Building Urban Economic Resilience during and after COVID-19

DIAGNOSTIC OF CITY'S ECONOMIC RESILIENCE PERFORMANCE
Pune, india

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Acknowledgements

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1. Summary

The City Economic Resilience performance is assessed using a framework of five themes: Business Environment; Labour; Finance; Economic Governance; and Services, Infrastructure and Connectivity. Each of these has a set of composite indicators, drawing from up to four parameters. The performance assessment for Pune is presented in the form of a spider graph in Figure 1.

The scores were initially awarded based on quantitative data and secondary studies, where available, and information from a dialogue with representatives of informal sector worker groups, civil society organisations and volunteers who have been active in COVID-19 relief and community outreach. The scores and reasoning were shared with sector experts in a Delphi process to obtain their inputs and arrive at the scores presented in this report. The lack of data at the city level for several parameters has been a limitation. Nevertheless, secondary data and local insights are used to award scores for each theme. The approach, scores, and underlying rationale are presented in this report. These would be helpful in plans to enhance resilience.

The key findings are that the local business environment is diverse, open and has productivity and financial capacity as strengths. The health services have functioned relatively well through the pandemic, and municipal fiscal capacity is a considerable strength. However, the city does very poorly in social protection of labour, especially informal sector workers, opportunities for re-training, and public infrastructure, safe and affordable mobility, and connectivity that are key ingredients in economic resilience. The city also needs to strengthen planning and governance, with a focus on resilience. Synergizing the strengths of an active and knowledgeable civil society and business community with municipal mandates and economic governance and focussing on the well-being of the urban poor would strengthen the resilience and recovery process in Pune.

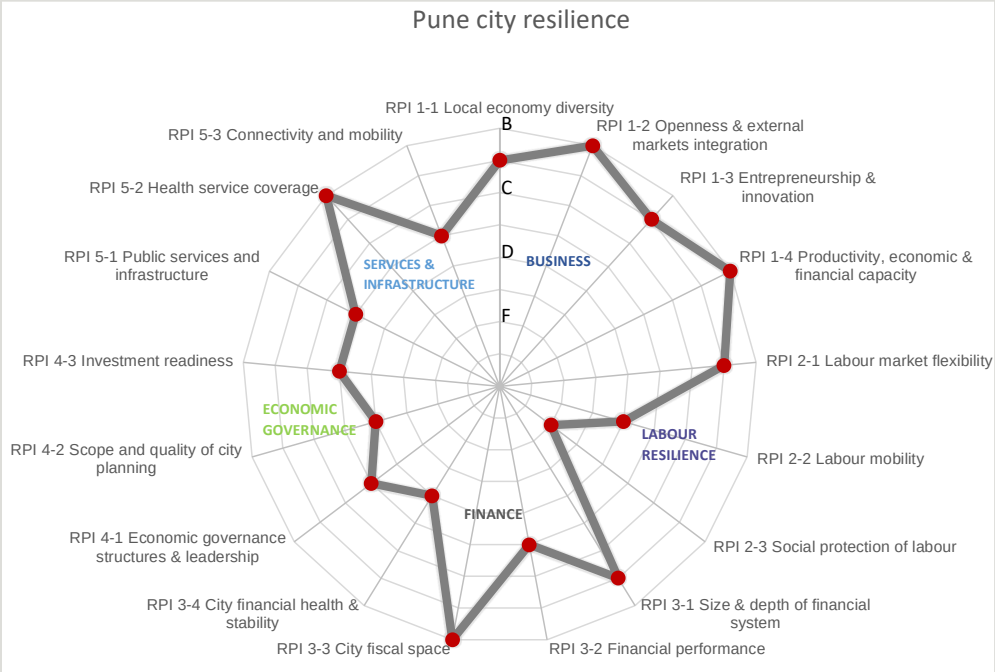


Figure 1 Status of Pune city's economic resilience

2. Introduction

2.1 Study Context

COVID-19 has had significant impacts in Pune, as in cities worldwide, as the pandemic forces countries to implement significant response measures, including the closure of businesses and reduction in urban services, resulting in the shrinking of economic activities in cities and consequential revenue loss in local governments. While the effects of COVID-19 provided some positive environmental outcomes, such as temporary reductions in carbon emissions and improved urban air quality, the opportunity for a sustainable and green urban recovery is still to be realised.

Pune urban context	
Status	Secondary city
Area	331.3 km²
Number of inhabitants	3 115 000 (2011)

Located in western India, Pune is the eighth-largest city in the country by population size. Pune, together with the industrial city of Pimpri Chinchwad at its northern boundary and other smaller towns and villages, is part of the Pune Urban Metropolitan region.

Among the challenges faced by the city are a high percentage of the population (more than 40%) living in slums and informal settlements with inadequate access to essential services, high and increasing population density and subsequent increase in demand for housing and inadequate access to public transportation. The work participation rate is considered low, especially among women. There are also significant issues regarding air and water pollution and inefficient solid waste management. Apart from that, the city experiences annual flooding episodes of the Mutha river, and during extreme rainfall events, it is prone to flash floods. Possibilities of disease outbreaks have also existed in advance of COVID-19 crises, with Pune having one of the highest recorded rates of the Swine Flu.

2.2 COVID-19 impact

Pune is among the cities that are worst affected by COVID-19 in India. The first confirmed coronavirus case in Maharashtra was reported on 9 March 2020 in Pune, where a couple returning from Dubai tested positive. The nationwide lockdown followed in 4 stages, starting with the 1st stage from 25 March 2020 to 14 April 2020 (21 days), followed by three extensions between 15 April 2020 and 31 May 2020.

Pune was among the worst affected cities in the country in the second wave, too, with shortages of hospital beds, oxygen and anti-viral medication. Media reports indicate that in April 2021, Pune was contributing almost 20 per cent of all cases in Maharashtra and more than 10 per cent of cases in all of India (Express News Service, 2021a). As per the 11 August 2021 update

report of the Maharashtra State Govt Health Dept (available at https://arogya.maharashtra.gov.in/1175/Novel--Corona-Virus), the cumulative position of illnesses and deaths due to COVID-19 is as follows:

Area	Illness	Death
Pune Municipal Corporation	506345	8912
Pimpri-Chinchwad Municipal Corporation	259143	3424

Over 7 million vaccinations have been administered in Pune district with over 1.8 million persons having received both doses.

2.3 Key crisis response and recovery measures

Crisis Response and Recovery Measures

As the local self-government institution of the city, the Pune Municipal Corporation has been supporting the healthcare services, maintenance of essential services, and lockdowns. The PMC has prepared micro containment zones and executed the Mahatma Jyotiba Phule Jan Arogya Yojana healthcare scheme. The local government was empowered to conduct surveys and declare containment zones, even at ward level, making rapid response possible at very localised scales. The local government has also been empowered to give extensions for payment of municipal taxes and charges.

In the initial days and weeks in 2020, the city had faced challenges in interpreting central government orders, distributing rations, relief materials, and PPE kits, and preparing temporary shelters for returning migrants due to the unprecedented scale of the crisis. These were addressed by improving communication platforms and setting up a command and control centre that functioned around the clock. A task force with civil society was also set up under the Divisional Commissioner. Additionally, the government coordinated with citizens, community organisations, and businesses through Corporate Social Responsibility (CSR) activities to reach different segments of society.

A COVID-19 Task Force was set up with the Divisional Commissioner as the Chairperson. Officials from the PMC and concerned individuals from civil society, including from the sectors of healthcare and informal sector economy, are members of the Task Force. The Task Force has convened regularly and mutually updated the different on-ground observations and experiences from the perspective of the local government, the frontline workers, and the public, especially the urban poor. The state-level IEC strategy '*Majhe Kutumb Majhi Jababdari*' was refined and adapted for implementation in Pune, with the participation of civil society organisations, CSR contributions, and the use of public transport buses and bus stops as a way of outdoor media outreach.

Main economic and financial impacts

The economic and financial impacts of COVID-19 have been mixed. According to the Maharashtra Economic Survey 2020-21, in the state among the three major sectors of the economy, the 'Agriculture and allied activities' sector was the only sector that contributed positively to gross state value added in 2020-21. Hence, this sector was the least impacted

during the COVID-19 pandemic. On the other hand, 'Industry' and 'Services' sectors showed negative growth of (-)11.3 per cent and (-)9.0 per cent respectively. Within the Industry sector, the 'Manufacturing' and 'Construction' sectors were most impacted and had negative growth of (-)11.8 per cent and (-)14.6 per cent respectively.

Labour Market

The crisis has had a significant impact, particularly on informal sector workers. Soon after the initial lockdowns in 2020, India saw an exodus of migrant workers returning to their home states, and Pune was no exception. Due to the lockdowns, many daily wage earners had no source of income, and continued months of lockdown have depleted their savings, with little left for consumer spending. The exodus also resulted in a shortage of labour when the economy started to reopen.

However, many domestic workers have lost some of their jobs, as formal sector employers have asked staff to work from home. A rapid assessment survey conducted in 2020 by Habitat for Humanity's Terwilliger Center for Innovation in Shelter showed that at least 71% of all respondents received no wages after the lockdown, and over 63% claimed to have no source of livelihood at their places of origin. Autorickshaw drivers, construction workers, and a range of service providers have seen an erosion of work. On the other hand, there has been an increase in demand for home deliveries and related logistics work. Domestic workers reported seeking home-based work to make up for the loss of income, but they found it difficult to access such work without phone connectivity and worker networks. In the second wave of the pandemic in India in April 2021, there was again a migration of people back to their home states (Express News Service, 2021b; Ghosh, 2021).

Business Environment

In February 2021, the MCCIA Monthly Survey on Resumption of Economic Activity in the Pune region (retrieved from MCCIA's page on Facebook[1]) showed that more than 50% of the companies surveyed have already achieved their pre-COVID-19 levels of production, while 20% had said they hoped to achieve the same in the next three months. In addition, the real estate body Confederation of Real Estate Developers' Associations of India (CREDAI) reported that migrant labourers had returned, while the Maharashtra Metro Rail Corporation Ltd (Maha-Metro) stated that 90% of workers had resumed work. However, as mentioned, several migrant workers returned to their home villages and towns with the second wave of the pandemic.

Financial Environment

The revenue of the PMC saw some shortfall but also recorded a high of property tax payments. INR ₹1,665 was collected as property tax which is more than that collected in the previous financial year (Gadkari, 2021). On the other hand, the revenue from development charges was lower as the quantum of construction activity was considerably affected due to the pandemic.

Economic Governance

A small advisory committee was set up in 2020 within PMC with the Municipal Commissioner, Additional Municipal Commissioners, and the Heads of Departments. This committee reviewed the civic projects budgeted for the year to identify which projects could be implemented later so as to have adequate resources for the health emergency and to tide over potential revenue shortfalls. As a result, last year it was decided that only works for infrastructure maintenance

[1] https://www.facebook.com/PuneMCCIA/posts/outcome-of-mccia-monthly-survey-on-resumption-of-economic-activity-in-pune-regio/1687847641394424/

will be accomplished, and new projects would not be taken up so that funds may be used for public health, medical supplies, COVID care hospital, and isolation centres.

SVANidhi - Supporting Street Vendors
The PMC is implementing the central government's scheme for street vendors (SVANidhi). As of August 2021, over INR 6.18 crores were disbursed in over 6200 individual loans, as against over 12000 applications, as per the online dashboard of the scheme[2]. Under this scheme, street vendors are eligible to get a working capital loan of INR 10,000 without any collateral. In addition, an interest subsidy of 7% is to be credited every quarter to the beneficiary's account.

Changes in municipal taxes
Under an amnesty scheme for those who have defaulted on tax payments, the PMC has announced that taxpayers, whose property tax dues are less than INR 50 lakh—then on the fine amount only (which is 2% per month)—get 80% discount. Concurrently, in order to improve revenue collection, the PMC has cancelled previously granted property tax discounts for projects implementing environment-friendly measures (vermicomposting, solar energy, rainwater harvesting) if the projects are not kept operational.

2.4 Diagnostic Process

The diagnosis of the economic impact and recovery potential was made using insights from:

- Literature review, including survey reports, government data available in the public domain and media reports,
- Focus group discussions with informal sector workers, civil society organisations and volunteers,
- A Delphi process with experts to review the initial draft of the diagnostic report, which was prepared using the diagnostic and planning tool for urban economic recovery and resilience (Version 3 of January 2021), developed by UN Habitat, UNECE and others.

Challenges concerning data include:

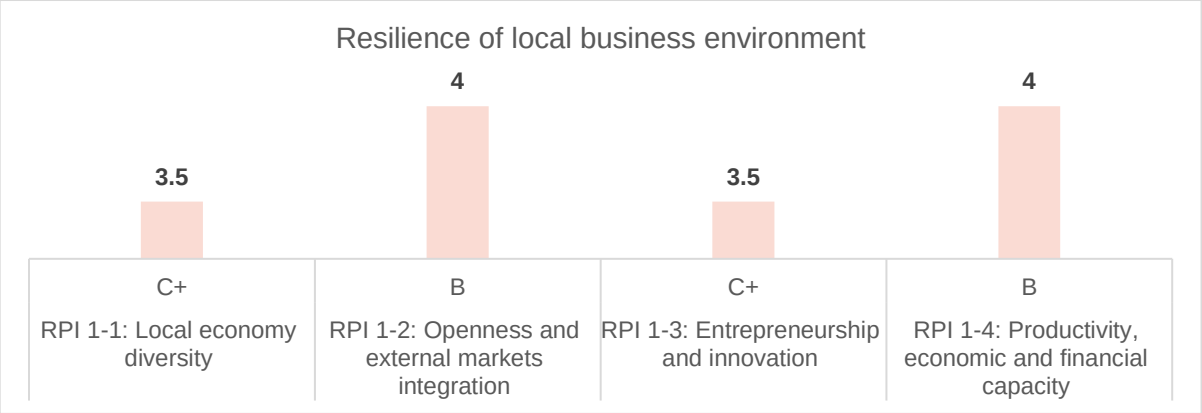
- Non-availability of several data sets, such as those related to employment, sectoral break up of city product and employment, labour mobility, import and export data filtered for businesses within the municipal limits, information on new business creation, and
- Different geographic and time scales of information that may need to be analysed together to get per capita scores.

[2] https://pmsvanidhi.mohua.gov.in/Home/PMSDashboard accessed 18 August 2021

3. Pune city diagnosis

The diagnosis shows that while the local business environment, financial sector and public finances have been impacted, the relative impact on the informal economy and labour force has been much more significant. Support systems, such as the possibility of taking up alternative livelihoods, retraining, unemployment benefits, easy loan schemes, public services like transport and healthcare, are either non-existent or not so readily available or accessible for the urban poor.

3.1 Resilience of the local business environment



Resilience of the local business (both in the public and private sector) is defined as the capacity to adjust its economic activities and business models in response to the changing supply and demand. It is assumed that this capacity depends on three primary factors: local economy diversity; its openness and external market integration outside the region (national and international); and its capacity for entrepreneurship and innovation.

Pune has a diverse economy but with an uneven representation of sectors. The economy includes traditional manufacturing, ancillary businesses, engineering, pharma and chemical, agri-businesses, while the IT, engineering and services sectors dominate the economy. However, data gaps and the fact that the Pune municipal area is part of a larger agglomeration make it difficult to isolate sector concentration. This diversity has helped certain types of sectors to continue functioning with relatively smaller interruptions, while other sectors are highly adversely impacted due to the dependence on external supply chains.

RPI 1-1: Local economy diversity

RPI 1-1: Local economy diversity	C+
City product diversity	B
Informality	C
Public economy strength	C
COVID-19 impact concentration	C

a. City product diversity

City product diversity (Herfindahl-Hirschman Index) is designed to measure sector concentration. It is calculated using the distribution of city product by sector and summing

the squares of the percentage shares for each economic sector. Lower values indicate greater diversification. *(Alternatively, where detailed data by sector are not available, a simple concentration ratio may be used measured as a percentage of the product share of four largest sectors to the entire economic product. A ratio above 50% indicates a less diversified (and therefore less resilient) local economy.)*

Considering that the city has a range of agri-businesses, manufacturing, pharma and chemicals, software and education as key sectors, it can be said that the city economy has a low sector concentration. As such, the state of Maharashtra has a diverse economic base (Govt of Maharashtra, 2021), and this is also the case in the Pune metropolitan region. However, in the city of Pune, the IT, Engineering and pharma sector are prominent in the formal large industry segment. There is a wide diversity of commercial, as well as educational and public sector activities. Though these are significant, their share may be relatively smaller as compared to formal large sector industry.

The score awarded is B.

A	B	C	D	F
City economy has a low sector concentration (e.g. no sector has more than 20% of the market)	City economy has a low to medium sector concentration	City economy has a medium to high sector concentration	City economy has a high sector concentration	City economy has a very high sector concentration (dominated by just one or two sectors)

a. Informality

Informality calculated as the geometric mean of the percentages of (a) share of the informal sector in the total CGP and (b) a share of the informal sector in total city employment. A higher informality above 0.6 usually indicates lower resilience performance.

Informality is moderate as a proportion of the city economy (e.g. 41-60%) (Estupinan & Sharma, 2020; Nikhil & Benakatti, 2020). With about 564 slum localities (Pune Municipal Corporation, n.d.), Pune has at least 1.1 million people living in informal settlements. Of these, some may be employed in formal jobs while most working adults are in informal sector occupations such as domestic work, waste collection, rickshaw driver, street vending, etc. A large proportion of workers in the formal sector are employed as daily wage contract workers.

The score awarded is C.

A	B	C	D	F
Informality is low as a proportion of city's total economy (e.g. below 20%)	Informality is relatively low as a proportion of city economy (e.g. 21-40%)	Informality is moderate (e.g. 41-60%)	Informality is high (e.g. 61-80%)	Informality is very high (above 80%)

b. Public economy strength

Public economy strength calculated as the share of public economy output in CGP. The higher values indicate a stronger public sector and a higher countercyclical potential with respect to the private sector of the local economy.

Public sector is small (e.g. 5-9%). It is estimated at USD 3.8 billion for Pune district[3] out of USD 30 billion real gross district value added (Govt of Maharashtra, 2021, p. 45). However, in the municipal area, the public sector is mainly the PMC, public universities, BSNL, BEL, public sector banks and banking institutions, and others. An accurate score is difficult to assign due to data gaps.

The score awarded is C.

A	B	C	D	F
Public sector is large in relation to city's economy (e.g. 40% or above) and plays an important role	Public sector is large to medium (e.g. 20-40%) and plays a relatively important role	Public sector is medium to small (e.g. 10-19%)	Public sector is small (e.g. 5-9%)	Public sector is very small (e.g. below 5%)

c. COVID-19 impact concentration

COVID-19 impact concentration is designed to measure the extent of COVID-19 impact across various sectors. It is measured either as the Herfindahl-Hirschman Index or a simple concentration ratio based on (a) output percentage shares or (b) labour percentage shares of each economic sector.

COVID-19 impact on some sectors is significantly more than on others. The growth rate has been -8% in the industry and services sector (Govt of Maharashtra, 2021). In Pune city, there has been a negative impact on manufacturing, MSMEs related to manufacturing, cement supply chain, construction industry, travel, tourism, shops, restaurants, small businesses, auto rickshaws. On the other hand, the relief measure of waiver of government stamp duty on real estate had a lot of takers and construction sales have done well. There is a positive impact on healthcare, e-commerce, delivery services, internet services, mobile phone sales and pandemic complementary industries. While some private higher education institutes, schools, and coaching centres managed to shift to online, not all colleges and schools have managed to function adequately.

The score awarded is C.

A	B	C	D	F
COVID-19 impact is more or less evenly distributed across sectors	COVID-19 impact on some sectors is slightly more than on others	COVID-19 impact on some sectors is significantly more than on others	COVID-19 impact is concentrated in just a few sectors (e.g. 3-4)	COVID-19 impact is concentrated in just a few sectors (e.g. 3-4)

RPI 1-2: Openness and external markets integration

RPI 1-2: Openness and external markets integration	B
Local industrial/ employment quotient	A
Local economy openness (export/ import)	C

[3] From Maharashtra Koshwahini at https://koshwahini.mahakosh.gov.in/kosh/kosh/, accessed 8 April 2021

a. Local industrial/ employment quotient

Location quotient range based on the comparison of the share of city industries with the national shares. It attempts to compare the city economy and the national economy. If both are very similar in structure, then it can be reasonably expected that the city economy will experience the same shock as the national economy during a crisis. If however the structures differ, then the shock factors for the city economy are different from those for the national economy and there are good reasons to believe that the local economy may behave countercyclically. The local quotient range is calculated as the difference between the economic sector with the lowest local quotient and a sector with the highest local quotient (i.e. the share of city industries in total employment or CGP as a share in national total employment or GDP): $R_{LQ} = LQ_{max} - LG_{min}$. The higher range approximating 10 indicates a stronger potential countercyclical performance of the local economy with respect to the national economy.

The city economy is structured somewhat differently from the national economy in sectoral terms, considering that Maharashtra is among the most urbanised and industrialised states in the country. Within Maharashtra, after Mumbai, the Pune region has a range of large, medium and small industries, with the required ecosystem of services developing rapidly. While there is no agriculture sector in the city limits, there are agri-businesses and food processing industries. The better infrastructure, educational facilities, salubrious climate, proximity to Mumbai are strong attractors for industry and professionals, as compared to other similar-sized cities (such as Surat, Nagpur, Cochin, Bhopal, Baroda etc.) and thus a higher GDP than these cities (Pune has the 8th rank of top 15 cities). Human Development scores for Maharashtra show higher scores for Nagpur, Thane, Pune, Mumbai.

The score awarded is A.

A	B	C	D	F
City economy is structured very differently from the national economy in sectoral terms	City economy is structured somewhat differently from the national economy in sectoral terms	City economy is structured similarly to the national economy	City economy is weakly balanced, similar to the national economy	City economy mirrors the national economy

b. Local economy openness (export/import)

Local economy openness is designed to measure the dependency of city economy on external markets. It is measured by the trade openness index calculated as the ratio of the arithmetic mean of merchandise exports (*x*) and imports (*m*) to GCP: $TOI = \frac{\frac{1}{2}(x_{i,t}+m_{i,t})}{GCP_{i,t}}$. Both high and low values of the index are a matter of concern. A high value (meaning a less exposed economy and higher retention of local production) is likely to indicate missed value addition opportunities outside the region whereas a low value (a more open economy) implies high reliance on external markets, which may pose a serious problem when regional supply chains are disrupted. *Alternatively, if the data is available, a ratio of the city export value to city import value can be used. A ratio above 1 indicates less dependence on exports and greater reliance on local produce, which is unlikely to be affected by disruptions in global or regional value chains.*

The city economy is significantly dependent on external markets for its economic activities, considering that Maharashtra contributes about 20% of the export value of the entire country. Exports from Pune are done through SEZs in several locations and inland container facilities at Dighi and Talegaon in the Pune region and from JNPT and Mumbai International Airport. There is a significant dependence on regional, national, international supply chains and exports since Pune has a B2B dominant environment. PMC manufacturing units supply significantly to automotive clusters in PCMC, Chakan, Ranjangaon, Chennai, and the Delhi National Capital Region. Pune businesses are particularly dependant on inputs like electricity supply and raw materials (imports).

The score awarded is C.

A	B	C	D	F
City economy is well balanced between internal and external markets in terms of value chains and exports/imports	City economy is moderately balanced and relies more on external markets	City economy is significantly dependent on external markets for its economic activities	City economy is very significantly dependent on external markets for its economic activities	City economy is almost entirely export-oriented and depends on imported materials

RPI 1-3: Entrepreneurship and innovation

RPI 1-3: Entrepreneurship and innovation	C+
New business creation	C
Business digitization rate	B
Digital access	B
State of ecosystem for innovation support	C

a. New business creation

New business creation calculated as a share of the new businesses created in the total number of existing (registered businesses). New business creation serves for a proxy for entrepreneurship, which is an indicator of the adaptiveness and flexibility of the private sector. Higher levels of entrepreneurship indicate a willingness of the population to take on new challenges. If the relevant data exist, new business creation may be further analysed by sector and firm size to identify the longer-term trends and structural transformation tendencies.

New business creation as a share of the existing businesses is medium to low and unstable. The main new business creation activity is in the B2B sector – engineering firms, suppliers to large corporations, consulting services, coaching and educational institutions, IT and ITES. Although some entrepreneurship and adaptation have taken place in the informal sector, e.g., shifting from restaurants, street vending, and domestic work to tiffin delivery, this is quite un-even. Data is inadequate; however, anecdotal information indicates that the new business creation rate is likely to be medium or low.

The score awarded is C.

A	B	C	D	F

New business creation as a share of the existing businesses is high and stable (or accelerating over time)	New business creation as a share of the existing businesses is high to medium and stable (or accelerating)	New business creation as a share of the existing businesses is medium to low and unstable (or decelerating)	New business creation as a share of the existing businesses is low and unstable (or decelerating)	New business creation as a share of the existing businesses is very low (or non-existent) and decelerating

b. Business digitisation rate

Business digitization rate is calculated as the mean of the ratios of (a) fintech companies and (b) e-commerce companies in the total number of registered companies in comparison to the respective national shares. Higher digitization rates imply a greater potential of the city private sector to leverage digital technologies.

The number of fintech and e-commerce companies is medium to large, and e-commerce is relatively common. Pune is among the top 10 cities in the country where FinTech companies are being founded. These relate to identity documents, such as Aadhar, bank accounts or equivalents, payment platforms, insurance, etc. (Sinha, 2020). India has over 5000 FinTech start-ups (Tracxn, 2021a), of which over 250 are in Pune (Tracxn, 2021b). Most businesses now have e-commerce and sales through their own or branded platforms (Just Dial, Amazon, Flipkart, Industrial Buying, MSME Mart, Google Business pages, Dunzo, etc.) that have improved e-commerce sales. However, it is not clear how much of the core operations are digitised.

The score awarded is B.

A	B	C	D	F
There is a large number of fintech and e-commerce companies; e-commerce is widespread	The number of fintech and e-commerce companies is medium to large, e-commerce is relatively common	The number of fintech and e-commerce companies is medium to small, e-commerce is relatively uncommon	The number of fintech and e-commerce companies is small e-commerce is uncommon	Very few or no fintech and e-commerce companies, e-commerce doesn't exist

c. Digital access

Digital access seeks to measure the degree to which population can consume digital services offered by businesses. It is calculated as an index of the simple average of (a) Internet access and (b) mobile network coverage as a percentage of the total population multiplied by the national GSMA mobile connectivity index[4] (from 0 to 1) as a proxy for the quality of Internet access. *(If the city-level data on Internet access and mobile network coverage are not available, it is possible to use the GSMA mobile connectivity index as a proxy for digital access provided that there is enough confidence that the city situation is not much different from the national situation.)*

Internet access is high to medium, and mobile network coverage is almost universal, relatively fast and reliable (GSMA Index 65-75) (Nielson, 2019). The growth in internet and

[4] GSMA Mobile Connectivity Index (2020). https://www.mobileconnectivityindex.com/#year=2019.

A	B	C	D	F
Comprehensive ecosystem for innovation support with different financial and technical facilities fully operational for supporting innovations at different stages of lifecycle	Large ecosystem for innovation support with different financial and technical facilities mostly operational for supporting innovations at different stages of lifecycle	Medium-sized ecosystem for innovation support with some financial and technical facilities operational for supporting innovations at different stages of lifecycle	Small ecosystem for innovation support with very few financial and technical facilities operational for supporting innovations at some stages of lifecycle	Very small or non-existent ecosystem for innovation support

mobile phone services, digital payment apps and app-based services is high due to the pandemic.

While a 'B' score is awarded since the view of at least one expert was that access to mobile phones, especially among poor women, is relatively lower, and may tend towards 'C' for a segment of the population.

A	B	C	D	F
Internet access is high and mobile network coverage is universal, fast and reliable (GSMA Index is high)	Internet access is high to medium and mobile network coverage is almost universal, relatively fast and reliable (GSMA Index 65-75)	Internet access is medium to low and mobile network coverage is patchy, not fast enough and not very reliable (GSMA Index 50-65)	Internet access is low and mobile network coverage is patchy, somewhat slow and unreliable (GSMA Index 30-49)	Very limited or non-existent Internet access and a patchy and unreliable (or non-existent) mobile network (GSMA index below 30)

d. State of ecosystem for innovation support

State of ecosystem for innovation support defined as availability of different financial and technical facilities for supporting innovations at different stages of their lifecycle. These include various public grant schemes, concessional financing facilities for innovations, financial incentives in the form of tax exemptions for investors in innovations, business incubators, etc.

As per the Swiss Business Hub, Pune has a medium-sized ecosystem for innovation support with some financial and technical facilities operational for supporting innovations at different lifecycle stages (Swiss Business Hub India, 2019). There is an environment for new business creation, including credit supply, knowledge, innovation clusters linked to industry associations, government research organisations, and universities. However, views from the expert review included that while the attitude for innovation exists in Pune, but not an extensive ecosystem. In comparison, currently, Hyderabad/Telangana are more supportive of the Fintech ecosystem.

The score awarded is C.

RPI 1-4: Productivity, economic and financial capacity

RPI 1-4: Productivity, economic and financial capacity	B
Business productivity	A
Business access to electricity	C
Access to affordable finance	B
COVID-19 business failure rate	C

e. Business productivity

Business productivity is calculated as the ratio of an average labour productivity of the city to the average national productivity measured as the output in monetary terms per worker. This measure positions the city in relation to the national economy indicating its potential advantage or disadvantage.

City business productivity is significantly higher than national productivity (McKinsey Global Institute, 2020). The business sectors dominant in Pune higher-paying – engineering firms, IT and ITES, healthcare, consulting, legal and financial services

The score awarded is A.

A	B	C	D	F
City business productivity is significantly higher than the national productivity	City business productivity is somewhat higher than the national productivity	City business productivity is at the same level with the national productivity	City business productivity is somewhat lower than the national productivity	City business productivity is significantly lower than the national productivity

a. Business access to electricity

Share of businesses with access to any means of electricity supply and/or share of businesses with access to grid power calculated as a share of registered (or all businesses if the data are available) of the total number of businesses.

Many businesses in Pune have access to electricity, at least 75% via the grid connection. Although almost all businesses technically have access to electricity via the grid, the expert view was that access in terms of affordability and competitiveness of electricity supply is constrained. For example, electricity rates for industrial supply in Maharashtra (and therefore in Pune) are 14% more expensive than all India industrial electricity rate[i].

Therefore, a 'C' is awarded.

Note: It is suggested that affordability and competitiveness of electricity supply be included in the description of the parameter' business access to electricity'.

A	B	C	D	F
Access to electricity is universal via the grid connection	All businesses have access to electricity, most of them via the grid connection	Many businesses have access to electricity, at least 75% via the grid connection	At least half of the businesses have access to grid electricity	Only some businesses have access to grid electricity

b. Commercial credit to SMEs

Access to affordable finance seeks to measure the affordability of finance by measuring the spread between average commercial loan rates for small and medium enterprises and average concessional finance offered by domestic development finance institutions (DFIs). The spread is calculated as a difference between the cost of commercial loans and concessional loans. By definition, the difference is always positive. A spread of 10 percentage points or more) indicates a high cost of commercial loans and, therefore constrained access of commercial enterprises to affordable finance.

Commercial credit to SMEs is available, and the spread is small (e.g. below 5%) (Press Trust of India, 2020). Commercial credit to SMEs is a mandated priority sector by the Reserve Bank of India. All large banks have SME banking in Pune, and it is readily available. However, loan taking is dependent on collateral availability. Concessional finance is also readily available - notably through SIDBI, CGTSME etc. However, it may not be sufficient to meet demand. MCCIA posts on social media indicate that the uptake of central government incentivises for MSMEs such as loans through the Prime Minister's MUDRA Yojana in the highest in Maharashtra. Among the different states, Maharashtra has the largest number of MSMEs in the country[5] and is among the top-performing states for the disbursement of loans[6].

The score awarded is B.

A	B	C	D	F
Commercial credit to SMEs is readily available and the spread is very small	Commercial credit to SMEs is available and the spread is small (e.g. below 5%)	Commercial credit to SMEs is not readily available and the spread is above 5%	Commercial credit to SMEs is difficult to obtain and the spread is between 5-10%	Commercial credit to SMEs is very difficult/impossible to obtain and the spread is above 10%

c. COVID-19 induced business failure rate

COVID-19 induced business failure rate calculated as the share of companies, which stopped their operation after the onset of the pandemic in 2020 and have not reduced them since.

Not more than 20% of businesses have stopped their operation (TNN, 2021). However, Kale and Girbane (Kale & Girbane, 2021) report that there is a disparity in the performance of firms across sizes. They report that in April 2020, production levels had dropped to about 37% of 2019 levels and had recovered by March 2021 to about 83% of 2019 levels. Of

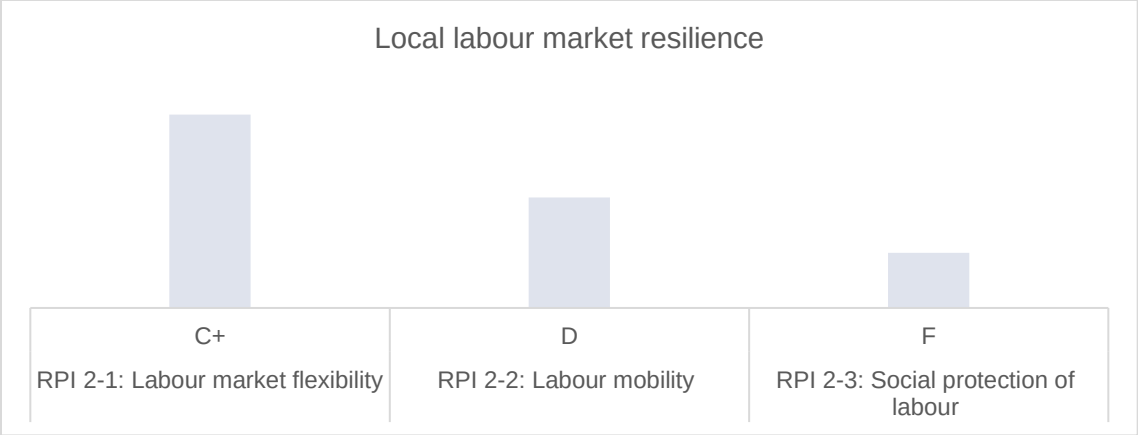
[5] https://www.facebook.com/PuneMCCIA/photos/a.150489118463625/1710066165839238/
[6] https://www.facebook.com/PuneMCCIA/photos/a.150489118463625/1721699364675918/

this, productions in large companies were at 90%, while micro-companies reported recovery to only 68% of pre-COVID-19 levels. More recent newspaper reports show a rise in nonperforming assets (NPAs) of non-banking financial institutions (NBFCs) (ETBFSI, 2021), and that NBFCs are seeking additional liquidity support to tide over the challenges due to the COVID-19 second wave in India (Shah, 2021). Experts suggest that the impact of COVID-19 may be even more severe than presented; some small or informal businesses, dependant on rented workspaces, have closed down, notably restaurant franchisees, QSRs, shops in malls. The proportion of closure in micro and MSME is larger; they were not classified under essential services.

The score awarded is C.

A	B	C	D	F
All or almost all businesses continue their operation	Most business continue their operation	Not more than 20% of business have stopped their operation	Not more than 30% of businesses have stopped their operation	Over 30% of all businesses have not resumed their operation

3.2 Resilience of the local labour market



The resilience of the labour market is understood as the capacity of the labour market to reallocate resources and adjust employment patterns and behaviours in response to internal and external shocks. It has three essential characteristics: flexibility, mobility and degree of social protection (the latter indicating the capacity to retain and preserve the labour force in good shape under adverse conditions when neither flexibility nor mobility can offset the negative trends in the markets).

Informal workers and casual labourers, especially migrants, are among the worst affected. Participants in the focus group discussions also mentioned police harassment/ movement restrictions in attempts to procure rations and medicines in the sealed areas that added to the distress related to health and livelihoods.

RPI 2-1: Labour market flexibility

RPI 2-1: Labour market flexibility	C+
Employment diversity	C

Population/Employment Ratio	B
COVID-19 induced unemployment	F*

a. Employment diversity

Employment diversity is calculated as the labour concentration by sector using the Herfindahl-Hirschman Index, which is calculated using the distribution of city employment by sector and summing the squares of the percentage shares for each economic sector. Lower values indicate greater diversification. *(Alternatively, where detailed data by sector are not available, a simple concentration ratio may be used measured as a percentage of the employment share of four largest sectors to the entire economic (employment). A ratio above 50% indicates a less diversified (and therefore less resilient) local economy.)*

The Pune city economy has a medium to high labour concentration by sector. Major informal work sectors include head loaders, construction workers, street vendors, domestic workers, drivers, gig workers etc. Experts have awarded a score of 'C' as detailed data by sector are not available.

A	B	C	D	F
City economy has a low labour concentration by sector (e.g. no sector has more than 20% of the labour market)	City economy has a low to medium labour concentration by sector	City economy has a medium to high labour concentration by sector	City economy has a high labour concentration by sector	City economy has a very high labour concentration by sector (dominated by just one or two sectors)

b. Population to employment ratio

Population/Employment Ratio is used to assess the city's performance in capturing local markets as well as assess the level of relative dependence on a particular industry. P/E Ratio represents a simple measure of regional supply and demand. When local ratios are compared with national ratios, it can be determined whether or not local demand is being met, if there are local expansion opportunities, or if the area is importing demand from surrounding regions. In addition, a P/E Ratio that is relatively small (i.e., high levels of employment given the city's population) indicates higher levels of dependence on specific industries.

Population to employment ratio is low to medium; the city employment rate, in general, is above or the same as the national employment rate (Govt of Maharashtra, 2021, p. 298).

The score awarded is B.

A	B	C	D	F
Population to employment ratio is low; the city employment rate is above the national employment rate	Population to employment ratio is low to medium; the city employment rate is above or the same as the national employment rate	Population to employment ratio is medium to high; the city employment rate is the same or below the national employment rate	Population to employment ratio is high; the city employment rate is below the national employment rate	Population to employment ratio is very high; the city employment rate is well below the national employment rate

c. COVID-19 induced unemployment

COVID-19 induced unemployment is measured as the number of workers as a share of the total pre-COVID-19 labour force who have lost their jobs as a result of COVID-19 and who have not resumed their work (found a new job) since then. This demonstrates the capacity of the labour market to absorb the economic shock.

COVID-19 induced unemployment is high (above 25%) (Inamdar, 2020). During the lockdowns, informal workers could not work at all: public vending was not allowed, the scrap market was closed, auto-rickshaws were not permitted to ply, micro-enterprises were completely shut down, and jobs shrunk for domestic workers. When reserve resources and connections are eroded, the climb up becomes much steeper, especially for the poor. While the formal sector may have taken on contract workers, the supply chain workers were affected. Though official data are unavailable or available only after a lag, the impact was very severe in both the first and second waves. Construction is another area of employment of informal sector workers, and this activity also ceased during the lockdown. According to the Periodic Labour Force Survey, unemployment in Maharashtra was at 22.6%. In July-September 2020, as compared to 5.8% in July-September 2019, and was the highest among all states for that quarter (MOSPI, 2021, p. A 37).

Experts' opinions ranged between awarding 'D' and 'F', with one view being that underemployment and work stoppage due to lockdown may need to be understood and treated differently from unemployment.

A	B	C	D	F
COVID-19 induced unemployment is insignificant (below 5%)	COVID-19 induced unemployment is low to moderate	COVID-19 induced unemployment is moderate (below 15%)	COVID-19 induced unemployment is moderate to high (up to 25%)	COVID-19 induced unemployment is high (above 25%)

RPI 2-2: Labour mobility

DPI 2-2: Labour mobility	D
Occupational labour mobility	D
Availability of worker (re)training programmes	D
Geographic labour mobility	C
Proportion of a household's budget spent on rental housing	D

a. Occupational labour mobility

Occupational labour mobility refers to the ability of workers to switch career fields in order to find gainful employment or meet labour needs. The Shorrocks index may be used as a summary measure of labour market mobility[7] (if the data at the city level are available). It captures the probability of moving across the three labour market states (employment,

[7] Results on mobility are mainly based on transition matrix analysis while results on inequality are obtained using measures of earnings dispersion such as deciles ratios. The measure of Shorrocks based on the information on the diagonal of the transition matrix $M = [n - trace(P)]/(n - 1)$ (Shorrocks, 1978b) indicates the percentage of people who changes decile. For any given inequality index the measure indicates the degree to which lengthening the accounting period tends to reduce the level of inequality over a longer-term period. The index compares long-run or "permanent" inequality measured over several periods with a weighted sum of single-period income inequalities.

unemployment and inactivity) between the current and previous period. The index is bounded between zero and one, where a value of zero implies a zero probability of leaving any labour market state (i.e. no mobility) and a value of one implies full mobility. *(However, the required data are very unlikely to be available at the city level and hence this particular dimension can be omitted.)*

The score for the Shorrocks index could not be calculated due to a lack of data. The experts' view was that occupational labour mobility is low. While there may be some mobility of occupation among university graduates, and some workers have shifted to the online deliveries sector, it was not easy or possible for a large proportion of informal sector workers as labour markets are saturated in the Pune urban region.

The score awarded is D.

A	B	C	D	F
The Shorrocks index is very high (close to 1)	The Shorrocks index is high (between 0.7 and 1)	The Shorrocks index is moderate (between 0.5 and 0.7)	The Shorrocks index is low (below 0.5)	The Shorrocks index is very low (close to 0)

b. Availability of (re)training programmes

Availability of worker (re)training programmes at the city level. This measure analyses the existing opportunities for workers to acquire new skills to move from sectors and occupations affected by the crisis to sectors where demand for labour force exists. For worker training programmes, consider any and all publicly supported (either through subsidisation or direct funding) programmes or initiatives that endeavour to train or retrain the local workforce. Examples could include retraining for former factory workers or training courses for computer engineering (learning to code). Programmes should be implemented at the local level but may include nationally funded/administered programmes.

In Pune, though some training/retraining programmes are available, they have very low capacity and cover only a few occupations in a small number of sectors. Expert views were somewhat varied for this parameter.

One view is that there has been a historical linkage of education, employment and employability, and Pune has been an industrial centre for over three decades. Industrial Training Institutes (ITIs), polytechnics, vocational training and entrepreneurship development institutes are available. Other experts believe that though there are some opportunities for retraining, these are more for the formal sector; for the informal sector there is nothing. TVET is hardly available for informal workers. The existing training programmes have very low intake, and placement services do not lead to jobs with adequate incomes. Retraining programmes need to be developed and assessed from the point of view of workers getting better job security and more income. Publicly funded programmes for informal sector workers are hardly available or not available. Another view was that Pune already has the capacities and solutions within itself and should be able to map, re-organise, streamline, and define a quicker response framework.

The score awarded is D.

A	B	C	D	F
(Re)training programmes at the city level have a high capacity (in terms of trainees) and cover a very broad range of occupations in most sectors	(Re)training programmes have a high to medium capacity and cover a broad range of occupations in most sectors	(Re)training programmes have a medium capacity and cover many occupations in many sectors	(Re)training programmes have a low to medium capacity and cover some occupations in a number of sectors	(Re)training programmes have a very low capacity (or don't exist) and/or cover some occupations in a small number of sectors

c. Geographic labour mobility

Geographic labour mobility is used to qualitatively measure the ability of workers within a specific economy to relocate to find new or better employment. The suggested proxy for this indicator is the ratio of daytime city population to the night-time population (commuter rate). Although not all daytime visitors are workers, most of them are, and this is therefore a good measure of the movement of external labour force. It is a measure of the city accessibility for the workers coming from outside (including transport availability and proximity of labour reserve areas).

The commuter rate in Pune is moderate. Workers generally commute for medium distances. Public transport is partly available and affordable. The average trip length in Pune is about 6 km. Travel modes include a 33% share of non-motorised modes, while the share of public transport is 12% and that of intermediate public transport is 4 to 5%.

A	B	C	D	F
High commuter rate; workers generally commute for short distances and/or transport is available and affordable	High to moderate commuter rate; workers generally commute for short distances and/or transport is generally available and affordable	Moderate commuter rate; workers generally commute for medium distances and/or transport is to partly available and affordable	Low commuter rate; workers generally commute for medium to long distances and/or transport is partly available and affordable	Very low commuter rate; workers generally commute for long distances and/or transport is unavailable and unaffordable

The score awarded is C.

d. Average rental housing expense

Average proportion of a household's budget spent on rental housing is used as a proxy to measure the geographic labour mobility. A higher proportion of a household's income spent on rental housing (a most common option for labour migrants) is a significant barrier to labour movement to urban areas. Average rental income should reflect a citywide average within the formal housing sector (private and public categories) it is calculated as the average annual rental housing rate (excluding utilities) divided by average annual household income.

Rental housing expenses in Pune are medium to high, 25-34% of the household income. Studies such as by Nakamura (2015, p. 189) show that house rent in slum localities may be as high as about 35% of monthly household expenditure, considering a mean value of about INR 3400 for rents and INR 9752 for monthly household expenditure. Regular housing rental expenses may also be high, between 25% to 30% of income, as per a report by JLL (Nadar et al., 2019) (Page 13). The experts' view was that Pune needs a stronger

welfare orientation, considering that Pune will continue to attract migrant labour. It would be appropriate to learn from cities such as Singapore that have invested in public housing.

The score awarded is D.

A	B	C	D	F
Average rental housing expense is low (below 15% of the household income)	Average rental housing expense is low to medium (15-19% of the household income)	Average rental housing expense is medium to high (20-24% of the household income	Average rental housing expense is high (24-35% of the household income)	Average rental housing expense is very high (above 35% of the household income)

RPI 2-3: Social protection of labour

RPI 2-3: Social protection of labour	F
Unemployment rate	D
Unemployed receiving unemployment benefits	D/ F*
Informal employment rate	F
City expenditure on social protection	F

a. Unemployment rate

Unemployment rate is calculated as a percentage by dividing the number of unemployed individuals (those persons who were without work, available for work and seeking work during the reference period) by the number of individuals currently employed in the labour force. High unemployment rates, particularly in combination with weak social protection mechanisms, undermine local economic resilience. A useful technique here is to use a local quotient to estimate the unemployment rate against the national indicator. (*Alternatively, when the city-specific data are not available, the national employment rate can be used as a proxy if there are good reasons to believe that the city situation is not significantly different from the national.)*

Considering the state-level figures for urban Maharashtra in the July-September 2020 report of the Periodic Labour Force Survey (MOSPI, 2021, p. A-37), the unemployment rate is higher than the national average. The rate for Pune is not separately available. Published survey figures for last year are available but not more recent statistics.

The score awarded is D.

A	B	C	D	F
Unemployment rate is low (e.g. below 5%) and/or lower than the national rate	Unemployment rate is low to average (up to 10%) and/or lower or the same as the national rate	Unemployment rate is average low (10-20%) and/or above the national rate	Unemployment rate is high (e.g. about 21-40%) and/or well above the national rate	Unemployment rate is very high (over 40%) and/or much higher than the national rate

b. Unemployed receiving unemployment benefits

Unemployed receiving unemployment benefits (including benefits which are not directly described as “unemployment benefits” but form significant contributions) are calculated as a percentage of those unemployed. This measure is designed to establish the coverage of unemployment benefit schemes implemented nationally and/or locally). This estimates the city economy potential to maintain an aggregate demand against an economic shock and includes all recipients of unemployment benefits regardless of the source (state, regional or city).

Public distribution systems and direct transfer schemes during the COVID-19 pandemic by the state and central governments exist. For example, the Government of Maharashtra has announced a scheme for autorickshaw drivers in May 2021 for a one-time relief grant of INR 1500 (Motor Vehicles Department Maharashtra, 2021), and the central government announced the SVANidhi scheme of micro-credit for street vendors (Government of India, Ministry of Housing and Urban Affiars, n.d.). However, as per information available online for certain schemes, and according to experts, the reach is fairly limited. For example, only about 6000 beneficiaries have received the funds out of over 12000 applicants from Pune under the SVANidhi scheme due to various reasons, including inadequate documentation, which may pose a barrier to access benefits. Moreover, there are no ongoing schemes for regular unemployment benefits for basic living expenses every month.

The score awarded is D or F.

A	B	C	D	F
All officially unemployed are covered by an employment benefit scheme; the access to benefits is easy	Most of officially unemployed are covered by an employment benefit scheme; the access to benefits is easy	More than 50% of all officially unemployed are covered by an employment benefit scheme; the access to benefits is easy/moderately difficult	Between 30 and 49% of all officially unemployed are covered by an employment benefit scheme; the access to benefits may be difficult	A small number of all officially unemployed are covered by an employment benefit scheme or the benefit scheme doesn't exist

c. Informal employment rate

Informal employment rate is calculated as employment in the informal economy as a percentage of total non-agricultural employment. Most informal workers are lacking any social protection at all and are extremely sensitive even to small variations in market dynamics.

Experts had diverse views on this parameter. Experts commenting on 'Informality' in the Business Environment awarded a score of' C', with the view that the Labour market is has a moderate level of informal employment. However, other experts have awarded an 'F' score, which pertains to above 80% of informal employment. The explanation provided is that apart from a large proportion have completely informal occupations (e.g. street vending, waste collection, IPT drivers, domestic workers, head loaders, laundry workers, etc.), there is also a high level of casual and daily wage labour in the formal sector industries for areas such as packaging and goods loading.

A score of F is considered.

A	B	C	D	F
Informal employment rate is low as a proportion of city's total employment (e.g. below 20%)	Informal employment rate is relatively low as a proportion of city employment (e.g. 21-40%)	Informal employment rate is moderate to high (e.g. 41-60%)	Informal employment rate is high (e.g. 61-80%)	Informal employment rate is very high (above 80%)

d. City expenditure on social protection

City expenditure on social protection (sickness/health care, disability, old age, survivors, family/children, unemployment, housing, and social exclusion) paid as city-established benefits to complement other existing national and/or regional social protection schemes calculated as a percentage of the total annual city expenditure. It is measured as an average of city expenditures for 3 years in 2017-2019. This measures the strength of the city's social protection mechanisms.

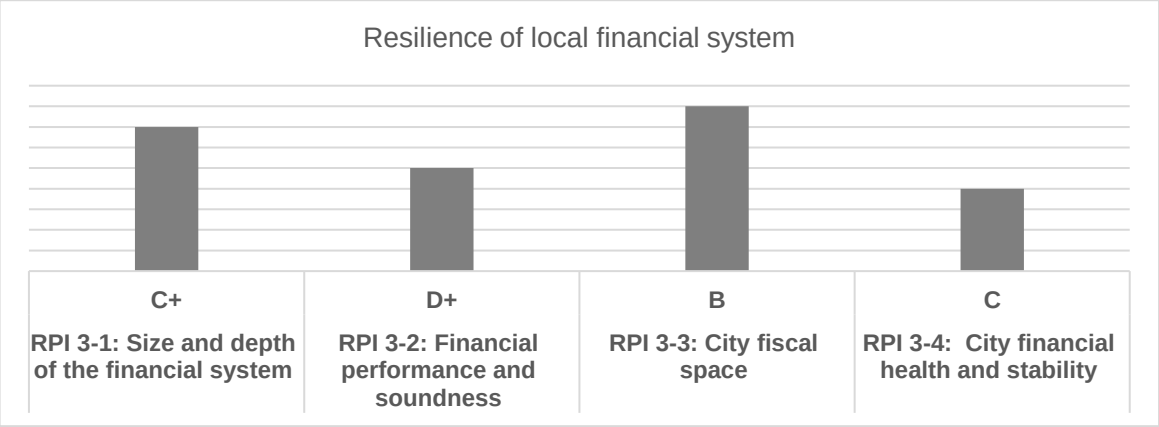
Pune city expends less than 2% of its annual budget on social protection.

The PMC's budget for 2021-22 allocates about INR 70 crore for housing (PMAY), about INR 1.5 crore for disaster preparedness, INR 434 crore for primary education, INR 80.5 crore for secondary education, INR 8.58 for slum schemes, INR 4.92 for social development dept, INR 37.88 crore for slum rehabilitation and about INR 350 crore towards public health, totalling to about INR 987 crore on social expenditure, including departmental salaries, equipment etc. However, there are no expenditure heads towards social protection benefits payments (such as for sickness/health care, disability, old age, survivors, family/children, unemployment, housing, and social exclusion).

Hence, an 'F' is awarded.

A	B	C	D	F
City expenditure on social protection is sizeable in relation to the budget (e.g. over 15%)	City expends a reasonable amount on social protection (e.g. 10-15% of its annual budget)	City expends between 5 to 9% of its annual budget on social protection	City expends between 2 to 4% of its annual budget on social protection	City expends less than 2% of its annual budget on social protection

3.3 Resilience of local financial system



RPI 3-1: Size and depth of the financial system

RPI 3-1: Size and depth of the financial system	C+
City quotient of access to financial institutions	C
Proportion of the population with a bank account	A
Percentage of adult population with a registered Digital Finance account	B
Market share of financial institutions offering affordable finance	C

a. City quotient of access to financial institutions

Financial institutions per 100,000 inhabitants as a local quotient in relation to the national indicators. Financial institutions are defined as all regulated loan-taking institutions or their branches represented locally, including commercial banks, thrifts, credit unions, savings and credit cooperatives (SACCO), savings and loans associations (VSLA), etc. This measure seeks to compare the city situation to the national: a ratio above 1 indicates that the city is doing better than the nation overall. *(Alternatively, if the city-level data are not available, the national data can be used but this should be justified by reasonable confidence that the city situation is not much different from the national.)*

As per the 'Resilience Diagnostic Planning Tool', this parameter is defined as 'Financial institutions per 100,000 inhabitants as a local quotient in relation to the national indicators'. For Pune (excluding rural), this quotient is 22.7% for banks in 2020. For urban India, the share (22.47%) was similar to Pune for 2020[8].

The score awarded is C.

A	B	C	D	F
Access to financial institutions per 100,000 at the city level is significantly higher than nation-wise	Access to financial institutions per 100,000 at the city level is somewhat higher than nation-wise	Access to financial institutions per 100,000 at the city level is approximately the same as nation-wise	Access to financial institutions per 100,000 at the city level is somewhat lower than nation-wise	Access to financial institutions per 100,000 at the city level is significantly lower than nation-wise

b. Proportion of the population with a bank account

The proportion of the population that has a bank account is calculated as the total number of adults with a bank account to the total number of adults. *(Alternatively, if the city-level data are not available, the national data can be used but this should be justified by reasonable confidence that the city situation is not much different from the national.)*

The proportion of households with a bank account in Pune (urban) was 92%[9], while the All-India average was about 80% (Abraham, 2019; InterMedia, 2019, pp. 13–14).

The score awarded is A.

A	B	C	D	F
Proportion of the population with a bank account is large (e.g. above 75%) and/or above the national level	Proportion of the population with a bank account is relatively large (e.g. above 60-75%) and/or above or the same as the national level	Proportion of the population with a bank account is average (e.g. 50-59%) and/or the same or lower than the national level	Proportion of the population with a bank account is small (e.g. 30-49%) and/or below the national level	Proportion of the population with a bank account is very small (e.g. below 75%) and below the national level

[8] Calculations by Dr Debarpita Roy as part of the expert review, based on household level data from the Debt & Investment, NSS 70th Round Visit-1: Jan - Dec 2013.
[9] Calculations by Dr Debarpita Roy as part of the expert review.

c. Percentage of adult population with a registered Digital Finance account

Percentage of adult population with a registered Digital Finance account[10] is calculated as the number of adults with a registered Digital Finance account to the total number of adults. A higher proportion implies higher financial inclusion. *(Alternatively, if the city-level data are not available, the national data can be used but this should be justified by reasonable confidence that the city situation is not much different from the national.)*

The use of digital accounts (e.g. mobile money) is not very common for formal and informal transactions (InterMedia, 2019, p. 14). According to Statista about 79 percent of the respondents of a survey were using some form of third-party digital payment apps, like Paytm and PhonePe, at an India level based on a survey conducted. UPI based transactions and card transactions witnessed record annual growth levels in 2020 (Statista, 2021). However according to another report by ACI Worldwide, cash payments (61% of all transactions) dominate over digital payments in India. According to this report 72% of all transactions might be through the digital mode by 2025 (Awasthi, 2021). City level data is not available.

A score awarded is B.

A	B	C	D	F
Percentage of adult population with a registered Digital Finance account is high; the use of digital accounts (e.g. mobile money) is widespread for formal and informal transactions	Percentage of adult population with a registered Digital Finance account is high to medium; the use of digital accounts (e.g. mobile money) is common for formal and informal transactions	Percentage of adult population with a registered Digital Finance account is medium to low; the use of digital accounts (e.g. mobile money) is not very common for formal and informal transactions	Percentage of adult population with a registered Digital Finance account is low; the use of digital accounts (e.g. mobile money) is relatively rare for formal and informal transactions	Percentage of adult population with a registered Digital Finance account is very low (or non-existent); the use of digital accounts (e.g. mobile money) is very rare (or non-existent) for formal and informal transactions

d. Market share of financial institutions offering affordable finance

Market share of financial institutions and other financiers (equity providers, angel and impact investors) offering affordable finance[11] for start-ups and innovations as a total of the local financial market. This indicates the capacity and willingness of the financial system to finance innovations and assume investment risks. *(Alternatively, if the city-level data are not available, the national data can be used but this should be justified by reasonable confidence that the city situation is not much different from the national.)*
As per the Economic Survey of Maharashtra, 2021, about 10% of industrial investments in the country are in Maharashtra, including 28% of FDI in the country. (Govt of Maharashtra, 2021, pp. 145, 146). Pune has a significant number of start-ups. However, the limited

[10] Digital Finance account is defined as (a) a branchless banking account i.e. basic savings account or no-frills account that has stipulated transaction and operational limits; or (b) an e-money account offered in the form of mobile money wallet or electronic wallet (see Alliance for Financial Inclusion (2019). Digital Financial Service Indicators. Guideline Note No. 33 July 2019).
[11] Affordable finance is defined as finance at below the market lending rates specifically earmarked to support start-ups and innovations as part of the institution's investment portfolio.

number of fund houses based out of Pune has been mentioned as a challenge faced by the start-ups as per KPMG and TIE 2019 report (KPMG India, 2019).

The score awarded is C.

A	B	C	D	F
A sizeable market share: start-up and innovation finance sector is represented by many different investors and different types of finance are readily available	A relatively large market share: there are different investors and different types of finance are available for start-ups and innovative businesses	A medium-sized market share: there are a limited number of different investors and different types of finance are generally available for start-ups and innovative businesses	A small market share: there are a few investors (mostly belonging to the same category) and a few types of finance are available for start-ups and innovative businesses	A very small (non-existent) market share: very few (or no) investors; finance for start-ups and innovative businesses is very limited or non-existent

RPI 3-2: Financial performance and soundness

RPI 3-2: Financial performance and soundness	D+
Interest rate spreads	D
Nonperforming loans rate	C
Sectoral distribution of loans	D
Nonperforming loans rate and loans restructured under COVID-19	B

a. Interest rate spreads

Interest rate spreads are the difference between the average yield that a financial institution receives from loans—along with other interest-accruing activities—and the average rate it pays on deposits and borrowings. The net interest rate spread is a key determinant of a financial institution's profitability (or lack thereof). Narrower interest rate spreads are considered as a sign of more efficient financial markets and less market volatility.

Interest rate spreads are high (Businessline Bureau, 2021; ET Bureau, 2019); this view was endorsed in the review by experts, with the observation that although the RBI has reduced interest rate spreads, these are not being passed on by the banks to the customers.

The score awarded is D.

A	B	C	D	F
Interest rate spreads are low	Interest rate spreads are low to medium	Interest rate spreads are medium to high	Interest rate spreads are high	Interest rate spreads are very high

b. Nonperforming loans rate

Nonperforming loans to total gross loans indicates the credit quality of banks' loans and their potential willingness to expand credit provision if necessary.

Nonperforming loans (NPL) rate is medium to high (on par or slightly worse than the industry rate) (Economic Times, 2021). The share of NPLs has been moderating since

2018. Despite a challenging year (FY21), the quantum of gross NPAs of scheduled commercial banks is expected to decline as compared with the previous year due to write-offs, lower slippage, restructuring schemes, and support for MSMEs (CARE 2021), offered across the country (Soni, 2021).

The score awarded is C.

A	B	C	D	F
Nonperforming loans rate is low (much better than the industry rate when measured for individual banks)	Nonperforming loans rate is low to medium (better than the industry rate)	Nonperforming loans rate is medium to high (on par or slightly worse than the industry rate)	Nonperforming loans rate is low (below the industry rate)	Nonperforming loans rate is very low (much below the industry rate)

c. Sectoral distribution of loans

Sectoral distribution of loans to total loans calculated as the Herfindahl-Hirschman Index (HHI). This shows the diversification of the bank's loan portfolio and therefore its risks. The lower the index value, the more diversified is the loan portfolio.

Pune's Herfindahl-Hirschman Index / HHI (2616) is higher than the distribution across metropolitan cities taken together (2392), indicating lesser diversification of the bank loan portfolio for Pune compared to the distribution across all metropolitan cities of India[12].

The score awarded is D.

A	B	C	D	F
Loan portfolio is well diversified (low HHI index)	Loan portfolio is diversified (low to medium HHI index)	Loan portfolio is diversified to some extent (medium to high HHI index)	Loan portfolio is concentrated in a small number of sectors (high HHI index)	Loan portfolio is very concentrated in just a few sectors (very high HHI index)

d. Nonperforming loans rate and loans restructured under COVID-19

Change in the nonperforming loans rate and percentage of loans restructured attributable to COVID-19. This dimension measures resilience of the local banking system in face of reduced capacity of businesses to service their debt obligations.

There has been a marginal effect of COVID-19 on NPL so far, but the impact is expected to worsen (Economic Times, 2021; RBI, 2021).

The score awarded is B.

A	B	C	D	F
NPL rate hasn't changed or changed marginally, very few cases of loan restructuring	NPL rate has a small change, and a small percentage of loans had to be restructured	NPL rate has changed moderately and an average share of loans underwent restructuring	NPL rates have increased significantly, many loans had to be restructured	NPL rates rose very significantly, most existing loans had to be restructured

[12] Calculation by Dr Debarpita Roy, based on data from RBI Database for Indian Economy.

RPI 3-3: City fiscal space

RPI 3-3: City fiscal space	B
City revenue diversity	B
Share of income inelastic own source revenues	A
Financial flexibility	C
Fiscal autonomy	B

a. City revenue diversity

Revenue diversity seeks to measure the degree to which a local government relies upon specific sources of funding from all sources including own source revenues, intergovernmental fiscal transfers and international grants (if available) less borrowing. Dependencies can be problematic, especially if such dependencies are not on own-source revenues. To measure diversity, this dimension relies upon the Herfindahl-Hirschman Index (HHI). The lower the index value, the more diversified is the city revenue composition. *(Alternatively, a simple ratio of own source revenues to total revenues may be used to establish dependency on external finance.)*

Looking at the quantum of revenues and funds from different sources, it can be said that the PMC has a diversified revenue space and that dependency on external finance is low to medium (50-65%). The annual municipal budget includes grants from the central government and state government and project funding. PMC has the third-highest per capita revenue in India, after Mumbai and Nashik in 2017-18. Per capita property tax is the second highest in the country after Mumbai. Also share of PMC's revenue in the total revenue is more than 50%. However, the quantum of own revenue and total municipal revenue as a percentage of GSDP has declined between 2012-13 and 2017-18. Share of own revenue as a percentage of total revenue has also declined over the same period. (ICRIER, 2019).

The score awarded is B.

A	B	C	D	F
City has a well-diversified revenue space, dependency on external finance is low (below 50%)	City has a diversified revenue space, dependency on external finance is low to medium (50-65%)	City has a somewhat diversified revenue space, dependency on external finance is medium to high (64-80%)	City has a lowly diversified revenue space, dependency on external finance is high (81-90%)	City has an undiversified revenue space, dependency on external finance is very high (above 90%)

b. Share of income inelastic own source revenues

Share of income inelastic revenues as a percentage of own source revenues. Many municipal taxes and revenues are income elastic (income tax, market fees, etc.) and decrease as the underlying economic activity decreases. On the other hand, income inelastic revenues are independent of economic activities and the city is in a position to legally enforce such revenues even if they have been deferred (such as the property tax or many other forms of land finance).

As per the PMC budget documents, the quantum of property tax and water fees were approximately INR 2913 crore out of INR 4050 crore of own-source revenues in 2019. This indicates a very high share of income inelastic own-source revenues (40% or more). Share or property tax in own-source revenues is around 41% in the case of PMC, which is higher across metro MCs taken together (36.5%). (ICRIER 2019).

The score awarded is A.

A	B	C	D	F
Very high share of income inelastic revenues (40% or more)	High share of income inelastic revenues (30-39%)	Average share of income inelastic revenues (20-29%)	Low share of income inelastic revenues (10-19%)	Very low share of income inelastic revenues (below 10%)

c. Financial flexibility

Financial flexibility is measured as the share of (a) own source revenues, (b) unearmarked (discretionary) grants, and (c) maximum amount of debt a city can contract given its financial position in the total city revenues (as of the previous or current year): $FF = \frac{OSR+G_d+D_{max}}{R_{Total}}$. The maximum amount of debt that a city can contract is calculated against its Net Operating Surplus/Deficit (after debt service including capital repayment) with due regard to any existing statutory limitations on subnational borrowing. These three sources of revenues are the most flexible ones and allow the city to mobilize and (re)allocate funding expeditiously in response to a crisis. The higher the share, the more financially flexible is a city.

Even though there is a high proportion of own-source revenues, the regular expenditures of the municipal body take up a considerable portion of the budget. The quantum of funds available for capital expenditure is moderate. Thus, a score of C is given, indicating a moderate degree of financial flexibility (30-49%). PMC's dependency ratio (total transfers/total expenditure) increased from 8.4% to 43% between 2012-13 and 2017-18. PMC raised INR. 200 crores in municipal bonds in 2017. It is among the 8 Indian Municipal Corporations to have done so. Capital expenditure's share in total expenditure declined between 2012-13 and 2017-18 to 39% (ICRIER 2019). Thus, PMC has demonstrated its ability to raise funds from the market on its own and has had access to grants from the state government. It also has performed well on the ‘own revenues’ front. Based on available information awarding a score of moderate financial flexibility is awarded for PMC.

The score awarded is C.

A	B	C	D	F
Very high degree of financial flexibility (over 70%)	High degree of financial flexibility (50-70%)	Moderate degree of financial flexibility (30-49%)	Low degree of financial flexibility (over 20-29%)	Very low degree of financial flexibility (below 19%)

d. Financial autonomy

Fiscal flexibility seeks to measure the fiscal autonomy of a city to manage its fiscal space. It is a qualitative indicator on the revenue side measured as the legal capacity of local government to set its tax rate and tax base. The stronger the fiscal autonomy of a city, the

more its capacity to restructure taxes by towards, for example, more income inelastic taxes to offset an economic downturn.

The local city government has the legal capacity to set rates for many taxes and fees assigned to it (independently or with the approval of the state or central government). PMC has the legal capacity to set taxes and fees with approval of the state government.

The score awarded is B.

A	B	C	D	F
Very strong fiscal capacity: the city has the legal capacity to set independently the rates for all taxes and fees assigned to it and introduce new taxes	Strong fiscal capacity: the city has the legal capacity to set independently the rates for most taxes and fees assigned to it and introduce new taxes	Moderate fiscal capacity: the city has the legal capacity to set rates for many taxes and fees assigned to it (independently or with approval of the central government)	Weak fiscal capacity: the city has the legal capacity to set the rates for a small number of taxes and fees assigned to it; central government approval is necessary	Very weak fiscal capacity: few taxes and fees are assigned; the city requires the approval of central authority to set the rates for taxes and fees (or they are set by the central government); no right to introduce new taxes

RPI 3-4: City financial health and stability

RPI 3-4: City financial health and stability	C
Share of the local financial market	F
City credit rating	A
City audit performance	F
Change in total city revenues under COVID-19	B

a. Share of the local financial market

The city's share of the local financial market via municipal financial institutions (e.g., municipal banks) or financial institutions with the city participation (e.g., subnational pooled finance mechanisms) as a local quotient in comparison with the national government's share of the financial sector.

There is no municipal bank or pooled finance facility. Municipal bonds were raised several years ago; however, it is a small amount.

The score awarded is F.

A	B	C	D	F
City's share of the local financial market is high (10% or more)	City's share of the local financial market is relatively high (7-10%)	City's share of the local financial market is average (3-6%)	City's share of the local financial market is below 3%)	City doesn't have a share of the local financial market

b. City credit rating

City credit rating is given by credit agencies based on a variety of factors to inform investors of the relative risk of the city as a borrow (particularly, a bond issuer). A higher credit rating of an investible grade implies a greater potential of a city to borrow on better terms.

The PMC has a credit rating of AA, awarded by Fitch Group India Ratings and Research. Their communication dated 24 June 2019 states that India Ratings and Research has affirmed Pune Municipal Corporation's (PMC) Long-Term issuer Rating at 'IND AA+'. (https://www.pmc.gov.in/en/credit-rating).

The score awarded is A.

A	B	C	D	F
Very high credit rating (AAA-AA)	High credit rating (A-BBB)	Average credit rating (BB-B)	Low credit rating (C)	Default (D)

c. City audit performance

City audit performance measures as the outcome of annual audit reports over the last three years available.

Audit reports have not been shared by PMC with the public.

The score awarded is F.

A	B	C	D	F
Unqualified audit opinion over the last three years	Unqualified audit opinion for at least 2 years out of the last three and no adverse opinion	Unqualified audit opinion for one year out of the last three and no adverse opinion	Qualified opinions for all three years or one adverse opinion	More than one adverse opinion

d. Change in total city revenues under COVID-19

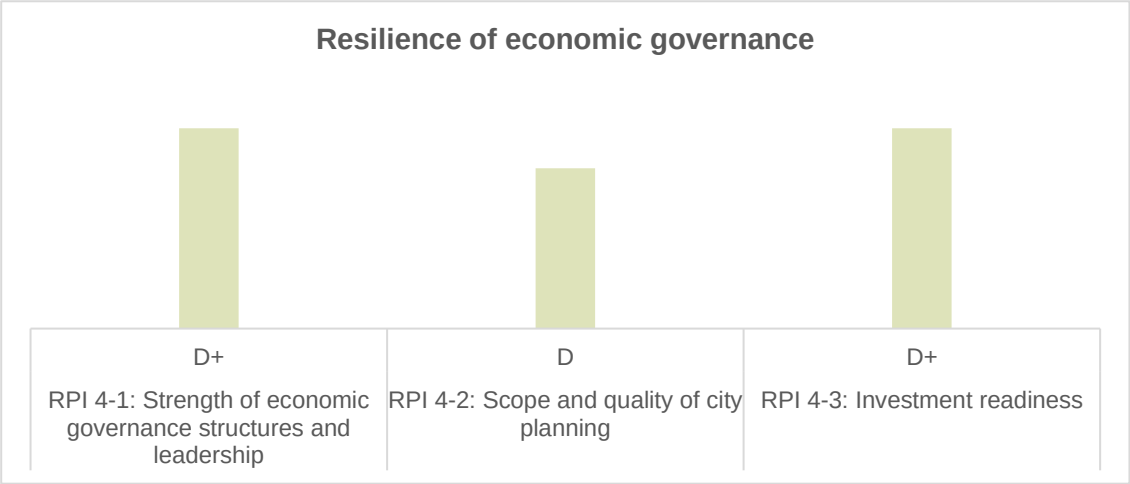
COVID-19 impact on the city financial health and stability measured as the percentage change in the total city revenues as compared to the same period in the previous year (2019) disaggregated for three types of revenues: own source revenues, central (provincial) government transfers, and grants from other sources.

There is some change in total city revenue after COVID-19. Though property tax collection has been higher than the previous year, the quantum of revenue from development charges has come down. Along with revenues, it is important to understand the impact on the capital and revenue expenditure too at the city level. Also, the effect of the pandemic on city tax and non-tax revenues might be felt over the next few years.

The score awarded is B.

A	B	C	D	F
City revenues increased or insignificantly reduced (up to 5%)	City revenues somewhat decreased (by 6-15%)	City revenues decreased (by 16-30%)	City revenues significantly decreased (by 36-50%)	City revenues decreased very significantly above 50%

3.4 Resilience of economic governance



RPI 4-1: Strength of economic governance structures and leadership

RPI 4-1: Strength of economic governance structures and leadership	D+
Inclusiveness of economic governance	D
Public participation in economic governance	B
Access to public information on economic issues	D

a. Inclusiveness of economic governance

Inclusiveness of economic governance structures measured as a share of non-government representatives in local economic governance structures (if any), such as a City Economic Council, City Development Forum and such like. It is important that the non-government representation is diverse and includes the private sector, academic, civil society organisations and other relevant stakeholders.

Provisions do exist in the Maharashtra Regional and Town Planning Act for suggestions and objections by the public on draft master plans. However, other annual planning processes don't have the same provision.

The score awarded is D.

A	B	C	D	F
A variety of nongovernment stakeholders regularly participate in city economic governance structures, making up 40-50% of the membership	A variety of nongovernment stakeholders regularly participate in city economic governance structures, making up 30-39% of the membership	A number of nongovernment stakeholders participate periodically in city economic governance structures, making up 20-29% of the membership	A number of nongovernment stakeholders participate periodically in city economic governance structures, making up 10-19% of the membership	City economic governance structures have a few or no nongovernment representatives limited to one sector only; participation is sporadic or ad hoc

b. Public participation in economic governance

Public participation in economic governance processes measured as the extent to which the public participates in development of the city economic policies and plans and the extent to which the public feedback is incorporated.

There is a relatively high degree of public involvement (via ad hoc consultations, forums) in civic governance as compared to other cities. Certain civil society groups have been arranging monthly meetings with the ward level officials, however these are not necessarily inclusive forums, and there are no guidelines for the conduct of such meetings. Lok Shahi Divas, is a mechanism for the public to meet municipal officials for discussion of grievances. Online and offline mechanisms for registering complaints about municipal services is in place. While there is the possibility for the public to interact, and give its submissions, the actual integration of ordinary citizens in municipal planning is not strong.

Some experts were of the view that C is a more appropriate score. However, other experts considering the high interest from civil society, and the relatively higher degree of participation fora in Pune, suggested that a score of B may be considered.

A	B	C	D	F
High degree of public involvement (via regular consultations, meetings, forums), public feedback is regularly sought and incorporated	Relatively high degree of public involvement (via frequent consultations, meetings, forums), public feedback is frequently sought and mostly incorporated	Average degree of public involvement (via ad hoc consultations, meetings, forums), public feedback is sought from time to time and sometimes incorporated	Low degree of public involvement (very few consultations/ meetings and no dedicated forums), public feedback is rarely sought and incorporated	Very low degree of public involvement (no meetings or consultations), public feedback is not sought and/or not incorporated

c. Access to public information on economic issues

Access to local public information on economic issues is measured as the type of relevant public information available to economic agents (e.g. public budgets and spending, tenders, financial and nonfinancial assistance, access to statistics, etc.), the frequency of information release as well as its accuracy and quality.

Information is provided by PMC, and it covers some relevant economic issues. However, the information may be not complete, of low quality and provided irregularly. A citizens' perception survey conducted by CEE in 2017 shows dissatisfaction with the extent of involvement of ordinary citizens in civic decisions, with the 'informing' and 'consulting' as the experience of participation, while citizens actually desire 'partnership' in civic governance (Menon & Hartz-Karp, 2020).

The score awarded is D.

A	B	C	D	F
Information covers all relevant economic issues, is of high quality and provided regularly	Information covers most relevant economic issues, is of high quality and provided regularly	Information covers many relevant economic issues, is of acceptable quality and provided relatively regularly	Information covers some relevant economic issues, is of low quality and provided irregularly	Information covers very few or no relevant economic issues, is of poor quality and/or provided sporadically, if at all

RPI 4-2: Scope and quality of city planning

RPI 4-2: Scope and quality of city planning	D
Comprehensiveness of city planning systems	D
Integration of crisis management provisions in planning and budgeting	F
Application of vulnerability assessment methodology	D
Extent of access and application of digital technologies	D

a. Comprehensiveness of city planning systems

Holistic planning system implies availability of a long-term city development strategy (vision), medium term plans as well as annual plans and budgets. It is important that the plans demonstrate interconnectedness at all levels and the specific planning targets and budget allocations in annual plans can be linked to the medium-term plans and eventually the development strategy (city vision). This measure looks at the robustness of the planning system which underlies urban resilience.

The Pune Municipal Corporation has a mandate for land-use planning and prepares the Development Plan. The PMC also prepares annual budgets which are available online. However, sectoral long- or medium-term strategies or plans are not prepared for all sectors. Annual plans (if prepared) with the associated budgets are not available to the public, and the link of annual plans to the development plans is not clear.

Hence, a score of 'D' is awarded.

The expert view included observations on the diagnostic framework, with the recommendation that city planning systems in Pune should address critical gaps in information about urban ecosystems, and that ecological considerations should be integrated into the development plan in a robust manner.

A	B	C	D	F
Comprehensive plans at three levels (strategic, medium-term and annual) exist and demonstrate a high degree of interconnectedness	Plans at three levels (strategic, medium-term and annual) exist and demonstrate a relatively high degree of interconnectedness	Plans on at least two levels (strategic or medium-term and annual) exist and demonstrate a degree of interconnectedness	Plans on at least one level (annual) exist and some interconnectedness can be established	No plans (or plans only at the annual level unconnected to any other level of planning)

b. Integration of crisis management provisions in planning and budgeting

Degree of integration of crisis management provisions in city planning and budgeting (medium-term and annual plans and budgets). This is a qualitative measure that looks at city preparedness for crisis situations including availability of relevant reserves, redundancies (financial and nonfinancial), business continued plans for delivery of public services as well as procedures to quickly mobilize and/or reallocate resources in case of need.

A Disaster Management Cell has been functional for several years now; the system of early warning also exists, especially for flooding of the major rivers, especially in conjunction with release of reservoir waters. However, there is no capability for prediction of pluvial flash floods and no plan for it. During the current COVID-19 situation, the PSCDCL has supported the PMC in data management. Crises management provisions are to some extent mainstreamed into respective plans. But the key to crises management

is its effective implementation. So a focus on capacity enhancement and its associated planning and budgeting elements should be considered.

The score awarded is F.

A	B	C	D	F
Crises management provisions are comprehensive and systematically mainstreamed in plans at all levels (strategic, medium-term and annual)	Crises management provisions are relatively comprehensive and mainstreamed in plans at all levels (strategic, medium-term and annual)	Crises management provisions address a number of relevant issues and are to some extent mainstreamed into respective plans	Crises management provisions address a few issues and not properly mainstreamed in respective plans	Crises management provisions are absent and/or poorly formulated and delinked from the planned actions

c. Application of vulnerability assessment methodology

Vulnerability assessment methodology exists and vulnerability assessments of basic infrastructure and systems are conducted regularly, relevant actions are incorporated in medium-term and annual plans and budgets.

A Pune Resilience Plan was prepared in recent years under the 100 Resilient Cities programme, and a broad vulnerability assessment was done (Pune Municipal Corporation, 2018). However, vulnerability assessment methodology within the PMC may be rudimentary. Vulnerability assessments take place ad hoc manner. In addition, a thrust on enhancing capacities of the existing disaster management systems is suggested.

The score awarded is D.

A	B	C	D	F
Robust vulnerability assessment methodology exists; vulnerability assessments take place regularly; relevant actions incorporated in plans at all levels	Vulnerability assessment methodology exists; vulnerability assessments take place periodically; relevant actions incorporated in plans at all levels	Vulnerability assessment methodology is rudimentary; vulnerability assessments take place ad hoc; relevant actions generally incorporated in plans	No coherent vulnerability assessment methodology exists; assessments take place rarely, if at all; relevant actions rarely incorporated in plans at all levels	No assessment methodology; no assessments; no attempts to incorporate relevant actions in plans

d. Extent of access and application of digital technologies

Extent of access and application of digital technologies for city planning and management, such as Internet of Things (IoT) and big data analytics comprised of sensors, networks, and applications to gather relevant data, such as traffic congestion, energy usage, and air quality to plan and deliver city services, including utilities, transportation, and public services.

IoT and big data are underdeveloped (nascent) and used on a pilot basis by one or two services on a limited scale.

A	B	C	D	F

IoT and big data analytics are advanced and most of the city services use them regularly	IoT and bid data analytics are somewhat advanced and many city services use IoT and big data analytics frequently	IoT and big data analytics are moderately developed and used by some city services from time to time	IoT and big data are underdeveloped (nascent) used on a pilot basis by one or two services on a limited scale	No use of IoT and big data

The score awarded is D.

RPI 4-3: Investment readiness

RPI 4-3: Investment readiness	D+
Strategic planning and resilience proofing of investment projects	D
Access to public land	D
Intensity of regulation/administrative burden	B
Quality of investment-enabling environment	D

a. Strategic planning and resilience proofing of investment projects

This measure is deigned to establish to what extent infrastructure investment projects are linked to longer-term planning, create opportunities for external investors and reflect resilience considerations.

A review of the Development Plan shows that such considerations have not informed the plan.

A score of D is awarded.

A	B	C	D	F
All investment projects are derived from the approved medium-term development plan and CIP, make provision for external finance when appropriate, and have project profiles that comprehensively address resilience issues	Most investment projects are derived from the approved medium-term development plan and CIP, make provision for external finance when appropriate, and have project profiles that in general address resilience issues	Some investment projects are derived from the approved medium-term development plan and CIP, sometimes make provisions for external finance, and some of them have project profiles that address resilience issues	Very few investment projects are derived from the approved medium-term development plan (CIP may be absent), rarely if at all make provision for external finance, and only some (or none) have project profiles that address resilience issues	Investment projects are not derived from the approved medium-term development plan (such plans may not exist at all), no provision for external finance, and project profiles (if exist) do not address resilience issues

b. Access to public land

Access to public land as a factor of production. It is measured by the extent of the city authority to manage urban land (change the use, lease, sell, etc.) as well as the percentage of vacant/unutilized public urban land as a percentage of total registered urban public land. In combination, these two measures indicate the city capacity to (re)allocate land resources efficiently.

The 'urban planning' function is devolved to the municipal corporation level in Maharashtra, following the 74th Constitutional Amendment and subsequent changes in the Maharashtra Municipal Corporations Act. Thus, PMC does have autonomy in land-use planning and management, though development plans require final approval by the

State Government. However, the availability of vacant/unutilised public land is now constrained in the older municipal limits. The Development Plan for Pune 2007-2027 indicated about 6.7% of vacant land (Pune Municipal Corporation, 2007, p. 16).

Peri-urban areas have recently been added to the municipal limits, and while these also already have considerable built-up area, there may be scope for planning afresh. A review of these peri-urban villages was taken up by the Gokhale Institute of Political Economy, commissioned by the PMC, which may throw light on availability of vacant land.

The process of land acquisition for public purposes is slow and fraught with challenges. The provision of Town Planning (land pooling) schemes is not used, unlike in Gujarat. Land acquisition in accordance with the approved development plan takes decades.

The score awarded is D.

A	B	C	D	F
City has a full autonomy to decide over the use and (re)allocation of land resources; a high percentage of vacant/unutilized public land	City has a significant autonomy to decide over the use and (re)allocation of land resources; a high percentage of vacant/unutilized public land	City has a somewhat limited autonomy to decide over the use and (re)allocation of land resources (approval of higher government required for some actions); an average percentage of vacant/unutilized public land	City has a limited autonomy to decide over the use and (re)allocation of land resources (higher government approval is required for most actions); a low percentage of vacant/unutilized public land	City has a very limited (or no) autonomy to decide over the use and (re)allocation of land resources (all decisions are taken by the central government); a very low percentage of vacant/unutilized public land

c. Intensity of regulation/administrative burden

Intensity of regulation/administrative burden (or days to start a business as a proxy) to measure how conducive is the investment environment to new private sector initiatives and how quickly businesses can diversify into other economic sectors if necessary.

There is a light intensity of business regulation, relatively quick and easy business registration procedures (India Infoline News Service, 2020). Government of Maharashtra has introduced single-window clearance (MAITRI scheme) and Zero Parwana Scheme on the principle of self-certification.

The score awarded is B.

A	B	C	D	F
Very light intensity of business regulation, quick and easy business registration procedures	Light intensity of business regulation, relatively quick and easy business registration procedures	Average intensity of business regulation, registration requires some effort and is not very fast	High intensity of business regulation, registration takes a long time and requires significant efforts	Very high intensity of business regulation, very long and difficult registration procedures

d. Quality of investment-enabling environment

Investment-enabling environment defined as availability of relevant investment data and facilitation mechanisms for investors at the city level. Facilitation mechanisms may include

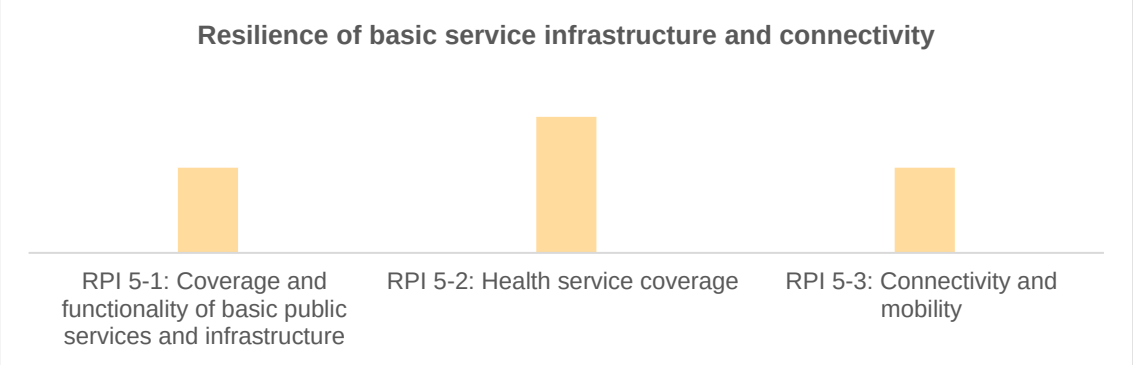
technical facilities to support project development, PPP and investment promotion units as well as financial incentives in the form of tax exemptions for investors.

This is not directly in the purview of the local government. For public infrastructure, a few PPP/ BOT type projects are ongoing. However, very little information is provided to potential investors and there is no comprehensive programme of municipal administrations to leverage PPP options, and to access borrowing to bring development projects to the city.

The score awarded is D.

A	B	C	D	F
Detailed and properly designed investment data (investment profiles) and a variety of financial and nonfinancial facilities to facilitate investment	A large amount of investment data (including some investment profiles) and a number of financial and nonfinancial facilities to facilitate investment	Some amount of investment data (including some investment profiles) and a small number of financial and nonfinancial facilities to facilitate investment	Little amount of investment data (including some investment profiles) and one or two dedicated financial or nonfinancial facilities to facilitate investment	Very little or no investment data, lack of investment profiles, no dedicated financial or nonfinancial facilities to facilitate investment

3.5 Resilience of basic service infrastructure and connectivity



The reality on the ground is such that the four components of the city economy (representing the factors of production operating within specific governance arrangements) cannot function without some basic infrastructure in place (e.g., energy, water, etc.) and require adequate connectivity for their efficient operation. Given the overall context of the tool and in particular its embeddedness in situations of global or regional epidemiological health emergencies, one more indicator is added to measure the health service coverage and its relative capacity to help the four components of the city economy to withstand the shock of such a health emergency. The three indicators below are designed to measure the resilience of basic service infrastructure (including healthcare) and urban connectivity.

RPI 5-1: Coverage and functionality of basic public services and infrastructure

RPI 5-1: Coverage and functionality of basic public services and infrastructure	D+
Public open space per 1,000 inhabitants	D
Average number and length of interruptions per customer per year in the electricity network	C
Percentage of population with access to water and sanitation services	C
Percentage of population with regular municipal solid waste collection	C

a. Public open space per 1,000 inhabitants (or per capita)[13]

Public open space per 1,000 inhabitants (or per capita).[14] In light of the COVID-19 experiences, the availability of public open space in a situation when congregation of many people indoors becomes unsafe, is critical for many urban functions. Also, public open space is often the primary workplace for many informal businesses. *Alternatively, percentage of open public space as the total city area.*

In the light of the COVID-19 experiences, the availability of public open space in a situation when congregation of many people indoors becomes unsafe, is critical for many urban functions. Also, public open space is often the primary workplace for many informal businesses. However, Pune has less than 21% of the total city area as open space (Pune Municipal Corporation, 2015). Experts have suggested that this indicator be revised to consider the gross level of open space even if certain tracts of open space are not directly under the jurisdiction of the municipal corporation. The Pune urban area has several hundred hectares of forest land, parts of which are open to the public, as well as streams and riverbanks that are accessed by the public for recreation and other needs. The current indicator does not consider the distribution of open space within a city.

The score awarded is D.

A	B	C	D	F
7 acres per 1,000 residents (28 sq m per capita) or more of public space[15] or over 45% of the total city area	At least 5-6 acres (20-27 sq m per capita) or 41-45% of the total city area	3-4 acres (12-19 sq m per capita) or 31-40% of the total city area	1-2 acres (4-12 sq m per capita) or 21-30% of the total city area	Less than 1 acre (below 4 sq m) or 21% and below of the total city area

b. Average number and length of interruptions per customer per year in the electricity network

Data available at the website of the Maharashtra State Electricity Distribution Company Ltd (MSEDCL) site shows frequent interruptions of less than 4 hours at most feeders. If the benchmark is to be the same across the cities in the world, then Pune should get a C for reliability. In the data reported for urban divisions for Pune Zone, the weighted average interruptions is about 4 hours per day for Q4 of FY21. This is typically a period of low non-agriculture demand and planned interruptions are also less. When compared to international standards, the C scoring is justified. However, Pune has better reliability as

[13] Public space is defined as publicly owned land and available for public use. Public spaces encompass a range of environments including streets, sidewalks, squares, gardens, parks, sports grounds, conservation areas. Each public space has its own spatial, historic, environmental, social, and economic features (UN-Habitat. (2016). *Global Public Space Toolkit: From Global Principles to Local Policies and Practice*).

[14] Public space is defined as publicly owned land and available for public use. Public spaces encompass a range of environments including streets, sidewalks, squares, gardens, parks, sports grounds, conservation areas. Each public space has its own spatial, historic, environmental, social, and economic features (UN-Habitat. (2016). *Global Public Space Toolkit: From Global Principles to Local Policies and Practice*).

[15] Based on the WHO recommendation of a minimum of 9 sq m of green urban space per person and UN-Habitat recommendation of green space as one half of the urban space allocated for open spaces such as streets and squares.

compared to Bangalore, Hyderabad, Chennai and other megacities, as well as smaller cities and peri-urban areas in Maharashtra.

Experts have suggested adoption of virtual net metering in PMC area.

The score awarded is C.

A	B	C	D	F
Very rare interruptions for short periods	Rare interruptions for short periods	Relatively frequent interruptions for relatively short periods (4 hours or less)	Frequent interruptions for longer periods (4-8 hours)	Very frequent interruptions for more than 8 hours or even days

c. Percentage of population with access to water and sanitation services

Over the last few years, PMC has extended water and sanitation services across the city. As per PMC's public notification of achievements against service level benchmarks, most population (90% or more) have access to running water and sanitation services, water points and sanitation facilities (Pune Municipal Corporation, 2019). However, experts' observations are that a 'C' score is more appropriate as the on-ground access is more in the range of 75% of the population with such access, as many slum neighbourhoods have common stand posts and community toilets.

The score awarded is C.

A	B	C	D	F
Universal access to running water and sanitation services	Most population (90% or more) have access to running water and sanitation services, water points and sanitation facilities are available in other areas	About 75% have access to running water and sanitation services, water points and sanitation facilities are available in other areas	50%-74% have access to running water and sanitation services, there are areas lacking water points and proper sanitation facilities	Less than 50% have access to running water and sanitation facilities, there are areas lacking water points and proper sanitation facilities

d. Percentage of population with regular municipal solid waste collection

Most of the population (90% or more) have access to municipal solid waste collection (Pune Municipal Corporation, 2019). The experts' observation is that while door step collection services are provided across the city, including slum localities, there are constraints in the management of waste.

The score awarded is C.

A	B	C	D	F
Universal access to municipal solid waste collection	Most population (90% or more) have access to municipal solid waste collection	About 75% have access to municipal solid waste collection	50%-74% have access to solid waste collection, unregulated dump sites are common, waste burning is the common method of waste disposal	Less than 50% have access to municipal solid waste collection, unregulated dump sites are common, waste burning is the common method of waste disposal

RPI 5-2: Health service coverage

RPI 5-2: Health service coverage	B
City quotient for health workers per 10,000 population	B
City quotient for hospital beds per 10,000 population	B
City expenditure on health	C

Updated information on the number of hospitals, bed availability or health workforce in Pune city is not readily available. Web searches and information accessed through the data of private sector mapping of hospital data (done by a city-based NGO during 2020) indicate that in terms of quantification of hospital beds/health workforce, the city seems to do fairly well[16]. However, one needs to be cautious while interpreting these indicators.

a. City quotient for health workers per 10,000 population

City quotient for health workers (physicians, nurses, and midwives) per 10,000 population. This measure compares the health service coverage at the city level to the national situation. The density of health workers (physicians, nurses, and midwives) shows access to trained medical personnel.

As per a 2016 report of the WHO (Anand & Fan, 2016), the state of Maharashtra with about 9% of the country's population has about 13.67% of all health care workers. There were a little over 100 doctors per 100,000 population as compared to 79.9 at the country level. Thus, the option 'Number of city health workers is somewhat higher than nationwide' is selected.

However, the following points are made with regard to the indicator and the score[17]:

- Currently, the scoring rationale relies mainly on the number of doctors. Although the city fairs well on this indicator, it does not give any specific information on training of the doctors and the stream of medicine they practice, which may affect the quality of healthcare.
- The indicator as it is currently framed, may limit our understanding from the perspective of resilience building. As was evident during the first and the second waves of COVID-19, the city could rapidly expand its health infrastructure. But it struggled to employ trained doctors, nurses, paramedics, counsellors, health outreach workers. The inadequacy of trained counsellors was acutely felt during COVID-19 times, where mental health was a big concern for the city.
- Similarly, health promotion and surveillance in the city has become extremely challenging given the severe shortage of outreach health workers.
- Given the high number of medical facilities in Pune, the health workforce is likely to be a sizable number. Ensuring their social protection and occupational needs has implications for quality health care.

[16] Dr Ritu Parchure, Prayas Health Group. Pers. Comm. July 2021

[17] Dr Ritu Parchure, Prayas Health Group. Pers. Comm. July 2021

The score awarded is B.

A	B	C	D	F
Number of city health workers is significantly higher than nation-wise	Number of city health workers is somewhat higher than nation-wise	Number of city health workers is approximately the same as nation-wise	Number of city health workers is somewhat lower than nation-wise	Number of city health workers is significantly lower than nation-wise

b. City quotient for hospital beds per 10,000 population

Similarly to the previous measure, this measure shows access to in-patient facilities and care.

The information on number of hospital beds and the country is not available so far. Provisional data in a 2018 report show that the bed to population ratio in Maharashtra is lower (poorer) than the country average (that is 2306 people are serviced per bed in Maharashtra as against 1844 at the country level) (Central Bureau of Health Intelligence, 2018, p. 260). However, this may not be the case for Pune. Also, much has changed in the COVID-19 scenario. Currently, the option 'number of beds at the city level is somewhat higher than nationwide' is selected.

The following points are made with regard to the indicator on hospital beds[18]:

- Unequal distribution of the hospital beds availability across different socio-economic strata is an important issue of concern for the city. The city has a large proportion of 'urban poor' population (-40%) that would mainly rely on public sector hospitals. However, the ratio of hospital beds in terms of private to public sector Is likely to be skewed towards private sector. The situation of out-patient health care is anticipated to be even more skewed. The numbers of clinics or dispensaries in public sector or primary urban health posts are low, compared to population needs. In the face of poor availability and perceived quality concerns, people are forced to seek health care in the private sector, despite monetary concerns. As per national health profile 2019 report, almost 3% of urban population in the state of Maharashtra required hospital care in a year. Of these, three fourth availed hospital care in a private facility, at an average cost of INR 34,608 per hospitalisation. With specific reference to the recent pandemic, anecdotal evidence indicates that many people from lower / middle income categories borrowed heavily to meet hospital bills for COVID-19 treatment. Such out of pocket health expenditure is likely to have pushed the economically vulnerable section further down the poverty level.
- The skewed distribution of health infrastructure impedes health care access of poor communities. It also makes the city less resilient in the context of crisis situations such as the COVID-19 pandemic. It is evident from the past experience that the private health sector has typically failed in giving rapid and coordinated response in public health emergencies. Although one must acknowledge its contribution during COVID-19 crisis, it was also because the private facilities were co-opted during the pandemic through the enforcement of the Epidemic Disease Act 1897.
- Strengthening public sector health infrastructure is crucial for planning the recovery. Its progress can be assessed by checking the ratio of public to private sector hospital beds and number of primary health clinics in the public sector. Updated information on city

[18] Dr Ritu Parchure, Prayas Health Group. Pers. Comm. July 2021

specific data on public and private health facilities (in-patient and out-patient) is of paramount importance.

The score awarded is B.

A	B	C	D	F
Number of hospital beds at the city level is significantly higher than nation-wise	Number of hospital beds at the city level is somewhat higher than nation-wise	Number of hospital beds at the city level is approximately the same as nation-wise	Number of hospital beds at the city level is somewhat lower than nation-wise	Number of hospital beds at the city level is significantly lower than nation-wise

c. City expenditure on health

This indicator considers city expenditure on health as percentage of total city expenditure (an average for three years in 2017-2019).

PMC expends between 5 to 9% of its annual budget on health services, considering that the budget for 2021-22 shows an allocation of INR 360 crore on hospitals and healthcare, in the total budget of over INR 8370 crore[19].

The score awarded is C.

A	B	C	D	F
City expenditure on health is sizeable in relation to the budget (e.g. over 15%)	City expends a reasonable amount on health services (e.g. 10-15% of its annual budget)	City expends between 5 to 9% of its annual budget on health services	City expends between 2 to 4% of its annual budget on health services	City expends less than 2% of its annual budget on health services

RPI 5-3: Connectivity and mobility

RPI 5-3: Connectivity and mobility	D+
Continuity of telephone and Internet operations	C
Average commuting travel time disaggregated for the key modes of transportation	B
Total coverage of all superior modes of public transport	C
Walkability and cyclability	F

a. Continuity of telephone and Internet operations

Continuity of telephone and Internet operations measured by the frequency and length of interruptions per year.

As per the Telecom Regulatory Authority of India, the down-time is less than 3% for all service providers, except 3 in September 2019, which had improved to no downtime by December 2019 (Telecom Regulatory Authority of India, 2019). As per a report from ICRIER, while intentional shut down on internet and mobile services is a matter of concern in India, Maharashtra has had relatively fewer shutdowns (Kathuria et al., 2018). However,

[19] https://www.pmc.gov.in/en/STD_Committee_Budgets_2021-22

as per the experts' review, considering the city as a whole there are interruptions and sections of the city without internet connectivity.

A score of 'C' is thus deemed appropriate.

A	B	C	D	F
Very rare interruptions for short periods	Rare interruptions for short periods	Relatively frequent interruptions for relatively short periods (4 hours or less)	Frequent interruptions for longer periods (4-8 hours)	Very frequent interruptions for more than 8 hours or even days

b. Average commuting travel time

Average commuting travel time disaggregated for the key modes of transportation. As the COVID-19 lockdowns demonstrate, longer commuting times may significantly impact the ability of workers to reach their workplace if there are restrictions on operating public and private transport.

Pune has relatively short commuting times (1-1.5 hours), given that the average private motorised trip lengths are about 8 km and about 10 to 11 km by IPT modes (Roychowdhury & Dubey, 2018), and speeds are at about 20 kmph (MoveInSync, 2019).

A score of 'B' is awarded, considering the commuting time.

However, the experts observed that the parameter is subjective, and 1 to 1.5 hours may not be considered 'relatively short' in most cities and towns across the world, except large metropolises where trip lengths tend to be much higher.

A	B	C	D	F
Short commuting times (under 1 hour)	Relatively short commuting times (1-1.5 hours)	Longer commuting times (1.5-2.5 hours)	Long commuting times (2.5-4 hours)	Very long commuting times above 4 hours

c. Total coverage of all superior modes of public transport

Total coverage of all superior modes of public transport (i.e. BRT, trolleybus, tram, light rail and subway, cable cars and ferry) measured as percentage of the total city area.

A score of C is awarded. A recent report by ITDP India shows that though over 96% of Pune and Pimpri-Chinchwad residents live within 500 m walkable distance of the trolley bus (PMPML) network, only 12% of trips are by bus. The same report also indicates that 66% of population has access to high frequency public transport (Singh & Deshpande, 2019). The affordability, reliability and frequency of bus services is a big concern. The percentage of people with access to rapid transit (including the Pune Metro and Rainbow BRT) is at just 25% (Singh & Deshpande, 2019).

Thus, the option 'Superior modes of public transport cover less than 74% of the city area' is selected. Though the quality of public transport is debatable, here the frequency parameter is considered that can make public transport superior.

A	B	C	D	F

Superior modes of public transport cover 90% of the city area or more	Superior modes of public transport cover 75-90% of the city area	Superior modes of public transport cover 50-74% of the city area	Superior modes of public transport cover 25-49% of the city area	Superior modes of public transport cover less than 25% of the city area od don't exist

The score awarded is C.

d. Walkability and cyclability

Walkability and cyclability is defined as a combination of the city performance on the sum of two measures: (a) percentage of streets with sidewalks and (b) percentage of streets with bicycle lanes.

Information on the extent of the road network with footpaths or sidewalks is not available (Pune Municipal Corporation, 2017a). Surveys done by Parisar, an NGO in Pune show that the status of footpaths is poor (Express News Service, 2020a). Similarly surveys by Save Pune Traffic Movement, another NGO in Pune (Express News Service, 2020b) as well as the Comprehensive Bicycle Plan for Pune show that the total length of bicycle tracks in Pune is less than 100km, and almost all of it is of poor quality (Pune Municipal Corporation, 2017b, p. 24).

The experts' view was that about 50% of major streets might have footpaths but the walkability and universal accessibility might not be satisfactory. Some roads in the city have dedicated cycle tracks but most of those are not in use due to poor design or encroachments. The city has taken a few steps towards correcting the situation, such as preparation of a comprehensive mobility plan, street design guidelines, bicycle plan, pedestrians' policy etc. However, the physical infrastructure is not cyclist and pedestrian friendly for the large part.

The score awarded is F.

A	B	C	D	F
All streets have sidewalks	90-99% of streets have sidewalks	75-89 of streets have sidewalks	50-74% of streets have sidewalks	Less than 50% of streets have sidewalks
Bicycle lane density exceeds the national standard or is better in comparison to other similar cities in the country	Bicycle lane density is the same or better than the national standard or is the same as in other cities of similar size in the country	Bicycle lane density is somewhat below the national standard or is slightly below in comparison to other similar cities	Bicycle lane density exceeds is well below the national standard or much below in comparison to other similar cities	Bicycle lanes a very few or non-existent

4. Conclusions and recommendations (DRAFT)

4.1 Resilience of the local business environment

The local business environment in Pune has a diverse economy with IT sector, engineering and services as dominant sectors, but also a presence of traditional manufacturing, ancillary businesses, engineering, pharma, chemical industry etc. There are strong linkages with global and regional supply chains and Pune is well integrated into external markets, and the productivity and financial capacity of local business and industry is a major strength. However, while an entrepreneurship and innovation supportive ecosystem exists in Pune, it is relatively smaller as compared to the other major cities in India. There is moderate level of informality, though a large proportion of workers in the formal sector are daily wage contract workers. The public sector is medium to small.

Areas of future work may include programmes for strengthening formalization of work, support for diversification of the economy with localization of supply chains in relevant sectors. Support to enhance the livelihoods of urban poor needs to be a high priority, especially women's entrepreneurship, micro and small businesses through enabling enhanced connectivity, incubation, micro-finance, soft skilling and public infrastructure access.

4.2 Resilience of the local labour market

The labour segment, especially informal workers, casual labourers, migrants are among the worst affected. Major informal work sectors are head loaders, construction workers, street vendors, domestic workers, drivers, gig workers etc. There is also a high level of casual and daily wage labour in the formal sector industries for areas such as packaging and goods loading. Their ability to move to other sectors was constrained as there is a saturation of the labour market. The unemployment rate in Pune during the pandemic appears to be higher than the national average. Though public distribution systems and direct transfer schemes initiated during the COVID-19 pandemic by the state and central governments do exist, but the reach is fairly limited. There are no ongoing schemes for regular unemployment benefits for basic living expenses every month. Training programmes, though available, are not very accessible for the poorest workers, due to low intake.

Potential areas for strengthening economic resilience with regard to the labour sector include:

- Improving documentation and data about employment and occupations is essential to get a more nuanced understanding of the situation.
- The ecosystem that offers worker training may need to map, re-organise, streamline, and define a quicker response framework to develop publicly funded programmes for the poorest workers from the point of view of getting better job security and more income.
- Investment in public housing and safe, affordable public mobility infrastructure would help reduce living expenses and improve net earnings of urban poor households.
- The city may initiate social protection measures (sickness/health care, disability, old age, survivors, family/children, unemployment, housing, and social exclusion) paid as city-established benefits to complement other existing national and/or regional social protection schemes

4.3 Resilience of the local financial system

Pune has a relatively higher degree of access to digital finance, and a large proportion of the population has bank accounts. There is a medium-sized market share of investors and fund-houses. Interest rate spreads are high and non-performing loans rate is medium to high. The loan portfolio is concentrated in a relatively smaller number of sectors.

In the future, funding institutions may need to diversify the loan portfolio and enhance the availability of finance for micro and small entrepreneurs.

4.4 Resilience of economic governance

The PMC has a diversified revenue space and dependence on external finance is lower which is a sound base. However, the regular expenditure of the municipal take up a considerable portion of the budget. The quantum of funds available for capital expenditure is moderate. The PMC has demonstrated its ability to raise funds from the market on its own, has moderate financial flexibility and strong fiscal capacity. The PMC also has a high credit rating. The pandemic did not create any significant dip in the city revenues. However, the PMC audit performance is not available for public review, and the city has no share in the local financial market.

In the future, the financial strength of the city government may be used to raise additional finance towards projects aimed at enhancing resilience, with a focus on the urban poor. Simultaneously, measures to enhance transparency of the budget, public participation in economic governance and public availability of financial audit reports would be essential to ensure effective and efficient public finance management.

Mechanisms to enhance effective and inclusive public participation in civic governance, including the conservation and management of urban ecological assets are also essential in the recovery process. Special attention is needed to integrate crises management provisions in city planning and budgeting. Even though the city government was able to orient its staff and resources to the handling of the pandemic, the learnings from the experience should be codified and integrated into systemic vulnerability analysis and disaster prevention and preparedness.

While PMC has been increasing digital technologies in city planning and management, these are as yet nascent. There is considerable scope and need for improving the use of digital technologies and information systems which become essential for devising preparedness and response strategies.

The city autonomy to decide land-use, however the percentage of vacant land is quite low. The Development Plans currently underway (such as at the metropolitan scale and in the peri-urban region recently merged into the city limits) should create opportunities for external investors and reflect resilience considerations. The Pune city resilience plan prepared in 2018-19 may be used to inform such plans.

4.5 Resilience of basic service Infrastructure and connectivity

Strengthening basic infrastructure is an imperative in terms of public transport and facilities for non-motorized transport. The city has well developed plans and guidelines for the mobility sector including the Comprehensive Mobility Plan, Bicycle Plan, Street Design Guidelines,

Pedestrian Policy, Parking policy etc. Implementing these would directly support economic recovery and public wellbeing.

A continued focus on improving access to water and sanitation, and solid waste management is needed, especially in the newly merged areas in the city limits. The adoption of virtual net-metering and catalysing the shift to renewables should be given high priority.

Health sector improvements are of high priority, with the following specific recommendations:

- Collect/compile updated city specific data on 1) public and private health facilities (in-patient and out- patient), 2) health outcomes, and make it available through open platforms
- Expand and strengthen public sector health infrastructure, strengthen health outreach mechanism and primary health care
- Create platforms or use existing ones to foster active engagement of citizens on health matters
- Take cognizance of interlinkages between social and economic factors, physical environment, health behaviours on health outcomes, while we plan for broader economic recovery processes in the city

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[i] Computed using the Annual Survey of Industries report (FY18) (Source: pdf page 662 and 637 http://microdata.gov.in/nada43/index.php/catalog/149/download/1855) which reports electricity used and the value of electricity, and the PFC report on Utility Finances (FY19)(Pdf page 117, 118 and page 123 and 124 of https://www.pfcindia.com/Home/VS/29) which reports category-wise sales and revenue. As per ASI report, industries in Maharashtra (and thus in Pune) get power which is 14% more expensive than the national average. The PFC rates were adjusted with duties levied (based on RBI study of budgets: estates database on https://rbi.org.in/Scripts/AnnualPublications.aspx?head=State+Finances+%3a+A+Study+of+Budgets). The data for FY19 shows that industries on an average pay 9% higher than the national average. The assessment does not include power loom subsidies in

Maharashtra and industrial subsidies in other states but since Pune does not have high power loom industries, this is still an underestimate. Scoring is based on the following matrix (less than national average = A, up to 5% higher than national average= B, 5-10% higher than national average = C, 10-15% higher than national average=D, > 15% Higher than average=F). A score of C is awarded, based on PFC data as it is more recent and can be revised annually. However, if ASI data or an average of the two is used, the score will change accordingly. Contributed by Ann Josey, Prayas Energy Group, July 2021.