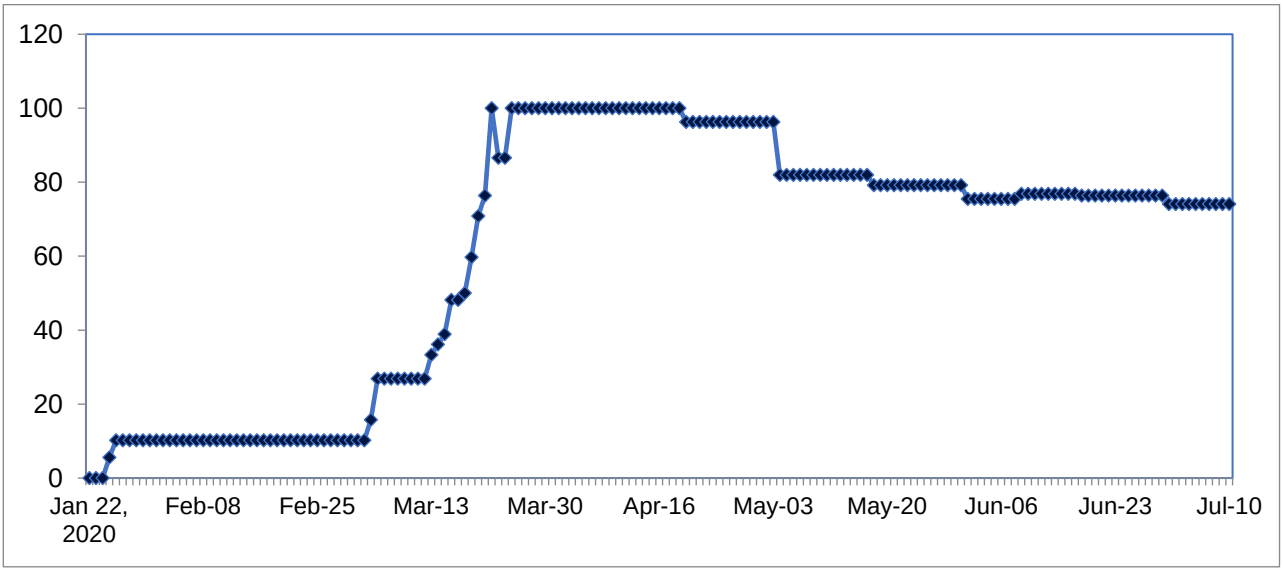
Experts have mixed opinions on the COVID-19 stimulus announced by the Government of India, including comments like:

- It is focused more on raising the 'trend rate' of growth rather than supporting the current cycle.[35]
- It does not have enough to provide immediate relief to the millions affected by the pandemic.[36]

The lockdown has affected growth prospects of the economy quite significantly, with most forecasts suggesting a contraction and recession. According to Mr. N.R. Bhanumurthy, a Professor at National Institute of Public Finance and Policy (NIPFP), the stimulus package was supposed to revive the economy, especially the demand side. However, what it contains are some important structural measures that will help on the supply side, with potential to boost growth in the medium to long term.[37]

An Oxford University[38] study on adequacy of government fiscal and other responses over 17 indicators ranks India high in the Response Stringency Index. The Government Response Stringency Index is a composite measure based on nine response indicators including school closures, workplace closures, and travel bans, rescaled to a value from 0 to 100 (100 = strictest response).

Figure 8. COVID-19: Government Response Stringency Index (India)



Note: This index simply records the number and strictness of government policies, and should not be interpreted as 'scoring' the appropriateness or effectiveness of a country's response
OurWorldInData.org/Coronavirus.CC BY

The stimulus package announced for business is largely futuristic. While agriculture reforms such as enhancement of farm income or creating e-market places are truly path breaking, the reforms give SMEs little impetus or the fuel to kick start. However, the focus and outlay of INR 1,500 billion (EUR 19 billion) for transforming farm including infrastructure, processing, adoption of technologies and building scale dovetails into EU priorities of sustainable farm to food and green agriculture practices including water use.[39] This area is open to joint research, collaboration and sharing of knowledge and know-how between India and EU.

Reserving tenders up to INR 2 billion (EUR 25 million) for Indian businesses is a wonderful step but the results will not be immediate or even in the medium term.[40] The assumption of the stimulus, that availability of credit to businesses will eventually spur demand is not realistic. In order to survive, businesses go on a contraction mode, conserve cash, optimise on salaries (including letting go of staff) and establishment costs

[35] D K Joshi, Chief Economist, S&P, https://www.indiatoday.in/magazine/special-report/story/20200601-will-it-work-1680801-2020-05-23
[36] D K Joshi, Chief Economist, S&P, https://www.indiatoday.in/magazine/special-report/story/20200601-will-it-work-1680801-2020-05-23
[37] Dr N R Bhanumurthy, NIPFP
[38] https://www.bsg.ox.ac.uk/research/research-projects/coronavirus-government-response-tracker
[39] "3rd instalment of the stimulus package: Sitharaman rolled out reforms for the farm sector" https://economictimes.indiatimes.com/news/economy/agriculture/essential-commodities-act-tweak-to-free-up-farmers/articleshow/75767855.cms?from=mdr
[40] Kaushik Dutta and Kshama Kaushik' Left out to dry- blood, sweat and fears of MSMEs" https://www.ndtv.com/opinion/hung-out-to-dry-the-blood-sweat-and-fears-of-msmes-2242646

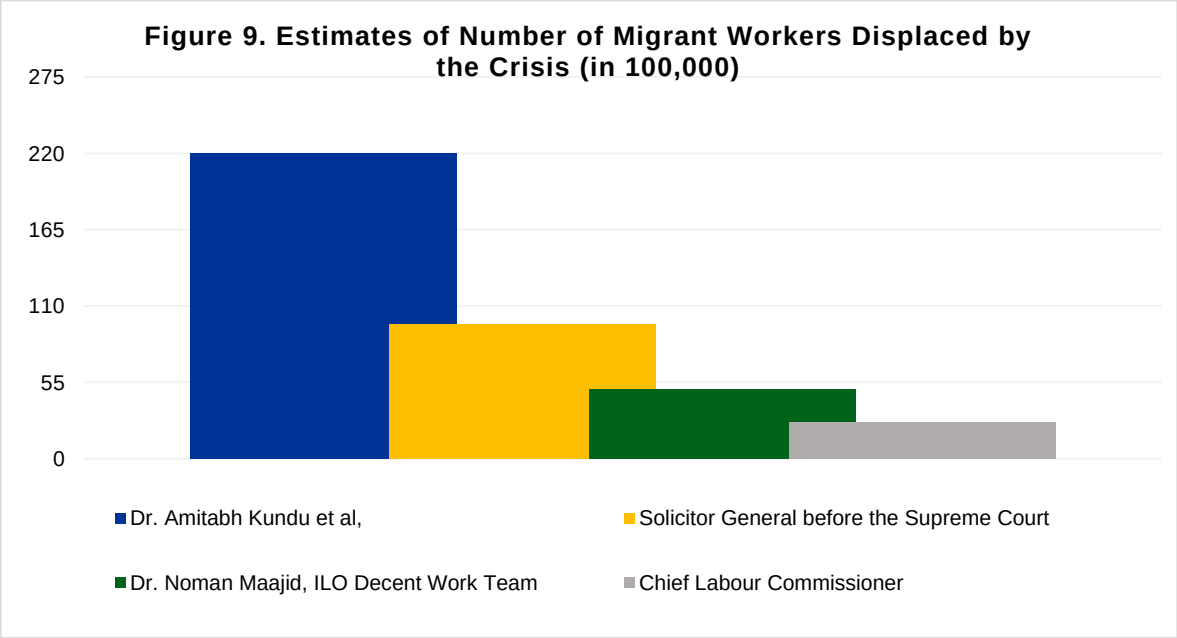
and operate at lower capacity till markets look up. In such a case, one does not borrow even at lower rates to take a punt on the future unless there is a clear path to growth and certainty of revival.

Rabobank has a positive and different outlook to the stimulus package: "The Modi government announced INR 20 trillion (EUR 250 billion) stimulus package, including land, labour, law and liquidity reforms. If this package addresses India's structural weakness and is properly executed, India's economy could even emerge stronger from the COVID-19 crisis."[41]

How India emerges from the pandemic has several variables, constrains and actors and only time will tell when we emerge from the crisis and in which form.

The Migration Challenge: When will they be back?

Reverse migration of labour from urban centres to villages is one of the enduring and distressing outcomes of the lockdown in India. This has created not merely a humanitarian impact but also a massive labour shortage in the states where they were employed, leading to delays in re-starting industrial activity. Estimates of the number of migrants varies significantly, making policy interventions much more difficult. The graph below shows estimations made by various experts on how many migrant workers have been displaced.



Source: Individual Estimates

The Government of India has announced several schemes to help migrant workers tide over these times including measures such as providing them adequate rations, sustenance wages, cash transfers into *Jan Dhan (accounts for government subsidies)* bank accounts, and announcing a recent scheme to provide to returning workers in rural parts of India, work for 125 days for the 116 districts in 6 states with the maximum amount of migrant labour.[42]

The World Bank estimates that India is home to over a 100 million internal migrants,[43] who are instrumental in the functioning of industry. The International Labour Organisation[44] suggests that about 400 million workers in the informal economy are at risk of falling deeper into poverty during this crisis, creating a large number of vulnerable people needing immediate attention. Industries that employ the most migrant and casual labour are construction, steel, textiles, apparels, fabricated metal products, operating motor vehicles, among others. The most disruption has taken place in states with high dependence on the migrant work-force, such as the metropolitan cities of Delhi, Mumbai, Chennai, Bengaluru.

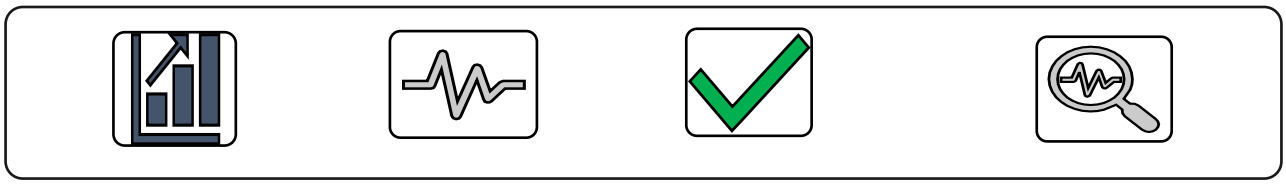
[41] https://economics.rabobank.com/publications/2020/may/the-shape-of-indias-exit-from-the-covid-19-crisis/
[42] https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1632231
[43] https://openknowledge.worldbank.org/bitstream/handle/10986/33634/COVID-19-Crisis-Through-a-Migration-Lens.pdf?sequence=5&isAllowed=y.
[44] https://www.ilo.org/wcmsp5/groups/public/@dgreports/@dcomm/documents/briefingnote/wcms_740877.pdf

CMIE has reported[45] on 17 June, 2020, that the unemployment levels are back to pre-COVID-19 levels but this is predominately due to engagement by the government under rural employment guarantee schemes like MNREGA and not due to absorption by industrial and business entities. In India, the Google Mobility Report of 27 June, 2020 shows that in respect of mobility at work, there has been 29% less mobility at work places between 16 May and 27 June, when the lockdown was lifted, indicating that the economy is far from being on the mend.

HSBC in July, 2020 says that while the about 30m migrant workers returning home is likely to be a drag on growth in FY21, it may not impact potential growth. We find that 60% of migration is aspiration-led and the 2.5x higher income earned in urban India may be too attractive to forego. Once the sowing season is over in July- August, 2020 and the COVID-19 cases abate, these workers are likely to return to urban areas.[46]

Mitigating and resolving the migrant crisis has taken up a lot of government efforts, which took away attention from working toward battling the pandemic and reviving the economy. Industrial, infrastructural development, and other manufacturing activities will continue to remain halted or muted for the next few quarters and the absence of labour will be another limiting factor for economic kick off in the short to medium term.

Figure 10. Getting Out of the Curve



GDP growth forecast	Trajectory of disease	Path to recovery	Impact of stimulus
GDP forecast: Most forecasts point to a GDP contraction of 5% during FY20-21 Recovery type: Recovery dependent on disease mitigation. Recovery V-shaped, if no further lockdown. W or L shaped recovery in case of further lockdowns Horizon: Recovery to pre-COVID levels expected in Q4, FY20-21 but can move to Q4 21-22 if further lockdown or effect of stimulus is weak	Flattening of curve is not visible yet Disease prediction: Predictions have been lower than actual. Medium and long term trends unreliable MIT has predicted that by Q4, FY'20-21, India will have daily infection rate of 2,87,000 Positives: Low mortality rates and demography helpful factors in disease control	Consulting firms/ investment banks: Global trade shift and supply chain diversification Rating agencies: Recovery predicted on picking up of private investment Demographics, competitive unit labour costs to help Governmental/ multilateral agencies: Consumption, government spending, livelihood support for people, soft infrastructure and use of technology	Immediacy of relief: Most analysts feel the stimulus of EUR 250 billion, which has proposed broad economic reforms, is insufficient in terms of the immediacy of relief Ranking India's response: Oxford University's Stringency Index ranks India at 80% in their stimulus effectiveness index. Rabobank feels the package addresses India's structural weaknesses and could help the economy emerge stronger.

[45] On 17 June 2020/https://unemploymentinindia.cmie.com/
[46] HSBC – July, 2020- India Focus- Scratched or Scarred?

Chapter 3. COVID-19: Setting the New Normal

Chapter 3. COVID-19: Setting the New Normal

Supply chain: Can India redefine its position in global supply chains?

COVID-19 has brought into focus the downsides of the globally integrated economy and questions the wisdom of 'just-in-time' stocking by industry.

The differential scale and timing of the impact of the pandemic means that global supply chains face disruption in multiple geographies. The weakest point in the chain will determine the success or otherwise of a return to re-hiring, training and attaining previous levels of workforce productivity. This calls on entities to reassess the entire business system and plan for contingent actions in order to return their business to effective production at pace and at scale.[47]

The US Government's assertion in the 2017 National Security Strategy (NSS) that 'economic security is national security,' the EU Commission President Ursula von der Leyen's call this February (2020) for 'tech sovereignty', and China's focus on 'self-reliance' in strategic technologies, portend a new age for geo-economics. All three areas have acquired a sharper edge in the middle of the pandemic.[48]

The pandemic also redefined trade equations between various countries including USA and China, and its effect on the global supply chains and regional economies can become very significant.

The surprising length and complexity of many supply chains has been illuminated sharply by the pandemic as, for example, when an American equipment manufacturer discovers that a British supplier of a major assembly that they thought they had fully vetted must suspend production because they have an Italian supplier of a sub-assembly who gets an inexpensive, but unique specialty component from an Asian company with a plant in China that has shut down.[49]

Supply chain managers who previously focused their attention one or two levels down into their supply chains will have to go back to work and develop the systems and discipline to track even more deeply into the chain. The growing belief is that shorter supply chains may work better.

According to an analysis by Boston Consulting Group,[50] the pandemic is likely to distort the global supply chain which is currently dependent on China, which in 2018 had a share of EUR 4.4 trillion out of EUR 15.75 trillion, representing 28%.[51] The China-USA trade dynamics have increased imports from India to USA in 2019 with sectors like biopharma, energy, aerospace, automotive components, electrical machinery among others, seeing a rise between 19% to 39% as compared to the previous year.[52]

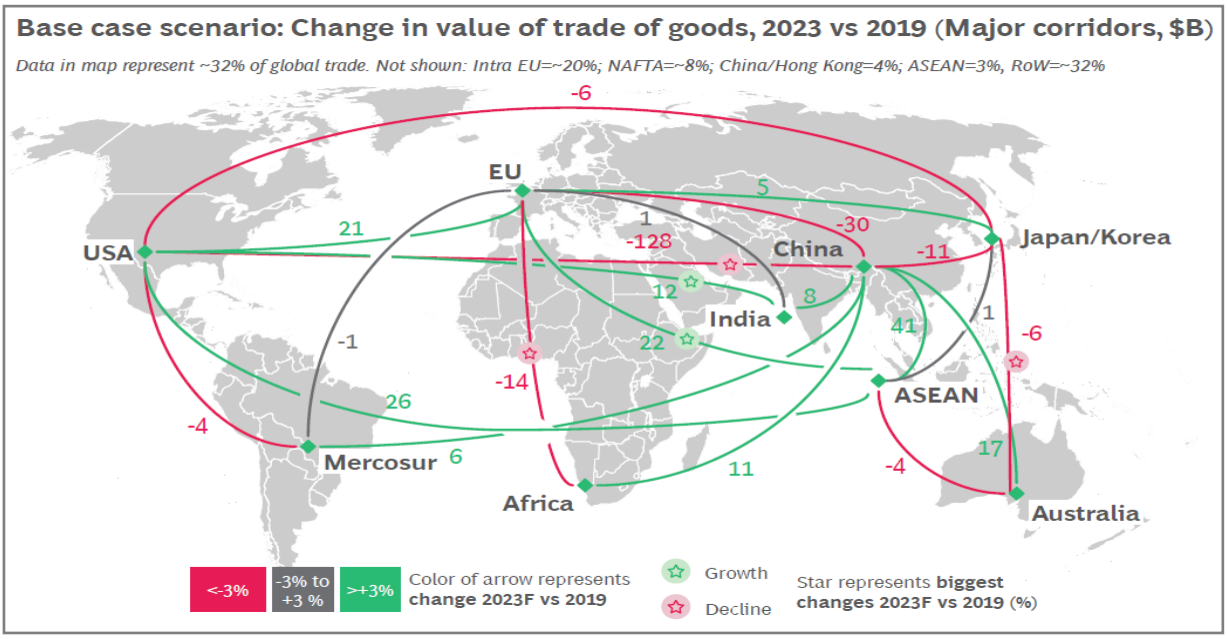
Total global trade will get back to pre-COVID-19 levels only in 2023 but will see a substantial shift between trade corridors, redrawing trade and business relations. Between 2019 and 2023, the change in value of trade of goods, between major corridors (in billion EUR) is forecast as follows:[53]

Change in Value of Trade of Goods, 2023 vs 2019 (Major Corridors, EUR billion)	
EU – India	**0.89**
US – India	**10.62**
China – India	**7.08**
US – China	**-113.24**
EU – China	**-26.54**

Table 1. Projected change in value of trade of goods between nations, 2023 (BCG, June 9, 2020)

[47] McKinsey: How European businesses can position themselves for recovery April 29, 2020 | Article (https://www.mckinsey.com/industries/public-sector/our-insights/how-european-businesses-can-position-themselves-for-recovery)
[48] Samir Saran, Akhil Deo, By the Global Ball and Chain, June 5, 2020, Observer Research Foundation : https://www.orfonline.org/research/by-global-ball-value-chain-67358/
[49] Harvard Business Review (https://hbswk.hbs.edu/item/how-the-coronavirus-is-already-rewriting-the-future-of-business)
[50] "Future of Global Trade and Supply Chains", COVID-19 BCG Perspectives, Boston Consulting Group (June 9, 2020)
[51] https://wits.worldbank.org/CountryProfile/en/CHN
[52] "Future of Global Trade and Supply Chains", COVID-19 BCG Perspectives, Boston Consulting Group (June 9, 2020)
[53] "Future of Global Trade and Supply Chains", COVID-19 BCG Perspectives, Boston Consulting Group (June 9, 2020)

Figure 11: Change in Value of Trade of Goods, 2023 vs 2019 (Major Corridors)[54]



The theme of localization and supply chains

Many elements of the Indian government's economic response to COVID-19 are towards building and bolstering local manufacturing and reducing imports. Any such localization will create new dimensions and options to supply chains in India and globally.

India - EU trade volume has remained nearly constant between 2017- 2019 between EUR 73 billion and EUR 77 billion with no significant imbalance of trade between the partners.[55] The trade mix, shared between primary and manufactured goods also has been similar. COVID-19 becomes a watershed moment, where the trade and supply chains could get reconfigured and reimagined. This creates a new value and supply chain opportunity for EU and Indian businesses to collaborate and explore.

India's engagement with China in business and commerce with China

The value of trade between India and China in 2019-20 was nearly EUR 72 billion with imports by India being EUR 57 billion and exports being EUR 15 billion. Indian industries like automobiles, pharmaceuticals, consumer electronics (65 % of the mobile phones in 2019 came from China), electronic assemblies , organic chemicals, solar panels (in 2019, 89 % was imported from China), small medical devices, plastic and moldings significantly depend on imports from China and alternative supply chains cannot be built in a short period of time.

Moreover, there are significant investments from China in a number of large and growing Indian companies ranging from manufacturing to technology to e-commerce, the benefits of which, including the flow of services and capital, cannot be disregarded. China is one of the bigger investors in India in technology related startups and unicorns, 17 out of the 24 unicorns of India have a Chinese investor having invested till 2019, EUR 3.70 billion.[56] The terms of time-honored traditions and regulations concerning global trade and business relationships will come into play, with hard positions taken and gradually tempered.

Given the current focus on increasing the percentage of locally-produced components in government procurement and restrictions of imports, a number of new opportunities present themselves for EU companies in India in the short to medium term in areas of renewable energy, automotive and mobility, non-metal building materials, electrical and mechanical machinery, agriculture and farm business products and machinery, which have seen a sharp increase in production and output.

[54] "Future of Global Trade and Supply Chains", COVID-19 BCG Perspectives, Boston Consulting Group (June 9, 2020)
[55] https://ec.europa.eu/trade/policy/countries-and-regions/countries/india/
[56] https://economictimes.indiatimes.com/small-biz/startups/newsbuzz/chinese-investments-in-indian-start-ups-grow-12-times-to-usd-4-6-bn-in-2019-globaldata/articleshow/76647471.cms?from=mdr

Ratings agency Acuité Ratings estimates that a reduction of imports from China by over EUR 7.04 billion, which is 17% of the trade deficit with China in 2019 and 0.3% of GDP, can be achieved in the first year.[#] This would be a possible short-term value proposition for new opportunities for Indian businesses and its supply chain.[@]

In the near term, local manufacturing in key areas of the economy will be a focus of the government which in turn could lead to a revision in business strategies of Indian enterprises. We expect that large government contracts in infrastructure, energy, construction, urban management like smart cities and transformation of agricultural business will have heightened local content and create a new collaborative and shared vision for businesses.

Small and Medium Enterprises (SME): The SME Conundrum

The story of elusive scale, growth and sustenance

In India, the share of SMEs in total Gross Domestic Product (GDP) during 2016-17, 2017-18 and 2018-19 was 29.3%, 29.7% and 30.3% respectively.[57] However, SMEs are affected by lack of physical infrastructure, timely availability of sufficient credit at affordable interest rates, marketing of products, obsolete/ old technology and lack of skilled manpower. Employment is affected by various factors such as seasonality, global market conditions and natural calamities.[58] This summarises the torment of SMEs in India and also is indicative of opportunities that lay ahead for innovation, scale and transformation.

The SME business segment in India is dominated by grassroots entrepreneurs who have low capital base, with businesses generally not scalable. In the last 5 years, there were 9 million new SME registrations, out of which almost 90% (i.e. 8 million enterprises) have an asset outlay of less than INR 2.5 million (EUR 31,250), making them vulnerable to small business shocks, due to significant dependence on a few local customers and the inability to achieve economies of scale.[59]

One of the clear and present risks that India carries is the risk of failure of SMEs which are spread across geographies and segments and employ about 120 million people. Their survival and restitution are paramount if India has to get out of the aftermath of the pandemic.

The situation in EU is quite different, where SMEs play an important role in international trade. Eurostat statistics show that over 615,000 SMEs exported goods to various destinations across the world. This represents 87% of total exporting EU companies and shows that SMEs are an important driving force for EU export performance. In addition, over 1 million SMEs engage in intra-EU exports accounting for 35% of the total value of intra-EU exports.[60] In normal circumstances, exporting EU SMEs are individually vulnerable to trade shocks as they typically export to only one or two foreign markets and have a very limited product portfolio and client base. Collectively, having a large number of competitive SMEs engaged in trade, is also a source of diversity and risk mitigation in global supply chains.[61] In relation to the existing problems of SMEs post-COVID-19, the Minister in charge of SMEs in India, Mr. Nitin Gadkari said:[62]

- 57% of micro-enterprises have no cash reserves, while 65% have had to dip into their personal savings to manage operations. Nearly 40% of MSMEs have already attempted to borrow money to survive, with only 14% borrowing from formal sources
- Additionally, about 73% of MSME businesses have reported a drop in orders and 50% indicated that inventory levels were up by more than 15%
- MSMEs also face a loss in domestic and global demand (the WTO projects that global trade in goods is expected to fall by 13-32%), coupled with the disruption in the supply of raw materials and non-payment of dues
- This could cause significant compression of approximately INR 800-1,200 billion (EUR 9.46 billion to EUR 14.19 billion) in profits for companies with a turnover between INR 0.75–2.5 billion (EUR 8.9 million to EUR 29.60 million) by FY21.

[#] Acuité Opinion – China Trade, June 2020, https://economictimes.indiatimes.com/news/economy/foreign-trade/india-can-reduce-8-4-billion-imports-from-china-over-fiscal-fy22-acuite-ratings/articleshow/76511483.cms

[@] https://www.cii.in/Sectors.aspx?enc=prvePUj2bdMtgTmvPwvisYH+5EnGjyGXO9hLECvTuNuXK6QP3tp4gPGuPr/xpT2f

[57] Rajya Sabha question number 3298 dated 20 March 2020, Mr. Nitin Gadkari, Minister for Micro, Small and Medium Enterprises, Government of India

[58] Rajya Sabha question number 3298 dated 20 March 2020, Mr. Nitin Gadkari, Minister for Micro, Small and Medium Enterprises, Government of India

[59] Rajya Sabha Question number 3299 dated 20 March 2020

[60] https://trade.ec.europa.eu/doclib/docs/2020/july/tradoc_158859.07.01%20Chief%20Economist%20Note%202%202020%20Final.pdf

[61] https://trade.ec.europa.eu/doclib/docs/2020/july/tradoc_158859.07.01%20Chief%20Economist%20Note%202%202020%20Final.pdf

[62] *Improving Economic Dynamism and Accelerating MSME Growth – June,2020, released on 26 June 2020*

The stimulus package announced by the Government of India does not include measures aimed at market creation or tax breaks for survival, to address demand related concerns.

Amish Mehta, Chief Operating Officer, CRISIL, puts it succinctly "The current facilitations may not have the heft to crank up demand in the near term because fiscal stimulus is limited and only to vulnerable households. It is critical that the demand curve is yanked steeply northwards, especially in discretionary products and services."[63]

Rabobank expects more loan write offs by banks creating financial stress in the banking system. Bank of International Settlements (BIS) has calculated that a 1% rise in the share of zombie firms (inefficient or unprofitable businesses) in a country reduces productivity growth by 0.3ppts.[64] COVID-19 may also see such "zombie" firms getting liquidated and more efficient firms with better technologies and processes entering the business world in their place.

COVID-19 and its after effects have hit the SMEs hard, both in India and elsewhere, and the need to scale and innovate with technological collaboration is key to survival. Strategic priorities in the EU- India Strategic Partnership Roadmap to 2025,[65] are to strengthen dialogue between EU and Indian businesses including SMEs and Start-ups, and mutual engagement through existing institutional mechanisms, notably the EU-India Trade Sub-Commission and its specialised working groups and dialogues, with a view to enhancing market access, particularly for small and medium sized enterprises (SMEs), addressing existing trade barriers and preventing the emergence of new ones, seeking alignment to international standards and best practices, easing up the assessment of conformity and improving investment conditions. This road map will create new and multiple engagements between India and EU to explore in areas of technology, products, innovation, training, capital and other factors of trade and commerce.

Will the INR 2 billion Opportunity for Local Bidding be a Breakthrough Opportunity?

The stimulus package for COVID-19 reserved all government procurement up to INR 2 billion (EUR 24 million) for Indian companies which will not be open to global tendering. The order[66] lays out the participation requirement for such contracts, namely the local content (*value added in India* after adjusting for imported content and taxes) should be 50% for class I suppliers, and at least 20% for class II suppliers. The order also states that local content can be increased through partnerships, joint ventures, the establishment of production units in India or JVs with local suppliers, or increasing the services of employees in India. However, the total value of opportunities for contracts between INR 1-2 billion (EUR 12-24 million), which were earlier open to global tendering, is not yet known.

The Government of India and centrally owned government companies' purchases in fiscal 2020 till February was INR 1,094 billion[67] or EUR 13 billion (in 2019 fiscal it was INR 1,534 billion or EUR 18 billion), out of which about 27% were supplied by SMEs. This is an indicator of the size of central government procurement which can come into play. States have their own procurement plans, (which are not covered here) suggesting additional scope and opportunities.

An indication of opportunities and the market which comes into play is in the India Investment Grid of the Ministry of Commerce, which as on 9 July, 2020⁎ lists 31 opportunities for the water management sector with contract values individually between EUR 25 – 35 million each, aggregating to EUR 765 million, that are yet to be contracted. In the absence of appropriate technologies and capital, Indian companies will look at collaborations for overseas companies including from the EU. Similarly, there are opportunities for other sectors as well.

Similarly, there are opportunities for other sectors as well. Though there are concerns over the definition of Indian companies or the extent of local content, in terms of eligibility for participation, this opens up whole new areas of opportunities and collaboration for EU businesses in India.

Sustainability—priority or at the margins for businesses?

The COVID-19 crisis has unleashed headwinds that threaten to limit the corporate response to the sustainability imperative. Many companies now find themselves in a difficult cash position, deeming anything

[63] "MSMEs face existential crisis, revenue to fall a fifth", CRISIL (S&P), June 15, 2020
[64] https://economics.rabobank.com/publications/2020/may/the-shape-of-indias-exit-from-the-covid-19-crisis/
[65] https://eeas.europa.eu/sites/eeas/files/eu-india_strategic_partnership_a_roadmap_to_2025_0.pdf
[66] Ministry of Commerce and Industry of the Government of India, dated June 4th 2020
[67] Rajya Sabha Question 1232 dated 2 March 2020
⁎ India Investment Grid, Ministry of Commerce and Industry https://indiainvestmentgrid.gov.in/ Accessed on June 29, 2020

not critical for survival as unnecessary. As companies struggle with decisions affecting their day-to-day existence, Environmental, Social, and Governance (ESG) matters may seem like slow-burning issues they can deal with tomorrow.[68]

The pandemic could trigger a reversal of sustainability trends. Unpredictable and rapid changes in demand inhibit advance planning, limiting companies' ability to respond sustainably. Lower oil prices could make the business case for sustainability moves—from renewables to bioplastics—look less compelling. Early findings from the research of the International Institute of Sustainable Development (IISD) show that, between the beginning of the COVID-19 pandemic in early 2020 and July 3, 2020, G20 countries have committed at least EUR 118 billion to fossil fuels and at least EUR 60 billion to clean energy in their stimulus and recovery packages. India has set out during this period EUR 7.8 billion to fossil fuels and USD 0.80 billion for clean energy.[69] The current priorities for kick starting the growth engines continue to be tilted on fossil fuels. Similarly, most Indian states are reversing their stand on banning single use plastic (plastic below 50 microns) post COVID-19 and will redraw plans for enforcing such a ban in the future.[70]

Environment

Lockdowns and the cessation of industrial activity the world over have led to a marked decrease in the levels of air pollution, especially in levels of nitrogen dioxide and formaldehyde, as noted by NASA.[71] However, the relief is transitory, with huge amounts of unrecyclable waste like carelessly discarded PPEs, rise in single use plastics out of fear of transmission of COVID-19, halting of global supply chains leading to large quantities of agricultural and meat products being rendered waste (with domestic markets being unable to absorb the entirety of the produce).[72]

While restricted movement of people around the world has contributed to reduction in air pollution, it has increased the share of e-commerce, with the downside of increased packaging materials, largely non-biodegradable. A McKinsey analysis of *packaging trends* showed that globally, sustainability could reduce by nearly half in terms of its impact.[73]

India recently promulgated the Draft Environment Protection (Amendment) Notification, 2020,[74] in March 2020, which governs the process of environmental clearances for newly set up factories and enterprises. National mandates such as ensuring 1/3rd of total land under high quality forest cover, establishing balanced relationships among humans, wild animals and nature, promoting integrated farming methods or envisaging development of sites within their carrying capacity are laudable goals[75] but expected to be achieved only in the long term.

Water and sanitation

To combat the humanitarian impact triggered by large scale migrations, the Government of India combined water and waste management efforts as per the Swachh Bharat Mission (Grameen) (Clean India Mission) and the Pradhan Mantri Krishi Sinchayee Yojana (PM's Farmer Irrigation Scheme) with the MGNREGA (national rural employment scheme).[76] Since the rationale behind the MGNREGA is generating the maximum employment possible, the methods used to achieve efficient water and waste management in rural areas is incredibly labour intensive. Thus, at this time, water management systems including grey water management in rural areas remain traditional, low cost and low tech, with little scope of bringing more sophisticated technology into this space. If the priority is large-scale rural employment rather than technical accuracy, it could lead to discrepancies in construction, affect the normal functioning of a septic tank, as well as the management of effluent and faecal sludge, which in turn could lead to contamination of the water table.

Labour and human resources

Several Indian states have re-worked their labour laws to promote the kick starting of industry and attract investments after the pandemic. Some changes are: increasing the maximum permissible daily working hours to 10-12 hours a day in factories, keeping labourers in service as required by industry, suspending several labour laws for a period ranging up to 1000 days. Although these moves are aimed at attracting

[68] BAIN & Company, *Covid-19 Gives Sustainability a Dress Rehearsal*
[69] https://www.iisd.org/gsi/subsidy-watch-blog/g20-recovery-packages-benefit-fossil-fuels-more-clean-energy
[70] https://www.livemint.com/news/india/how-covid-19-is-reversing-the-ban-on-single-use-plastic-across-india-11593608049382.html
[71] https://www.nasa.gov/feature/nasa-probes-environment-covid-19-impacts-possible-links
[72] https://unctad.org/en/pages/newsdetails.aspx?OriginalVersionID=2333
[73] "Shaping the next normal of packaging beyond COVID-19," McKinsey (May 2020)
[74] http://moef.gov.in/wp-content/uploads/2020/03/Draft_EIA2020.pdf
75 https://niti.gov.in/post-covid-19-world-needs-sustainable-development-plus
[76] https://nrega.nic.in/netnrega/writereaddata/Circulars/2415Joint_Advisory_for_water_conservation_works.pdf

investments and giving a push to increasing manufacturing activity in India, there are some concerns that hard-won ESG norms could be temporarily affected in the process.

Digital business models become the only business model in some sectors

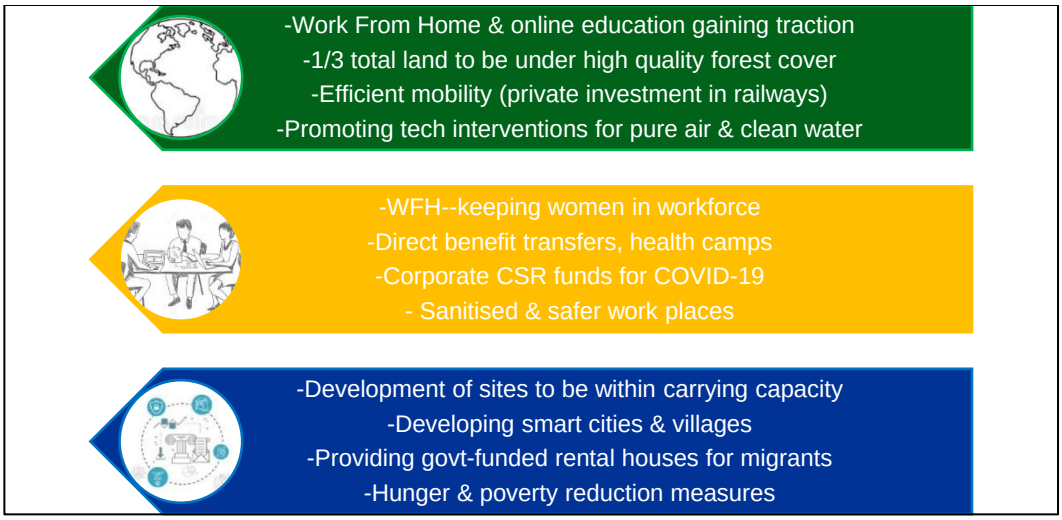
Over the last decade, products and services in a number of industries moved from atoms to bits: media (newspapers, movies, books, magazines), financial services (payments, mortgage applications, car loans), cameras and film, real estate marketing (apps like Zillow in the United States for seeing homes for sale in neighbourhoods), and maps (Google) and more. The pandemic will quicken the shift to fully digital business models in banking, insurance, medicine, and retail, among others.[77] The net ESG effect of such moves is unclear at the moment.

Agility, scalability and automation will be the watchwords for this new era of business, and those that have these capabilities now will be the winners. Those businesses that have designed their solutions to use the full potential of cloud computing, will not buckle under the pressure.

In India, this imperative may deepen the digital divide. This divide was starkly seen in the Kindergarten to Grade12 (K-12) education sector during lockdown when students from families with access to home computers and smartphones could better understand online lessons. Some efforts have been made to use alternative methods such as television broadcast for promoting inclusiveness in education.

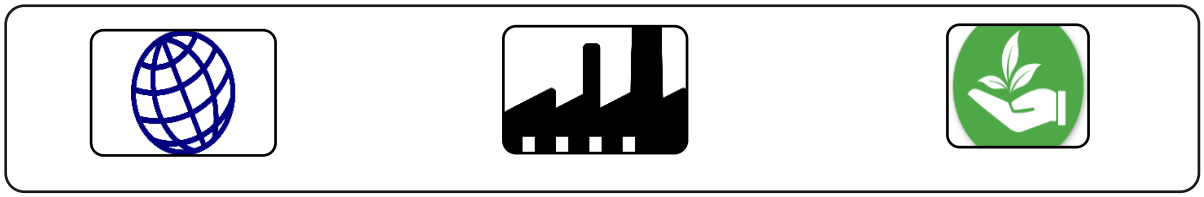
Encouragingly, for each headwind threatening sustainability, there are several corresponding tailwinds, many of which will be longer lasting. ^ Some of these are suggested in Government of India measures to promote ESG in the post-COVID-19 recovery phase (a few are outlined in the diagram below).

Figure 12: Some post-COVID Likely Trends



[77] Digital tracking – of products, shipments, and money in "the last mile" – becomes critical (The New Normal the Pandemic will Unleash on Businesses—Krishnan Ramanujam, President, Business and Technology Services, TCS)
^ BAIN & Company, Covid-19 Gives Sustainability a Dress Rehearsal

Figure 13. The New Normal and What May Follow



Trade and Supply chain

Global re-balance of trade and commerce is expected to improve global trade with India. India's trade with US and EU projected to be EUR 10 billion and EUR 1 billion respectively by 2023

India's localisation drive will bring new opportunities for joint ventures/ technology transfer for EU businesses

Policy impetus and winds of change: Policy impetus post-COVID-19 has seen large global investment inflow and opens up opportunities for EU companies re-configured China supply chains

Road ahead for SMEs

Policy imperative: India's recovery depends on how SMEs come out of the pandemic. The INR 2 billion opportunity for local bidding is a potential breakthrough opportunity for foreign participation through channels of partnerships & JVs

Opportunity for intevention: Indian SMEs lack scale, innovation, technology, liquidity strength, areas which provide opportunities for EU businesses for intevention.

Sectors in focus: Agriculture, farm processing and infrastructure sector provide opportunities for greater collaboration

Sustainable growth

Environmental goals shift: Environmental sustainability goals likely to be impacted in the short to medium term.

Labour reforms and the pitfalls: Efforts to fast-track private investment have lead to labour reforms in certain states; may impact labour welfare goals in the short to medium term.

Digital trends pick up: Digital business models pick up, especially in sectors of media, banking and financial services, medicine and retail

Chapter 4. Sectoral Review

Chapter 4. Sectoral Review

4.1 Renewable energy

India has set an ambitious renewable energy target of 175 GW cumulative RE deployment by 2022 and 450 GW RE by 2030. A total of 87.7 GW has been commissioned as on June 2020, and capacity in upwards of 40 GW has been under implementation/ bidding against the target of 175 GW.[78] Data from the Central Electricity Agency (CEA) indicates that RE contributes to almost 24% in India's installed power capacity (87.7 GW RE as part of 371 GW installed power capacity[79]) and the renewable power penetration (in billion unit terms) has grown from 3% to 12% in the last five years. Whilst the markets for clean technologies have already been dominated by a few leading companies, there is a need for new technologies to reduce emissions from other sectors of the economy, beyond electricity. One such area is technologies related to the production, transportation, storage and use of low carbon hydrogen.

India's engagement with EU

Statistics from the International Renewable Energy Agency (IRENA) indicate that both India and EU contribute significantly to global RE capacities. India stands 4th globally in terms of installed wind capacity and 5th globally in installed solar capacity; while EU (28) stands 2nd globally in both solar and wind energy. India's trade relationship with the European Union is spread across various product groups. In 2019, EU exports to India of power generating machinery were valued at EUR 1.4 billion (EUR 1.3 billion in 2018) and electrical machinery were valued at EUR 2.3 billion (EUR 2.4 billion in 2018).[80] Trade in this segment is either lower or at best marginally higher than 2018, indicating tapering down of engagement of EU businesses with India. In view of the healthy trade balance and cordial relations, increased trade opportunities exist between EU and India.

EU-India Clean Energy and Climate Partnership (CECP), announced in March 2016, aims at reinforcing cooperation between Europe and India on clean energy through joint activities for deployment of climate friendly energy sources including solar and wind energy. Current areas of collaboration include activities in offshore wind energy, roof top solar and solar parks, integration of renewable energy and storage, smart grids, biofuels and energy efficiency in buildings.

EU companies and countries through their sovereign investment arms are one of the largest investors in the renewable energy sector in India. The European Investment Bank (EIB) has approved an investment, of EUR 3.4 billion for India, half of which is for renewable power in solar and wind sector. The balance is for metro rail projects. EUR 2.8 billion of the approved amount has been disbursed in the past 6 years.[81]

The recently concluded tender 2000 MW Solar PV Power Projects (Tranche IX) tender from Solar Energy Corporation of India (SECI), bagged by developers including Spain's Solarpack, Italy's Enel Green Power, French Total Eren and EDF Renewables, and German ib vogt among others,[82] are indicative of the continuing commitment of EU businesses in India.

With the European Green Deal, adopted in December 2019, Europe has put clean energy and climate action on a priority and has proposed transformative policies and increased climate ambition for 2030 in order to achieve the 2050 climate neutrality objective. The new Hydrogen Strategy explores the potential of clean hydrogen to help the process of decarbonising the EU economy, in line with the 2050 climate-neutrality goal.[83]

In 2016, the Ministry of New and Renewable Energy (MNRE) published a report laying out a comprehensive plan for increasing R&D activity on clean hydrogen. This included significant funding for different electrolyser technologies and their integration with renewable electricity sources, which has strong potential in India given the cost and availability of renewable electricity. New pathways of collaborations with EU leaders will help India move towards its renewable energy sufficiency in the years ahead. Reliance Industries Limited (RIL),[84] the largest Indian company and a conglomerate from oil to technology to retail, on 15 July 2020

[78] Standing Committee on Energy (2019-20), Seventeenth Lok Sabha, Ministry of New and Renewable Energy (Fifth Report), March 2020.
[79] http://www.cea.nic.in/reports/monthly/executivesummary/2020/exe_summary-06.pdf
[80] European Union, Trade in goods with India, DGFT, European Commission
[81] https://energy.economictimes.indiatimes.com/news/renewable/offshore-wind-energy-should-be-indias-topmost-priority-henriette-faergemann-eu-counsellor-to-india/74226683
[82] https://www.seci.co.in/Upload/New/637304227738927744.pdf
[83] https://ec.europa.eu/energy/topics/energy-system-integration/hydrogen_en
[84] https://energy.economictimes.indiatimes.com/news/oil-and-gas/reliance-to-replace-auto-fuels-with-electricity-hydrogen-targets-carbon-zero-co-by-2035/76981733

announced that it will replace transportation auto fuels with clean electricity and hydrogen and has set a target to become net carbon-zero by 2035.

This potentially creates an opportunity for EU corporations which have been undertaking leading work in this field, consistent with EU's Hydrogen Strategy aimed at creating a clean environment and sustainable jobs post-COVID-19 and aimed at producing 10 million tonnes of renewable hydrogen in EU between 2025–2030.[85]

Impact of COVID-19 on renewable energy sector

According to the International Energy Agency (IEA), India's full national lockdown reduced energy demand by almost 30%, meaning that with each additional week of lockdown, annual energy demand reduced by 0.6%.[86]

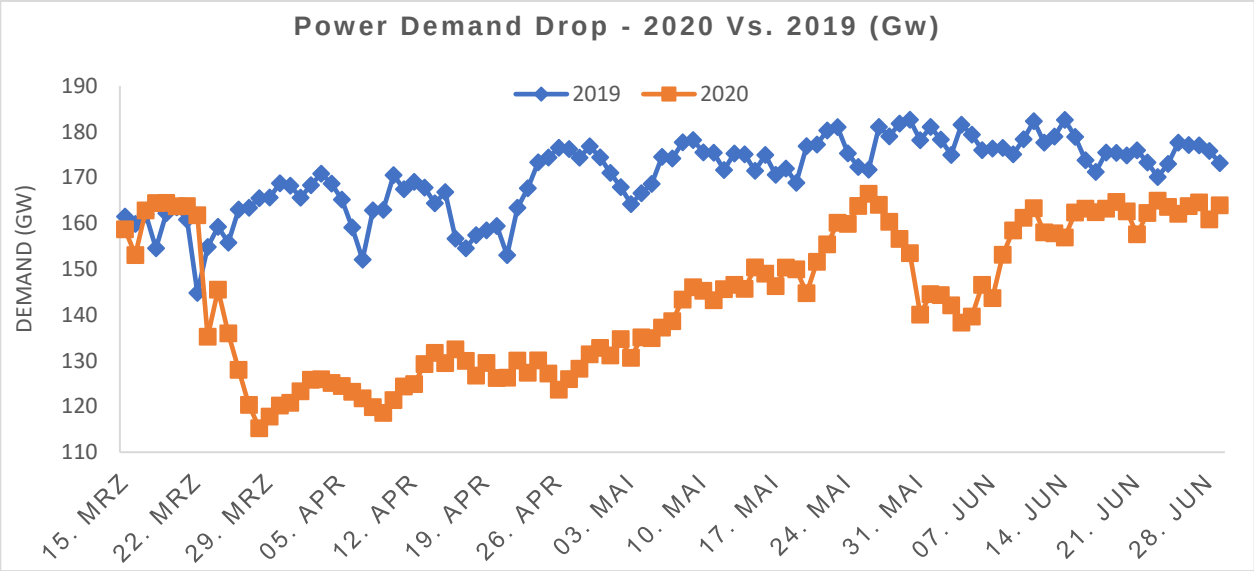
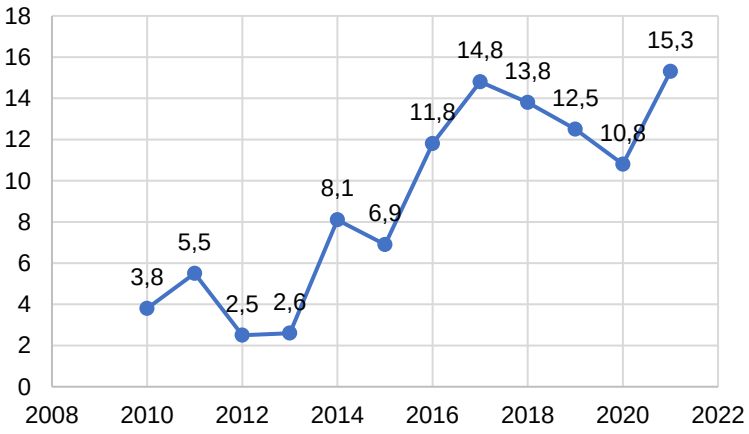


Figure 14. Renewable Energy Capacity Additions, 2010-2021, IEA Forecast (in GW)



While the share of coal-fired power fell drastically during the lockdown, the share of renewables remained relatively constant. In 2020, the IEA forecasts that net additions of renewable electricity capacity in India will decline by 13% compared with 2019. The decline reflects delays in construction activity due to supply chain disruption, lockdown measures and social-distancing guidelines, and emerging financing challenges. In 2021, renewables are expected to show their resilience – the majority of the delayed projects expected to come online, leading to a rebound in new installations.[87]

As a result, in the next year, the renewable energy capacity additions are forecasted to make gain.

[85] A Hydrogen Strategy for climate neutral Europe. https://ec.europa.eu/commission/presscorner/detail/en/FS_20_1296
[86] Global Energy Review 2020, International Energy Agency
[87] Renewable Energy Market Update – Outlook for 2020 and 2021, International Energy Agency
~ Non-Rating Action Commentary, Fitch Ratings, "Indian Renewables Generators' Liquidity Risk Manageable Amid Coronavirus" (April 17, 2020).

Fitch Ratings feels that the renewables sector has adequate liquidity. *"(…) the renewable energy generators rated under Fitch's Corporate Rating Methodology have adequate liquidity, low near-term debt maturities, and expectations of support from stronger parents in certain cases, so we do not expect any negative rating action in the near term." Fitch's assessment factors in expectations of a sharp decline in India's economic growth before gradual recovery to pre-coronavirus levels in the financial year ending March 2022 (FY22)*.

The COVID-19 pandemic, while not derailing India's renewable energy prospects, will likely slowdown progress in the short term.

According to Brookings India: "India's transition wasn't just one of decarbonisation but also of broader changes to market structures, digitalisation, among others; while these are unlikely to be shelved, there is a chance these may be slowed down instead of accelerated in the short run. *There will be a larger focus on factors like employment and domestic security. Both of these seem to support coal.*[88]

Energy research firm, Wood Mackenzie said: "The drop in power demand as a result of the crisis will hurt renewables. Any emerging energy technologies will require government subsidies if they are to succeed. The economic turmoil post COVID-19 is likely to stretch the Indian government's ability to provide this kind of support."[89]

A NITI Aayog report says: "The economic slowdown that is positively impacting the environment is also creating new challenges for India's clean energy transition, including liquidity and financing constraints, supply-chain shortages, shifting priorities in the public and private sectors, reduced workforce, and job losses."[90]

CRISIL[91] assessed "moderate impact" on the Indian renewables sector and said: Under-construction projects to be commissioned by July and August of 2020 are at risk of missing their respective scheduled commercial operation dates if trade with China continues to be affected for long, because India sources 80% of its solar modules from China. In the event, the prices of modules increase due to import restrictions from China or due to increased costs of production in India or imports from other countries, the price per unit of solar power could increase and operators will struggle to supply power based on prices specified in their bids, which factored falling costs of modules.

*Most experts think that renewable energy sector in India will decline in the short term and can expect to see growth revival only toward the end of 2021 (medium to long term).India in its stimulus package on COVID-19, has allocated EUR 7.8 billion on fossil fuels and EUR0.80 Billion on clean energy, marking a shift in the short term outlook and transition of the government.**

Government response to COVID-19 and priorities

Coal Sector and DISCOMs

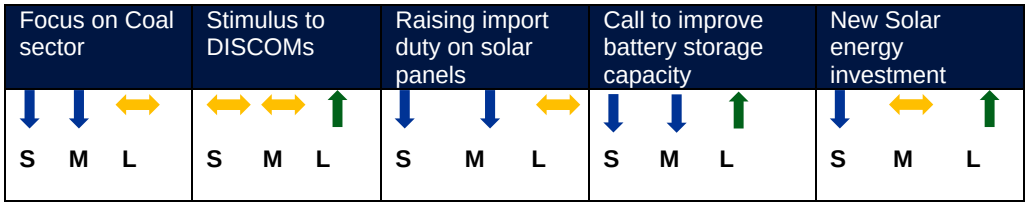
- The Government of India's COVID-19 stimulus package includes several measures addressing the coal sector including auction of 50 new coal blocks to the private sector, incentives to coal gasification/ liquification and allocation of INR 5,000 billion (EUR 62 billion) for infrastructure development of the coal sector.[92]
- INR 900 billion (EUR 10.49 billion) stimulus for DISCOMS: This infusion is to help DISCOMs deal with acute liquidity crisis and repay debts to power generators and transmission companies, expecting to restart the cycle of cash flow in the power sector.
- Plans announced to privatize power departments of 9 Union Territories to drive better customer services, operational and financial efficiency.

[88] Rahul Tongia, "DisComs post-COVID-19: Untangling the historical challenges, short-term needs, and long-term ambitions", Brookings India, Discussion Note (May 2020).
[89] "How will India's extended lockdown impact the energy sector?" Editorial, Wood Mackenzie (May 6, 2020).
[90] NITI Aayog and Rocky Mountain Institute (RMI). Towards a Clean Energy Economy: Post-COVID-19 Opportunities for India's Energy and Mobility Sectors, 2020 (page 7)
[91] Impact Note published March 19, 2020, "The Covid-19 fallout"
[92] Ministry of Finance Press Release, May 16, 2020, Press Information Bureau. https://pib.gov.in/PressReleasePage.aspx?PRID=1624536

Renewable Energy

- The Ministry of New and Renewable Energy (MNRE) provided some relief measures to address concerns of developers like notifying 'man and material movement' for renewables as an essential service[93] to allow for project work to continue during the lock-down period, recognizing the pandemic as a 'force majeure' event,[94] giving confidence to project developers and enforcing 'must run' status to renewables even during COVID times.
- The Government of India has decided to impose basic customs duty on solar cells, modules and inverters starting August 2020.[95]
- The Finance Ministry has extended the safeguard duty on imported solar cells and solar modules. A safeguard duty rate of 14.90% will be imposed for the first six months starting July 30 and 14.50% for the subsequent six months. Within developing countries, the duty is applicable only on China, Thailand and Vietnam.
- The Finance Minister announced policy reforms to fast track investment in an effort towards **Aatma Nirbhar Bharat**, highlighting that incentive schemes[96] for promotion of new champion sectors will be launched in sectors such as solar PV manufacturing; advanced cell battery storage, etc.
- The Solar Energy Corporation of India concluded an innovative tender for 400 MW Renewable Power to be supplied on Round-The-Clock (RTC) supply[97] and also floated notice for 1200 MW Renewable Power to be supplied during peak hours.
- Recent investments have promised to significantly broaden the reach of the solar segment in India. Adani Green Energy Ltd won a bid to build 8 GW of photovoltaic solar power projects along with 2 GW manufacturing over the next five years.

Figure 15. Summary of Impact of Government response/priorities on Renewable Energy Sector[98]

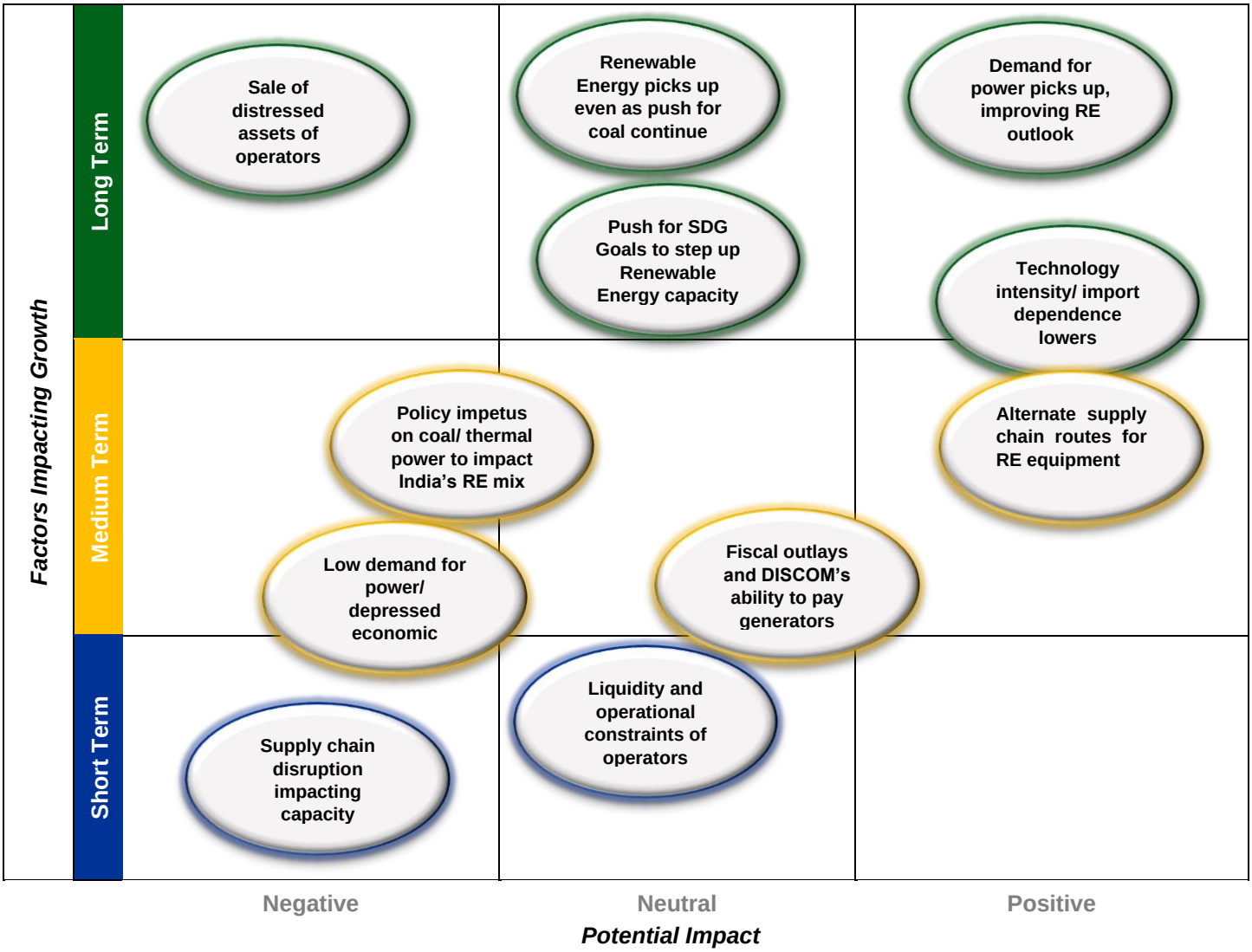


[93] https://mnre.gov.in/img/documents/uploads/file_f-1585207142578.pdf
[94] https://mnre.gov.in/img/documents/uploads/file_f-1584701308078.pdf
[95] https://www.pib.nic.in/PressReleasePage.aspx?PRID=1633750
[96] https://pib.gov.in/PressReleasePage.aspx?PRID=1624536
[97] https://www.seci.co.in/Upload/New/637279133335581455.pdf
[98] ⬇(negative), ⟺(neutral), ⬆(positive). S=Short Term, M=Medium Term, L=Long Term

Key Takeaways and Investment Opportunities

The factors listed in the diagram are independent and are not ranked in order of their relative importance. Overlaps signify factors which can influence each other.[99]

Figure 16. Renewable Energy-A Matrix of Impact & Opportunities



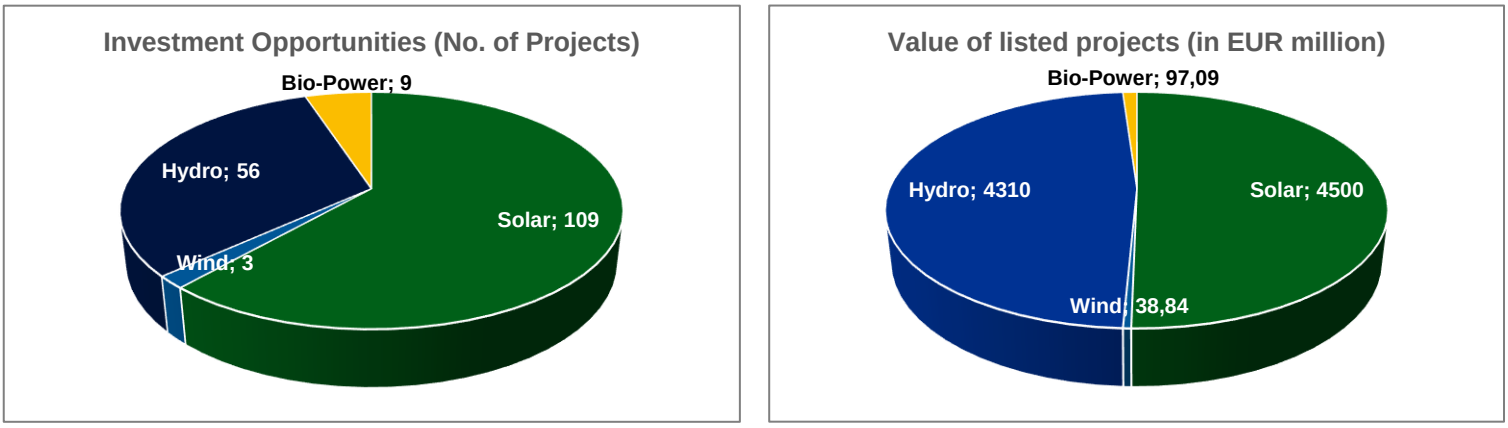
The impetus provided to the coal mining and exploration sector could come in the way of India's ambitious energy transition roadmap, as the government could likely in the medium to long term see coal as a sector, which could drive employment in large numbers, across the value chain. With the renewable energy sector having to deal with a contraction of demand and liquidity concerns of generators, the push for coal reforms could in the near to medium likely impact the growth of the renewable energy sector.

Niti Aayog summarises the future of renewables: "COVID-19's impact on the clean energy transition is complex and will continue to be so in the near term."[100]

[99] Source: Analysis of Rating Agencies, India Investment Grid, TARI Analysis
[100] NITI Aayog and Rocky Mountain Institute (RMI). Towards a Clean Energy Economy: Post-COVID-19 Opportunities for India's Energy and Mobility Sectors, 2020

The Government of India has curated marquee opportunities for investment in various states across several sectors through an interactive platform **India Investment Grid,** maintained by the Department for Promotion of Industry and Internal Trade, Ministry of Commerce & Industry. Opportunities in the renewable energy sector as depicted in the grid are:[101]

Figure 17. Renewable Energy-Investment Opportunities



This, and our analysis of the sector, gives a snapshot of opportunities for technical and other collaborations and investments for EU businesses in India in this sector:[102]

Figure 18. Renewable Energy-Opportunities for EU Businesses

Timeline	Equipment and Service			Finance and Investment			Technology	
	Exports to India	Manufacturing in India	O&M	Capital investment in new bids	Stressed assets	Capital investment in existing operations	Technology and innovation	Wind solar hybrid
Short term	↓	↑	↑	↓	↑	↑	↓	↑
Medium term	↔	↑	↑	↑	↑	↑	↑	↑
Long term	↑	↑	↑	↑	↑	↑	↑	↑

RE power continues to enjoy "must run" status, however the sector is bound to decelerate in the short term owing to lower demand, supply chain disruptions and pressure on investments. In the medium to long term it is likely to rebound as energy demand recovers and the government continues with clean energy transition. Most utility supply chains will be restored in the medium term but increased 'localisation' focus will remain, as highlighted under the Aatma Nirbhar Bharat Abhiyaan. India's vision to be self-sufficient especially on solar cells, batteries, etc. offers opportunities for global manufacturers.

[101] https://indiainvestmentgrid.gov.in/, accessed on 10 July 2020, TARI representation

[102] ↓ (negative), ↔ (neutral), ↑ (positive).

4.2 Waste Management

There is no denying that India has improved its sanitation coverage, but the country's biggest shortcoming is its poor waste management infrastructure. India still uses manual labour for waste pick-up, segregation, street cleaning and inefficient disposal including burning and dumping. The majority of the people working in the Indian Waste Management System belong to the informal sector; for rag pickers, landfills form the very source of livelihood. As countries and cities seek to modernize their waste management and recycling processes, this group is at risk of being marginalized and seeing its livelihood endangered.[103]

Yet, there is increasing government push to create a market ecosystem for waste management and one estimate states that by 2025, India's market size for waste management will be worth EUR 13.22 billion, with annual growth of about 7%.[104]

Farm and food waste

Agricultural waste is predominantly handled by the owners of agricultural land which is primarily in the private sector. Approximately 500 Metric Tonnes of agricultural waste is generated in India annually. With additional impetus given to the farm and food sector by the Government of India's COVID-19 stimulus, farm sector waste is set to increase steeply. Farmers across India burn significant amounts of agricultural waste to clear their fields for the next crop and rarely put it to use except as animal fodder or mulch since the cost of collection, processing and transportation can be much higher than the revenue from the beneficial use of such waste.

There are some instances of innovative uses of agri-waste but these stand out as exceptions; for instance, one enterprise in the state of Karnataka is making bio-degradable packaging in partnership with a German firm.[105] Several opportunities are likely to open up in this sector for collaborations using newer development in technology, in process development and in product development to increase the economic values of products, while contributing to clean air and water.

Plastic waste and bio medical waste

India generates close to 25,940 tonnes per day of plastic waste of which 15,342 remains uncollected, according to the Central Pollution Control Board. India has committed to phase out the use of single-use plastic by 2022, but as a result of the pandemic, the use of plastic products such as gloves, face shields, and packaging has increased. Globally, as a result of concerns about virus contaminated surfaces, several countries have rolled back or delayed plans to ban plastic bags, and some have even banned reusable bags temporarily.[106]

Guidelines for disposal of huge quantities of bio-medical waste arising due to COVID-19 are still being evolved.

Municipal solid waste

There are approximately 3,135 dump sites in the country out of which 37 are either reclaimed or capped. Further, there are 8 dump sites which are converted to sanitary landfill sites.[107] The total Municipal Solid Waste (MSW) generated in the urban areas of the country is 1.45 lakhs metric tonnes per day (MT/D) of which 54% is being processed in a scientific manner.[108] Solid waste management is a state subject and function of Urban Local Bodies.

However, nearly half of India's waste-to-energy (WTE) plants, meant to convert non-biodegradable waste, are believed to be defunct. The country's inability to segregate waste has resulted in even the existing plants working below capacity.[109] The fundamental reason (for the inefficiency of these plants) is the quality and composition of waste. MSW (municipal solid waste) in India has low calorific value and high moisture content. As most wastes sent to the WTE plants are unsegregated, they also have high inert content. This situation has worsened in the period post-Covid-19, since a substantial quantity of waste in Indian towns and cities is recycled through informal labour, who have migrated to home villages in large numbers. This has knocked out the base of the waste recycling industry, calling into question the viability of WTE plants.

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[103] Patrick Schröder, "Promoting a just transition to an inclusive circular economy", Research Paper, Chatham House, April 2020
[104] Waste Management Initiatives and Activities in India For Society's Welfare, K Venkata Rami Reddy, Dr. A. SreeRam. INTERNATIONAL JOURNAL OF SCIENTIFIC & TECHNOLOGY RESEARCH VOLUME 8, ISSUE 12, DECEMBER 2019
[105] Making Products with Crop Waste Could Improve India's Air and Water, https://www.bloomberg.com/news/articles/2018-04-24/packaging-made-from-crop-waste-could-curb-india-s-pollution)
[106] Ibid
[107] Lok Sabha answers: UNSTARRED QUESTION No.2706 TO BE ANSWERED ON 06.03.2020
[108] LOK SABHA UNSTARRED QUESTION NO: 959, ANSWERED ON: 27.06.2019 Disposal of Municipal Waste
[109] At the Cross Roads, Centre for Science and Environment, 2019, page 30

This could offer opportunities for mechanisation and use of more technology to improve the quality of waste input and make WTE plants more efficient.

Circular Economy

India's GDP growth is often called consumption-led growth, by a rising middle class population. Between 1970 and 2017, demand for natural resources increased from 1.18 billion tonnes to 7.4 billion, and India emerged as the world's second-largest consumer of materials. The situation is complicated by India's slow resource productivity, compared to nations like Germany and China. Limitations in finance, and technology know-how and access impede improved productivity and material recovery.[110]

Promoting the circular economy will enhance resource efficiency and promote the use of secondary raw materials which has emerged as a strategy for minimising the potential trade-off between growth and sustainability. This strategy can stabilise raw material supply for industry, reduce ecosystem pressures, and create green jobs. Resource Efficiency has the potential to improve resource availability that is critical to the growth of industries, which translates into reduced price spikes due to supply constraints or disruptions.

In February 2020, Goa was the first Indian state to adopt a formal strategy to mainstream resource efficiency and foster sustainable management of resources in the state. The strategy, prepared in collaboration by Directorate of Planning, Statistics and Evaluation (DPSE), Government of Goa and The Energy and Resources Institute (TERI) with support from the EU-Resource Efficiency Initiative (EU-REI), presents a resource efficiency roadmap for tourism and construction along with addressing the issue of marine litter.[111]

New industries can be created including those in the recycling sector, as well as in innovative design and manufacturing, and states other than Goa can make India become a key innovation hub for Resource Efficiency (like it has for ITeS).

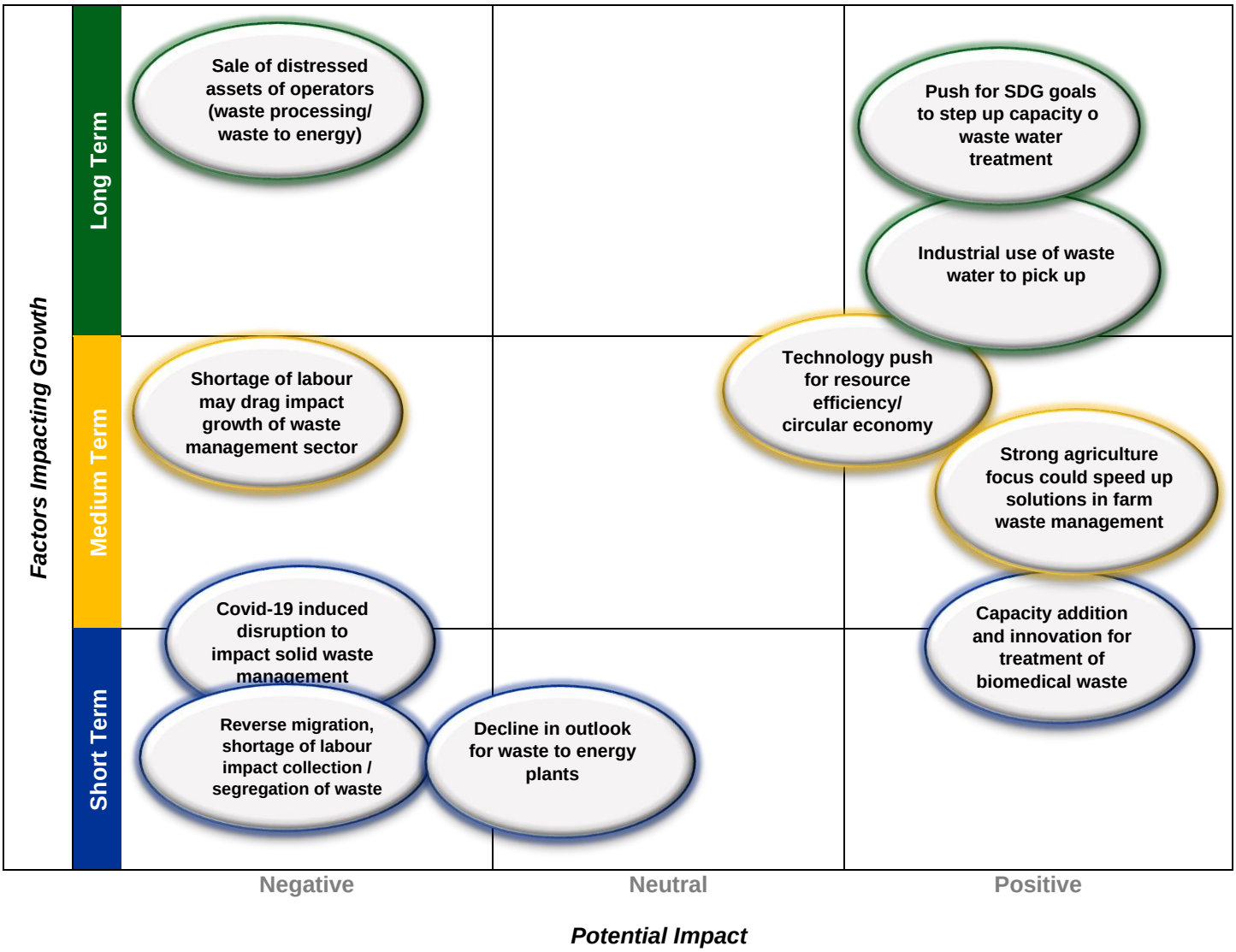
However, manufacturing economy recovery is expected to regain to pre-COVID-19 levels only by the fiscal year 2022-23, at which time resource efficiency will regain importance in the nation's agenda.

[110] https://www.downtoearth.org.in/blog/energy-efficiency/enhancing-prosperity-through-resource-efficiency-in-india-65149
[111] https://www.teriin.org/press-release/goa-becomes-indias-first-state-have-resource-efficiency-strategy-measures-suggested

Key Takeaways and Investment Opportunities

The factors listed in the diagram are independent and are not ranked in order of their relative importance. Overlaps signify factors which can influence each other.[112]

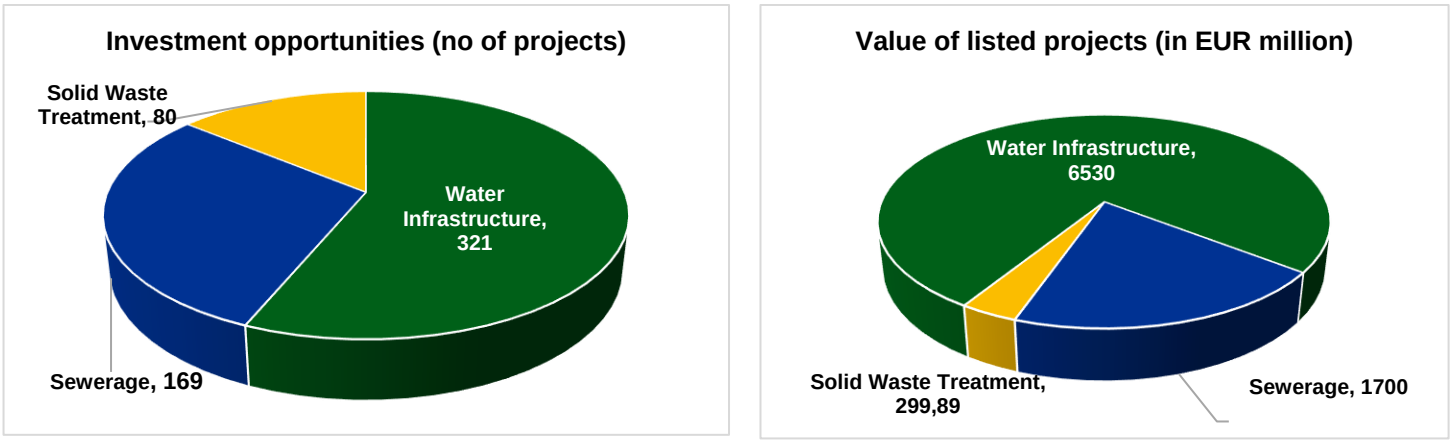
Figure 19. Waste Management-A Matrix of Impact & Opportunities



[112] Source: Analysis of Rating Agencies, India Investment Grid, TARI Analysis

The Government of India has curated marquee opportunities for investment in various states across several sectors through an interactive platform **India Investment Grid,** maintained by the Department for Promotion of Industry and Internal Trade, Ministry of Commerce & Industry. Opportunities in the waste management sector (combined with water management) as depicted by this grid are:[113]

Figure 20. Waste Management-Investment Opportunities



This, and our analysis of the sector, gives a snapshot of opportunities for technical and other collaborations and investments for EU businesses in India in this sector[114]:

Figure 21. Waste Management-Opportunities for EU Businesses

Timeline	Equipment and Service			Finance and Investment			Technology	
	Exports to India	Manufacturing in India	O&M	Capital investment in new bids	Stressed assets	Capital investment in existing operations	Technology and innovation	Biomedical waste management
Short term	↓	↓	↑	↓	↑	↑	↓	↑
Medium term	↔	↑	↑	↔	↑	↑	↑	↑
Long term	↑	↑	↑	↑	↑	↑	↑	↑

India needs to move from isolated solutions across the waste management spectrum to integrated approaches to build sustainable and resilient systems. Efficiencies built into integrated solutions are key to making a business case for attracting investments in this sector.

[113] https://indiainvestmentgrid.gov.in/, accessed on 10 July 2020, TARI representation

[114] ↓ (negative), ↔ (neutral), ↑ (positive).

4.3 Water Management

India stands in a delicate balance with respect to the availability of freshwater, both in terms of quantity and quality. India is home to 17% of the world's population but has only 4% of the world's freshwater resources.[115] India's per capita water availability is around 1,100 cubic meter, well below the internationally recognized threshold of water stress of 1,700 cubic meter per person, and dangerously close to the threshold for water scarcity of 1,000 cubic meter per person.[116]

The COVID-19 pandemic has exponentially increased the need for consumption of fresh water. An analysis finds around 20-40 litres of water in this new normal is used every day, with the assumption that every person cleans their hands at least 10 times a day, instead of a usual average of five times a day.[117]

India-EU Water Partnership

In June 2017, the Joint Working Group of the India-EU Water Partnership agreed on an IEWP Action Plan that identified nine Priority Areas (PRs) for cooperation and implementation on water resources as well as river basin management.

While all these PRs are important, in the post-COVID-19 period, the following are expected to get a fillip based on the Government's post-Covid-19 stimulus programme and recovery plan:

- Priority 1. Sustainable Development of Water Basins and Water Governance
- Priority 4. Groundwater use
- Priority 5. Water use in irrigation
- Priority 8. Treated wastewater re-use
- Priority 9. Collaboration in research, innovation and technology

Changes impacting priority areas (Government priorities/ COVID-19 response)

The Government of India announced a host of policy interventions to push through reforms which would kick start the economy. The reforms are spread over different industries and hence their impact on the water scenario in the country will differ. Estimates suggest that industrial water requirement will increase 4 times between 2005 and 2030.[118] Additionally, a recent study reports that industries will need to draw three times the water compared to their actual consumption by 2030 due to water efficiency challenges.[119]

Water Governance

Water governance is widely acknowledged as an important factor for sustainable development. As NITI Aayog's Composite Water Management Index 2019 said, states have displayed strongest improvement on the Policy and Governance theme amongst the nine themes included in the Index, with the theme median score rising by 30% over the last three years.[120]

Water governance in India is decentralized at the state level, who have different institutions such as regulatory authorities, water departments, gram panchayats, irrigation departments and public works departments to develop and manage water resources. The sheer number of stakeholders makes water governance challenging in India.

The Ministry of Jal Shakti, formed in May 2019 by the Government of India, seeks to consolidate institutional structures and bring interrelated water management functions together to drive more effective outcomes.

Groundwater use

The Government's stimulus package has placed great thrust on the coal sector, which indicates that thermal power will remain the mainstay of India's energy mix for the next few years. Up to 40% of India's thermal plants are located in areas facing acute water shortages and rely on fresh water for cooling purposes.[121] In 2019, it was revealed that only about half of the 156 plants declared themselves compliant with water norms across 12 states.[122]

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[115] Composite Water Management Index, NITI Aayog in association with Ministry of Jal Shakti and Ministry of Rural Development (August 2019)
[116] Helping India Overcome Its Water Woes, The World Bank (Dec 9, 2019)
[117] Centre for Science and Environment (CSE), "COVID-19: The need is to decentralise how we manage wastewater" (May 8, 2020)
[118] *Charting Our Water Future* (McKinsey & WRG, 2009), cited in NITI Aayog "Composite Water Management Index" (August 2019)
[119] "Investments worth $291 bn needed to plug water demand-supply gap in India: Study", *ASSOCHAM India*.
[120] Composite Water Management Index, NITI Aayog in association with Ministry of Jal Shakti and Ministry of Rural Development (August 2019).
[121] 'Parched Power: Water Demands, Risks, and Opportunities for India's Power Sector.' World Resources Institute, cited in Mercom India, "Solar PV is the Solution as 40% of India's Thermal Plants Threatened by Water Scarcity (Jan 18, 2018)
[122] Rishika Pardikar, "Thermal power plants in India using more water than permitted limit: RTI", Business Standard (13 September 2019)

This could provide opportunities for increased efficiency and use of re-cycled waste water in cooling thermal plants.

Water use in irrigation

Agriculture accounts for 80% of water demand in India. The Government of India, as part of its Covid-19 response, *Atma Nirbhar Bharat Abhiyan* or Self-Reliant India, has announced a host of reforms related to the agricultural sector.

The increased agricultural push will put stress on ground water reserves. As NITI Aayog's Composite Water Management Index 2019 said, most states remain highly dependent on rain-fed agriculture with the median state having 62% cultivated area under rain-fed agriculture.[123] Enhanced water use efficiency in agriculture can help reduce the volume of irrigation needs, and minimize the estimated demand-supply gap of 570 BCM expected to be faced by the sector in 2030. The opportunities arising post the pandemic lie in areas such as rainwater harvesting, and watershed development to reduce dependence on ground water reserves. In this regard, water infrastructure development is a key area of potential.

An analysis of opportunities highlighted in the portal, India Investment Grid shows that the within the industry sector "Waste & Water", 56.3% of the opportunities is towards water infrastructure.[124]

Treated wastewater reuse

According to NITI Aayog's Composite Water Management Index 2019, states had failed to demonstrate any significant improvement on the theme of "urban water supply and sanitation" in the last three years, and while access to water in urban areas remains high on average, significant gaps exist in wastewater treatment. While only around 50% of the states and UTs (14 out of 27) have capacity to treat more than 50% of the wastewater generated, only 33% of them actually do so.[125]

- As mandated in the Revised Electricity Tariff (2016), treated wastewater from Sewage Treatment Plants (within 50 km) should be used for the cooling towers of thermal power plants. Yet, it is not common for thermal plants to use treated wastewater from sewage treatment plants for the cooling towers.
- While there has been no specific stimulus announced with respect to the treatment of wastewater reuse, the need for waste water reuse is likely to gain a push in the wake of the COVID-19 pandemic where a recent study[126] has found the presence of COVID-19 pathogens in untreated sewage water in Ahmedabad.

These two flex points provide opportunities in re-cycling and re-using water to improve quality and reduce dependence on freshwater.

IEWP is working with the Government of India on drawing up a new policy for re-use of treated wastewater which targets a circular approach to use and reuse of water. The required level of treatment of wastewater will depend on the end use of recycled water in terms of quality and safety elements. This, in turn, will determine the kind of technology to be deployed, which will open up several business opportunities for EU businesses, not only in technology collaborations and equipment sales but also for imparting training in use of such technology and equipment to ensure proper re-use of wastewater.

Collaboration in research, innovation and technology

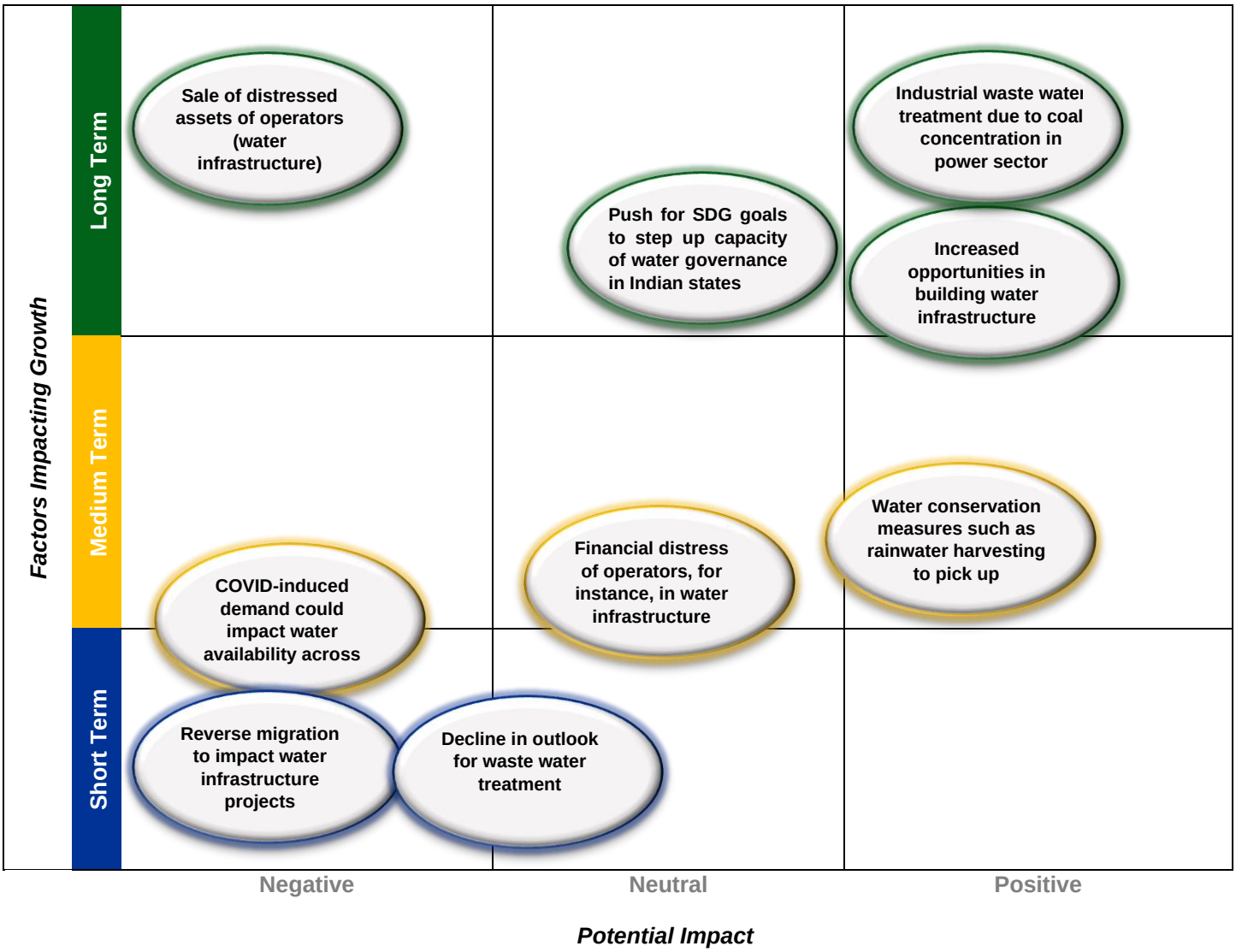
Limited resources and increasing population pressure require smarter, more efficient approaches to manage water. The government's economic package announced the establishment of a research reactor in Public-Private Partnership (PPP) mode for production of medical isotopes for affordable treatment. It also announced that facilities in PPP mode to use irradiation technology for food preservation – to compliment agricultural reforms and assist farmers shall be established. Technological collaborations, and quality standardisation is all aimed at strengthening research collaboration on technology and innovation.

[123] Composite Water Management Index, NITI Aayog in association with Ministry of Jal Shakti and Ministry of Rural Development (August 2019).
[124] India Investment Grid, Ministry of Commerce and Industry https://indiainvestmentgrid.gov.in/ Accessed on June 29, 2020.
[125] Composite Water Management Index, NITI Aayog in association with Ministry of Jal Shakti and Ministry of Rural Development (August 2019).
[126] IIT Gandhinagar, Gujarat Biotechnology Research Center and Gujarat Pollution Control Board from Old Pirana Waste Water Treatment Plant, Ahmedabad

Key Takeaways and Investment Opportunities

The factors listed in the diagram are independent and are not ranked in order of their relative importance. Overlaps signify factors which can influence each other.[127]

Figure 22. Water Management-A Matrix of Impact and Opportunities



[127] Source: Analysis of Rating Agencies, India Investment Grid, TARI Analysis

Information from the India Investment Grid,[128] along with our analysis of the sector, gives a snapshot of opportunities for technical and other collaborations and investments for EU businesses in India in this sector[129]:

Figure 23. Water Management-Opportunities for EU Businesses

Timeline	Equipment and Service			Finance and Investment			Technology	
	Exports to India	Manufacturing in India	O&M	Capital investment-new bids	Stressed assets	Capital investment-existing operations	Technology and innovation	Waste water treatment
Short term	↓	↓	↑	↓	↑	↑	↓	↑
Medium term	↔	↑	↑	↔	↑	↑	↑	↑
Long term	↑	↑	↑	↑	↑	↑	↑	↑

The greater economic push for sectors such as coal, agriculture, atomic energy, requires the use of water. The impetus provided to these sectors is significant and would require technological innovation and applications to manage India's limited water resources.

[128] Please see section on Waste Management for a snapshot of Government of India curated marquee opportunities for investment in various states across several sectors through the interactive platform of India Investment Grid.

[129] ↓ (negative), ↔ (neutral), ↑ (positive).

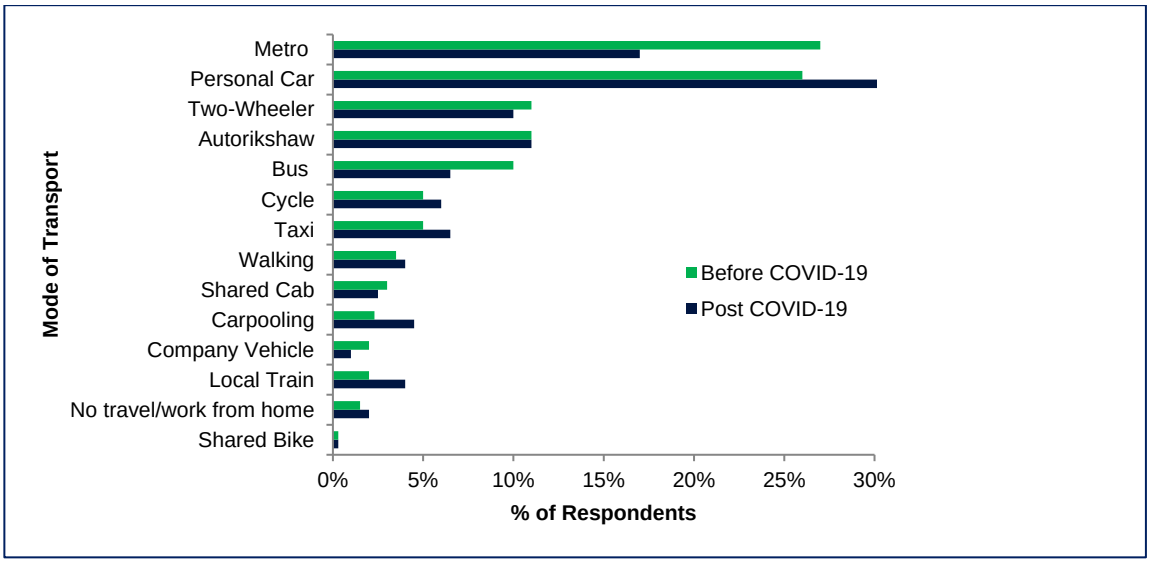
4.4 Sustainable Urbanisation—Mobility

Mobility, automotive and transportation

The COVID-19 pandemic has brought the economic engine to a halt and while the engine is limping on a slow and laboured path to normalcy, many pillars of growth are in disarray. The Google Mobility Report of 27 June 2020 shows that public transport usage is down by 39% between 16 May to 27 June 2020.[130]

TERI, the premier environmental research organisation of India says,[131] (see graph below): About 35% of respondents stated that they are likely to change their mode of transport for work trips post COVID-19. A sharp decrease has been reported in the usage of bus and metro services, and instances of shared mobility have dropped as well. This is expected to shift to the use of private vehicles and intermediate public transport (IPT) such as taxis and auto rickshaws

Figure 24. Mode of Transport – pre- and post- COVID-19



Automobiles, components and public transportation

Over the long term, COVID-19 could have a lasting impact on mobility as it drives change in the macroeconomic environment, regulatory trends, technology, and consumer behaviours. A McKinsey report estimates consumer spending may decline by 40 to 50%, translating into a roughly 10% reduction in GDP and numerous second- and third-order effects.[132] The most immediate and visible effect of COVID-19 in the traditional automotive sector—which prior to COVID-19 was reeling under falling sales in India, new norms of emission, global slowdown in the sector—is the standstill of many OEM and supplier factories, which will likely produce 7.5 million fewer vehicles in 2020. Car sales in India for 2021 for both passenger and commercial segments is expected to reduce by over 30% compared to 2019-2020.[133]

Public-transit ridership has fallen by 90% in major cities across India,[134] and the operators are burdened with uncertainty including responsibility for strict hygiene protocols or restricting the number of riders in trains and stations to comply with space requirements. Ride hailers have also experienced declines of up to 90% with large scale staff retrenchment in India in the face of a very uncertain future.

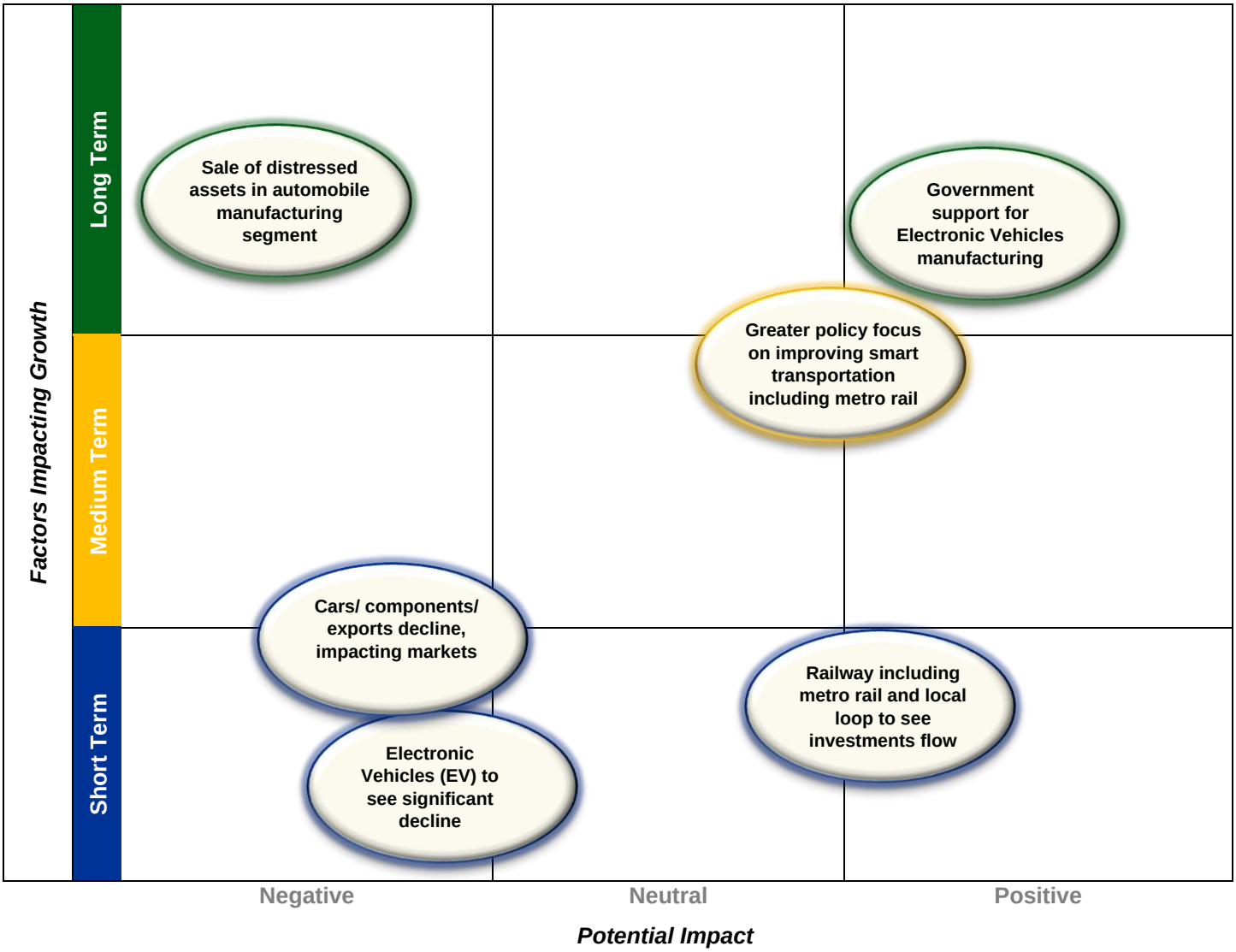
On 20 June, 2020 the Minister of Road Transport and Highways, and MSME, Mr Nitin Gadkari while affirming India's commitment to EV said, "Air pollution has majorly impacted Indian health. India will become the number one manufacturing hub for electric two-wheelers, cars and busses. Furthermore, we want to conduct a pilot project to set up an electric highway on the Delhi-Mumbai express highway...My suggestion is for us to find good alternatives for imports, including for batteries, storage and other tech solutions. The government will provide impetus, but it's time for the industry to start investing in R&D in order to upgrade existing technologies to emerge a market leader."[135]

[130] https://www.google.com/covid19/mobility/
[131] https://www.teriin.org/policy-brief/impact-covid-19-urban-mobility-india-evidence-perception-study
[132] Safeguarding our lives and our livelihoods: The imperative of our time, McKinsey Research, March 2020
[133] https://www.livemint.com/news/india/moody-s-says-india-auto-sales-to-drop-30-in-calendar-2020-11589360594546.html
[134] https://www.deccanherald.com/national/covid-19-90-fall-in-public-transport-ridership-says-urban-affairs-ministry-848866.html
[135] E-Webinar: India's Electric Vehicle Roadmap Post COVID-19

Key Takeaways and Investment Opportunities

The factors listed in the diagram are independent and are not ranked in order of their relative importance. Overlaps signify factors which can influence each other.[136]

Figure 25. Mobility-A Matrix of Impact and Opportunities



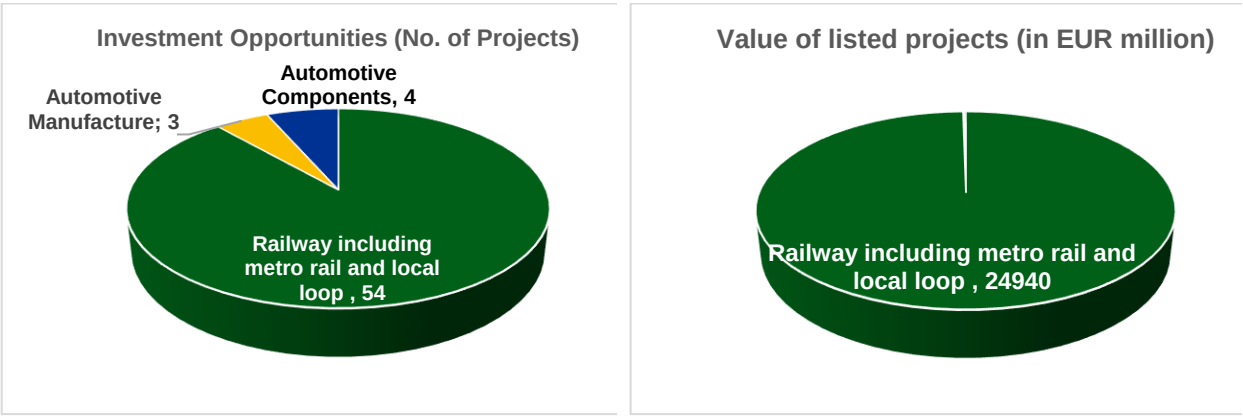
Niti Aayog in their report of 30 June, 2020 says "Auto sales could decrease by as much as 45% in the financial year 2020–21. EV production could be affected in the short term due to lower demand and supply-chain disruptions with BNEF estimating an 18% decrease in global EV sales in 2020. However, their forecast also mentions that countries like India, where EV adoption has been slower, could see better than average EV sales in the medium term if governments and early adopters continue to lead on procurement.

The EV market may experience other shifts. For example, there is an expectation of demand for more affordable EV products. This potential shift in consumer preferences may affect manufacturers' investment and production decisions. Ultimately, resuming production levels for conventional vehicles and EVs will depend on demand revival, supply-chain reactivation, and access to the labour force."

The Government of India has curated marquee opportunities for investment in various states across several sectors through an interactive platform India Investment Grid. Shown below are the list of relevant investment opportunities in the mobility space:[137]

[136] Source: Analysis of Rating Agencies, India Investment Grid, TARI Analysis
[137] https://indiainvestmentgrid.gov.in/, accessed on 10 July 2020, TARI representation

Figure 26. Mobility-Investment Opportunities



This, and our analysis of the sector, gives a snapshot of opportunities for technical and other collaborations and investments for EU businesses in India in this sector:[138]

Figure 27. Mobility-Opportunities for EU Businesses

Timeline	Export/ OEM			Finance and Investment			Technology & Innovation	
	Automotive	Railways incl. metro and local loop	EV (cars/ buses/ trucks)	Capital investment in new projects	Investment in stressed assets	Capital investment in existing operations	Technology and Innovation	Smart transport solutions
Short term	↓	↑	↓	↔	↑	↑	↑	↑
Medium term	↔	↑	↓	↔	↑	↑	↑	↑
Long term	↔	↑	↑	↑	↑	↑	↑	↑

India's march towards electric vehicles as a sustainable and green option has been challenged by COVID-19 as OEMs are reeling under their own business downturn to make new investments and focus on R&D in times of current tribulations. Low fossil fuel prices also play a role in delaying investment decisions in new technologies.

Experts estimate that the delay in development of EV's as a green alternative and as non-polluting vehicles are a game changer, but they will be a viable alternative only after 3 – 5 years.

[138] ↓ (negative), ↔ (neutral), ↑ (positive).

4.5 Sustainable Urbanisation—Infrastructure

The Taskforce on National Infrastructure Pipeline[139] which was asked to identify technically feasible and economically viable infrastructure projects for FY 2020-2025, towards the target of India achieving a USD 5 trillion (EUR 4.4 trillion) economy by 2025, laid down significant focus in the roads, rural infrastructure *(including water and sanitation)* and urban sectors *(smart cities, affordable housing)*.

Table 2. Proposed Capital Expenditure-National Infrastructure Pipeline

Sector	Proposed Capital Expenditure in INR trillion / EUR billion (FY20-25)	% of total investments in infrastructure pipeline (FY20-FY25)
Roads	20.34 trillion (EUR 239 billion)	18%
Rural infrastructure	7.74 trillion (EUR 90 billion)	7%
Urban	19.19 trillion (EUR 225 billion)	17%

Source: Report of the Task Force on National Infrastructure Pipeline (Vol I), Department of Economic Affairs, Ministry of Finance, Government of India

Post-COVID-19 Challenges and opportunities

Infrastructure projects are implemented by the states. Even before the pandemic set in, infrastructure spend was on a decline.[140]

Construction

According to CRISIL (S&P Ratings), spending on infrastructure by states such as Maharashtra, Tamil Nadu, Gujarat and West Bengal, which accounted for 25% of all state spends, is likely to be at high risk because of more COVID-19 cases, more red zone districts, wide fiscal deficits and material dependence on excise duty collections.[141]

As a measure of containment and a safety strategy due to COVID-19, many employers offered a "work from home" alternative to a number of the urban workforce across India and many such companies are evaluating how, when and in which manner the workforce will return to offices. This is likely to create a realignment and reorganisation of real estate—offices, homes and other infrastructure like restaurant/ hotels/ malls in the urban work ecosystem. Till answers to the new use of work space ecosystem are found, investments in these sectors will be muted including completion of ongoing projects.

Urban infrastructure

The urban sector under this framework comprises the Atal Mission for Rejuvenation and Urban Transformation, Smart Cities**,** MRTS, Affordable Housing, Jal Jeevan Mission. Many of these sectors have a linkage with other sectors considered relevant for EU business' in India, such as water management and waste management which has been covered in a separate section.

Smart Cities

Under the Smart Cities Mission, as on 24 February 2020, 4,488 projects worth INR 1,638 billion (EUR 19 billion) have been tendered out of which 3,655 projects worth INR 1,217 billion (EUR 14 billion) have been grounded and 1,575 projects worth INR 259 billion (EUR 3 billion) have been completed.[142] A Ministry of Housing & Urban Affairs-BCG report says that the COVID-19 pandemic has brought into focus the need for resilience in the longer term, which could include aspects like city wide surveillance and sensor network; AI based proactive incident detection and threat intelligence; systems to absorb disturbance and reorganise during the change; and long-term sustainability, resource access and climate impact solutions.[143]

Affordable Housing

The Government of India's strong push on 'Housing for All' and extension of several sops to homebuyers and developers of this segment led to a wave of affordable housing developments. Nearly 40% of new launches added across the top 7 cities of India during the past few years have come in the affordable

[139] Report of the Task Force on National Infrastructure Pipeline for 2019-2025 released by Finance Minister Nirmala Sitharaman, December 2019.
[140] CRISIL Research, "A viral deconstruction of state wherewithal" CRISIL (S&P), June 4, 2020.
[141] CRISIL Research, "A viral deconstruction of state wherewithal" (CRISIL (S&P), June 4, 2020.
[142] "Report Card on Smart Cities", Reply to Unstarred Question No. 2319 (March 5, 2020), Reply in the Lok Sabha by Minister of Housing and Urban Affairs, Government of India.
[143] Covid-19,"Indian Smart Cities: Leveraging technology and smart city facilities for rapid response", MoHUA-BCG (May 12, 2020).

housing segment (units priced < INR 4 million, or EUR 46,619).[144] According to a research, the unsold inventory in the affordable housing segment will register an annual increase of 1-2%.[145]

COVID-19 and Government of India stimulus on infrastructure sectors

As part of the economic package to combat effects of the COVID-19 pandemic, the Government of India and the Reserve Bank of India have announced measures which could directly and indirectly provide an impetus to spending on infrastructure. These include:

- INR 700 billion (EUR 8.22 billion) boost to housing sector and middle-income group
- Affordable rental housing for migrant workers/ urban poor
- Under the concessionaire scheme, initiated by the central ministry for housing and urban affairs, existing government-funded housing complexes will be converted into Affordable Rental Housing Complexes (ARHCs) through concession agreements for 25 years. Special incentives will be offered to private and public entities for developing housing complexes on their own land for 25 years. The scheme seeks to target more than 350,000 beneficiaries who form a large part of the workforce of manufacturing industries, service providers across sectors, construction and other sectors.
- Relief to contractors in time extension and liquidity
- Fiscal support to states by the RBI

[144] "Covid-19 Impact on the Indian Real Estate (RE) Sector", ANAROCK Property Consultants Pvt. Ltd.
[145] "Covid-19 Impact on the Indian Real Estate (RE) Sector", ANAROCK Property Consultants Pvt. Ltd.

Key Takeaways and Investment Opportunities

Infrastructure targets with respect to roads, rural and urban infrastructure is likely to see a decline in terms of their achievements in the short to medium term. In the longer term, the infrastructure sector is likely to rebound due to the promised investments but much depends on the success of the containment strategy in the key states where infrastructure investments have already happened.

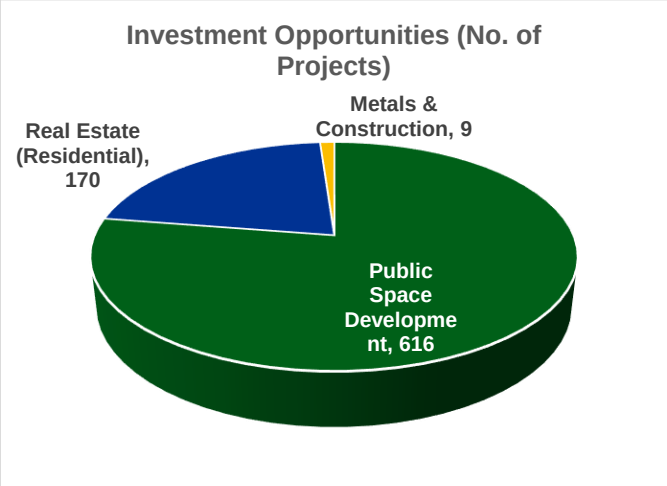
The factors listed in the diagram are independent and are not ranked in order of their relative importance. Overlaps signify factors which can influence each other.[146]

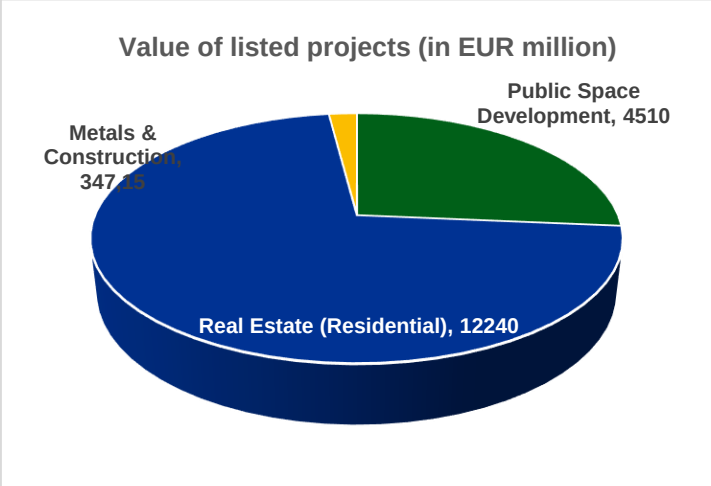
Figure 28. Infrastructure-A Matrix of Impact and Opportunities

[146] Source: Analysis of Rating Agencies, India Investment Grid, TARI Analysis

The Government of India has curated marquee opportunities for investment in various states across several sectors through an interactive platform India Investment Grid. Shown below are the list of relevant investment opportunities in the urban infrastructure space:[147]

Figure 29. Infrastructure-Investment Opportunities





This, and our analysis of the sector, gives a snapshot of opportunities for technical and other collaborations and investments for EU businesses in India in this sector:[148]

Figure 30. Infrastructure-Opportunities for EU Businesses

Timeline	Export/ OEM			Finance and Investment			Technology & Innovation	
	Public space development	Real Estate (Residential)	Metals & Construction	Capital investment in new projects	Investment in stressed assets	Capital investment in existing operations	Technology and Innovation	Smart city and infrastructure
Short term	↓	↓	↓	↓	↑	↑	↑	↑
Medium term	↔	↔	↔	↔	↑	↑	↑	↑
Long term	↑	↑	↑	↔	↑	↑	↑	↑

[147] https://indiainvestmentgrid.gov.in/, accessed on 10 July 2020, TARI representation

[148] ↓ (negative), ↔ (neutral), ↑ (positive).

4.6 ICT—Digital transformation post COVID-19

After the initial high intensity response to the pandemic, there would be structural changes in the way businesses, societies and government respond. Forbes[149] predicts that the key long-term effects on adoption of Information and Communication Technology (ICT), post COVID-19 will be:

- Collaborative and remote working
- Smart cities, 5G, Edge and IoT applications
- Hybrid and multi cloud
- VDI streaming, SaaS
- Super and quantum computing
- Supply chain and manufacturing

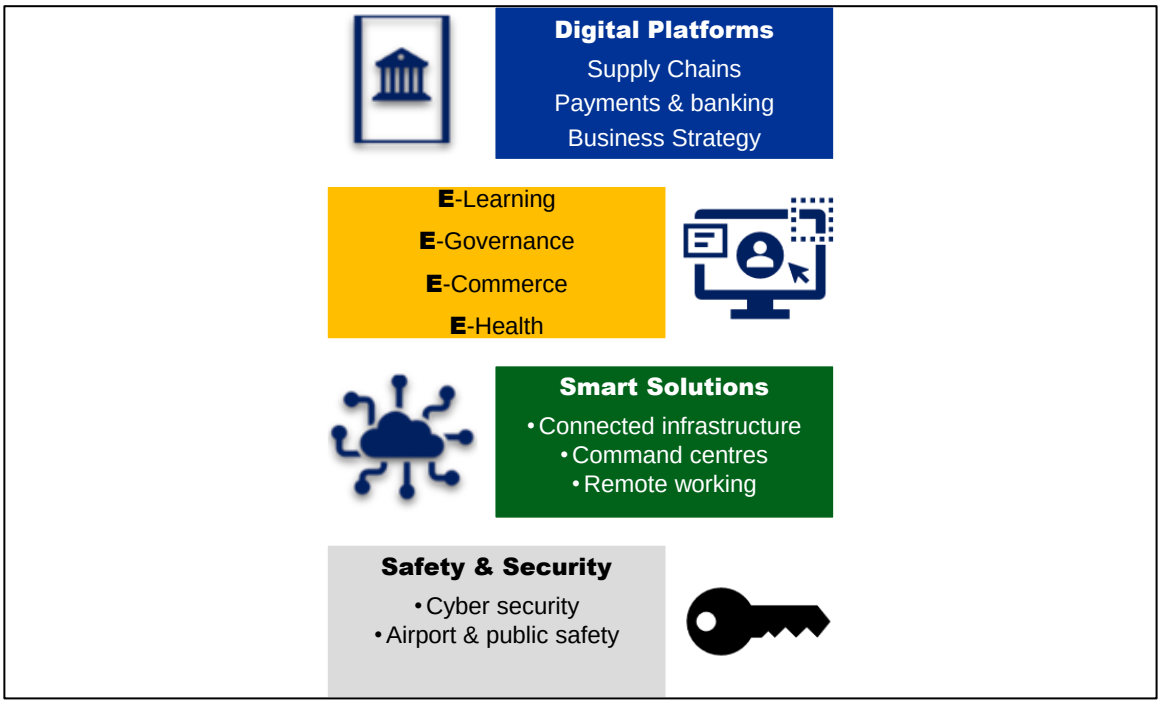
COVID-19 being a watershed event would accelerate ICT adoption. Use of ICT by Indian smart cities in managing the outbreak, is an example of connected response using ICT at its core. Some of the steps which saw the use of ICT platforms included Artificial Intelligence (AI) based real time analysis of surveillance footage for social distancing violations; alert police for fast action; drone surveillance in city's hotspots; video consultations and online prescriptions; and cities tracking the full supply chain so that goods reach only registered operational stores.[150]

What could this mean in the new normal?

ICT based interventions will open up applications, platforms and solutions across the cross section of users, for instance, from an individual to a business to the government and society, creating a new interconnected world tied to each other through technology.

Some of the areas where there would be permanent and long-term alteration in business models post-COVID-19 include:

Figure 31. Business Models Post COVID-19



[149] https://www.forbes.com/sites/moorinsights/2020/04/14/what-technology-accelerates-long-term-after-the-short-term-covid-19-danger-subsides/#404a792446be

[150] "Indian Smart Cities: Leveraging technology and smart city facilities for rapid response", report by Boston Consulting Group drafted in collaboration with the Ministry of Housing and Urban Affairs.

Government initiatives to COVID-19 and Opportunities in the digital space

On May 12, 2020, the Indian Prime Minister in his address to the nation while emphasising the need for self-reliance, highlighted five pillars: economy, infrastructure, system (technology), demography and demand.[151] The Government of India as part of its reform roadmap, announced various schemes and programs, many of which enable the promise of digital growth in sectors such as education and health, for instance:

- **Technology driven education** – Launch of PM e-VIDYA, a programme for multi-mode access to digital/online education, immediately. Top universities permitted to start online courses by May 30, 2020.
- **Leveraging Information Technology (IT) in the health space** – Roll out of e-Sanjeevani tele-consultation services, capacity building through virtual learning modules, and use of technology enabled app, Arogya Setu for self-assessment and contact tracing.
- **Future protection from pandemics** – Government announced the setting up of Integrated Public Health Labs in all districts and block level labs and public health units, and implementing the National Digital Health Blueprint
- **Telemedicine** – The central Ministry of Health and Family Welfare and NITI Aayog released Telemedicine Guidelines 2020 to enable remote medical consultation for COVID-19 cases. These guidelines provide the opportunity to leap-frog and transform the healthcare delivery paradigm.
- **One Nation One Ration Card:** One ration card that can be accessed across the country. The initiative will see great use of ICT enabled mechanisms and integration across platforms.

Private sector investments and initiatives: Indian conglomerate, Reliance Industries Limited (RIL) has announced significant investments in areas of Broadband connectivity, Smart devices, Cloud and Edge Computing, Big Data Analytics, AI, IoT, among others, with a focus on expanding the digital footprint and penetration in the country, across sectors and segments.[152]

Make in India and other localisation programmes will see a rush of adoption of new and green technologies from various different industries and countries which will be cutting edge and transformative, with digital disruption, block chain and other horizontal technologies. This adoption will bring in higher productivity, resource optimisation and is expected to be greener than those previously used in India. The areas which will see a penetration in the short term will be mobile phone and telecom hardware, defense manufacturing, financial technologies, agriculture technologies, electrical and electronics products and pharmaceuticals.

The aforesaid measures are likely to witness a deepening of the digital footprint across the country and may see an increase in digital infrastructure to ensure reliability and spread, the need for robust data infrastructure to ensure digital safety and cyber security.

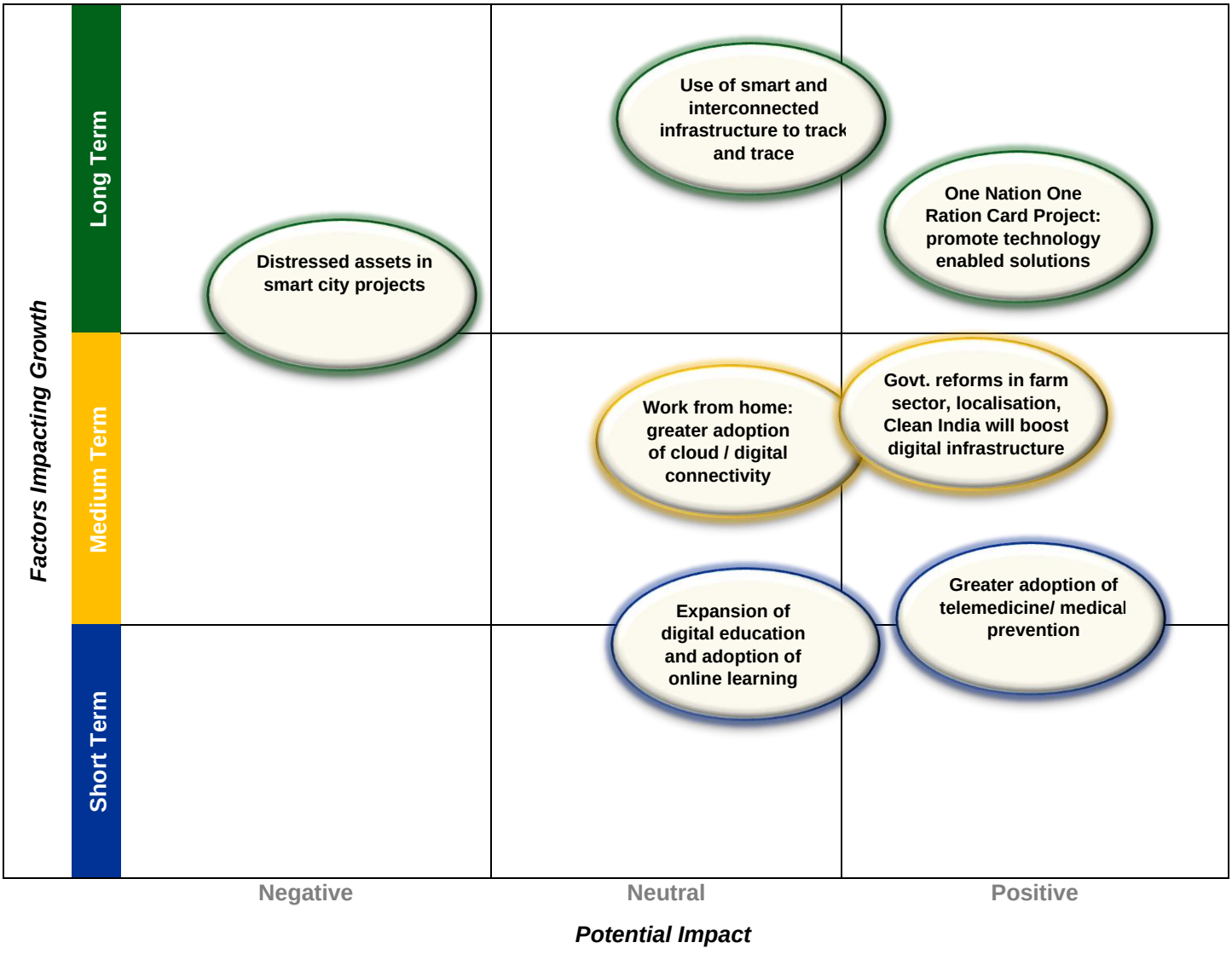
[151] PIB Release, Prime Minister's Office (May 12, 2020).
[152] "Facebook to invest INR 435.74 billion (EUR 5.44 billion) in Jio platforms for a 9.99% stake" RIL Communication (April 22, 2020).

Key Takeaways and Investment Opportunities

The economic reforms announced by the Government of India and the push towards a host of digital services, both by the government and private sector, is likely to ensure opportunities in areas of healthcare, education, rural and urban transformation, among other related industries.

The factors listed in the diagram are independent and are not ranked in order of their relative importance. Overlaps signify factors which can influence each other.[153]

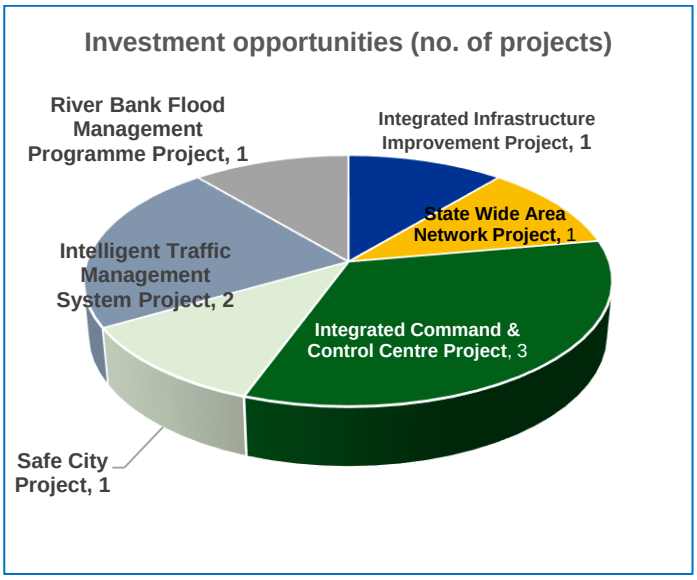
Figure 32. ICT-A Matrix of Impact and Opportunities

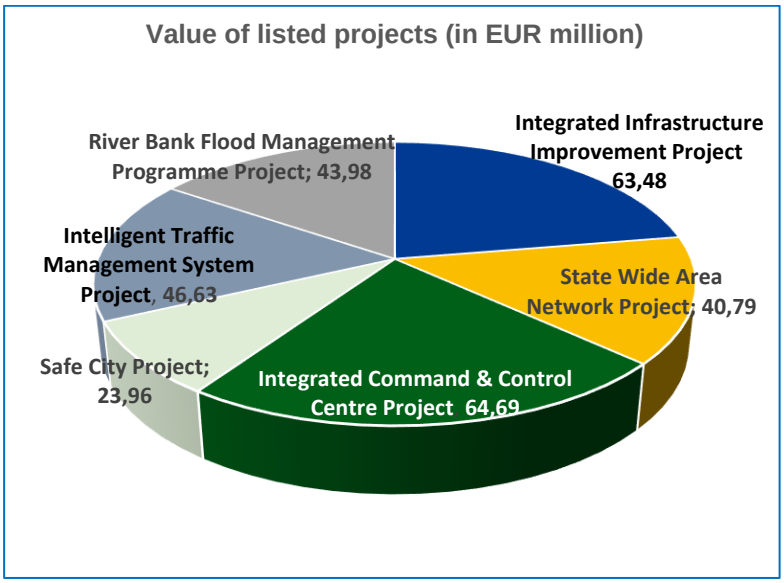


[153] Source: Analysis of Rating Agencies, India Investment Grid, TARI Analysis

The Government of India has curated marquee opportunities for investment in various states across several sectors through an interactive platform India Investment Grid. Shown below are a list of relevant investment opportunities which is built on ICT technology use:[154]

Figure 33. ICT-Investment Opportunities





This, and our analysis of the sector, gives a snapshot of opportunities for technical and other collaborations and investments for EU businesses in India in this sector[155]:

Figure 34. ICT-Opportunities for EU Businesses

Timeline	Smart solutions / Technology infrastructure						Finance and Investment		
	Integrated infrastructure (Smart city)	e-Gov	City-level Disaster Management	E-health system	Air & Water quality management	Telecom infrastructure and network	Capital investment in new bids	Investment in Stressed assets	Capital investment in existing operations
Short term	⟺	↑	↑	↑	↑	⟺	↓	↑	↑
Medium term	↑	↑	↑	↑	↑	↑	↑	↑	↑
Long term	↑	↑	↑	↑	↑	↑	↑	↑	↑

Though ICT solutions are fungible and can bring about widespread transformation including efficiencies and optimisation in resource use, an enhanced level of automation and process changes in India can create large displacement of persons who lack the requisite skills. Oxford Economics estimates that 1.5 billion people around the world would be affected by this widening skills mismatch in the next 10 years. The National Infrastructure Pipeline has INR 3,100 billion (EUR 36.07 billion) allocated for setting up digital infrastructure in India between 2020 -2025, which would accelerate digital adoption across sectors, help government target their plans and lessen knowledge asymmetry for citizens.

[154] https://indiainvestmentgrid.gov.in/, accessed on 10 July 2020, TARI representation

[155] ↓ (negative), ⟺ (neutral), ↑ (positive).

Chapter 5. Wrap up – Learning from the Past, Gazing into the Future

Chapter 5. Wrap Up- Learning from the Past, Gazing into the Future

The COVID-19 pandemic has thrown into disarray planning of businesses, governments and citizens. The key risk emerging is that the flattening of the curve is not in sight, as a result of which, the march to economic recovery is faltering in its steps. Researchers from Massachusetts Institute of Technology (MIT)[156] predict that India will have a daily infection rate of 287,000 per day by the winter of 2021, which questions most of the earlier assumptions of forecasters on lowering of the infection rate and hence the output. There are too many variables, most which cannot be factored in, making reasonable predictions of recovery in terms of time and nature highly daunting.

As economies try to pull themselves out of the steep fall, the best hope is to have a V-shaped recovery. Is this hope justified for India?

India's Chief Economic Advisor, (CEA) Mr KV Subramanian draws from a paper recently published by the US-based National Bureau of Economic Research (NBER) saying if learning from the Spanish Flu were to repeat itself,[157] "maybe India's economic recovery after the crisis could be V-shaped. He draws parallels with the USA when Spanish flu emerged in 1918 and claimed 39 million lives till 1920…the percentage of people infected by COVID-19 is much less and here the mortality rate is just 3%...(Also) there are several similarities that the US economy at the time and the Indian economy now have. For example, the proportion of urban population in the US was 45% while India's, some say, could be closer to 45% (now).'' While many research firms expect India's GDP growth this year to fall to near-zero, the CEA is taking heart from US numbers post-Spanish flu -- they dropped to 3.5% but went to 7.5% soon after. "It's the V-shaped recovery but however this analysis has to come with the caveat that we are dealing with enormous uncertainties."[158]

CRISIL Limited (an S&P company) draws parallels with the Global Financial Crisis (GFC) to say that India moved out of the effect of GFC in two years by recording a GDP growth of 8.2% over that time on the back of massive fiscal spending and swift global recovery. They believe that for India to get back to pre-COVID-19 levels will take till March 2023.[159]

On another positive note, monsoons are expected to be normal for 2020 with continued resilience for the agriculture sector, food and general inflation have been under control, the border dispute with China is being managed, government spending on MNREGA has created significant livelihood opportunities (which is reflected in lower unemployment rates by CMIE), mortality rates from COVID-19 are lower than the global average and the Indian demographic is tilted toward a younger population, who have greater resilience against the disease.

*Between April to July, 2020, that is during the pandemic period, India saw investment commitments and flows of over EUR 17.50 billion from companies like Google, Facebook, PIF, Foxconn, Walmart and others reiterating the faith of global business community in India as a long-term investment destination.***

However, there is no silver bullet and the path to recovery is to be traversed through rugged roads and only time will tell the story of the emergence of India from this pandemic. For businesses this provides an opportunity to re-assess their priorities, spot fresh investment avenues, increase collaboration and investment and generally find more efficient ways of doing business. Earlier sections in this impact report have carried out detailed analysis of the various pulls and pushes, both macro-economic and specific to five identified EU business sectors in India.

At the recent EU –India Summit leaders recognised the need to for high level engagement on trade matters to deepen our relations and to tackle the common global challenge. With this objective in mind, the EU and India have agreed to establish a High Level Dialogue on Trade and Investment, co-chaired by the EU Trade Commissioner and Indian Minister of Commerce. This deeper engagement also sets the theme for greater business and people connects.

Given below is a matrix combining the impact of various business environment elements/pillars, effect of COVID-19, government response and priorities to the challenges of the pandemic across the identified sectors of EU businesses in India to provide a visual at-a-glance assessment of sectoral threats and opportunities.

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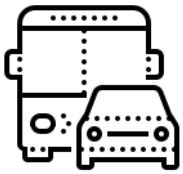
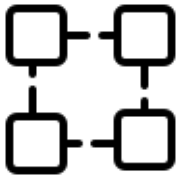
[156] https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3635047, 1 July 2020
[157] https://www.hindustantimes.com/india-news/cea-points-at-spanish-flu-lesson-in-covid-fight/story-bMWrrU9fXxrCfKLjyVM96M.html
[158] ibid
[159] https://www.crisil.com/en/home/our-analysis/reports/2020/05/minus-five.html
** http://meaindia.nic.in/cdgeneva/?10916?000

Figure 35. Matrix of Threats & Opportunities

Sector	Short Term	Medium Term	Long Term	Rationale
Renewable Energy 	↓	↔	↑	• Low Demand for power/ depressed economy • Liquidity constraints of operators • Delays in construction activities • Supply chain disruption • Government priority for RE and achieving SDGs
Waste Management 	↓	↓	↑	• Shortage of labour • Fragmented sectors • Lack of comprehensive policies • National imperative especially in bio-medical waste, re-cycle/re-use waste water for industrial use • Consolidation, innovation in technology, momentum for impact investment/green bonds
Water Management 	↓	↓	↑	• COVID-19 induced requirement for water & sanitation • Shortage of labour for completing water infrastructure • Fragmented local-level authorities; no comprehensive water governance policies • Investment in smart irrigation, rain water harvesting, urban and industrial water use • Government priority for achieving SDGs • National policy on reuse of treated wastewater (drafting phase)
Sustainable Urbanisation-Mobility, automotive and transportation 	↓	↔	↑	• WFH, lower use of public transportation due to social distancing • Postponing purchases—lower auto sales and components for the medium term • Financial distress of car manufacturers—reduced spends on EV R&D • Depressed global oil prices—postponing R&D for EV at least over the medium term • Government spending on urban transport including metro/ local loops / smart transportation resumes in medium/long term in line with the National Investment Plan, creating new opportunities for EU
Sustainable Urbanisation-Infrastructure 	↓	↓	↑	• GDP contraction—muted government outlays for urban infrastructure in the short / medium term • Lower GST allocations & collections in states limiting investments • Significant boost in stimulus package for affordable housing in urban and rural areas (results over long term) • Investments in Smart cities to pick up in the long term. • Urban workplaces and its ecosystems significantly altered due to COVID-19; new private investments for both office and home will be deferred till a new paradigm is defined.

Sector	Short Term	Medium Term	Long Term	Rationale
Information, Communication and Technology (ICT) 	⬆	⬆	⬆	• Significant government initiatives to use technology and automation as immediate priority • Acceleration of adoption of new technologies in AI, digitisation, remote working, block chain. due to COVID-19 (1 nation-1 ration card, e-Vidya, e-medicine, Command centres) • Technology solutions opportunities for EU collaboration—smart irrigation, farm to fork, waste & water management, circular economy, smart transport • Make in India and other localisation projects will see absorption of technologies brought about by modern manufacturing protocols. • Government commitment to ICT impetus—National Infrastructure Pipeline has an outlay for digital infrastructure of INR 3,100 billion (EUR 39 billion) between 2020-2025 • Short-and-medium term growth for key telecom infrastructure deployment is contingent upon availability of technology, policy support including availability of spectrum • Depressed economic conditions could impact government funding for key projects

⬇ (negative), ⟷ (neutral), ⬆ (positive).

Chapter 6. Voices of Key Influencers

Chapter 6. Voices of Key Influencers

Waste Management & Renewable Energy: Dr Arunabha Ghosh - CEO of Council on Energy, Environment and Water (CEEW)

EU-India Policy Dialogues

It should focus on forging effective technology partnerships, investing institutional capital in the Indian market and on the messaging required from India and the mentorship required from Europe, to consider this is a long term bet.

Effect of COVID-19 on Waste Management (WM)

- Post-COVID-19 biomedical waste is emanating from households apart from hospitals/clinics, due to increased use of masks, gloves, personal protective equipment (PPE) kits.
- Thus in the short-term, challenges emerge in treatment of biomedical waste
- This crisis is likely to lead to a setback in India's commitment to ban single use plastic by 2022.
- Another short-run challenge: difficulty to develop, pilot and grow new business models in decentralised waste management due to long/repeated lockdowns.
- Medium term: Broader initiatives around smart cities with elements of better waste management systems would be impacted due to budgetary constraints & reallocation of budgets towards relief, recovery and other such measures.
- Long-term outlook: More encouraging, as there is likely to be a shift on how to develop the sector into a driver of new growth, generate jobs while building sustainability.

Effect of Migration on Waste Collection & Resultant Effects on Disease, Containment

It is a short-term challenge. But sooner or later migrants will return (maybe under more strained conditions), as rural economies will be unable to support the additional 30-40 million people and provide employment on a sustained basis.

Use of New Technologies in WM & Where EU Could Invest/Collaborate in India

- Technologies are required in: mixed waste, recovery of resources related to energy and how we get more resources out of waste & recycling e-waste particularly for critical minerals.
- All these require technology which European firms can provide.

To Grow in RE, from the Supply Chain Point, How Will the Supply of Solar Panels from China (75-80% of our supply) Pan Out & Impact RE?

- Clearer policy direction is needed of the incentive to procure domestically.
- India should start with increasing capacity on modules, then cells, then maybe (if at all) for wafers.
- It is important to ensure that we don't have only a safeguard duty, because that alone has not proven to be enough to encourage local investment.

Funding of WM in India

- Business models will vary across WM sub-sectors.
- The general shift has to be towards opex models rather than capex models.
- The way to go is either find green investors – impact investors like green bond financing against future savings, or look at opex models and pay as you go, as traditional municipal budgets are unlikely to be allocated in a significantly large enough way to allow entry of capital to set up the required infrastructure.

Effect of COVID-19 on Renewable Energy (RE) Plans

- Slowdown in business functioning & departure of labour affected the RE sector, but was the first to open in April
- Positive developments: a) investments are picking up; b) initiation of reforms; c) reforms in the Electricity act, e.g.: appointment of regulators, de-politicising state level regulators.
- Concerns: a) credit enhancement & leveraging public money; b) lack of attention on distributed energy, rooftop solar in urban areas, micro/mini grids in rural area, which have efficiency & job gains, & potentially new lines of business even for distribution companies to go the decentralised route; c) financial health of distribution companies

Impact of Renewed Focus on Coal & Fossil Fuels (in next 3-5 years), on RE adoption in India

- In electricity, there is no case for continuing through coal.
- In the last 3 years, renewables investments have been at the same levels as thermal power investments and prices even with storage getting lower than thermal power.
- Coal demand will continue in heavy industries, steel, fertilisers, cement & petrochemicals. Whether it comes from India or outside will depend on its calorific value.
- So, demand will rise there, but it will not rise to levels of 1500 million tonnes annually.
- The renewables story will continue in electrical vehicles.
- There are huge opportunities for India-EU collaboration to decarbonise heavy industry.
- But this will not be private sector driven, signals have to come from the government.

Takeaways for EU-India Policy Dialogues post COVID-19

- EU companies should see the long term in the energy transition happening in India.
- Notwithstanding glitches/challenges, the broader direction has been set for RE, bio-energy, hybrid systems, energy storage, etc.
- Huge demand for capital investments in RE, approximately EUR 25-30 billion annually (based on current exchange rates) for 10 years.
- This can come only from institutional investors, pension funds, insurance funds, etc. The policy dialogue should consider policy tweaks that have to happen in India, the risk hedges that India should offer and the kind of changes needed in investment strategies on the part of institutional investors which will allow them to invest in slightly riskier markets that opens up for significantly higher returns than what they will get by investing in Europe at 2-3% returns.

Water Resources Management (WRM): Ms. Birgit Vogel - Project Manager, Implementation Support to the India-EU Water Partnership

India-EU Water Partnership

The India-EU Water Partnership together with the German Development Corporation is supporting the Ministry of Jal Shakti and the National Mission for Clean Ganga in the development of a national policy on the reuse of treated waste water. Besides many key issues, this policy will also address COVID-19.

The Economy & Water Resources Management

- Questions related to COVID-19 are many, for which we do not have answers because it's new.
- Health and sanitation are at the forefront of the discussions, especially in countries with a large population and with a higher percentage of poor, such as India.
- Hopefully focus on COVID-19 will not result in neglect of other aspects like water borne diseases and of water resources management.
- Donors are already reallocating resources to COVID actions, often in an integrated way and linked to other water topics.
- Many actions are currently ad-hoc and short-term, but mid and long-term effects will need to be considered, whether with regard to COVID-19 or other water borne diseases.

Resource Allocation in Business

- The impact of COVID needs to be understood in greater detail and the measures most needed to ensure safety and security of water.
- There is already an impact on businesses, particularly for innovation.
- In the waste water treatment sector, the level of treatment of waste water, especially in reuse of treated waste water for different purposes, (industry, or irrigation), needs to be thought of.
- Ensuring the quality of treated waste water and that the virus cannot be spread through this source has to be discussed and understood.

Increased Water use Due to Government Priority towards Village Incomes

- Efficient use of water with minimum loss is crucial in agriculture and irrigation.
- The problem of lower levels of ground water in certain regions need to handled sustainably.
- Proper reuse of treated waste water also has the potential to take away pressure from natural resources to some extent.
- So, technology for efficient irrigation is very important.
- It is also important to have the right application, the right maintenance of command areas and the irrigation equipment.
- The right and best technology also needs to be operated and maintained properly.
- Training of water users, or associations that play a role in irrigation, including sensitizing them on their role to maintain a command area is thus very important.

Source of Capital for WRM, other than Monetising Water

- If people don't understand the value of water as a resource that has to be paid for, it is difficult to manage it.
- Monetising water is therefore an important aspect.
- But, it is equally difficult to introduce tariffs, to get acceptance for it and to manage it.
- However, if there is no value to water use at all, the aspect of supply becomes difficult, when it comes to drinking water supply, waste water treatments and other services.

Areas of innovation in WRM & Technologies and Learnings from EU

- For EU businesses to offer technologies and innovations in a more targeted way, it is crucial to understand India's exact requirements.
- For instance, under the EU Horizon 2020 research programme of the EU, 7 projects are now being implemented with India with a joint budget of EUR 30 million.
- They are about innovative technologies in the sector – relating to supply, drinking water, waste water treatment and water quality monitoring.
- Integrated water and river basin management is gaining importance in India.
- The India-EU Water Partnership is facilitating opportunities for EU businesses, to better understand the Indian water sector and make processes clearer on how to compete in India.

Do Penalties for Wasting Potable Water Actually Work?

- Behaviour changes when something has to be paid for.
- So if water is monetised it will be wasted less.
- In countries where water is scarce, awareness levels are often higher and wastage is less, (e.g. Spain, Italy and Greece).
- This a matter of governance and setting water use priorities that are also controlled in times of scarcity.
- Along with a rule, it is equally important to control it and make sure that restrictions are implemented and that there are consequences if they are not.

Areas of Meaningful India-EU Business Partnerships, Enhancing/Promoting them

- Big European companies in the sector are already active in India and doing well, Lots of opportunities exist for small, medium enterprises.
- The India-EU Water Partnership facilitates that operation with EBTC.
- Opportunities are in waste water treatment, reuse of treated waste water, irrigation efficiency, flood risk measures, water quality monitoring and many in river basin management

Mobility & Infrastructure: Mr. Davinder Sandhu - Independent Advisor, previously Partner & Head, Transport Sector, KPMG

The changes in urban mobility and infrastructure due to COVID-19 are still evolving & will be impactful but we need to be nimble in our policy responses to them as we advise people.

COVID-19 & Changing Urban Mobility Choices & Infrastructure. Is the Change Permanent?

- Policy planners, development experts, businesses, users, potential investors are dealing with uncertainties that people are experiencing & must constantly adapt to the challenges everyone faces.
- Quarantines/lockdowns are a luxury affordable by the rich, for a daily wager, the entire policy structure of addressing the virus has its own share of hardships.
- The changes happening are likely to impact people's choices on where they live & how they work.
- E.g. the spurt in demand for FMCG goods like washing machines, dish washers etc., suggests falling demand for urban home services, where the potential wage to an urban services provider is converted into a capital asset. These urban services providers were also users of public or green transport like cycles. Thus fewer jobs means fewer riders in the public transport system.
- The impact on green transport & the urban economy is still unclear.
- Also, none of the financial models or cash flow statements are sustainable today: transit oriented development, land value capture, mixed use working, number of footfalls, financials around urban malls & mixed use structures - all of these ideas need a rethink & upgrade.

Due to Arbitrage between Urban & Rural Real Wage of 2-3 times, Reverse Migration is likely to Happen as Early as August or September.

- Some people will definitely return, but due to home & MSME automation, many will find their jobs have been replaced by machines or imports.
- MSMEs will find themselves transitioning from manufacturers to traders due to availability of cheaper imports, thus rendering returning workers jobless.
- More social protection programmes will be launched in the rural sector and there will be fewer jobs in the urban sector.
- So, while 50% may return, 25% of them may not find jobs, the remaining 50% stay back as they feel they are better off in the village rather than in a slum structure in the city.

Redistributive Incomes Work When One Sector is Performing Well. If Low Growth Rates Continue at least till 2023 then Doles will be unaffordable. Where will incomes come from apart from doles?

- Falling incomes & the import ban will lower the quality of life of lower income households who used cheap imported household goods like lamps, coolers, cycles)
- The opportunity lies here – if we examine & establish the entire value chain of such products in collaboration with MSMEs & EU, thus lowering costs of manufacture in India, even if subsidies are given to MSMEs for 2-3 years to make them more competitive.
- EU can help with technology transfer & it will also provide jobs in MSMEs

Urban Transportation after COVID-19 & Extent of Investment in Cleaner Technologies Given that Auto Manufacturers are Struggling

- The focus till now was on decongesting big cities through rapid & rail transport systems.
- Now, since the commuting public may not want to board public transport, it may be time to break big cities into small clusters where people can work & stay within cycle-able distance.
- This suggests potential for quality affordable housing; people may now want to be renters rather than home-owners. So perhaps we are looking at rental housing policies and related technologies.
- In public transport, demand for contactless services like self-opening doors will increase. The impact on rural transport remains to be seen.

When a Vaccine that Reduces Fatalities Significantly Emerges Will our Behaviour Change, as rapidly as it Changed Now?

- This seems an irreversible and lasting behavioural change, irrespective of whether a vaccine comes sooner or later.
- It is good, as people have become more sanitation-minded, more aware of cleanliness, etc.
- For policy makers it should be clear that this is a lasting change.

Future of Urban Workspace Ecosystems in the New Work Environment & Given the Huge Capital Stuck in Such Ecosystems, Where the Capital for Any Possible Reorganisation Will Come From

- A second wave of bank capital infusion is required over the next 2-3 years, as there will be large NPAs in the next year or so.
- Conversations are already on regarding debt-GDP ratio of 70% & ramping it up by say another 15% with a clear programme on how to ramp it back over the next 20 years.
- This will require multi-partisan consensus on the plan for the next 20 years so that we can spend over the next 5 & recover over the next 15.
- The 9 city plan is an approved plan for de-congesting Delhi as part of the NCR region. Significant capital is committed ($12 billion for Rapid Rail alone) for this. There is a need to re-look at these plans, and re-orient them to post-pandemic scenarios. These scenarios are still developing, & not very defined, but policy planners should not assume business as usual.

In terms of Quantitative & Definitive Measurable Changes where EU & India can Work Together for Long Lasting Solutions

- In a country of more than 600,000 villages with an increasingly aspirational people, a number of jobs will come up in peri-urban spaces rather than in pure urban spaces, with skilled people in big cities going back to smaller cities & setting up tea shops, equipment repairs & other services.
- The EU can help with technology in these aspirational villages & smaller towns in water & sewerage management, smart electricity metering, a programme for municipal finances, etc. It is an opportunity waiting to be tapped.

Changing Consumption Patterns of People in Cities

- A spurt in purchase of durable FMCGs like freezers & dishwashers, otherwise uncommon even in upper income Indian households.
- Good organic processed & pre-processed food, as households will not employ full-time cooks any longer.
- Maintenance services for household appliances
- The Ministry of Skilling must take note & partner with EU guilds & others, where skill sets are fundament to driving economic structures. So value added services can replace unskilled labour-based services in urban households.
- Poverty stress in urban areas also leads to change in labour & services demand patterns, because while there are a plethora of programmes to handle rural poverty, the urban poor fall through the cracks. As a result, they have no option but to return to the village where some policy tools exist to give them free food grains & other items, assured jobs, wages for 100 days, etc.

Views on Whether Government Plans to Provide Urban Housing to the Poor is a Game Changer

- People need to be provided a place to stay & not land, so whether handing over land is sustainable in the long run is unclear. Which is where rental housing has to be factored in.
- The Government can open affordable housing to the private sector.
- Affordable housing is an opportunity to explore with the EU as it has excellent experience in efficient & sustainable housing

Information & Communication Technology: Sachin Gaur - Local Co-ordinator, India-EU ICT Standards Collaboration Project and Founder, MixORG Consulting Services Private Limited

Online collaboration is 'the 21st century skill' one needs to survive in the knowledge economy

How Things Have Changed at the Workplace

- The two most important changes: remote working and accelerated adoption of digital.
- Companies (especially engineering companies) initially caught unawares have now allowed WFH.
- More people are now connecting online, as reflected by exponential growth of digital companies and increased sales of licenses for tools like Zoom etc.

The Potential for these Online Communication Tools after COVID-19

- There will be a mixed reaction.
- Pure IT companies might afford to work as it is, especially in a cities where commuting time is high.
- Other companies, especially engineering companies, may require physical presence at offices. After COVID-19 though, they might have to adopt a hybrid model.

Impact on Manufacturing Sector (which requires physical presence) & Technologies Available for them to Work More Efficiently

- If the pandemic comes again (which is a likelihood), no company would want to go back to the traditional approach which will stop work abruptly.
- So, building resilience is key for a business leader.
- Most likely 10-20% staff would be encouraged to try alternative approaches of working, so that when required, the switch to that mode is smooth.
- In engineering companies switching from desktop to laptop might enable mobility for some, for others it may enable certain processes/systems which assure data protection/safeguarding intellectual property

Is COVID-19 a Watershed Moment for Businesses & Companies? Its Digital & Technological Impact

- COVID-19 has acted as a catalyst for change and accelerated inevitable change that was expected in ten years.
- It has already brought about the fourth industrial revolution about ten years earlier than envisioned (eg: conferencing technology which has found a use case in India in telemedicine, with appropriate regulation).
- Artificial Intelligence (AI), Internet of Things (IoT), 3D-printing, and others, find increasing relevance today.
- 3D printing, for instance, can provide a greater push for local manufacturing and reduce dependencies on riskier supply chains by facilitating production of important components required in manufacturing which are otherwise imported.
- There are a variety of uses cases for AI currently in use, from drug discovery, to healthcare screening.

How Technology & People Move Together, Given the Need to Re-skill a Large Population

- Technology always creates more jobs, there should not be resistance to a technology enabled future.
- If India is looking to replace China as a manufacturing hub, then our manufacturing has to be as state of the art as Japanese or German manufacturing to be attractive.
- We need reskilling infrastructure similar to the mainstream education system to prepare people for new jobs as they come.
- This requires a larger awareness programme, starting from schools to mid-career professionals.

The Role of Green Technologies in Fighting COVID-19

- Government incentivise companies willing to go the new way.
- Increasingly we will see the Indian automobile sector, coming out with electric vehicles, which has been desirable for a while, but will perhaps happen in a big way now.
- Research in battery technology, is a fundamental area where the government should invest.

The Areas of New Investments in ICT & Areas of Most Innovation

- Artificial Intelligence (AI) will touch many more sectors, like waste management, etc.
- Building AI requires data. Governments should invest in unlocking datasets for youngsters to build innovative solutions.
- This might happen in engineering colleges or SMEs, where they might come up with data labs where students from tier 2 cities or professionals, generate an AI which can for instance enable local police to issue challans for not wearing a helmet and the police might also get revenue out of it.
- Additionally the new economy would require a greater impetus in infection prevention and control, where robotics and image processing will come handy across sectors.

Chapter 7. List of Figures & Tables

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