



TECHNICAL PAPER 1

DRIVERS FOR CHANGE



1. DRIVERS FOR CHANGE

1.1 TRANSITIONS HAPPENING IN PUNJAB

The foremost need before envisioning Punjab’s future at completing its centennial on 100-year-journey is to first recognise the factors and resources which are driving its development, changed the dynamics of Punjab in past seven decades, and will largely contribute in future also. These on-going transitions mainly include dimensions of demographics, which are largely influenced by increasing share of youth; rapid Urbanization that is demanding services and houses for dwellers and portrays opportunities with sharpening strains on ecosystem and service delivery. Other parallel transitions taking place in Punjab are in shapes of improving infrastructure, education, energy, and information that has improved socio-economic fabrics of the province as well as posited challenges towards the environment and ecology parameters. A brief outline of these transitions is presented below:

- **Demographic transition** has made Punjab most populous province of the country with its 110 million inhabitants (Population Census, 2017)¹. Incremental growth of Punjab is lower than the rest of provinces, but southern Punjab has posted above average growth rates despite mounting migrations to central and north Punjab. The growing working age population shall need more resources and jobs to increase quality of life in the province.
- **Urban transition** in Punjab has been the highest in the country since 1947 that has emerged with 194 urban centers across province. Punjab has become the second most urbanized province of Pakistan with above 37% of its population living within the demarcated cities’ boundaries and growing by above 3% annually. The trend; however, portrays challenges and needs for transforming existing cities and planning for developing new cities.
- **Economic transitions** in Punjab change the dynamics of country as it contributes above 60% in national’s economy. The province has been serving as food basket, manufacturing and services hub for the whole country but still has very limited global linkages and export-orientation. Punjab economy’s transformation is needed to optimize its contributions and help Pakistan catch-up emerging world.

1.1.1 Demographic transition Increasing Population

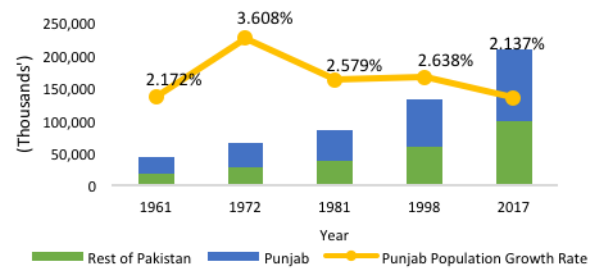
Since becoming a sovereign state in 1947, Punjab has experienced demographic transitions, which can be traced to socio-economic conditions, government policies and family planning. The first census was conducted in 1951, which indicated a population was greater than 33 million. After 67 years, the 6th population census revealed a population in

¹ PBS (2018). *Population Census 2017 (Interim Results)*. Islamabad: Pakistan Bureau of Statistics, Government of Pakistan.

excess of 110 million. The figure indicates the decline in proportion of Punjab’s population relative to Pakistan. Despite this decline, Punjab still holds the crown of being the most populous province in Pakistan, with the highest potential to drive the economic development.

The population of Punjab grew from 47 million (Population Census, 1981) to around 73 million (1998 census) reflecting fast inter census rate of 2.64%. The rate had led to a doubling of people in just 31 years from 1981-2011. After 1998, the population grew from 73 million to 110 million in 2017. This reflected a 2.13% growth rate, which could imply doubling of population in 32 years if the growth rate is maintained.

Figure 1.1: Punjab and Pakistan Population Growth



Source: PBS (1961, 1972, 1981, 1998 and 2017), National populations Censuses

One of the pivotal factors in this growth in population is a fertility rate. The total fertility rate for Punjab has overall declined from 1990-91 from 5.4 to 3.5 children per woman in 2017. Despite this fall, around 3 million births occur in Punjab on an annual basis with a net annual addition of estimated 2.2 million people. With this onset the population density has risen from 230 persons in 1981 to 536 persons per sq. km (Punjab Population Policy, 2017)². Southern Punjab has observed comparatively a higher population growth i.e. DG khan and Bahawalpur have experienced population growth rates of 2.81% and 2.16%. This trend is not surprising as the division of DG khan experienced the largest TFR of 4.8. Moreover, Bahawalpur and DG khan are one of the lowest users of contraceptive methods 29% and 25% respectively compared to the Punjab average of 39%. Despite these population trends, the top migration divisions are Lahore and Sahiwal with density of migrants at 38.4 and 17.3 population per km². In comparison to these, divisions of Bahawalpur and DG khan have meagre density of migrants at 3.4 and 1.7 populations per sq. km (MICS, 2014)³. Such low densities are attributable to the unequal growth opportunities and lack of basic civic amenities and infrastructure.

If the present population growth rate (2.13%) remains constant, the population of Punjab may surge to 144.6 million. However, according to the medium population growth scenario, the population of Punjab is projected to grow by

² Population Welfare Department (2017). *Punjab Population Policy, 2017*. Lahore: Population Welfare Department, Government of the Punjab

³ BOS (2014). *Multiple Indicators Cluster Survey (MICS), 2014*. Lahore: Punjab Bureau of Statistics.

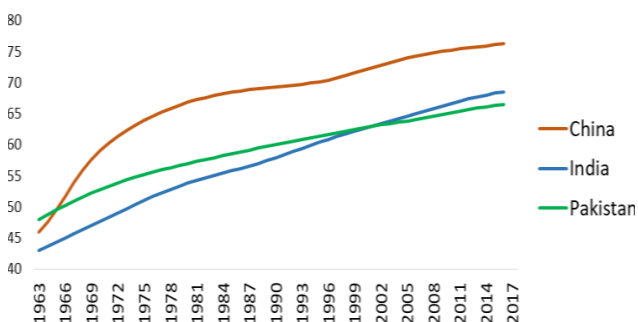


135.6 million by 2030 (Punjab Population Policy, 2017) ⁴. Accordingly, a sustainable urban and labor force planning is required to accommodate the increased population.

Growing Life Expectancy

In terms of life expectancy at birth, Pakistan is behind its regional neighbours. In Pakistan, on average, a person is expected to live up to 66 years of age compared to 69 and 76 in India and China, respectively. The chart below indicates the pattern of life expectancy over 58 years. The chart indicates that China's life expectancy improved, due to better health care and development. Moreover, India has steadier growth in comparison to Pakistan, indicating similar improvements.

Figure 1.2: Life Expectancy Comparison



Source: World Population Prospects, 2017

Similarly, China is facing the issue of aging population. Aging has been associated to lower productivity and decline in manufacturing industry.

If demographic dividends are to be gained, then Punjab has to achieve a TFR of 2.1 by 2030. Supportive measures are needed in education improvement, contraceptive use, and women empowerment and integrated family planning. For balanced development. These measures along with provision of basic amenities need to be undertaken especially in the divisions of southern Punjab.

Augmenting Youth bulge

Punjab has been blessed with a youthful population. The dynamics of Punjab's population reveal that there is a youth bulge (population age 15-29). Approximately, more than 61% of Punjab's population is younger than 35 years. This trend is predicted to expand further in coming years. This implies that Punjab has entered a phase of potential demographic dividend (rising share of working age population in total population). The figures below indicate the change in the age structure between 1981 to 2017. It is clear that the youthful population has bulged for both the genders. Moreover, there is an increase in the working age population (those aged 15-64). This trend is expected to remain consistent for future also.

Furthermore, it is forecasted that between 2018 and 2047, number of people within labor force (18-60 years) is expected to increase up to 40% from 36% (Punjab Population Policy, 2017). Whereas the proportion of youth population, and children are expected to decrease slightly in Punjab.

However, this youth bulge can yield demographic dividends; provided there are employment opportunities. Punjab has an opportunity to drive economic growth on the back of its rising working-age population. This population has boasted a compound annual growth rate (CAGR) of 2.13% since 1998 a situation often referred to as demographic dividend ⁵. However, due to limited efforts, the youth of Punjab was not mainstreamed at optimum levels, in particular females. Over the next decade, Punjab is expected to add almost 10-12m people to its workforce and 20-30 million people thereafter every decade, with the working-age population crossing the 100 million mark before 2037. Providing employment for these people should be the focus of government planning.

Enhancing Female Participation in Job Markets

Pakistan in 2017 had approximately 48.7% females in its population. It is further estimated that close to 22% females older than 15 years of age are in employment; the employment to population ratio, for males older than 15 years of age is approximately 77.5%.

Currently the labor participation rate of Punjab for population of age 15-65 stands at 61%. In this category males have a participation rate of 84.7% and females have a participation rate of 37.5%, which is well below rates for countries with similar income levels. Even among women with high levels of education, labor force participation lags. This low female labor force participation represents a major loss of potential productivity. It also has important implications for women's empowerment, as working women are more likely to play a role in household decision making compared with nonworking women in the same villages or even in the same families.

With growing participation rate, female participation will be doubled in next thirty years that will increase the overall jobs need. Considering the demographic transitions, province would require 60 million new jobs by 2047 to accommodate the labor force and improve female participation in the economy.

Figure 1.4: Punjab Demographic Forecasts

Parameter	2017	2027	2037	2047	CAGR
Punjab Population (millions)	110	133	158	180	1.72%
Working Age Population (millions)	69	86	108	125	2.07%
Labor Force Participation Rate (%)	61%	66%	70%	80%	1%
Active Labor Force (millions)	39	52	72	96	2.60%
Per Year Jobs needed (millions)	-	1.2	2	2.4	-

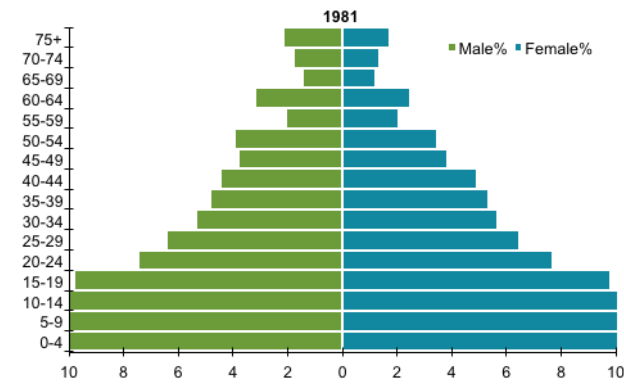
Source: Urban Unit Projections based on Punjab Population Policy, 2017 and UN Population Prospectus 2017

⁴ Population Welfare Department (2017), *op. cit.*

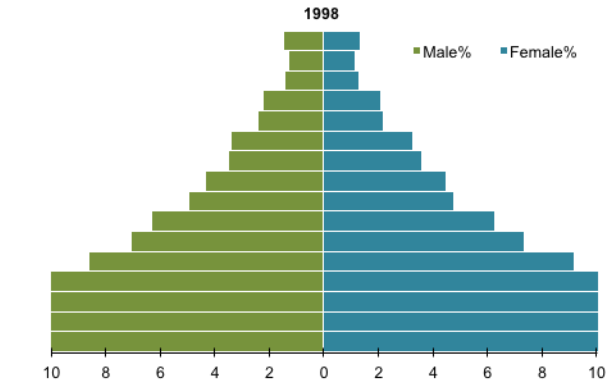
⁵ PBS (2018). *op. cit.*



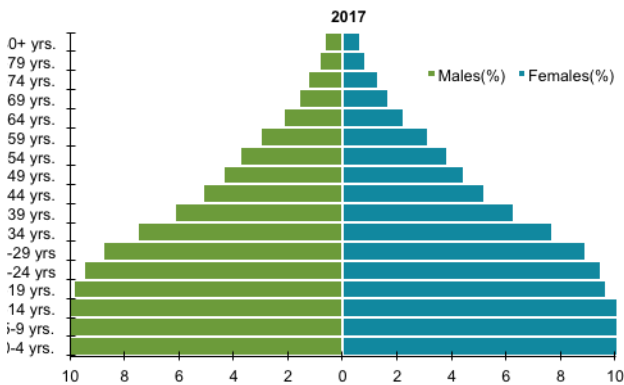
Figure 1.3: Age-Sex Distribution of Punjab's Population



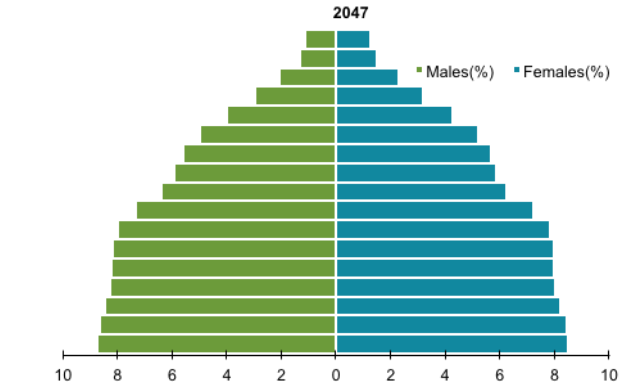
Source: 1981 Census Report Pakistan



Source: 1998 Census Report



Source: UN World Population Prospectus 2017 Revision, International Data Base (online).



Source: UN World Population Prospectus 2017

Witnessing strong Migration Trends

Findings indicate that major cities of the Punjab, i.e., Lahore, Rawalpindi, Faisalabad, Gujranwala and Multan are the major recipient of migrants. These major districts receive 55% of total migrants from both rural and urban areas to the urban areas of Punjab. District Lahore receives the highest percentage of migrants (23% of total), followed by Rawalpindi, Faisalabad, Gujranwala and Multan respectively. The following figure indicates the migration trend of Lahore for the past 10 years (LFS, 2014-15)⁶.

As the map shows, the services sector has a higher employment concentration in Lahore than in the industries sector. Both male and female migrants to Lahore in the past 10 years are mostly employed in services sector. 65% of the migrants in Lahore have indicated rural area of the district, as their previous residence while migrants from urban district comprises of 35% of the entire migrant population of Lahore. In corroboration with the literature, most of the migrants in Lahore are coming from districts where the major portion of labor was employed in the agriculture sector. This in turn suggests better job opportunities in the service sector of the urban Lahore district.

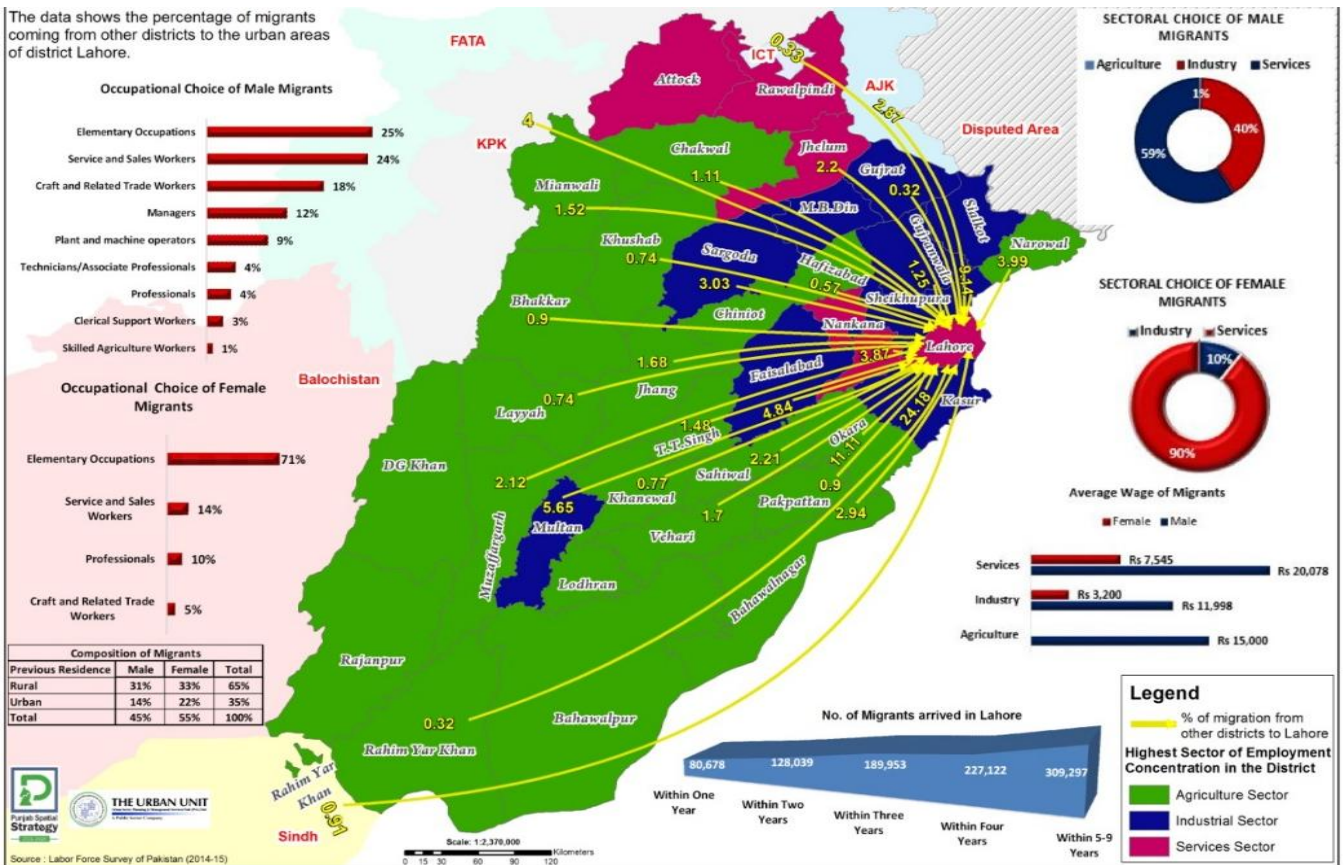
The figure below corroborates the earlier migration patterns. In Punjab, developed cities are the economical hubs attracting

migrants. The top cities are Lahore, Rawalpindi, Faisalabad, Gujranwala and Multan. The width of the bars indicates the density of migrants coming into a city.

⁶ PBS (2015). *Labor Force Survey of Pakistan 2014-15*. Islamabad: Pakistan Bureau of Statistics.



Figure 1.5: District-wise Migration towards Lahore



Source: Urban Unit Analysis based on LFS 2014-15 Microdata

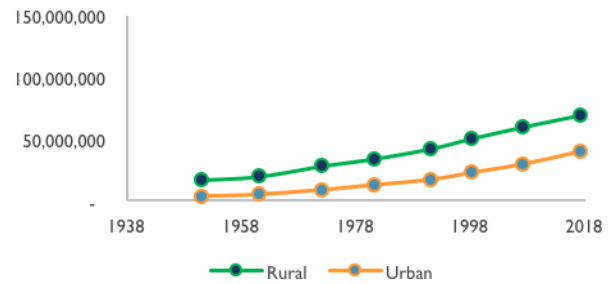
1.1.2 Urban transition

Punjab has been the most rapidly urbanizing province of Pakistan. In 1951 only 17.4 percent of Punjab's population was living in urban areas; in 2017 the figure exceeds 37 percent of total provincial population of 110 million. Indeed, the city of Lahore alone has a population today that is three times of the total urban population of the Punjab in 1951 and half of the overall population of 1951. Punjab has five cities, other than Lahore, above 1 million populations, and another ten cities with population between 500,000 and one million inhabitants. The 194 cities of Punjab occupy only 1.37% of Punjab's area. Of this urban land, 87% is occupied by 50 major cities of Punjab.

Moderate Urbanization Rate

Urbanization rate of Punjab has steadily increased over the years and currently stands at 2.74%. As per current trends urbanization rate is expected to increase and the population living in urban areas will surpass that living in rural areas by 2037. It is hence essential to implement proper city planning to cater to increased urbanization trends.

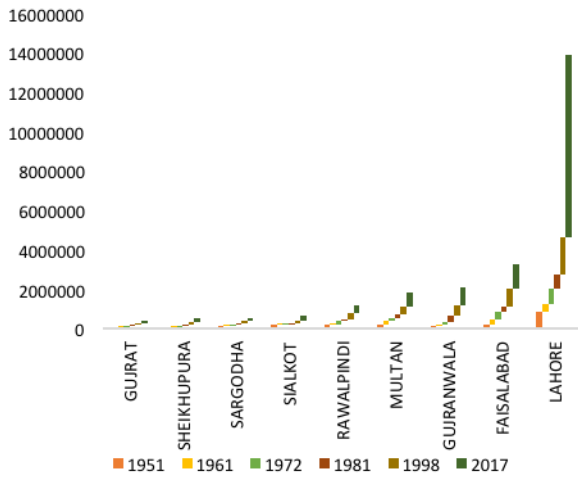
Figure 1.6: Urban and Rural Population Increase



Source: Populations Censuses (1951 to 2017)



Figure 1.7: Inter-census Population Increments



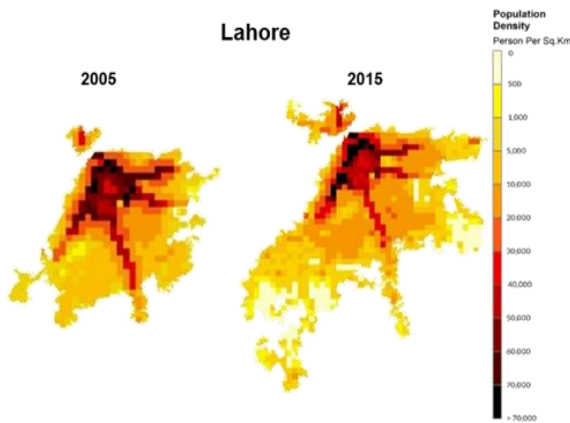
Source: Six population Censuses from 1951 to 2017

Densities

Around 60% of the area of Punjab has a low population density. Lower density developments do not ensure true land value capture and increase cost of service delivery.

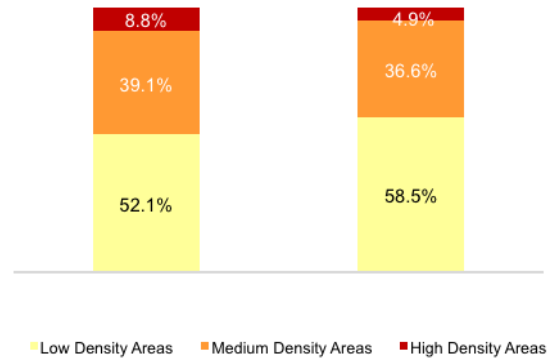
Currently, the population density of Lahore stands at 14,583 p/sq. km. Urban sprawl has led to a lower density development in the outskirts of the city.

Figure 1.8: Lahore Population Density Comparisons



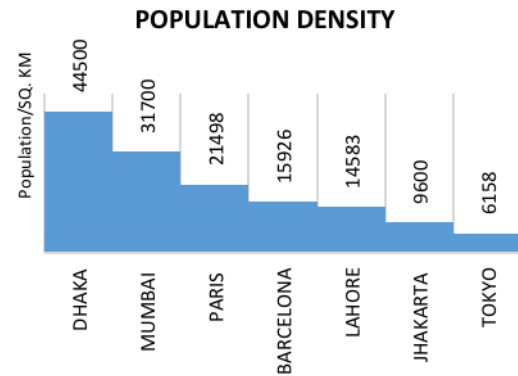
Source: Urban Unit (2017), "Punjab Cities Growth Atlas"

Figure 1.9: Punjab Density Area Composition



Source: Urban Unit (2017), "Punjab Cities Growth Atlas"

Figure 1.10: Population Density of Major World Cities



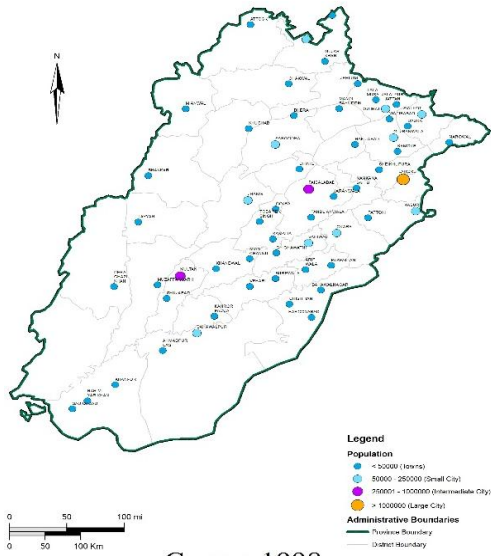
Source: World Economic Forum, 2017⁷

The chart above shows a comparison of Lahore with other Global cities including Barcelona and Paris. Relatively, Lahore's population density is much lower than some of the global cities such as Paris or Mumbai. This indicates towards the lack of planned growth, which has led to the lateral expansion of the city instead of vertical expansion. Vertical orientation makes for more efficient city infrastructures and reduces cost of service delivery.

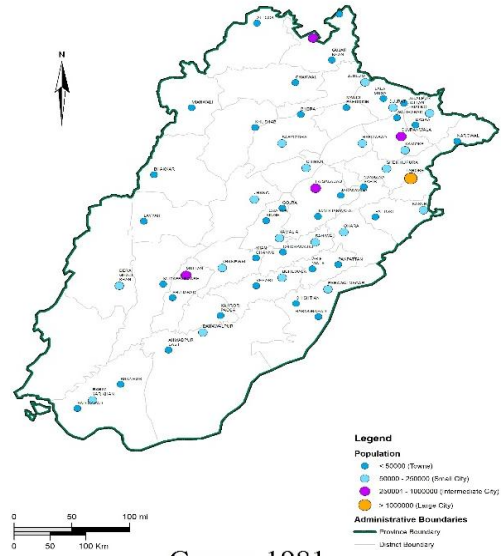
⁷ World Economic Forum (2017). These are the world's most crowded cities. Accessed online from <https://www.weforum.org/agenda/2017/05/these-are-the-world-s-most-crowded-cities/>



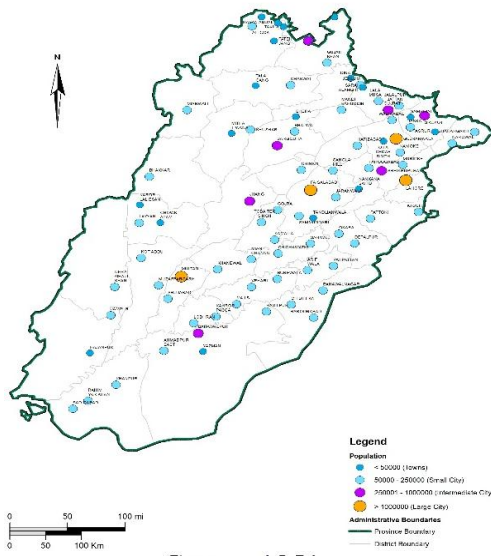
Census 1961



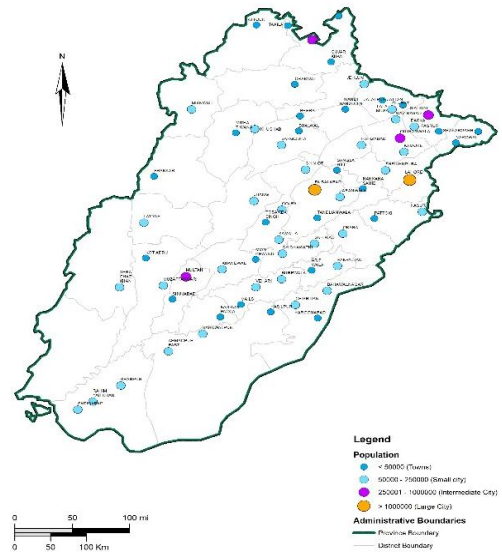
Census 1972



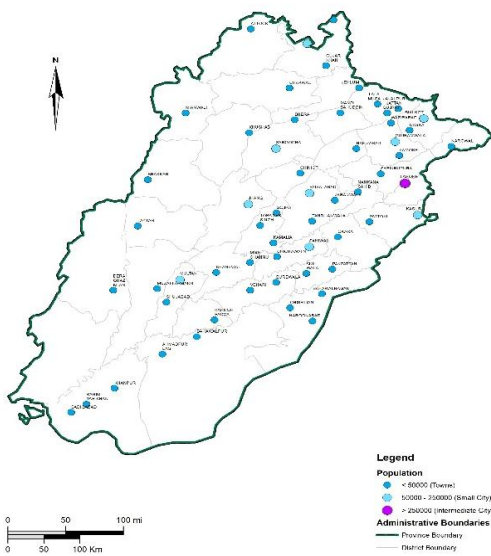
Census 1998



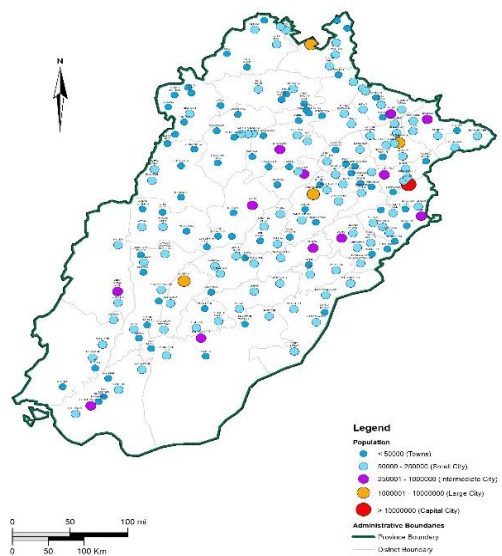
Census 1981



Census 1951



Census 2017



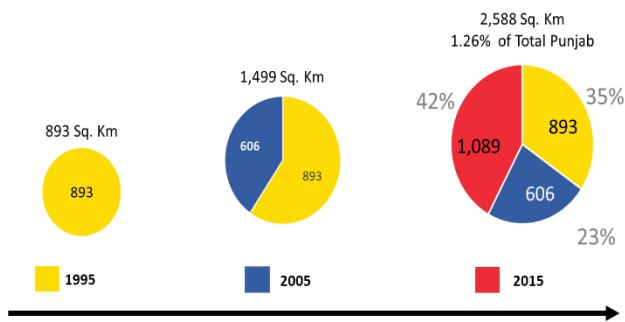


Expansion of Urban Footprints

The maps below show the expansion of major cities in Punjab from 1995 to 2015. Over the years, most of the cities have expanded either vertically or horizontally due to unplanned sprawl. Most of the city expansion is fueled by unapproved residential societies, which contribute most significantly to urban sprawl. The charts below depict the decade-wise urban expansions of the 50 major cities of Punjab.

Moving forward, it is essential to curb lateral expansion of cities and promote vertical expansion for both residential and commercial development. Below is the decade-wise increase in urban area of Punjab. The largest increase has come in the last decade.

Figure 1.12: Decade-wise Expansion of Punjab Cities



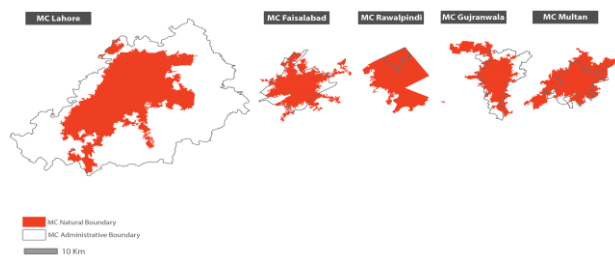
Source: Urban Unit (2017), "Punjab Cities Growth Atlas"

Urban Sprawl

As per estimates, only 41% area of the top-fifty cities of Punjab planned and most of the development is unplanned.

These has been an over emphasis on residential development and new developments have mainly focused on providing residential areas and uses. Currently, only 45% of the housing schemes in Punjab are approved. This has led to a non-optimal urban development. With only 3% designated to public facilities, there is an obvious lack of integration of effective transport systems, which hampers manoeuvrability. Proper master planning is required for the cities of Punjab to allow them to expand in a sustainable manner and transition into more liveable cities. Following figure depicts the expansions and demarcated boundaries of the top five cities of the Punjab.

Figure 1.13: City Expansion relative to Demarcated Boundaries

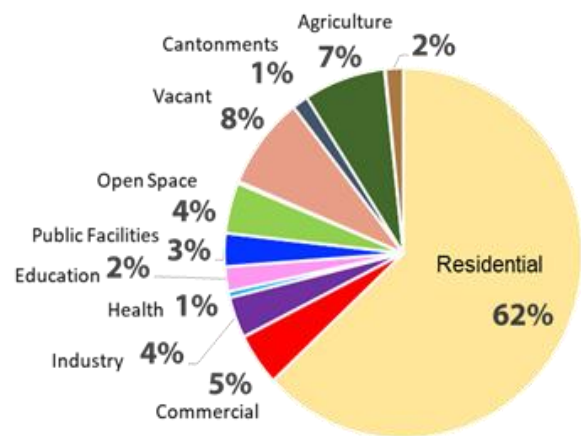


Source: Urban Unit (2017), "Punjab Cities Growth Atlas"

Odd Urban Land usage

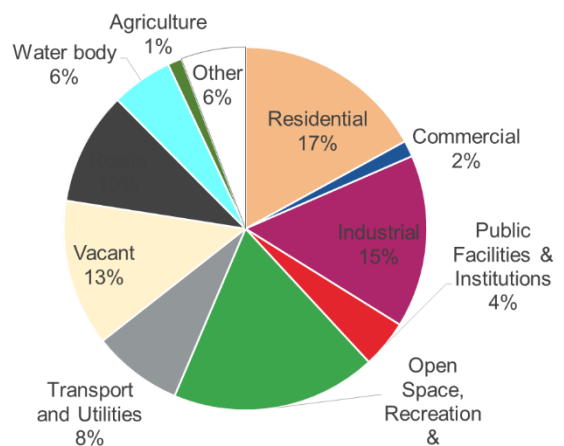
As labor moves from rural to urban areas, economic productivity is expected to increase due to better opportunities in urban areas. However, thus far Punjab has not witnessed such productive urbanization due to various issues hampering the productivity of the industrial and services sectors. As per findings garnered during analysis, Punjab urban centers have not yet transformed into economic hubs. Less than 10% urban areas are meant for pure economic activities, industry 4% and commercial 5%, while above 60% are for housing purposes only. Punjab's urban centers should transform into economic engines by expanding areas of economic and recreational activities instead of just housing.

Figure 1.14: Land use in Punjab for 50 Cities 2015



Source: Urban Unit (2017) "Panjab Land Use Analysis"

Figure 1.15: Singapore Land-use



Limited Urban Services and Infrastructure

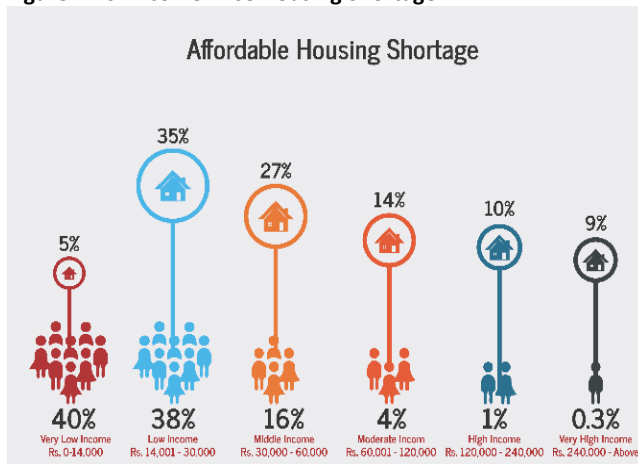
Due to the lack of proper urban plans and their implementation thereof, the cities of Punjab are confronted with several major issues. With an increasing trend of



urbanization, the major cities of Punjab are becoming stressed. This has aggravated the housing shortage problem, with many middle and low-income families struggling to find affordable housing in the cities.

The total housing shortage in Punjab stands at around 2.4 million for the year 2017. With an aim to increase urbanization to 70% by 2047, demand for housing may increase to approximately 26.25 million units in the urban areas of Punjab. Bulk of the housing demand comes from the major districts of Punjab. Lahore, Faisalabad and Multan districts make up over 40% of the total housing demand in Punjab for 2017. The lower and middle-income group generate the highest demand for housing. It is hence essential to develop innovative solutions for affordable housing, which these income groups can afford. To cater to the massive housing demand and ensure that the true value of the land is realized, housing projects should have a vertical housing model.

Figure 1.16: Income-wise Housing Shortage



Source: Urban Unit (2017), "Affordable Housing Shortage in Punjab"

Increasing population of cities and low-density development in the form of sprawls puts added strain on municipality services such as waste management and sewerage as the cost of service provision increases. Transportation issues are also significant in these major cities. There is no integrated transport plan and transport management system. Additionally, there is no single agency responsible for the public transport sector. Currently it is managed by more than four agencies. PTAL's index calculations for Lahore show that 65% of the population have poor to very poor accessibility to public transport (Urban Unit, 2017⁸).

There is also a need to make the cities more inclusive and sustainable. Safe public transport for women is ignored in many of the major cities of the province. The main focus of development in these cities has been residential areas due to which public places and facilities occupy only 3% of the land-use in cities.

There is a need to provide policy framework for city development and improving city governance. Additionally, there is a need to manage city densities and controlling sprawl. This is essential to improve the liveability of cities in Punjab.

⁸ Urban Unit (2017). *Transportation and Connectivity study under PSS*.

1.1.3 Economic transition

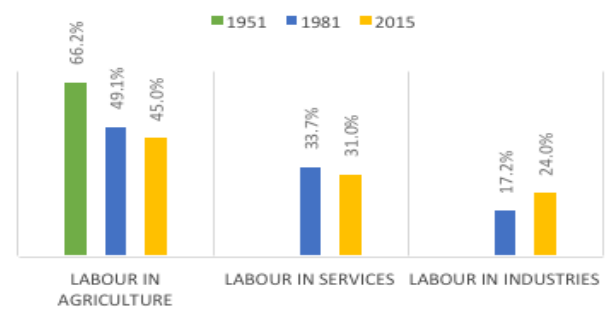
Punjab has been the land with abundant resources of Land, Water and People for centuries. It has been the backbone of numerous empires and dynasties, spawned by the Indus Valley civilization. Present Punjab's economy, which stands at around \$ 180 billion, has always been on the vanguard position in terms of economic development of the country - above 55% share in the national GDP and around \$ 1,600 per capita growing higher than the national average. Due to this pursuit, the nation's macroeconomic position always reflects, by and large, the dynamics of the Punjab province and its progress. Even though Pakistan is at the bottom positions in most of the international development benchmarks, Punjab; however, relatively secures a better position due to its economic structure and thriving human capital.

Water and irrigation have been main driving force for development of Punjab. However, with growing industrialization in modern age, Punjab (and Pakistan as a result) has not been able to perform optimally primarily due to its heavy reliance on the agricultural sector with minimal levels of vertical integrations and thus failed to reap full benefits of the green revolution happened in Punjab during the decades of 50s and 60s. Punjab terrestrial economic activities are well correlated with its irrigation network – a clear juxtaposition of the development in Punjab led by the water economy.

Changing Trends in Labor Composition and Unemployment

Labor composition and unemployment trends have varied over the years with the shifting economic landscape of the province. In 1981, in an era of economic expansion the unemployment rate stood at 3.2%. This was also supported by a low labor participation rate of 28% (Census, 1981). However, in 1998, the unemployment rate shot up to 19.1% in times of economic uncertainty. From there on, the unemployment rate has gradually decreased to 8.1% in 2002 and 6.1% in 2015 (LFS, 2015). The decrease in unemployment rate is supported by the expansion of the services and industrial sectors.

Figure 1.17: Sector-wise Labor Share



Source: Census 1951, Census 1981 and Labor Force Survey 2015

Sector-wise labor share for 1951, 1981 and 2015 show a gradual transition of labor employment from being predominantly agriculture based in 1951 to being semi-industrialized in 2015. In 1981, the share of labor in agriculture was over 66% and the services and industries sector combined accommodated only 33.8% of the labor. Share of labor in agriculture dropped to 49% by 1981. This significant transition was mainly supported by the mechanization of agricultural practices and industrial development in major districts of



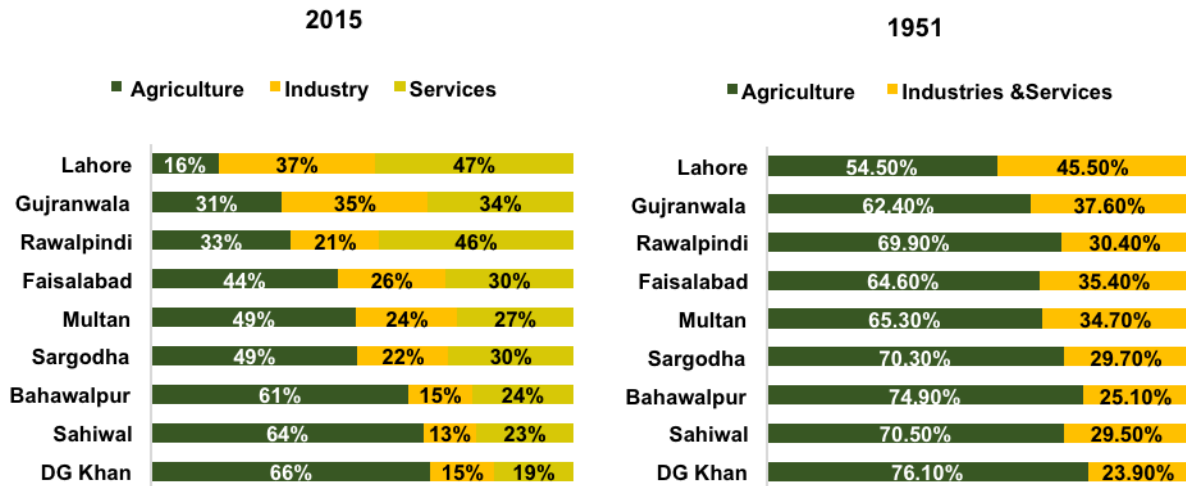
Punjab. From this time forth however, the transition has not been as dramatic. Since 1981, the share of labor in agriculture has dropped only 4% and stands at 45% in 2015.

The decrease in share of labor in agriculture, albeit small, is counteracted mainly by the increase in share of the industrial

Figure 1.18: Sector-wise Composition of Labor at Divisional level

Sector. However, employment in the industrial sector is concentrated mainly in a few industrialized districts. Transition of sector-wise labor share has been more dramatic in the central and eastern districts of Punjab. Share of labor in

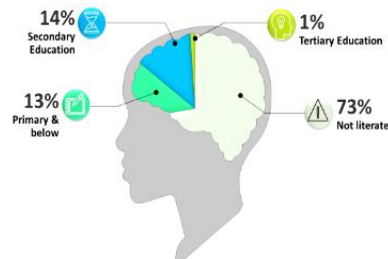
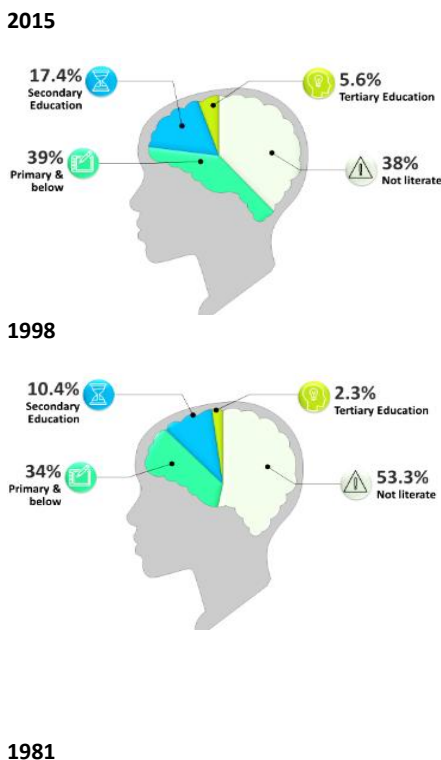
agriculture in Lahore decreased from 55% (Census, 1951) in 1951 to 16% (LFS, 2014-15) in 2015. During the same time frame share of agriculture in D.G Khan in western Punjab saw only a minute decrease from 76% (Census, 1951) to 66% (LFS, 2015). The following charts show the transformation in labor force at divisional level of Punjab from its birth i.e. 1951 to 2015.



Source: Population Census 1951, 1981 and LFS 2014-15

Rising level of Education and Skills

Figure 1.19: Percentage of Population receiving Education



Sources: Population Census 1981, 1998 and PSLM 2014-15

The figures show the educational transition of the human capital of Punjab. Since 1981, there has been a marked decrease in the percentage of illiterate population and the share of population with secondary and tertiary education has increased. This has however, not translated into a significant increase in the productivity levels of the workforce. To achieve that, sector-wise demand-driven skills training is required.

Over the years, percentage of females attaining higher education has improved significantly however; this is not translating into increased participation in the labor force.

Under-Performing Agricultural Sector

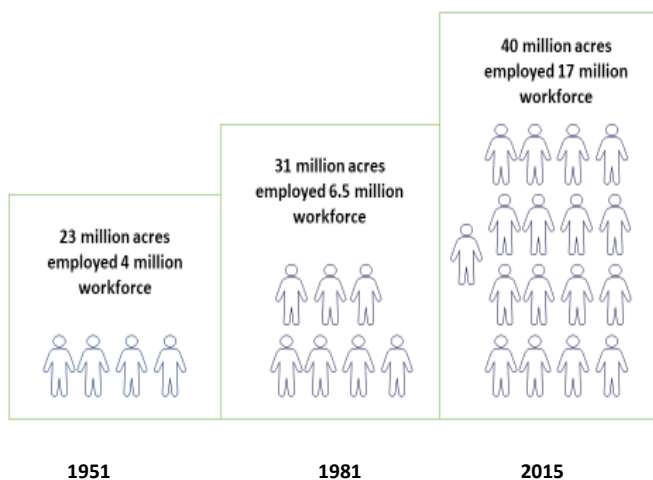
The value added per worker in the agriculture sector of Pakistan has experienced only a mediocre increase from \$1527 to \$1700 (Constant US\$) in the last 25 years. In comparison, the world average increased from \$909 in 1991 to \$2200 in 2016 (World Bank 2016). The value added per worker for



Punjab is even lower than the Pakistan average and currently stands at around \$1600. Despite mechanization, incorporation of modern farming techniques and high-yield varieties, the moderate increase is indicative of over employment and inefficiency in the agriculture sector.

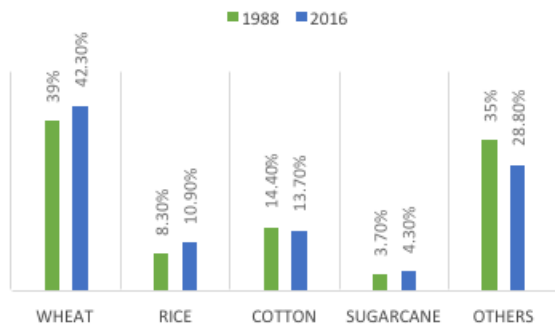
Cropping pattern has remained the same, as it was around thirty years back. There has been no significant shift to high-end cropping practices. This is evident from the figure below. The cropping land has increased around 75% in the past 65 years, however the labor employed in agriculture has increased by 325% during the same period.

Figure 1.20: Cropping area versus employed labor force



Sources: Agriculture Development Plan, PDS 1981, 2016 and LFS 2014-15

Figure 1.21: Crop-wise Cultivated Area of Punjab



Source: PDS 1990 and PDS 2017

The composition of cropped area has not changed significantly over the past three decades. Being an important raw material for the industrial sector, the share of cropped area of cotton should have increased however, the opposite has happened rendering Punjab unable to meet its demand thus having to import cotton.

Punjab's yield, both in crops or livestock does not compare to world's best yields. The yield for wheat in Punjab stands at 28 maund/acre compared to the world's best yield of 91 maund/acre. Similarly, the yield of Punjab for cotton stands at 8 maund/acre compared to the world's best average of 55 maund/acre.

Limited Industrial Expansions

Punjab has transformed from being an overwhelmingly agriculture-based economy to a semi-industrialized economy. As of 2017, the share of industrial sector in Punjab's GDP stands at 22% while the agricultural share of GDP has fallen to 15%. It is, however, important to note that most of the industry in Punjab is agro-based. The sector-wise composition of the industry in Punjab has not changed much since the 60's and 70's. Textiles, wearing apparel and food product industries were and still are the most prominent in Punjab's landscape and both are predominantly agro-based industries. Other important sectors include non-metallic minerals, fabricated metal products and machinery and equipment. These were the most significant industrial sectors in the same era. This is indicative of limited diversification and lack of value chain integration.

Over the past three decades, growth of the industrial sector has mainly been in the light and basic manufacturing sectors however; these sectors are predominantly inward-focused and are not exporting. The share of high-tech industries has decreased over the last 30 years, which is due to the lack of technology integration in the industry. This has led to a low per labor productivity for the industrial sector of Punjab. Currently the value added per worker in the industrial sector stands at \$4,350. In comparison, China has a value added per worker of \$20,000 for the industrial sector.

Preferred industrial location has also remained same over the years. The cities of Lahore, Sialkot, Gujranwala, Gujarat and Multan gained economic importance during the Mughal era. An Atlas of the Mughal Empire, 1595, a publication by Irfan Habib shows that due to their indigenous competitive factors, these cities developed product competencies mainly in agricultural products, carpets, weaponry textiles and embroidery (Habib, 1982)⁹.

Even in modern day Punjab, industrial development in Punjab has been concentrated in these few industrialized districts. Seven of the most industrialized districts i.e. Faisalabad, Lahore, Gujranwala, Sialkot, Multan, Sheikhpura and Gujarat house around 75% of Punjab's Industry (CMI 2015-16¹⁰). There are several indigenous advantages, which have promoted the development of industrial clusters in only these districts. There have been limited efforts to institute these advantages in areas apart from these districts. To diversify the location portfolio of the industrial sector and promoting organized development of industry, the government has established industrial estates in districts like Vehari, but these ventures have failed to attract significant private sector investments. One of the first industrial estates to be established in Punjab was the Kot Lakhpat estate in Lahore in 1960. Since then, 9 large and 20 small-scale industrial estates have been established. Many of these estates have several vacant plots and only a handful of them, in the industrial hubs of Punjab, have succeeded in attracting significant private investment. Currently only 3.5%

⁹ Habib, I. (1982). *An Atlas of the Mughal Empire*. India: Oxford University Press.

¹⁰ PBS & Urban Unit (2018). *Census of Manufacturing Industries 2017-18 (in Punjab)*. An unpublished dataset.



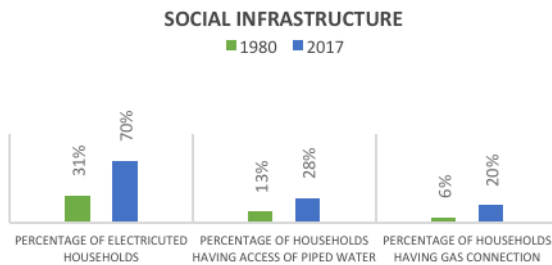
of the industry is located in these estates and these firms employ around 6% of the overall manufacturing sector labor.

Enhancing Social Inclusion

Over the past three decades, there have been significant improvements in providing access to social and health facilities. Investments in infrastructure has improved coverage of these facilities however, there are significant regional disparities in terms of coverage as there are still many unserved areas.

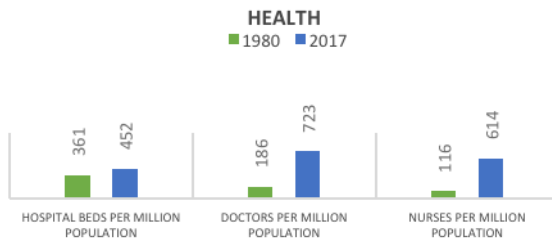
Punjab is facing several health-related challenges with one of the highest malnutrition and infant mortality rates in the world. Currently the hospital beds per million population stands at 452, which is far below the 3500 beds per million populations as advised by WHO. Prioritized investments in state-of-the-art health infrastructure are required in the most deprived districts to bring them at par.

Figure 1.22: Social Infrastructure Transition



Source: PDS 1981 and PDS 2017

Figure 1.23: Health Infrastructure Transition



Source: PDS 1981 and PDS 2017

Expanding Connectivity and Infrastructure

One of the reasons for limited coverage of health services and disparities in industrial development is the limited rail and road connectivity. Over 50,000 Km of new roads have been added to Punjab's connectivity infrastructure in the past three decades, however, only a small percentage of these new roads constitute of national and provincial highways. Resultantly, the ratio of national, provincial and motorways as opposed to all roads in Punjab has decreased from over 50% in 1990 (PDS, 1990¹¹) to around 25% in 2017(PDS, 2017¹²). The road

¹¹ BOS (1991). *Punjab Development Statistics 1990*. Lahore: Bureau of Statistics, Punjab.

infrastructure has not increased in a way to serve the increase in population. Additionally, most of the road infrastructure has been developed in the economic hubs of Punjab such as Lahore and Faisalabad and many of the areas remain relatively inaccessible. Similarly, rail infrastructure has not developed in a way to serve the transport and cargo needs of the province. Being a landlocked province, Punjab requires an efficient and reliable transport system to fulfil these needs.

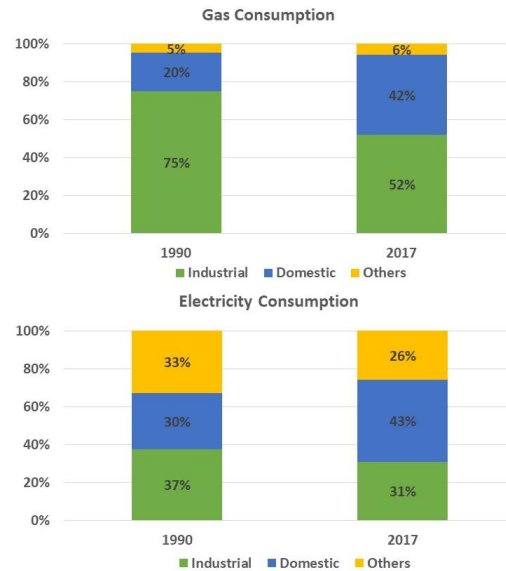
Of the 14.5 million vehicles in Punjab, only 3% constitute of public transport vehicles (Excise department, 2015). Although the physical connectivity infrastructure of the province has expanded but mass transit avenues have not been developed in a sustainable manner causing congestion on roads.

In the last five years or so, digital connectivity has significantly improved due to the introduction of 3G and 4G powered technologies being used by 80 million subscribers across the province (PDS, 2017).

Striving for Sustainable Energy

Punjab's economy has suffered greatly due to energy shortages. Gas consumption has increased from 6.55 thousand Decca m³/capita in 1989 (PDS, 1990) to 9.4 thousand Decca m³/capita (PDS, 2017). Similarly, electricity consumption has increased from 253 KWH/ capita in 1988 (PDS, 1990) to 520 KWH/ capita in 2017 (PDS, 2017). In comparison, India's per capita electric consumption is 806 KWH and for China it is 3927 KWH (World Bank, 2017). Bulk of the increase in consumption for electricity and gas comes from the domestic sector due to the lack of industrial development in the province. Surge in demand and inability to cope with the increase has led to acute energy shortages in the province.

Figure 1.24: Punjab Energy Demand Transition



Source: PDS 1990 and PDS 2017

¹² BOS (2018). *Punjab Development Statistics 2017*. Lahore: Bureau of Statistics, Punjab.



1.2 SHIFT TO STRUCTURAL TRANSFORMATIONS FROM JUST TRANSITIONS

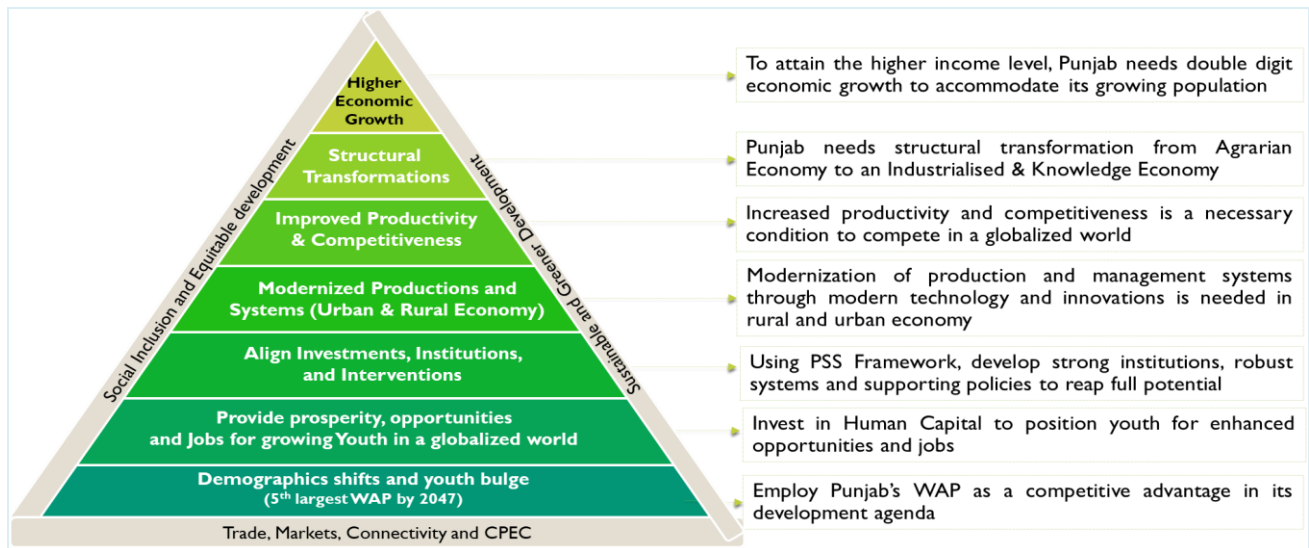
Despite facing various impediments, Punjab has maintained a modest growth in past transitional phases and demands transformation journey to translate its comparative advantages to competitive advantages and accelerated growth alongside. A shift to structural transformation is essential to achieve socio-economic growth across the province to position Pakistan in catching-up the growing economies of the world. Punjab shall, on priority, unlock opportunities for investment

In areas where it has genuine competitive advantages and will also enable growth in those areas where economic activity has been the weakest in past due to prevailing dynamics.

Punjab has a high potential to grow multifariously by leveraging on its natural endowments, abundant human resources and the game-changer — China-Pakistan Economic Corridor (CPEC).

Punjab, by aligning its resources, under spatial planning framework will yield in real and inclusive growth fostering competitiveness. For this endeavor, however, Punjab will have to activate its latent resources, optimize allocations, and realign investment priorities under a premeditated and sustainable roadmap to revitalize its economic shape and growth.

Figure 1.25: PSS Growth Pyramid (2017-47)



On priority, Punjab to revive its industrialization appetite and will opt for a paradigm shift from the predominant agrarian and inward-looking economy to an outward-looking knowledge economy. Most importantly, this structural transformation will integrate the provincial growth agendas and policies. Punjab Spatial Strategy (PSS), therefore, is set to play a significant role in this endeavor. Following is the pyramid of growth for Punjab focusing structural transformation.

As illustrated, the PSS employs a bottom-up approach, and primarily focuses on the due structural transformation of Punjab's economy that will result in higher and sustainable economic growth. The envisaged structural transformation will not happen autonomously; therefore, it will be largely relied upon the consistency and implementation of the proposed policies and actions with support from the government and

private sectors. The PSS will equip the province with structural transformation roadmap by aligning investments, interventions, and institutions at macro, meso and micro levels. Most importantly, for achieving a sustainable growth, Punjab will integrate all its planning, strategies and investments along with a well-coordinated framework of Punjab Spatial Strategy.

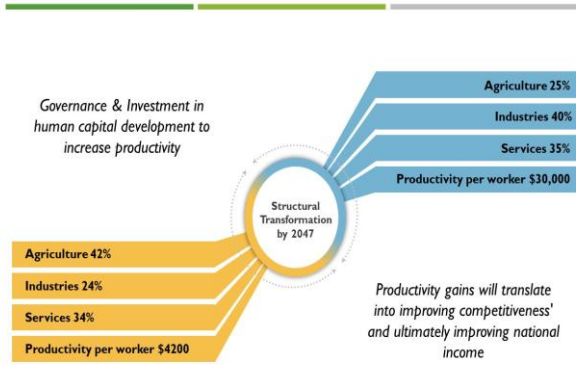
1.2.1. Punjab at 100 — post-structural transformation

Punjab should have bold aspirations if Pakistan to become an upper-middle-income country by 2047 and to improve quality of life of its inhabitants. Punjab can multiply the size of its economy and should target to cross US \$ 3 trillion after thirty years. To reach that level, Punjab must maintain its growth at a compound annual growth rate (CAGR) of above 10% on average until 2047. In this endeavor, Punjab will create above 60 million new jobs for its expanding working age population in next three decades. This rapid growth episode shall



transform the province socio-economic dynamics of the province, especially in the areas of jobs, education, and overall living conditions—only if Punjab propels sustainable and inclusive economic simultaneously.

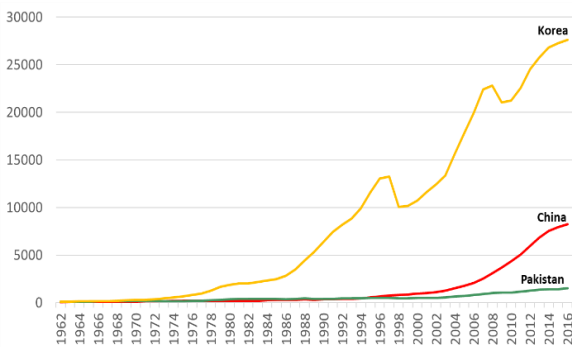
Figure 1.26: Transformation of Share in Total Employed Workforce



The economies that today are labelled as advanced were all able to diversify away from agriculture, and basic manufacturing (e.g., food processing, and textiles). To overcome this improvident economic structure, Punjab will also follow the success achieved by several Asian countries.

Figure below portrays the comparison of China’s and South Korea’s successes with Pakistan’s lagging decades during the course of last fifty years.

Figure 1.27: GNI per Capita in South Korea and China Compared to Pakistan (In USD)



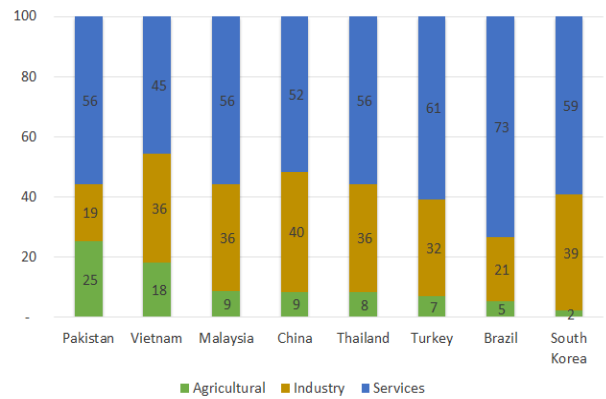
Source: World Development Indicators 2017¹³

Fifty years back in 1967, Pakistan and South Korea had nearly same Gross National Income (GNI) Per Capita. South Korea was at USD 150 and Pakistan was at USD 140. South Korea was able to increase its GNI Per Capita 184 times, while Pakistan was able to increase it only 11 times in 50 years. This was result of structural transformation that happened in South Korea. Similarly, thirty years back in 1987, Pakistan’s GNI Per Capita was USD 400 and China was at USD 320; nearly USD 80 less than Pakistan. In thirty years, China’s GNI Per Capita multiplied by 26 times to reach USD 8,260. In the same period, Pakistan’s GNI Per Capita multiplied by 4 times to reach USD 1,510. The countries that have achieved structural transformation and

¹³ World Bank (2018). *World Bank Development Indicators 2017*. Accessed online database

were able to increase their industrial share of the GDP are reflected in the figure.

Figure 1.28: GDP Share of Countries (in percent)



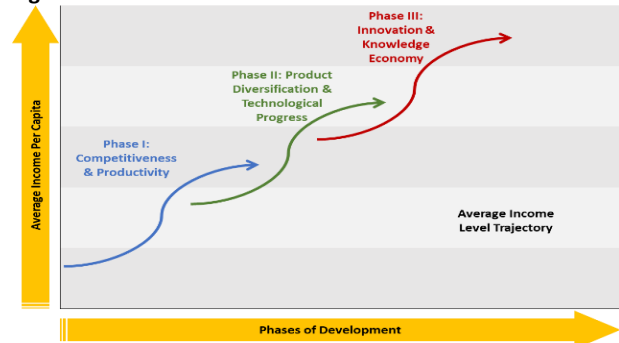
Source: World Development Indicators 2017

1.2.2 Transformation in phases

Competitiveness & Productivity – The First Phase (2018-27)

The first phase will primarily promote factor-driven growth and concentrate on the existing strengths of Punjab. The focus would be on the available resources and comparative advantages to exploit maximum opportunities with limited financial implications, trade-offs and complexities. In addition to comparatively low-priced labor, Punjab has locational advantages and natural endowments, which source raw materials for many industries.

Figure 1.29: Phase-wise Transformation



This phase would require spatial positioning in Punjab with optimizing locational advantages. Punjab has a strong base for agricultural products and modernization of production techniques can result in significant agricultural productivity gains. Spatial alignments of investments in relation to location of high value cropping zones, processing industry for agriculture and development of Industrial corridors and Special Economic Zones for value added production are necessary.

These investments in right direction will position Punjab with increased efficiency through investment to be guided through spatial lens. Processing as key driver of agro-based industry will generate surplus incomes for farms to laborers. This is possible if spatially aligned investments in farm-to-market infrastructure are made and ensuring connected settlements across Punjab.



Medium tech industrial production focusing on capturing international markets as well as local demand will be promoted. At this stage of transformation, the key purpose is to achieve maximum efficiency in the given paradigm. Skill development and investment climate reforms will be key policy actions for this transformation to occur.

Punjab can similarly attract investment low technology labor-intensive sectors for relocation. Punjab can enter the Global Value Chains, but its penetration will be at the bottom of the Global Value Chains with minimalistic value addition in the product. Since workers are mostly low skilled in Punjab, skill supporting training through institutions and knowledge centers would need.

Product Diversification and Technological Progress – The Second Phase (2028-37)

The second phase shall capitalize on the improved production systems. The human capital transformation's foundation of labor training & skills in the first phase will then be supplemented by acquisition of new technologies to improve the overall technical capacity of the industry. The focus on human capital development will be on innovation and research & development. This would lead to development of a more sophisticated product portfolio with products that are of medium to high technology.

Focus should be on enhanced mechanization that is supported by higher absorption of technical labor to increase the diversification of Punjab's exports. Electronic, mechanical, automotive and high-tech products & parts should be the cornerstone of development. Special Economic Zones with necessary infrastructure will be key driver for this era. An enabling urban environment with global connectivity will attract foreign capital. Such interventions will ensure Punjab into strategic global partnerships with leading firms. Making Punjab as more livable and business friendly province.

This stage would also require further investment in upper tier skill development, development of supply chain logistics and forward linkages. At this stage of development, the focus of capturing local demand will shift to capturing regional and international demand. The labor from agricultural will start shifting towards industries, and their quality will be upgraded for better production systems.

Innovation and Knowledge Economy – The Third Phase (2038-47)

Culture of entrepreneurship and innovation needs to be incorporated to bring further value addition in the products and services. Adoption of modern technologies will be the key driver in coming two decades and work force needs to be prepared for that change. These new technologies will result in higher productivity, GDP growth, improved business performance, and prosperity. Increased concentration in research and development to develop a knowledge economy, consumer financial services and other merchandise services will be encouraged. These new IT technologies will be human skill intensive and they basis for which have to be laid in 2nd Stage of Transformation. Connected cluster of high-performance cities that are globally connected to international markets will lay the basis for this transformation. Sustainable

developments across Punjab will reap benefits in this era, where human resource will be at an upgraded stage to capture these advantages and emerging opportunities.

Cross-sectoral boundaries will dissolve, and major reliance will be moving up the value chain where high-end services are added with the production of goods. Global consumer markets need to have direct access to the Punjab. The urban centre in Punjab will be connected and part of global chain of action. They would be required to offer high quality living for people and reformed investment climate for businesses, whilst caring for sustainability

