BUILD BACK BETTER:
REVITALIZING CLEAN URBANIZATION TO DRIVE INDIA'S POST-COVID ECONOMIC GROWTH

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Introduction

The COVID-19 epidemic and the associated economic lockdown have hit India particularly hard. As of end of August 2020, India had some 2.5 million confirmed cases, despite one of the most stringent lockdowns in the world. On the economic front, high-frequency data, such as daily electricity generation or monthly production of heavy industry, show an economy in freefall during the lockdown. The index of core industry production fell by 37% in April, and remained in negative territory in June, falling 15%.

This comes in the context of already slowing growth, and rising fiscal and financial stress across the economy. The gross domestic product (GDP) growth for the last pre-lockdown quarter, January to March 2020, came in at just 3.1%, after being on a declining trend for the last eight quarters. Meanwhile, the consolidated fiscal deficit has come in at more than 6% of GDP in 2018–19. It is expected to worsen further with the impact of the COVID-19 lockdown on both the expenditure and the revenue side.

The COVID-19 shock to the economy is thus substantial, and comes at a time when the economy was already in poor shape.

The crucial question is therefore: what can be done to protect, revive, and strengthen the Indian economy? The government has already released an economic support package, which combines liquidity support, reforms, and some discretionary fiscal stimulus. However, constrained by the already high government debt and low domestic savings rate, the discretionary fiscal stimulus amount has been small, at only 1–1.5% of GDP.

This report argues that sustainable urbanization should be front and centre of the recovery plan, in order to put the Indian economy back on a more equitable high growth pathway.

Urbanization Is Crucial for Economic Growth

Urbanization is one of the crucial drivers of economic development. An increase in the rate of urbanization is observed in all the countries that have achieved high levels of economic and social development. The reasons for this are several. First, urbanization is associated with the process of transition of labour out of agriculture, and into more productive industry and services sectors. This transition in the sectoral composition of the economy drives increased aggregate productivity.

Second, urbanization can facilitate more efficient and effective provision of the public services that improve human capital: education and health, in particular. Third, urbanization facilitates economies of scale, lower transaction costs, and larger and more efficient markets: all of these are associated with higher firm and worker productivity. Finally, there are substantial spill-overs between urban economic development and rural economic development, as urbanization enables the transfer of capital, know-how, and purchasing power to adjacent rural areas.

Figure 1 shows the correlation between per capita GDP and urbanization rate at the national level for 184 countries in 2018. GDP is given in purchasing power parity (PPP), in order to allow cross-country comparison. The x-axis presents the natural logarithm of GDP per capita, which allows an exponential relationship to be presented as linear. The implication is that if there is a linear relationship between the natural logarithm of GDP per capita and urbanization rate, the relationship between actual GDP per capita and urbanization is exponential. Indeed, urbanization rate increases as a declining exponent of GDP per capita, i.e. extremely rapidly at lower levels of GDP per capita, before plateauing and reaching a stable relationship at high levels of GDP per capita. In simple terms: as countries get richer, they inevitably urbanize, up to a level of

about 70–75% at high levels of per capita income. The R2 for this relationship is ~0.5, implying that GDP per capita explains 50% of the differences in urbanization rate across countries.

While it is true that urbanization is an integral part of the development process, it also has a number of downsides, or social costs, that need to be considered. Notable among them: high material and energy intensity, land-use conversion, and local air and water pollution. Moreover, the process of urbanization creates the so-called congestion costs. These congestion costs include the social and economic 'scarcity costs' of scarce urban resources, including open space, clean air, and uncongested streets. Congestion costs can be exacerbated by insufficient investment in supplying these goods: for example, a shortage of affordable housing will drive up housing costs, creating a kind of congestion cost. Lack of investment in effective and affordable public transport will drive up the demand for private transport, creating congestion costs in the form of local air pollution, snarled and noisy streets, and excessive space consumption by private modes of transport.

The process of urbanization should thus be thought of a balancing act between the benefits of agglomeration and the costs of congestion.
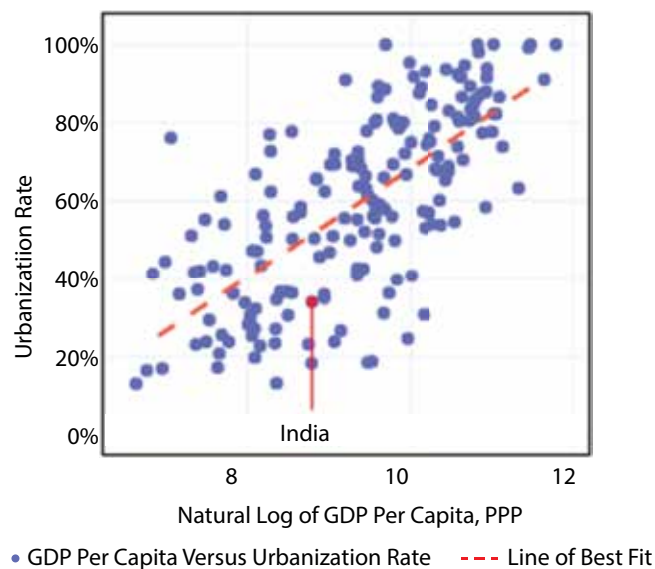
Figure 1: Correlation between GDP per capita and urbanization rate
Source: Based on data from World Bank (2020)

It is very clear that India has got this balancing act wrong. Its urbanization rate is too low for substantial agglomeration benefits; and what urbanization India has is associated with high congestion costs, because of suboptimal urban planning and investment.

# Urbanization Is Associated with Economic Growth in India

The relationship between urbanization and GDP per capita highlighted above also holds for India, with the caveat that India's definitions of urbanization are fairly stringent and appear to be applied differently by different states within the country. Nonetheless, even at the all-India level the relationship between urbanization and economic welfare is clear and unequivocal. Figure 2, left panel, shows the relationship between district-level household monthly per capita consumption expenditure and district-level urbanization. The statistical relationship here is significant, with the R^2 of the two values at 0.36. However, there is still substantial variability between districts at the all-India level. Some of this variability can be explained by variability between the states, rather than variability between districts within each state. Figure 2, right panel, shows that among states having 10 or more districts, the within-state correlation coefficient between district-level urbanization rate and district-level household per capital consumption expenditure is generally higher than 0.5, with only 3 of the 13 states having a correlation coefficient below 0.5.

Thus, it is clear that in India urbanization is strongly associated with increased economic welfare, although there are differences in this relationship between states and a few outliers (notably Bihar and Kerala).

Urbanization Is Strongly Associated With the Structural Transformation of the Indian Economy

Urbanization drives higher incomes because it facilitates the structural change of the economy, by which we mean the transition of employment and output out of agriculture, and into more productive industry and
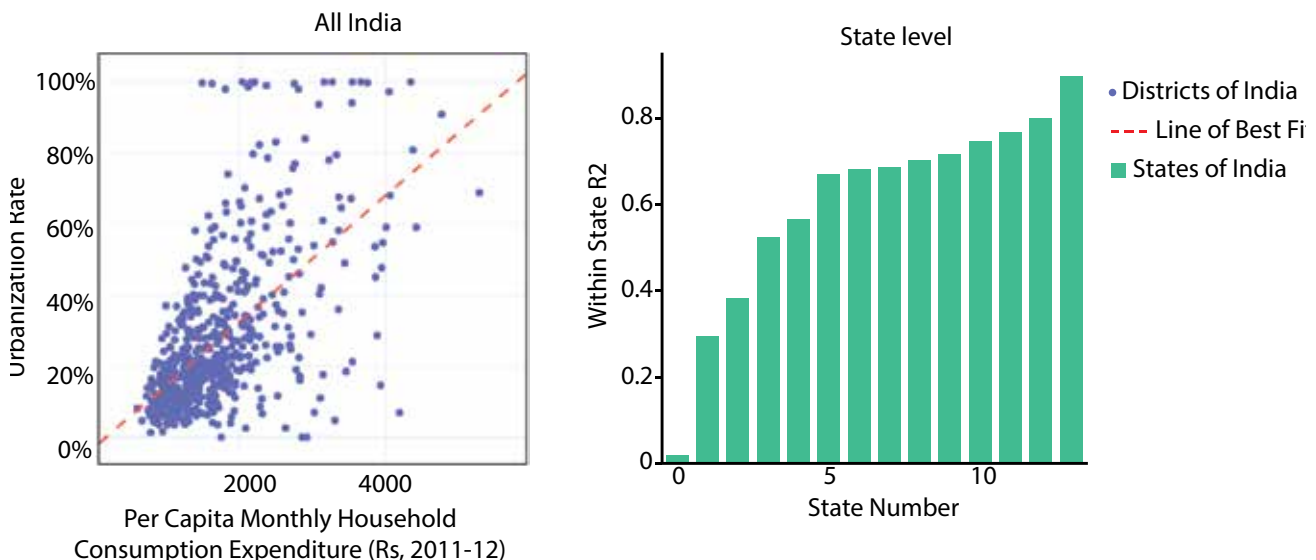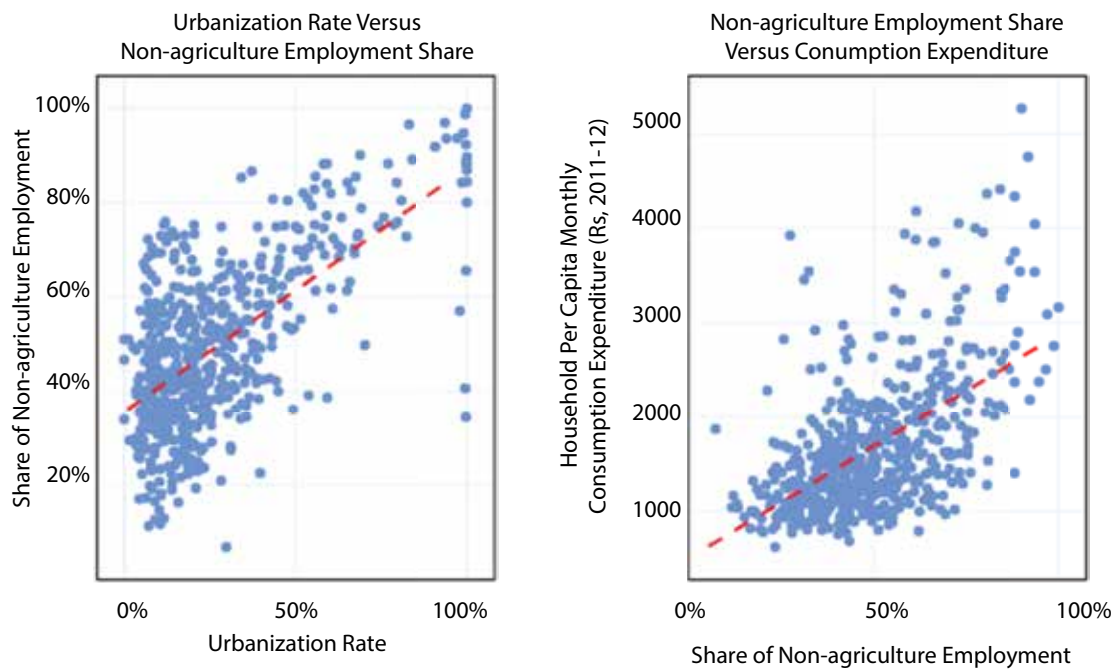

Figure 2: Relationship between urbanization rate and economic welfare in India
Source: Based on data from NSSO (2012) and ORGCC (2011)

services jobs. This holds true also of India. Figure 3, left panel, shows the strong relationship that exists in India between the district-wise urbanization rate (x-axis) and the district-wise share of non-agricultural employment (y-axis). The relationship is strong and positive at the all-India level. However, there is still substantial variability at the all-India level, which is partly explained by the variability of this relationship between Indian states. Within states having more than 10 districts, the mean correlation coefficient between district-level urbanization rate and district-level share of non-agricultural employment is 0.61, indicating a consistent strong relationship within states between urbanization and the share of non-agricultural employment.

Figure 3, right panel, shows the relationship at district level between household per capita consumption expendtiture and the share of non-agricultural employment. Here also there is a strong positive relationship, although also a fair bit of variability. A part of this variability is due to the variability in this relationship between states, rather than between districts within states. For states having more than 10 districts, the average correlation coefficient between household per capita consumption expenditure and the share of non-agricultural employment is 0.52. In other words, on average among Indian states the share of non-agricultural employment explains 52% of the district-wise variability in household economic welfare, measured as household per capital monthly consumption expenditure.

Figure 3: Relationship between urbanization and structural change in India
Source: Based on data from NSSO (2012)

In simple terms: urbanization is associated with the transition of employment out of agriculture, which in turn is associated with higher levels of economic welfare. India's development depends on urbanization.

India's Urbanization Rate Is Too Slow, and Too Low

Urbanization is both a process and a state. As a process, the term describes the rate at which the share of the urban population in the total population increases over time. As a state, urbanization describes the share of the urban population at any given point in time.

Unfortunately, India's urbanization rate is too slow, and its level is too low.

We can get a good sense of this by comparing the extent of increase in the urbanization rate between India and China. Figure 4 shows the level of urbanization in China and India in 1978 and 2018. The year 1978 is selected because it marks the year when China started its process of 'reforms and opening up'; India started to initiate piecemeal reforms in the 1980s, although the real substantial reforms came only in 1990. India started the period more urbanized than China, with an estimated

urbanization rate of 22% to China's 18%. However, across the period China's urbanization rate has substantially overtaken India's, reaching an estimated 59% in 2018 compared to India's 34%. Put in another way, China's urbanization rate increased by 41 percentage points compared to India's 12 percentage points. The growth in China's urbanization rate has been almost four times more than the growth in India's urbanization rate.

This has been essentially matched by the increase in the per capita GDP in the two countries. China's per capita GDP grew by a factor of 25, while India's GDP per capita grew by a factor of 5. Again, as with urbanization, China has outperformed India in the per capita GDP growth by about five times. A large part of this is because China has succeeded far better than India in the essential structural transformation that faces all developing countries: pulling workers out of agriculture, and pulling people out of rural areas and into urban areas.

There are many academic controversies about the way that India measures urbanization.[1] However, regardless of how it is measured, what cannot be disputed is that the rate of India's urbanization process has been slow (Tumbe 2016). India has failed to reap the full benefits of urbanization.

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[1] See, for example, a recent effort to match satellite and census data: (Balk, Montgomery, Engin, *et al.* 2019)
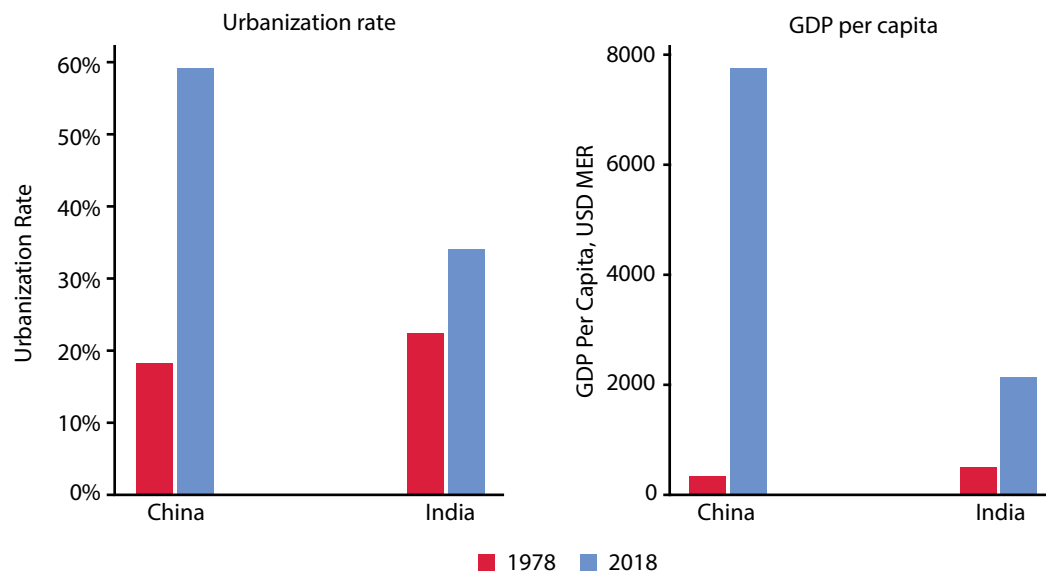
Figure 4: Comparison in urbanization rate and GDP per capita of India and China
Source: *Based on data from World Bank (2020)*

The High Externalities of India's Urbanization Process Have Slowed Its Advance and Sapped Its Social Support

In the first section of this paper, we characterized the process of urbanization as a 'balancing act between the benefits of agglomeration and the costs of congestion'. This is not a new observation, but it accurately describes the trade-offs between economic benefits and costs of urbanization. However, these costs and benefits are not independent of policy. When well executed, higher degrees of urbanization can be accompanied by greater economic benefits of agglomeration and lower social costs of congestion. On the other hand, when poorly executed, even relatively low levels, and slow processes, of urbanization can bring substantial congestion costs, be it in terms of traffic congestion, local air pollution, space constraints, or social exclusion.

Unfortunately, this is the case for India. In the following sections, we explore a few of the externalities of India's urbanization process.

Traffic Congestion

The streets of India's cities are notoriously choked and clogged with traffic. This is in spite of India having an extremely low level of car ownership per capita, at just 25 cars per 1000 people, compared to 400–600 cars per 1000 people in Europe and more than 800 in the United States. India holds the dubious distinction of having 4 cities in the top 10 most congested cities of the world, according to the TomTomTraffic Congestion Index. In Figure 5, we use Uber traffic data to calculate the approximate travel speed for world cities in 2019. These data are approximate because Uber only gives the urban polygon to urban polygon travel time; by calculating the implied speed of the travel from the centroid of the source polygon to the centroid of the destination, we can get an approximation of average travel speeds. The picture is fairly clear, and concords well with other indicators of congestion, such as India's poor performance on the TomTom congestion index. In simple terms, despite having a very low rate of car ownership, India's streets are already the most congested in the world. This is not just a problem of large metros, even tier-2 and tier-3 cities experience substantial congestion and slow travel speeds, although the culprit here is largely motorbikes and rickshaws. This is also not just an issue of convenience: the economic costs of congestion are massive.

Median Uber travel speeds, Q3 2019
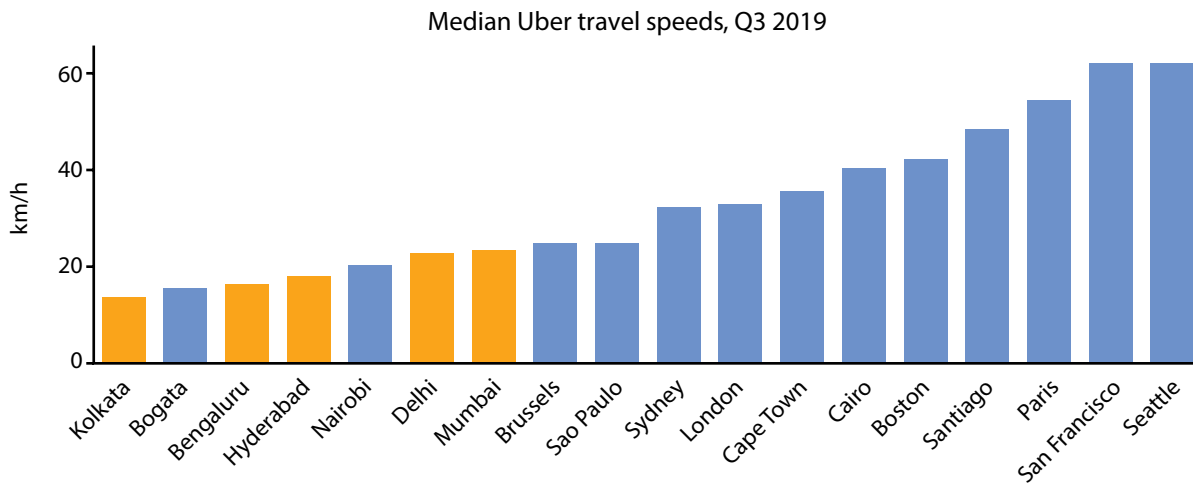
Figure 5: Median Uber travel speeds in major world cities
Source: Based on data from the Uber Movement Data Platform

Public Health

India's suboptimal urbanization process also has negative impact on public health, a crucial issue during the COVID-19 pandemic. India's urban slum population is substantial, with 24% of the urban population living in slums as of 2014. Figure 6 shows the living conditions of rural, urban slum, and urban non-slum populations as per the latest sample survey of the National Sample Survey Organisation.

The top left panel shows why rural populations move to urban areas, even if it means living in cramped and unhygienic slum conditions. In simple terms: the economic opportunities of city life far outweigh the inconveniences of slums. The per capita monthly consumption expenditure of the urban slum population is substantially higher than the level of the rural population. As during the industrialization of the developed world during the 19th and early 20th centuries, the lack of economic opportunity in rural areas drove people to cities.

The top right and bottom left panels show some of the convenience and salubrity penalties that urban slum

dwellers have to pay. Their per capital floor space is on average almost half that of their less well-off rural counterparts, and fully half that of non-slum urban households. Likewise, the bottom left panel shows that although latrine access in urban slum populations is better than in rural populations, there are still substantial deficiencies. Almost 20% of the urban slum population had no access to latrines, and another 20% access to paid public latrines, which clearly are a concern in times of a global pandemic.

Despite the insalubrious conditions of slum life, the bottom right panel shows that rural poverty is worse. The percentage of households having self-reported experienced fever in the last month is higher in rural areas even than in crowded slum conditions.

The picture is clear: slum life is bad, rural life is worse. The history of economic development in the West shows: rural people will continue to seek better opportunities in cities, even if it means considerable convenience sacrifices. There is simply no stopping this process. What is needed is not to work against urbanization, as India's political economy sometimes tends to, but rather to improve this inevitable process.
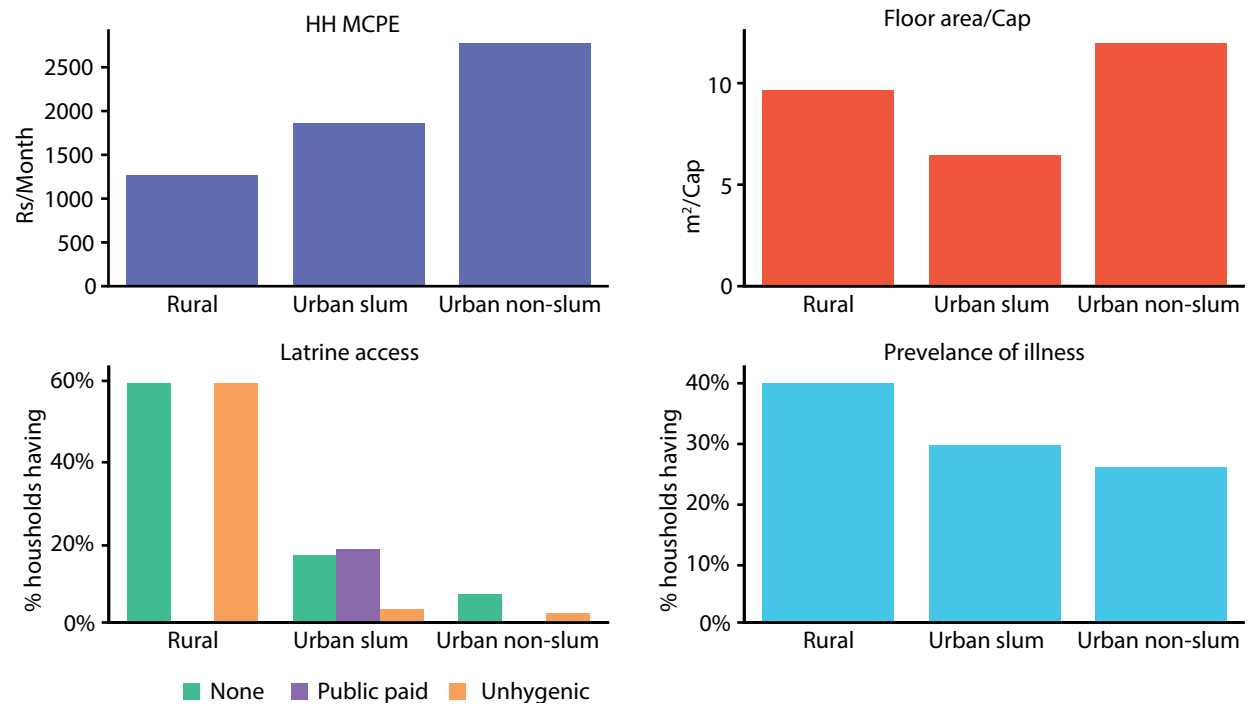
Figure 6: Living conditions of rural, urban slum and urban non-slum population
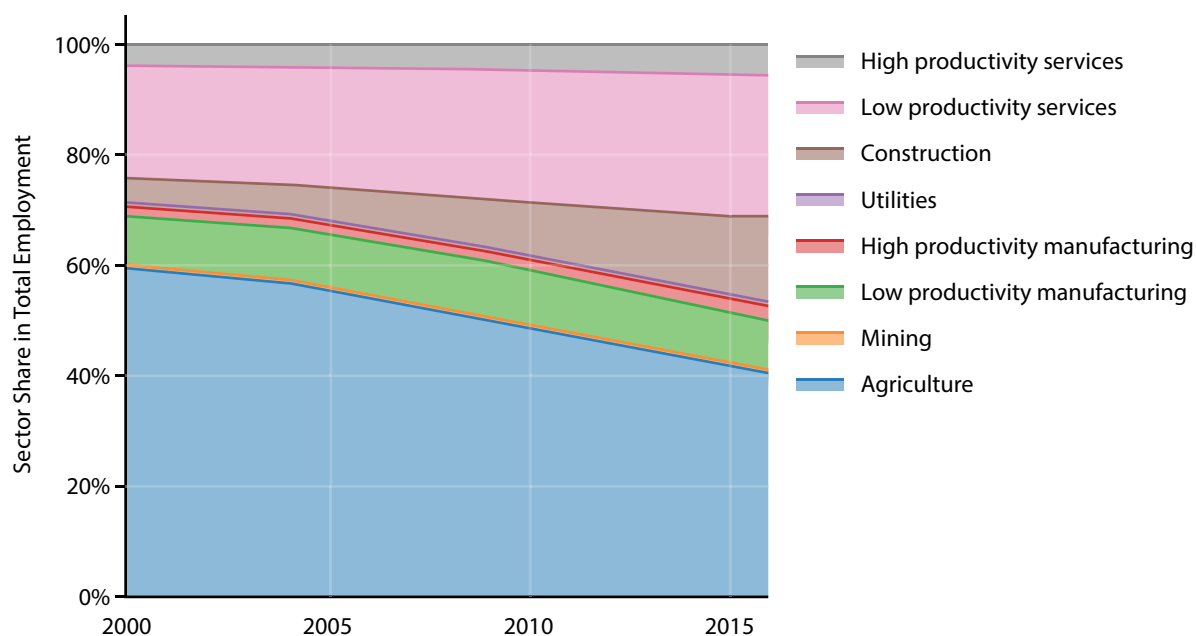*Source: Based on data from NSSO (2013)*

Air Pollution

This section needs few words: India's problem with outdoor air pollution is the worst in the world. The situation is although not as bad as in Western cities, like London during their process of industrialization, owing to the extremely high use of coal in these economies. Coal made up more than 40% of the UK's primary energy supply into the second half of the 20th Century. Part of India's problem is due to the 'geographic curse' of the Gangetic plain, which acts as a giant bowl trapping pollution. India's air pollution problem is interesting in that its causes combine 'mis-development' with the inevitable consequences of 'development'. In the first category, we can place India's continued reliance on traditional biomass for household cooking, which contributes terribly not only to indoor air pollution, but also to outdoor air pollution at the level of entire airsheds. In the 'mis-development' category, we can also place the problem of stubble burning, driven by perverse incentives to grow the wrong crops at the wrong times in the wrong parts of the country. Likewise, the 'mis-development' of the unreliability and high cost of grid power drives many small industries and residential complexes around urban areas to invest in polluting diesel generators.

But part of India's urbanization problem is also due to more positive developmental processes. These include the rise of construction dust as India urbanizes, as well as the rise of transport emissions as India urbanizes and develops. These processes are more 'positive' in the sense that they are the cause and consequence of growing incomes, not the cause and consequence of low incomes (as is the case of stubble burning, reliance on biomass, and polluting diesel gensets). But to mitigate the negative externalities of the generally positive (indeed, developmentally essential) process of urbanization is crucial to accelerate it, and increase its social acceptability. This includes tackling air pollution arising from the urbanization process.

The construction industry has been a crucial driver of increased low-skill employment, but has been in trouble recently

India's crucial challenge is creating low-skilled employment to attract employment out of agriculture, and into more productive industry and services. So far, India has not been successful in creating jobs in low-skilled manufacturing. Instead, the construction industry has absorbed the largest share of low-skilled employment transitioning out of agriculture. However,

Figure 7: Employment share of various sectors 2000–16
*Source: Based on data from Reserve Bank of India (2019)*

the growth rate of value-added construction had been falling since the last quarter of fiscal year 2017–18. The real estate sector has struggled with a massive build up of unsold inventory, and the financial sector as come to be stressed by its exposure to the real estate sector. Recovery in the construction sector is essential to the recovery of the Indian economy after COVID-19, and to the structural transformation that must drive India's mid-term growth.

Elements of a Green and Socially Inclusive Recovery Plan

Building out electrified public transport in metro and tier-2 and tier-3 cities

The poorest Indian's spend large shares of their incomes on transport services, but very little on direct consumption of fuels. Often, the poorest segments of the population cannot afford even the cost of a subsidized bus ticket. Projects like metro rails or subways are essential to the long-term transport plans of large metros on a multi-decadal timescale, because only these forms of public transport can satisfy the commuter density that prevails in the large metro cities. But such projects are not socially profitable in the short-term. They neither help the very poor nor can they be implemented quickly. Large-scale metro rail should continue to be developed, but as a multi-decadal project of city-building. In the short-term, what can be done is a massive expansion of the public bus fleet, which is notoriously low. This should consist of not only the large-scale 20 plus seater buses, but also smaller 12–15 seater buses, particularly in tier-2 and tier-3 cities. Given that electric buses are now economically competitive with diesel buses, all of this procurement should be electric (see Figure 8). It should also consist of a substantial share of domestic procurement, in order to kickstart the domestic manufacturing industry. Rolling out electric buses would also reduce the operational costs for financially stretched state municipal corporations, and allow them to offer lower tariffs based on the low operating costs of electric buses. The deeper fiscal pockets of the central government should allow it to bear the upfront costs of the procurement, and pass the operational benefits of electric buses to the states.
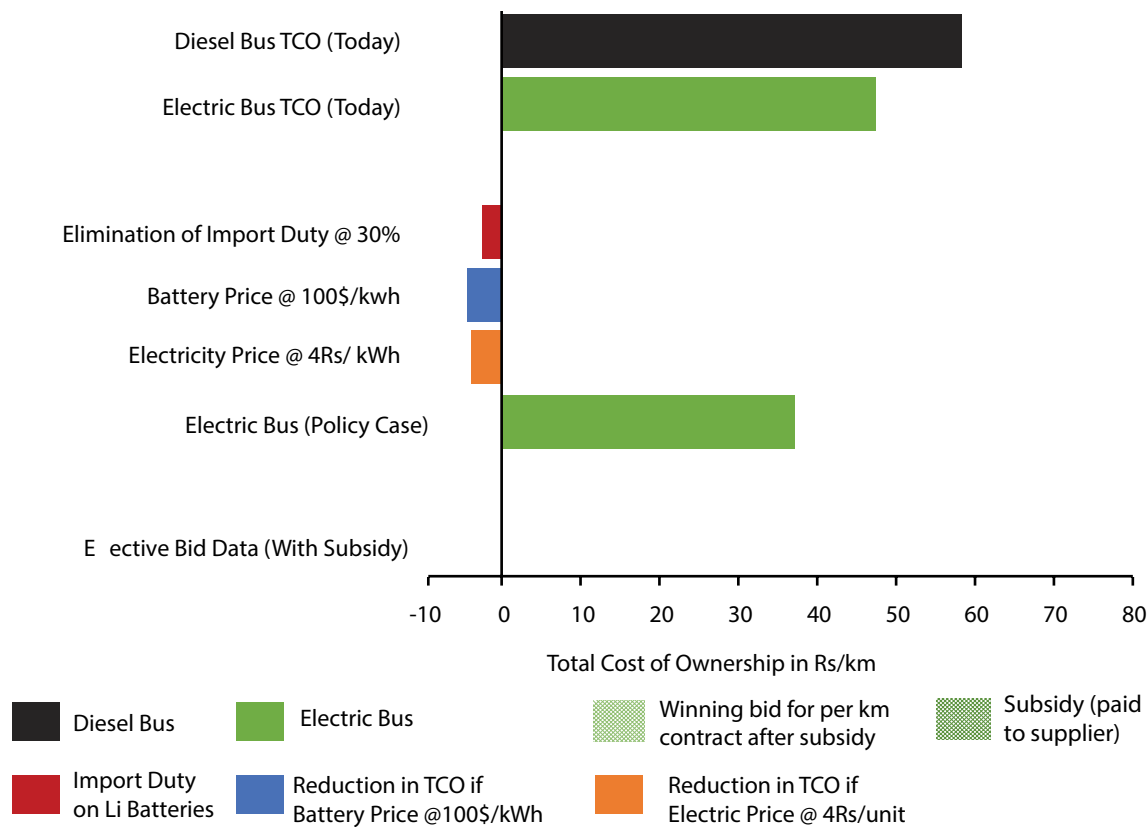
Figure 8: Economic competitiveness of electric versus diesel buses
Source: Khandekar, Rajagopal, Abhyankar, et al. (2018)

Clearing the Inventory of Unsold Real Estate

The massive unsold inventory of real estate acts as a ball and chain around the Indian economy (see Figure 9). This is not just a problem of the real estate sector per se, but also of all the upstream and downstream sectors that are linked to construction. Until there is a revival of construction demand, India's economy will not recover.

For demand to revive, prices need to come down, and excess supply to be absorbed. We can draw a parallel with the situation in China in the period 2014–17, in which the Chinese economy was plagued by overcapacity in the real estate and industrial sectors. The solution was typically aggressive, swift, and ruthless Chinese policymaking. A programme of 'supply-side reform' was initiated in which the excess supply in industries like iron was closed down (with moderate success). In addition, a massive programme of slum redevelopment was undertaken:

"The Ministry of Housing and Urban Rural Development set ambitious targets for slum clearance— 6 million units a year from 2015 to 2017, and 5 million a year from 2018 to 2020. China Development Bank—the massive state-owned policy bank—provided funding, tapping cheap credit from the PBOC to do so. From mid-2015 through the end of 2017 the PBOC made about 2 trillion yuan in loans earmarked for slum clearance. Commercial banks, often owned by local governments, chipped in additional funds".

The Chinese policy is based on the realisation that excess supply can be extremely detrimental to growth. If the process of balancing supply and demand is not facilitated by a downward adjustment in prices (for example, if the real estate developers and the banks and NBFC companies that lend to them avoid taking losses on existing projects), then excess supply hangs around for years, dampening all incentives for further investment.

Something equivalent to China's process of 'supply-side reform' is needed in India to clear excess supply. Of course, this needs to be designed with Indian characteristics in mind. Forced slum clearance *a la* China is not possible. Rather the government needs to use regulatory mechanisms to force real estate developers to real loses and bring down prices. As a last resort, the government could set up a financing vehicle to buy up excess inventory, but only after developers and financial institutions take haircuts. These could then be offered at lower prices, increasing the supply of low income housing and facilitating the economically beneficial process of urbanization and helping to revive the construction sector.

Massive Programme of Energy-efficient, Low-income Housing in Tier-2 and Tier-3 Cities

Regardless of what the government does, clearing oversupply from tier-1 cities will take time. The economy is in need of an immediate boost. To provide this, the government can initiate a large-scale programme of affordable housing construction in tier-2 and tier-3 cities. While we do not subscribe to the idea that India's urbanization process needs to be slowed (see discussion above: indeed it should be accelerated), urbanization needs to be rebalanced towards tier-2 and tier-3 cities. Increasing the supply of affordable housing can be essential to this process. Because low-income households tend to spend a higher share of their income on energy services, making these houses
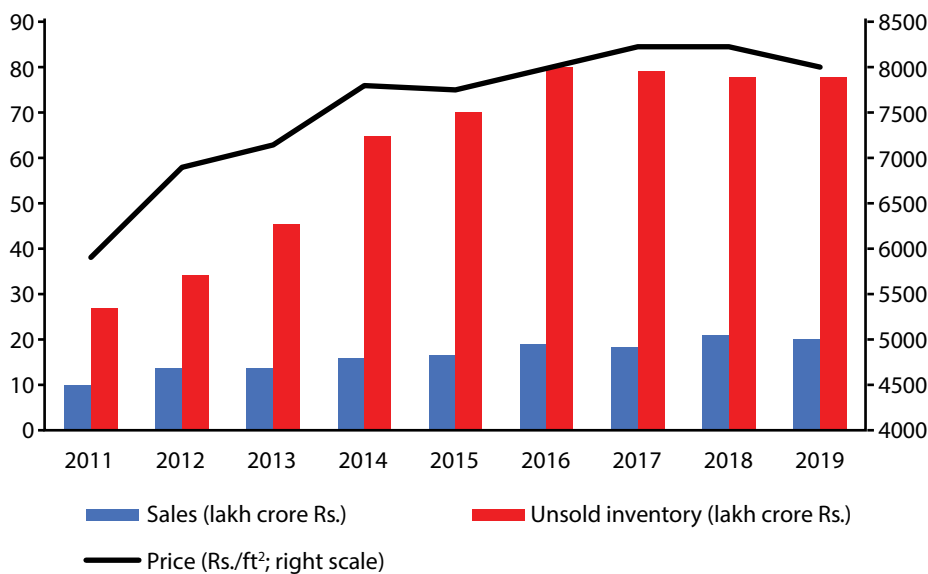
Figure 9: Unsold inventory and the failure of the price mechanism to rebalance
Source: Quoted in Subramanian and Feldman (2019)

energy efficient would leave disposable income in the hands of low-income households, providing a further boost to the economy. Ensuring that the construction is energy efficient would also boost the industry that supplies equipment and materials for energy-efficient construction, and help to create the market for a more energy-efficient construction industry.

Conclusion

The Indian economy is indeed on a sticky wicket. In order to recover, and to avoid a lost decade, bold action is required. Part of this action must be a change in mindsets: the historical aversion to urbanization needs to be shed, just like the intellectual change regarding protectionism and regulation in 1990. There is no development without urbanization, pure and simple. India's suboptimal urbanization process has understandably sapped public and political support for

it. But that is a fault of execution, not of objectives. Now is the time to drive a beneficial contribution to India's future growth from urbanization. Three strategies have been outlined: large-scale expansion of domestically produced electric buses, in particular to tier-2 and tier-3 cities; accelerated clearing of the unsold inventory of real estate, in order to create incentives for future investment and revive the construction industry; and a large-scale programme of affordable, energy-efficient housing.

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