

POLICY BRIEF

A collaboration between CPPG and Civil Services Academy

Sustainability of Lahore: How can the city meet its SDG 11 targets?

Authors

Rabia Chaudhry, (Assistant Professor, CPPG), Shahid Mehmood, Ra'ana Hameed, Adnan Mahmood, Zameer Abbas, Qaiser Khan


Directing Advisor

Ms. Tasneem Zafar, Chief Instructor, CSA

As a signatory to the Sustainable Development Goals (SDGs), Pakistan is under an obligation to meet the prescribed targets. It therefore needs to create a policy framework that allows envisioning, adopting, and implementing concrete measures in pursuit of the commitments. This policy brief concentrates on the capacity of the city of Lahore to meet the targets proposed by SDG 11 on making the city “inclusive, safe, resilient and sustainable” (SDG Tracker 2022). It highlights how disproportionate population growth in Lahore, which is principally driven by migration, is hindering the city’s ability to meet and deliver on its obligations. Using SDG 11 as the corner stone, it will propose ways to manage unwarranted population migration growth to the city.

Lahore is the second most populous city of Pakistan. According to the census of 2017, its population is estimated to be over 11 million (Hasan 2021). Moreover, the city’s population is estimated to be growing at 4 percent per annum. To better understand this statistic, the urban population growth for the whole province of Punjab, between 1998 and 2017, was 2.74 percent (Pakistan Bureau of Statistics 2021). This population growth rate of Lahore was not only the highest among all cities of the province, but it is projected to grow up to 17 million by 2030 (World Population Review 2022). Despite receiving the highest per capita share in the development expenditure by the provincial government for last many years (Punjab Planning & Development Board 2021), this unplanned migration has adversely affected the quality-of-life indices of the city. In 2021, according to Numbeo Quality of Life City Index, it ranked at 200 amongst a list of 241 countries surveyed (Numbeo 2022). In 2016, it stood at 199 among 230 cities (worldwide) according to the Mercer Quality of Living Index (Hasan 2021).





It must be noted here that the fertility rate in Lahore is 3.1 percent, the lowest as compared to the next four large cities of Punjab namely Faisalabad, Gujranwala, Rawalpindi and Multan. This leads us to accentuate that the population growth in Lahore is in fact driven by migration.

Data shows that the population growth in the city has outpaced its development and is undermining its ability to manage the consequent pressures on the city's housing, municipal infrastructure, public places and environment. The supply of adequate, safe, and affordable housing facilities remains a key challenge for the city. According to estimates, the total housing gap in Lahore is 696,360 units (The Urban Unit, Rapid Housing Assessment of Punjab 2021). Access to public transport is limited with only one bus available for 60,000 persons (Majid 2019) leading to an over reliance on private vehicles causing additional problems like traffic congestion and environmental degradation. Lahore today is amongst the most polluted cities of the world. The water table of the city is depleting at an alarming rate due to excessive pumping and pollution from effluents from industry and leakages from sewerage are on the rise. If the population continues to migrate to the city at current rates, the city is likely to miss many targets set under the SDG 11 for access to safe and affordable housing, sustainable transport system, inclusive green and public spaces and protecting the environment of the city.

Given this disproportionately large migrating population growth in Lahore, would the city be able to achieve the targets of SDG 11? This policy brief explores how migration to Lahore needs to be curtailed for better performance of targets on housing (11.1), access to public transport (11.2), and environment (11.6). This policy brief compares Lahore with the next four large cities of Punjab i.e., Faisalabad, Gujranwala, Rawalpindi, and Multan. Most importantly, it draws attention to the “First City Bias” inherent in the development agenda of the government and how higher-than-average population growth of Lahore, as compared with other big cities of Punjab, adversely affects the capacity of the government to deliver on its promises of housing, transportation, and environment.

Drivers of Demographic Shift: Urbanization, Population Growth and Migration

By 2020, 56 percent of the global population was living in urban spaces (Buchholz 2020). This is expected to grow to 68 percent by 2050 (UNDESA 2019). In line with the global trend, Pakistan is urbanizing at an annual rate of 2.7 percent (World Bank 2020) – which, is among the highest in Asia (Urban Unit 2019). As per the Population Census 2017, 36 percent of Pakistan's population lived in urban areas (Pakistan Bureau of Statistics 2021).

Preliminary literature review reveals that there are three major drivers of urbanization in the country. First is population growth. At the current rate, nearly half of the country's

population is expected to be living in urban areas by 2030 (Urban Unit 2019). Second is the rural-urban migration (Jabeen, Farwa and Jadoon 2017). This is driven by perception of better living prospects in urban areas. Internal security and conflict have also forced many to seek refuge in urban areas (Jabeen, Farwa and Jadoon 2017). Third, legal and technical, “reclassification” of rural areas to urban, to accommodate population growth has further boosted urbanization (Khan, Arshad and Muhammad Mohsin 2014). Lahore appears to be the victim of all the three drivers simultaneously.

The urbanization trend of the province follows the national pattern. 53 percent of the country’s population (110 million) lives in Punjab out of which 40 million (36 percent) live in urban areas. From 1997 to 2018, the urban population in Punjab grew at an annual rate of 2.74 percent. Lahore is the only mega city in the province. By 2017, it had a population of over 11 million (Urban Unit 2019). Lahore’s population is 3.5 times larger than Faisalabad, which is the next in line with a population of 3.2 million.

Demographic Shift: A Case of Lahore

Population Growth in Lahore versus Other Large Cities

Lahore is the cultural and economic hub of Punjab (Shirazi and Kazmi 2014). The population statistics of Lahore recorded in censuses since 1951 (Figure 1 below) reveals that the population of the city has risen from 849,476 in 1951 to 11,126,285 in 2017. The population of Lahore more than doubled from 5.1 million to 11.1 million in only two decades. The average annual growth rate in this period remained 4.1 percent (see Figure 2). It is significantly higher than the 3.1 percent growth during 1972-1981 and 2.8 percent during 1981-1998. Its impact is also more pronounced due to a much larger population base in 1998 as compared to that of 1950s or 1960s.

Figure 1: Population Increase in Lahore

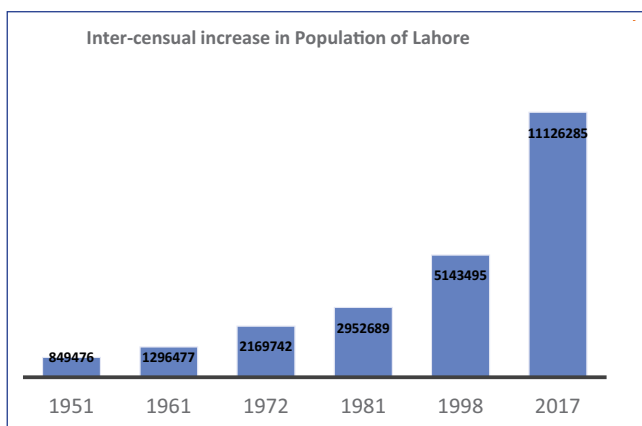
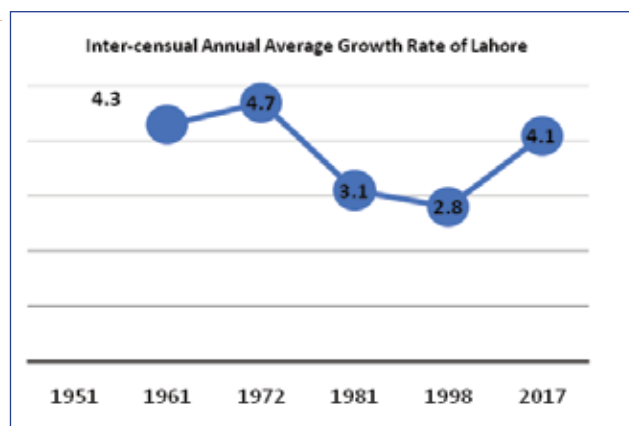


Figure 2: Average Growth Rate of Lahore



A comparison of the population growth in Lahore with the four largest cities of Punjab

after Lahore (Table 1) reveals that the average annual growth rates of all the other cities have reduced between 1998 and 2017 as compared to the growth rate between 1981 and 1998. However, for Lahore, it has increased from 3.27 percent to 4.1 percent for the same time periods.

	Census 1981	Census 1998	Census 2017	Annual Average Growth Rate 1981-1998	Annual Average Growth Rate 1998-2017
Lahore	2953000	5143495	11126285	3.27	4.07
Faisalabad	1104000	2008861	3203846	3.53	2.45
Rawalpindi	795000	1409768	2098231	3.38	2.08
Gujranwala	601000	1132509	2017001	3.74	3.04
Multan	732000	1197384	1871843	2.89	2.35

Source: Population and Housing Census 1998, 2017

Population growth in any city depends on the natural increase (i.e., birth rate-death rate) coupled with migration from other cities and rural areas. In case of Lahore, there is no evidence that this disproportionate rate of population growth is due to natural increase. As shown in the Table 2, the fertility rate (women aged 15-49 years) in Lahore is the lowest in the Punjab at 3.1.

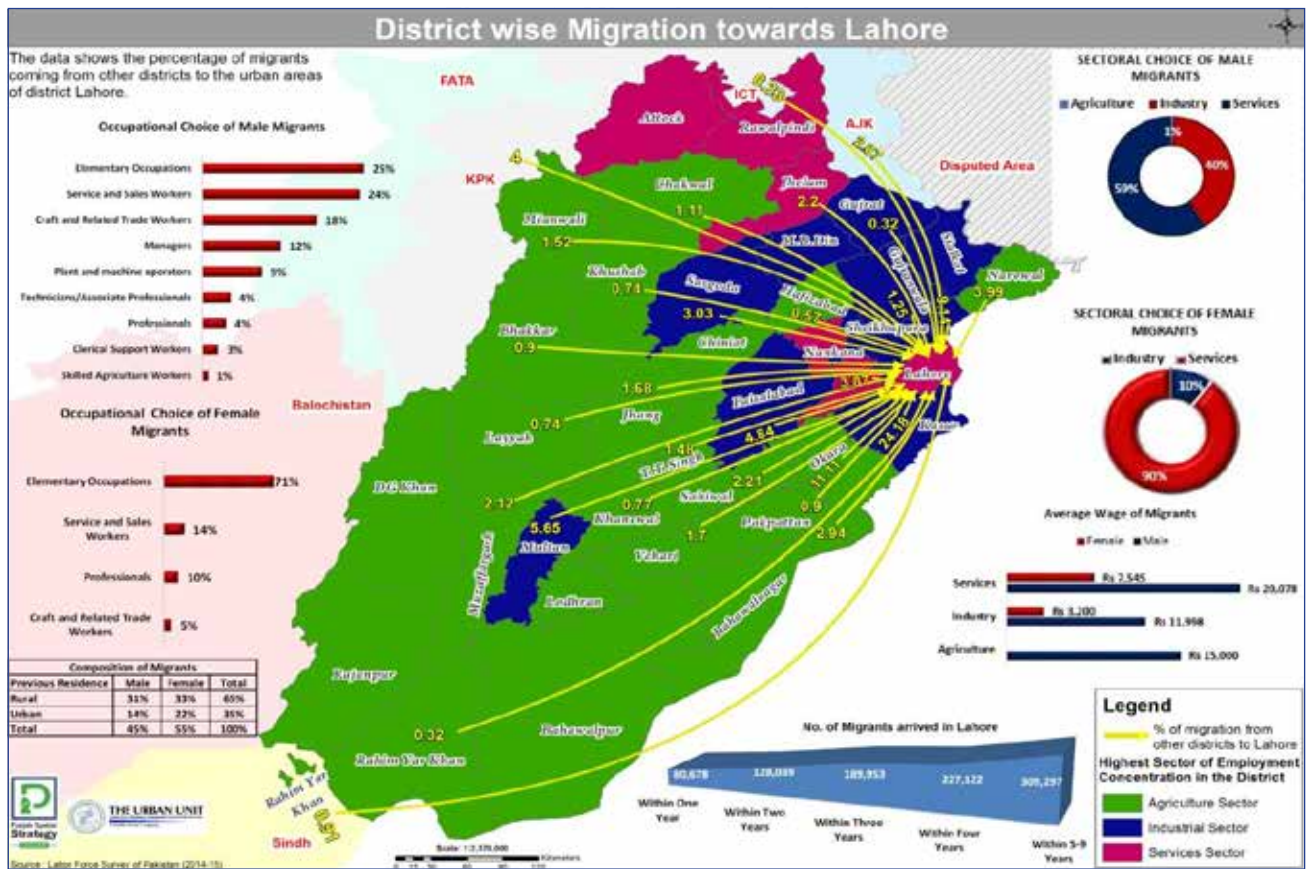
City	Fertility Rate	Contraceptive Prevalence Rate
Lahore	3.1	40%
Gujranwala	3.4	16.70%
Rawalpindi	3.2	33.90%
Faisalabad	3.3	45.80%
Multan	3.6	49.60%

Source: Punjab Bureau of Statistics Multiple Indicator Cluster Survey (MICS) 2017-18

Similarly, the Contraceptive Prevalence Rate in Lahore is 40 percent which is less than Faisalabad and Multan but higher than Gujranwala and Rawalpindi. Therefore, it can be inferred that Lahore's population is growing due to migration from rural areas and other cities.

Population Density, Migration and Population Projections

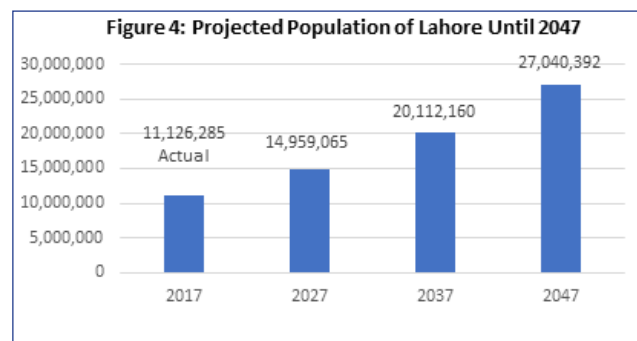
65 percent of the immigrants to Lahore come from rural areas while 35 percent from other urban areas (Urban Unit 2019). As shown in Figure 3, people from all over Punjab as well as other provinces migrate to Lahore. Consequently, the density of migrants in Lahore is 38.4 persons per square kilometer, which is the highest in Punjab (Urban Unit 2019). Hence, Lahore is most vulnerable to the demographic changes resulting from increasing urban population.



Lahore has a total area of 1772 square kilometers. Based on this area following table depicts the change in population density of the city from 1981 to 2017. The population density for the city has increased threefold from 2001 to 6278 persons per square kilometer from 1981 to 2017.

Years	Area (sq. km.)	Population (000)	Population Density (Persons/sq. km.)
1981	1772	3546	2001
1998	1772	6318	3566
2017	1772	11126	6278

In the coming six years, the population of Lahore is projected to increase to approximately 15 million and go up to a whopping 27 million in another 26 years (Urban Unit 2019).



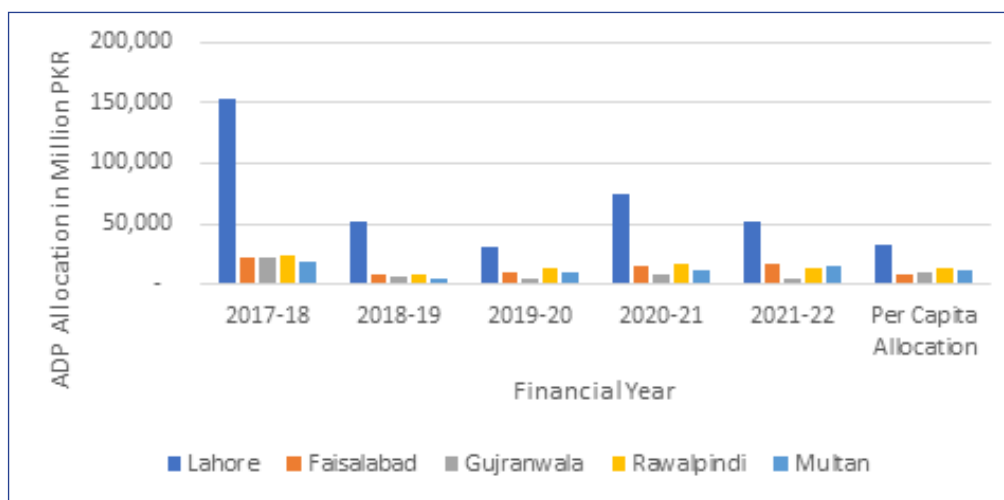
First-City Bias

Within this backdrop, the existing urban policy paradigm pertaining to Lahore is trapped in a vicious cycle. In the recent Annual Development Plans (ADPs) of the city we see increasingly more developmental funds being allocated to Lahore to meet the social services needs of its burgeoning population. However, this policy of awarding financial resources to the city without identifying and addressing the issue is only further widening this gap between Lahore and the other cities. This is what Todaro terms as the ‘First-City Bias’ (Todaro and Smith 2020, 345) which essentially means that the largest city of a country (in this case a province) is allocated a larger share of resources. This is driven by both political and economic factors. The city also becomes the most preferred destination of the private sector for investment.

In case of Lahore, this bias is evident from the table given below which analyses the ADP allocations to Lahore and the four large cities of the province after Lahore. Table 4 below shows that Lahore received more resources over the past five years as compared to other large cities. In 2021, Lahore received approximately Rs. 75 billion. Next in line is Rawalpindi, which received Rs. 16.2 billion; Faisalabad (Rs. 15 billion); Gujranwala (Rs. 7.6 billion) and Multan (Rs. 11 billion). These numbers reflect development funds allocation bias in favor of Lahore. Similarly, compared to other cities, the per capita expenditure between 2017 and 2021 has been Rs. 32,537 for Lahore which is more than double that of Rawalpindi and Multan; and nearly four times as much as that of Gujranwala and Faisalabad.

City	Population in 2017	2017-18	2018-19	2019-20	2020-21	2021-22	Total	Per Capita Allocation (PKR)	Population of the city as % age of District	Total Allocation to city	Adjusted Per Capita Allocation (PKR)
Lahore	11,126,285	154,087	51,294	30,254	74,873	51,509	362,017	32,537	100%	362,017	32,537
Faisalabad	3,203,846	21,365	8,159	10,001	15,058	16,020	70,603	22,037	40%	28,241	8,815
Gujranwala	2,027,001	22,063	6,145	4,321	7,621	4,929	45,079	22,239	40%	18,032	8,896
Rawalpindi	1,908,671	23,408	8,805	13,732	16,207	14,114	76,266	39,958	35%	26,693	13,985
Multan	1,827,001	18,874	4,009	9,350	10,968	14,523	57,724	31,595	38%	21,935	12,006

Figure 5: ADP Allocation to Lahore and Four Large Cities of Punjab



This first city bias is therefore not only creating an inter-city disparity, which is exacerbating and reinforcing the current migratory trends (towards Lahore) but is also hindering the progress in achieving targets under the SDG 11. This is evident from the performance of the city on the targets identified above (see Figure 5).

Performance of Lahore on Targets under SDG 11

Target 11.1: Ensure Access for all to Safe, Adequate and Affordable Housing

According to a recent estimate, as of 2021, the total housing shortage in Lahore is 696,360 units. Housing deficit is determined by urban population growth, migration, deterioration of existing housing stock, overcrowding and affordability.¹ As shown in Table 5 below, the housing deficit projected for the years 2022-2026 shows that with an increase in the urban population in Lahore, the housing needs will become more acute (The Urban Unit, Rapid Housing Assessment of Punjab 2021).

¹ Mr. Muhammad Asif Chaudry, Director General Punjab Housing & Town Planning Agency, Interview by Authors, January 2022, Lahore.

Table 5: Projected Housing Deficit - Years 2022-26

Year	Projected Population	Projected Housing Demand	Projected Housing Supply	Housing Shortage	Shortage due to Overcrowding	Dilapidated Housing	Total Shortage
2022	12,891,110	2,106,710	2,088,031	18,679	657,625	46,400	722,704
2023	13,277,844	2,184,669	2,164,400	20,269	681,677	48,097	750,043
2024	13,676,179	2,265,512	2,243,562	21,951	706,609	49,856	778,416
2025	14,086,464	2,349,347	2,325,619	23,729	732,453	51,680	807,862
2026	14,509,058	2,436,285	2,410,677	25,608	759,242	53,570	838,420

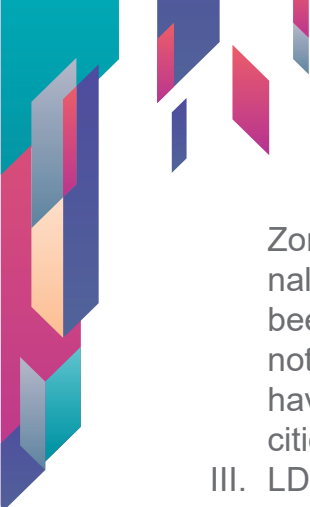
Source: Rapid Housing Market Assessment of Punjab -The Urban Unit

The provincial government has certainly tried to address this shortage through multiple Punjab Growth Strategies (2018 and 2023). However, in effect they fall short of taking any concrete measures to address the existing housing issues in Lahore. These strategies can best be described as a mere nod towards acknowledging the issue. In reality, they do not deliver on the provision of adequate, safe and affordable housing facilities to the urban population of Punjab (SDG 11.1).

Target 11.1 is not merely about addressing the housing backlog. An associated issue is ensuring access to affordable and low-cost housing. Average monthly rent and property values in Lahore are the highest in Punjab (Urban Unit 2019). The migrants and city poor are the worst affected by this and are likely to end up in slums and Katchi Abadis, which contravenes the SDG target indicator pertaining to the reduction of urban population living in slums and informal settlements.

Moreover, housing was devolved to the provinces under the 18th amendment in 2010. Government of the Punjab has not been able to frame a provincial housing policy even after a decade. Instead of enacting policies targeted towards Lahore, it is taking its cues from Federal Government Programs like Naya Pakistan Housing Program (NPHP) and inclined towards adopting one-size-fits-all type generic solution. Currently, it has amended laws and taken initiatives accordingly to implement the same model across Punjab. A few key initiatives taken in this regard are as follows:

- I. The provincial government has recently enacted the Punjab Development Authorities Private Housing Scheme Rules in 2021 in which it has been made it mandatory for private housing schemes to allocate 20 percent of their total residential area for low-cost housing.
- II. To address the growing housing demand, the government has decided to promote a culture of apartment living. For this purpose, construction of apartment buildings has been allowed on a 10 Marla plot through amendments in the LDA Building and



Zoning Regulations in 2019 whereas previously it was only permitted on a 4 Kanal or above plot. Moreover, low, medium and high-rise apartment buildings have been allowed to increase urban population density of the city. It is interesting to note that the development authorities of Lahore as well as other large cities do not have the institutional capacity to even formulate the master plans of the respective cities.

III. LDA is constructing low-cost apartments in LDA City under NPHP.

However, these initiatives cannot be successful without addressing some issues that run to the very core of the problem at hand. First, there is no housing policy or condominium law² in Punjab. Secondly, an overview of the high-rise residential buildings being constructed in Lahore in LDA jurisdiction as of 2021 reveals that they are being built in posh areas like Gulberg, Johar Town, Model Town etc³. Hence, they are likely to be high rise luxury apartments. Moreover, increasing urban population density means that more people are cramped into a limited urban space which will put a greater pressure on housing, public amenities, services, and infrastructure system of that area. Finally, even in case of low cost NPHP LDA City apartments – that are being constructed by LDA, the starting price of an apartment of 650 Sq. ft. is Rs. 27,000,000. Hence, access to adequate and affordable housing will remain an issue.

Target 11.2: Access to Safe, Affordable, Accessible and Sustainable Transport

With one bus for 60,000 persons (Majid 2019), access to public transport remains a key challenge in Lahore (Chaudhary 2015). Furthermore, as the traffic infrastructure is poorly planned, it is not inclusive for pedestrians. To accommodate the increasing car and bus using population, bicyclists and pedestrians, who make up almost 45 percent of traffic in Lahore, have remained a low priority for planning transport infrastructure, as is evident by the near absence of bike lanes or even pavements. While ownership of private vehicles has been rising exponentially, it has created multiple problems of congestion, traffic management, parking spaces and implementation of regulations for smooth traffic flow. The Motor Registration Authority reveals that there are 6.2 million vehicles plying on the roads of Lahore alone (Khalti 2021). Overall, the city has around 32 percent of vehicles in Punjab⁴. As per the estimate given by Punjab Excise and Taxation Department, in the year 2021, Lahore had the highest number of vehicles at 6,928,868 followed by Rawalpindi, 2,081,422; Faisalabad, 84,674; Multan, 72,064 and Gujranwala, 45,108. The Figure 6 below shows the number of registered vehicles over the years in Lahore between 2003 and 2021.⁵

² Condominium law allows for multiple/joint ownership on a common parcel of land on which multiple housing units are constructed.

³ Zohaib Chaudry, Deputy Director (Coordination) LDA, Interview by Authors, January 2022, Lahore.

⁴ Excise & Taxation, Department, Lahore

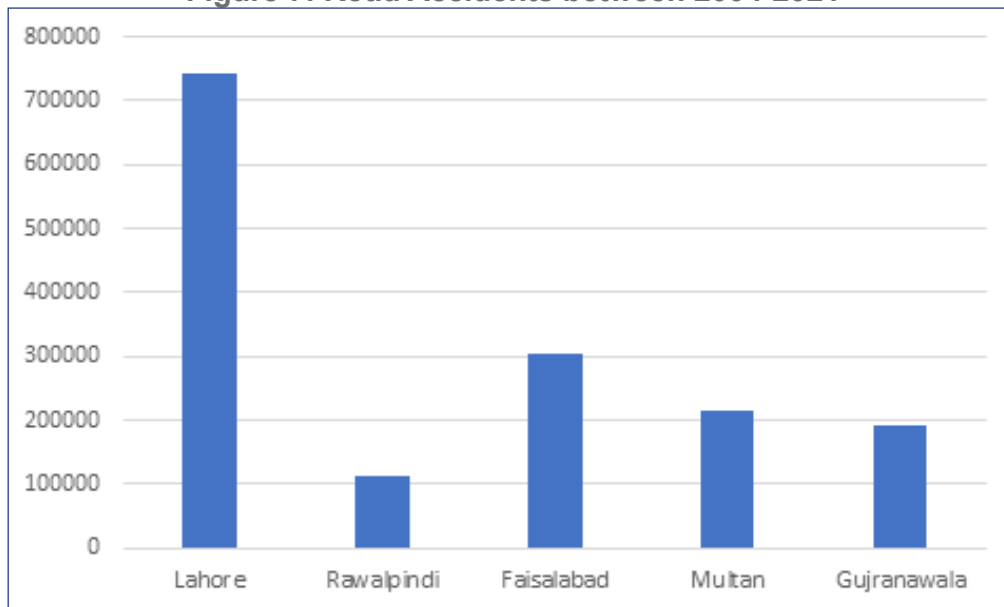
⁵ City Traffic Police Office, Interview by the Authors, January 2022, Lahore.



The trend suggests that the number of vehicles is likely to grow in future. Estimates show that the car ownership is expected to grow to 43 percent in 2030 from 29 percent in 2020 (UN-Habitat 2018, 42).

Moreover, a study conducted highlights that Qinjais are a favorite mode of travel across city as the waiting queues are shorter and it is readily accessible (UN-Habitat 2018, 39). The study also pointed out that rickshaw was preferred by women as they considered it safe. From another perspective, poor traffic management makes the roads unsafe. As Figure 7 shows, Lahore has a higher number of road accidents with an average of nearly 44,000 road accidents per annum as compared to other large between 2004 and 2021 (Rescue1122 2022).

Figure 7: Road Accidents between 2004-2021



As Table 6 shows, the vehicle to road density as well as population to road density is highest in Lahore as compared with other large cities. The trend suggests that this density is going to rise. Juxtaposing this trend with number of accidents and weak traffic regulations enforcement, the roads in Lahore are likely to become more unsafe.


City/District	Population to Road Density	Vehicle to Road density
Lahore	9600 persons/km	3712 Vehicle/Km
Faisalabad	1730 persons/Km	244 Vehicle/Km
Multan	2570 persons/Km	645 Vehicle/Km
Gujranwala	2006 persons/Km	282 Vehicle/Km
Rawalpindi	1930 persons/Km	282 Vehicle/Km

Source: Punjab Development Statistics

In Lahore, the First City Bias is reflected in yet another way. The largest share of public funds has so far been allocated to address issues of traffic management through construction of under-passes, overhead bridges, construction of ring roads and widening and improvement of roads (UN-Habitat 2018). This has led to the development of car centric infrastructure, which has further aggravated the problem of congestion.

Even though the Government has made major investments in public transport systems like the Metro Bus which runs across the city, it has not made much as a dent in the car centric infrastructure. This is because the ratio of population to bus is extremely low that make its accessibility very poor and coverage is limited.

Based on all these factors, Lahore is likely to miss target 11.2 of the SDG for providing access to sustainable and safe transport. The ‘first city bias’ is evident again, as more resources have been invested in Lahore as compared to other cities, which, has aggra-



vated the problem instead of solving it. If the trend of allocating more resources on basis of the 'first city bias' persists, it will keep attracting more people and thereby; undermining its ability to achieve targets under this goal.

Target 11.6: Environmental Impacts

Due to the pressures on the city mentioned above, the overall environment, including the quality of air and water has degraded drastically in Lahore. In 2021 the Air Quality Index named Lahore as the world's most polluted city in terms of its air quality for the fourth time in a row (IQAir 2022).

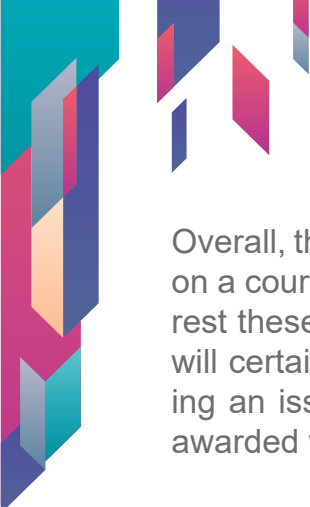
In addition, the city suffers from unprecedented levels of smog in winter months. This is because over the past decade and a half Lahore has lost 70 percent of its tree cover due to the construction of highways, underpasses, and overhead passes built to meet the needs of the steadily growing population (The Business Recorder 2020).

Similarly, the Water Quality and Consumption indicators are consistently facing a downward sloping trend. The water consumed in Lahore is entirely dependent on the groundwater reserves. It ranges from domestic use – which has the largest share at 53 percent – to industrial / commercial, even including agriculture usage (MMP 2019). Studies show that there is a significant difference between the discharge and the average recharge of the aquifer. The total discharge is 2748 MCM per annum while the recharge is 2372 MCM (MMP 2019). This translates into an annual shortfall of 346 MCM.

Due to this continually increasing demand of water, the groundwater table of Lahore is depleting at a rapid speed. So much so, that in the past 30 years, the groundwater table under the city has been decreasing by 0.5 meters per annum on average (MMP 2019).


Target 11.6 aims to minimize the adverse impact of cities on air quality, municipal and other waste management. As things stand, not only is the city not able to meet Target 11.6, but it is also falling short of Target 6.4 of the SDG 6: Clean Water and Sanitation (UNESDA 2021). The water supply to Lahore, faces a two-pronged threat. On the one hand there is relentless over exploitation of groundwater, on the other the already decreasing water table is being polluted with effluents from the industries based in the city and leakages from the sewerage system (MMP 2019).

Moreover, collection and disposal of solid waste remains a fundamental challenge to the environment of the city. Currently, Lahore generates more than 6000 tons of garbage per day. Plus a significant proportion of wastewater and solid wastes are dumped directly into storm water drains. The city does not have the capacity or even the wherewithal to manage such a large amount of waste.



Overall, this rising pressure has expedited the degradation of environment. The city is set on a course to miss Targets 11.6. If the population pressure persists, it will be hard to arrest these environmental degradations. As discussed earlier, spending more on Lahore will certainly not resolve the environmental issues. Rather, the solution lies in developing an issue-oriented approach whereby development allocations are understood and awarded within the context of the increasing migrations to the city.

Conclusion & Recommendations



Using First City Bias as a lens, this policy brief concludes that disproportionate population flows towards Lahore are adversely impacting the achievement of targets under the SDG 11. As it stands, Lahore suffers from severe housing and transport shortages and rapid environmental degradation. Yet it is receiving the highest per capita development funds from the government and that too at the cost of other cities. This has three-pronged effect. First, it is reinforcing migration to Lahore; second, it is exacerbating the current pressures on the target sectors discussed above and thirdly, other cities are not developed enough to share the burden of relentless urbanization. In absence of balanced growth strategies which could curb the migration to Lahore and related pressures, the city has become unsustainable. Bearing in mind the future growth projections, the city is most likely to miss its SDG targets.

In light thereof, the following policy recommendations would help reduce migration to Lahore and accelerate progress towards achieving the SDG 11:


1. The Provincial Government has been indirectly encouraging migration to Lahore by disproportionately investing in and developing better health, education, transportation, and economic opportunities in the city; this demands a balanced and alternate policy approach. The Government should plan in investing in other medium and large cities by raising budgetary allocation for development of all these amenities in those cities to reduce the pull towards Lahore.
2. Capacity of the development agencies should be built to better manage urbanization in cities. Their capacity to generate and analyze data, engage with community and urban planning should be focused on. This would help in reducing uneven and ill targeted development in cities thus reducing migration.
3. A regional urban planning agency should be established which supports The Urban Unit. This agency should define the regional land classification in to urban, peri-urban and agricultural land with the aim of promoting balanced urbanization at the regional level.
4. Special Economic Zones and Industrial Parks should be developed in other cities to promote economic growth and employment opportunities.
5. Disaggregated data on migrants on the basis of gender, age and socio-economic status of the migrants should be developed to formulate sound policy interventions to discourage migration to Lahore.

6. To discourage migrants, city should strictly enforce the housing and town planning rules. This would discourage the development of illegal private housing societies in the city. Growth of informal settlements and slums should also be curbed because most of the migrants from low economic strata tend to settle in slums which is threatening the sustainability of the city and is attracting migrants.
7. The administrative functions and services are overly centralized in Lahore. Most of these functions except those related to policy making should be decentralized to district and tehsil levels. Therefore, the District government and Mayor of Lahore should be empowered to deal with developmental issues of the city.

Bibliography

- Bank, World. *Urban Population Growth (Annual %)*. 2020. <https://data.worldbank.org/indicator/SP.URB.GROW>.
- Board, Punjab Planning & Development. "Annual Development Programs 2017-2021." Government Document, Lahore, 2021.
- Buchholz, Katharina. *How has the world's urban population changed from 1950 to today? World Economic Forum*. November 04, 2020. <https://www.weforum.org/agenda/2020/11/global-continent-urban-population-urbanisation-percent/> (accessed October 30, 2021).
- Chaudhary, Ahmad. "Lahore's roads to nowhere." *The City Fix*. February 26, 2015. <https://thecityfix.com/blog/lahore-pakistan-infrastructure-road-safety-traffic-congestion-car-ownership-ahmad-chaudhary/>.
- Ghafoor, Naghmana, Mehr Un Nisa, and Muhammad Riaz Akbar. "Socioeconomic Determinants of Migration in the City of Lahore, Pakistan." *Journal of the Knowledge Economy*, 2021.
- Hasan, Syed. *Sustainable Urbanisation in Pakistan and Lahore: Challenges and Way Forward*. Background Paper, Lahore: Asia-Europe Foundation, 2021.
- IQAir. *Air quality in Lahore*. January 06, 2022. <https://www.iqair.com/pakistan/punjab/lahore>.
- Jabeen, Nasira, U. Farwa, and M. Jadoon. "Urbanization in Pakistan: a governance perspective." *Journal of the Research Society of Pakistan* 1, no. 54 (2017): 127-136.
- Khalti, Sher Ali. "1,044,837 vehicles registered in eight months in Punjab." *The News*. September 18, 2021. <https://www.thenews.com.pk/print/893284-1-044-837-vehicles-registered-in-eight-months-in-punjab>.
- Khan, Asad Ali, Sana Arshad, and Muhammad Mohsin. "Population growth and its impact on urban expansion: A case study of Bahawalpur, Pakistan." *Universal Journal of Geoscience*, 2014: 229-241.
- Majid, Sheikh. *Transport Plan for Lahore and Puzzled Bureaucrats*. May 2019. <https://www.dawn.com/news/1480727> (accessed January 10, 2022).
- MMP. "Preparation of master plans for water supply, sewerage and drainage sector for Lahore." *Water Projects*. 2019.

- Numbeo. *Quality of Life Index by City 2022*. 2022. <https://www.numbeo.com/quality-of-life/rankings.jsp> (accessed January 05, 2022).
- Rafia Haider, CEO LWMC, interview by Author. (January 2022).
- Recorder, Business. *Lahore's 70pc forest cover lost in 15 years: SAPM*. November 10, 2020. <https://www.brecorder.com/news/40031738>.
- Rescue1122. *Consolidated Report of Emergency Calls and Rescue Operations In Punjab*. Lahore, 2022.
- Review, World Population. *Lahore Population 2022*. 2022. <https://worldpopulationreview.com/world-cities/lahore-population> (accessed January 05 , 2022).
- SDG Tracker. 2022. <https://sdg-tracker.org/cities#targets> (accessed January 12, 2022).
- Shirazi, Safdar Ali, and Syed Jamil H. Kazmi. "Analysis of Population Growth and Urban Development in Lahore-Pakistan using Geospatial Techniques: Suggesting some future Options." *South Asian Studies, Vol 29, No 1* , 2014.
- Statistics, Pakistan Bureau of. *Provisional Summary Results of 6th Population and Housing Census-2017*. Government of Pakistan, 2021.
- "The Urban Unit, Rapid Housing Assessment of Punjab." 2021, 71.
- Todaro, Michael P, and Stephen C. Smith. *Economic development*. Pearson UK.: Pearson India Education Services, 2020.
- UNDESA. *World Urbanization Prospects 2018*. New York: United Nations , 2019.
- UNESDA. *Sustainable Development Goal 6*. 2021. <https://sdgs.un.org/goals/goal6> (accessed January 05, 2022).
- UN-HABITAT. "Global Urban Competitiveness Report." 2018.
- UN-Habitat. "The State of Pakistani Cities." 2018.
- Unit, The Urban. *Punjab Spatial Strategy 2047-Technical Paper 3 Cities and regions, Lahore*. Planning and Development Board, Government of the Punjab, 2019.
- WB. *Migration and the job issues for the 21st century. Social Protection and Jobs Global Practice*. Washington DC: World Bank, 2019.
- "World Urbanization Prospects." *UN Department of Economic and Social Affairs*. 2018. <https://population.un.org/wup/Download/> (accessed 1 05, 2022).
- Yuen, Belinda, and Anthony G.O.Yeh. *High-Rise Living in Asian Cities*. Springer Science+Business Media B.V., 2011.
- Zohaib Chaudry, Deputy Director (Coordination) LDA, interview by Author. (December 2021).



This Policy Brief is a result of a course module designed by the Centre for Public Policy and Governance in collaboration with the Civil Services Academy, Pakistan Administrative Services (PAS), for the 3rd Specialized Component of the 32nd Mid Career Management Course. The aim of the module was to provide the officers with an understanding of evidence-based policy making through a practical approach to data collection, analysis, policy critique and research writing. Each Policy Brief highlights a particular development challenge under the theme of the Sustainable Development Goals (SDGs) and provides policy recommendations in the form of actionable solutions that reflect the experiences of CPPG Faculty and the PAS officers.

Other Policy Briefs in the Series:

- Good Health and Well Being: Achieving Sustainable Development Through Adaptive Public Healthcare Policies
- Sustainability of Lahore: How can the city meet its SDG 11 targets?
- Street Vending: Secure Livelihoods and Sustainable Cities