



History matters in making Lahore sustainable

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Lahore, the second-largest city of Pakistan, is facing sharp population growth and economic development coupled with increased motorisation and a deteriorating urban environment. This is due to a long history of investment into roads and low-density suburban housing development in Lahore which increases motorisation. This paper provides a historical overview of urban planning in Lahore by shedding light on the Mughal and the British period of development followed by the post-independence planning paradigm in the city. This paper examines the contradictions and uncertainties that have characterised urban planning in Lahore in the pre and post-independence period by using a sustainable city and sustainable transport literature. The analysis shows that Lahore traditionally attracted investment in the high-quality roads infrastructure (flyovers, underpasses and a ring road) and recently in the country first ever Bus Rapid Transit (BRT) system (2013) and Metro Train project (2018) in the city. The paper argues that the Lahore BRT and Metro train projects can provide a window of opportunity to redefine transport and land use issues and offer a transit-oriented development (TOD) solutions in Lahore.

Keywords: Lahore, transport, sustainable urban development

Introduction

Lahore, the second-largest city of Pakistan and capital of the Punjab province, is facing sharp population growth and economic development coupled with increased motorisation and a deteriorating urban environment. Although over 60 per cent of total trips are made by sustainable transport modes¹, the city administration has been criticised by planning scholars for putting most of its recent investment into roads, despite severe air pollution and vulnerability to climate-change-related events such as flooding and heatwaves². Employing a sustainable city and sustainable transport framework, this paper examines the contradictions and uncertainties that have characterised transport and urban planning in Lahore in the post-independence period. The paper inquires into how Lahore got itself into its current urban planning situation, examines the implementation of Lahore's first Bus Rapid Transit (BRT) project and metro train project (the Orange line) and suggests how these projects provide opportunities for transit-oriented development (TOD) model for future urban growth. The paper begins with a historical overview of urban planning and development of Lahore since the Mughal period. This is followed by a more detailed and critical review of urban and transport planning in Lahore in the post-independence era through the lens of metropolitan strategic plans (locally called 'Master Plans'). Finally, the paper focuses on the challenges and opportunities arising from the BRT and Orange line metro projects, to establish the urgency of finding reforms in land use planning to facilitate TOD.

Pre-1947 Lahore

Lahore was a prominent centre of the Mughal Dynasty. Before the Mughals, Lahore was subjected to regular Afghan and Mongol invasions that it protected itself from by building 13 gates and a wall around the inner city. The Mughals aspired to transform the city by constructing architecturally significant buildings including Lahore Fort (1566) (see Figures 1), Shalimar Garden (1642) and Badshahi Mosque (1673).

After a brief period of Sikh rule in the first half of the nineteenth century, the British colonization of north-western India brought further changes to the architecture and culture of Lahore. The Lahore Railway Station was completed in 1861, connecting the city with major urban and regional centres. The British established prestigious educational and research institutions in Lahore (such as Government College (1861)); a modern municipal system (Municipal Committee (1862) (see Figures 2); open spaces (Lawrence Garden (1862)); and new road systems (such as Egerton Road, Davis Road etc.). The Punjab Municipal Act 1911, Punjab Town Improvement Act 1922, and Lahore Municipal Corporation Act 1941 were all used to regulate land use and the provision of infrastructure facilities in Lahore.



Figure 1 Lahore Fort (Source: Authors)



Figure 2 Lahore Metropolitan Corporation Building (Source: Authors)

The British viewed the old city (mixed land use in an organic layout) as backward and in need of modernization by separate zoning and by-laws for housing, educational and institutional buildings, and commercial activities³. Model Town, established in 1921, on the outskirts of Lahore, was laid out on 'garden city' principles with bungalow-style housing and was governed by the Cooperative Model Town Society Limited (see Figure 3). The newly built areas and major civic and government buildings in Lahore were connected through a suburban railway network, omnibuses and horse-drawn carts (tongas)⁴. These developments strengthened Lahore's status as the political, social and cultural capital of north-western India⁵. However, the chaotic, densely-populated inner city remained excluded from modern planning practices. The walled city continued with its traditional *bazar* economy⁶.

Patrick Geddes report 'Town Planning for Lahore' published in 1917 argued for conservation and improvement of the walled city of Lahore through a 'conservative surgery' approach rather than large-scale demolition in the name of slum clearance. He emphasized combining physical and social planning in development projects and proposed several 'garden villages' outside the walled city to accommodate Lahore's urban growth. The later part of the colonial period was characterized by a development planning tradition, in which state-led policies sought to co-ordinated land use with accessibility through transport and to enrich the social and economic sustainability of the city.

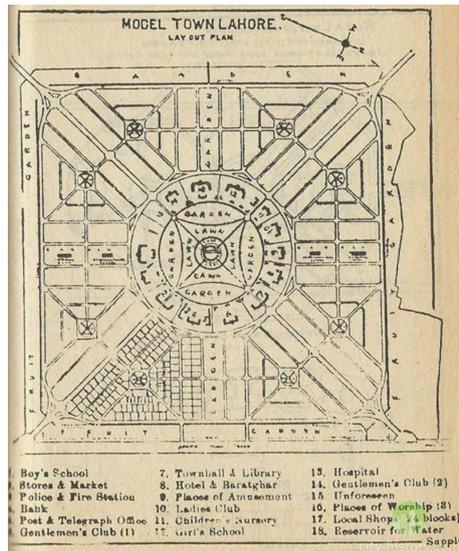


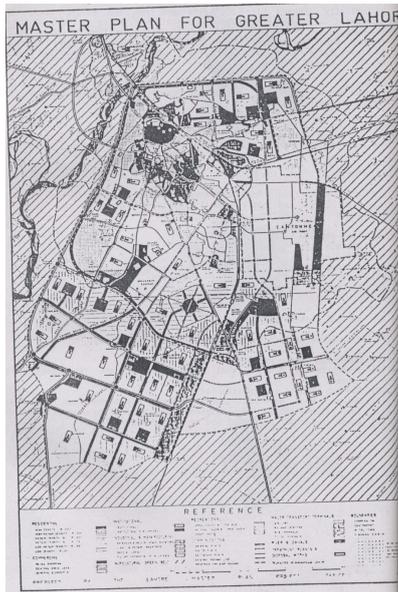
Figure 3 The Model Town, Lahore, 1927 (Source: Sir Ganga Ram Pocket Book of Engineering)

Post-1947 Lahore

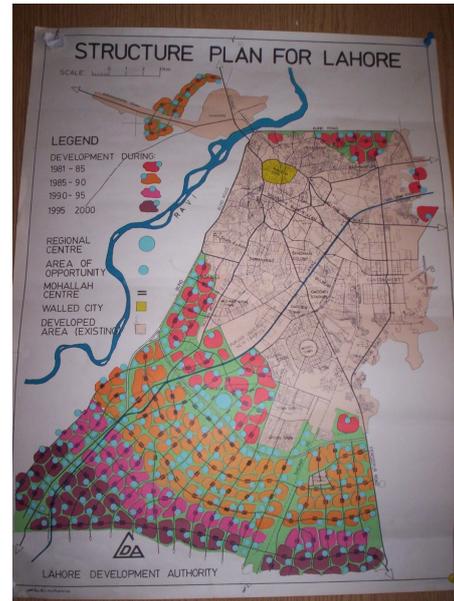
Lahore suffered after the partition of British India in 1947 when 240,000 middle-class Sikh and Hindus, comprising one-third of Lahore's population, fled to India⁷. On the other hand, almost half of East Punjab's population (comprising 400,000 Muslims) moved to Lahore in a wave of reverse migration and violence. This demographic change made Lahore one of the fastest growing cities of the time. The partition also made Lahore a border city, creating a sense of insecurity not experienced before.

Pakistan joined the Colombo Plan in 1950 and made arrangements for preparing national level Five Year Plans. The second Five Year Plan (1960-65) recommended preparing master plans for 11 major cities, leading to the formulation of the first *Master Plan for Greater Lahore (1965-80)*⁸. The Master Plan project office published an interim report in 1962 followed by the Master Plan in 1965. First Master Plan proposed a three-tier hierarchy of neighbourhood, district (metropolitan) and divisional (greater district) civic centres, a 24 kilometre green belt around the city and four industrial satellite towns served by high-quality inter- and intra-city transportation projects⁹. A 'circumferential arterial road' (later named the Ring Road) was also proposed together with standards for a road hierarchy, justified as a catalyst for economic growth¹⁰. For commuter traffic, the Master Plan recommended a mass transit 'circular railway' system as a 'long-range project', arguing that the Lahore Omnibus Services would be unable to cope with the expansion of new planned neighbourhoods and satellite towns. Most of the road proposals in the first Master Plan were eventually implemented in the medium to long term, although a large part of the Ring Road has been constructed only recently. The circular railway as a mass transit system and a green belt to check urban sprawl and ribbon development did not catch the attention of decision-makers.

The Lahore Urban Development and Traffic Study (LUDTS), known locally as the Lahore Structure Plan (1980-2000), was the second strategic master plan prepared by foreign consultants and financed by the World Bank. Like the 1965 Master Plan, the 1980 Structure Plan recommended south and south-westward growth over its twenty-year life supported by high-speed roads¹¹. The main argument behind its proposals was the strong belief that a rising level of economic activity would bring low-density suburban development and a higher volume of private vehicles¹². With no statutory basis the Structure Plan remained an advisory plan for the development¹³. The *Integrated Master Plan for Lahore (2001-2021) (IMPL)* (LDA, 2004) and the (draft) *Integrated Strategic Development Plan for Lahore Region 2035 (ISDP-35)* (LDA, 2013) are the recent strategic urban development plans prepared to guide future development in the Lahore metropolitan area. In relative terms, land use planning and policy in both the IMPL and ISDP-35 maintain the status quo of accommodating future urban growth in greenfield development at the edge of the city (see Figure 4).



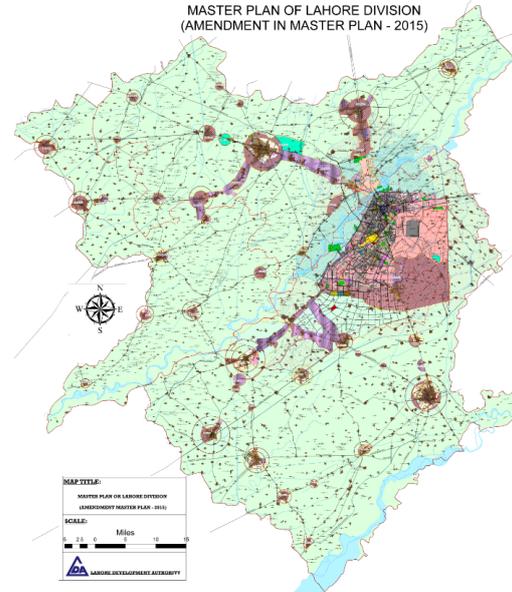
Master Plan for Greater Lahore (1965-80)



Lahore Structure Plan (1980-2000)



Integrated Master Plan for Lahore (2001-2021)



Integrated Strategic Development Plan for Lahore Region 2035

Figure 4 Various Master Plans of Lahore (Source: Document published by LDA)

All Master Plans were not fully implemented due to institutional disconnection - the absence of a comprehensive implementation framework, the absence of legal protection of the plan, a lack of systematic allocation of funding to proposed projects, out-dated zoning, building and land subdivision regulations, flawed property tax policy, the absence of programmes for urban renewal and the purchase of land for public purposes, and of incentives for private sector and institutional re-organization¹⁴. All Master Plans in Lahore have weaknesses in terms of their content, preparation process and enforcement mechanisms¹⁵. Moreover, these plans only apply to two-thirds of the total area under the jurisdiction of Lahore Development Authority (LDA) and the Lahore Metropolitan Corporation. These plans do not include land uses and bylaws in Cantonment¹⁶ or Defence Housing Authority areas even though these comprise nearly one-third of the built-up area of Lahore. Overall, Master Plans have taken a long time to prepare and then have been approved (or partially approved) reluctantly, do not apply to significant parts of the urban area and are inadequately and selectively implemented. In spite of these deficiencies, however, these plans set the direction for future urban growth for the upper-middle class and for investment in city transport. For example, the exponential growth of gated communities in urban fringe has become successful in recent decades



because they offer the growing urban middle class better security in the face of increasing street crime and terrorism¹⁷ and a prestigious a lifestyle that gives access to modern facilities and amenities, along with speculative investment. After spending four years as a Country Director for UNDP, Marc Andre Franche spoke of Pakistan's 'apartheid of opportunities' and argued that 'Pakistan will not be able to survive with gated communities where you are completely isolated from the societies, where you are creating ghettos at one end and big huge malls for the rich at the other end. It is not the kind of society you want your kids to live in'¹⁸. However, it is not only the planning mechanisms within Pakistan that favour the elite, but also international agencies such as the World Bank which continue to promote an elite-led economic growth model which exacerbates inequalities¹⁹.

Challenges to and opportunities for sustainable transformation

Despite the pro-road and pro-suburban emphasis of Master Plans in the post-Independence era, 60 per cent of the 9.6 million daily trips in Lahore still take place by sustainable transport (walking, cycling and public transport)²⁰. This is possible because 80 per cent of Lahore's population still lives in the inner and intermediate areas of the city, within an average seven kilometre radius of the centre, at average densities of 200-600 persons per hectare²¹. There is an opportunity to prepare urban development plans that show sensitivity to the socio-economic characteristics and spatial realities of Lahore and bring investment and improved quality of life to these existing high density urban areas. This section explores difficulties to date in challenging the road-based transport paradigm through case studies of Pakistan's first Bus Rapid Transit (BRT), or the Metro Bus, and of the metro, or 'Orange', train line currently under construction. We argue that these public transport investments should serve as catalysts for land development alongside the BRT corridor and around train stations as the basis for sustainable regeneration.

Bus Rapid Transit (BRT): Pakistani cities have failed to develop high-quality mass transit systems in the post-Independence era, and public transport has been provided largely by privately-owned minibuses with very low levels of service and comfort²². The main reason for this failure has been a lack of political leadership and investment in public transport to make the best use of existing high-density development²³. However, this situation changed in 2013, when the Chief Minister of Punjab, Shabaz Sharif (SS), succeeded in gaining support to complete Pakistan's first BRT in Lahore. Lahore BRT is a 27 kilometre-long corridor and is equipped with an intelligent transport system (ITS) (see Figure 5).



Figure 5 BRT in Lahore (Source: Author)

The project was completed in 2013, at the cost of approximately PKR 30 billion (US\$ 0.28 billion), raised from provincial resources. BRT has been criticized for its high construction and operational costs, the dislocation of people and businesses, its negative impact on the environment and heritage sites, the opportunity cost of education and health issues affecting the entire province, and lack of public involvement in the planning and design processes. However, some scholars have viewed the criticism of the BRT as being out of context in that it did not take into account public transport key performance indicators. BRT offers high speed (45-60 km/hour) transport during both peak and off-peak periods²⁴ and, together with a fare structure that encourages short trips, it has the potential to become a 'game-changer' for the public in Pakistani cities who have been accustomed, under the deregulated private sector to being loaded like cattle on to buses and wagons (low-quality mini-buses)²⁵. Haider²⁶



sees an essential role for public investment in public transport but proposes that the private sector should be involved in property development to subsidize the capital cost of transit projects.

The Orange Line: The successful implementation of the BRT project encouraged the Punjab Government to initiate Pakistan's first metro train, the Orange line project, in Lahore, planned to be completed in mid-2018. Like the BRT, the 27 kilometre-long railway passes through historical and compact parts of the city. Approximately 250,000 people a day will be able to travel on this train. The Orange line comprises 25.3 kilometres of elevated and 1.7 kilometres of underground sections. The total cost²⁷ of the project is estimated at over PKR 162 billion (US\$ 1.5 billion), 100 per cent financed by a Chinese 'soft' loan. The Chief Minister of Punjab has described the Orange line as the 'common man's ride', providing safe, swift and pollution-free transport. Like the BRT, the Orange line project has also been opposed by political and civil society actors who have concerns about the dislocation of people²⁸. Questions have also been raised about the transparency of land acquisition and compensation, lack of civic engagement, privacy issues and the threat of terrorism inherent in the elevated sections. The loudest opposition came from groups who had reservations about the design of the project and its potential effects on important heritage sites of Mughal and British architecture (see Figure 6). Because of these controversies, the project has been challenged in the Lahore High Court. The Orange line project was suspended in August 2016, when the Lahore High Court ordered the Punjab Government to stop construction at sites near eleven historic buildings. The court ruled that this violated a law prohibiting construction activities within 200 metres of UNESCO-listed heritage sites.



Figure 6 The Orange line construction near the Chaurburji, Lahore (Source: Pakistan Today newspaper)

The Punjab government challenged this decision in the Supreme Court (the highest court in the country), which allow construction of remaining sites after one year of hearing and on the advice of the technical committee. The government had hoped to complete this project before the 2018 general election in May. In short, a lack of communication and the adoption of a set planning process, a deficit in trust, and mismanagement - specifically, the absence of a traffic plan and resettlement issues - created confusion about both the BRT and Orange line projects among residents, businesses and professionals. We consider the lessons from these projects to provide a 'window of opportunity' for the discussion and introduction of contemporary urban planning practices and, specifically, of transit-oriented development in Lahore which will be explored in the next section.

TOD as a model for Lahore's future: Considering Lahore's long history of greenfield development, how can the BRT and the Orange line can drive a transformational shift in sustainable urban development. It is estimated that the service sector in Lahore has already grown to 42 per cent of the workforce, resulting in mass transit system demand. The BRT and Orange line projects, while imperfect, need to be built upon in support of the case for investment in high-quality public transport to reduce rising congestion under conditions of continuing population and economic growth. Proposals for transport and land use integration have been largely absent from Lahore's Master Plans to date. The current practice of reactive planning needs to be replaced by proactive planning based on TOD in newly-built public transport corridors. The recently developed Punjab Land Use Rules 2009 also allow high rise residential and office towers and Lahore has also received more investment in the retail sector than anywhere else in Pakistan in the last ten years through the building of medium and large-scale shopping malls²⁹. However, these malls are located haphazardly in the city and are mainly accessible by cars. There is a need to direct this retail investment strategically to sites accessible by the Orange line and BRT. Private developers toned



to be encouraged to invest in land development in high-quality transit corridors, particularly if the LDA assists by assembling the land.

Lahore can learn from the experience in this regard of Hong Kong and Singapore in Asia and of Curitiba, Bogota and Santiago in South America, all of which integrated high-quality public transport with land use by adopting a proactive transport and land use planning approach, sometimes called the ‘transit city’ model³⁰. In Lahore, it is important to develop a shared smart vision of the BRT and the Orange line corridors and to prepare an urban regeneration master plan for these corridors, followed by institutional capacity building to manage regeneration. Pakistani cities need clever preservation and creative destruction to make urban renewal happen³¹. Even high-density cities can adopt a compact city policy with ‘local sensitivity’ to improve the quality of life³². Likewise, we argue that a regeneration plan should incorporate a holistic place-based land use plan covering a 500-metre radius from BRT and train stations. High-density TOD along a transit corridor ultimately generates a greater number of passengers to sustain a mass transit system, and Lahore could transform Ferouzpur Road, Multan Road and GT Road into new and desirable high-density residential and commercial areas (see Figure 7).



Figure 7 The built environment alongside the Orange line (Source: Chief Minister of Punjab Facebook)

Lahore, historically an ‘aspiring architectural capital’ and a ‘political powerhouse³³’ in the post-independence era, is well-placed to exploit its strengths to adopt TOD. The transit-city model requires the institutional capacity to adopt innovative land use approaches, rules, regulations and procurement strategies in their local context. The Punjab Mass Transit Authority (PMTA) has considerable responsibility for policy-level guidelines, regulations and procurement of public transport but, in its current form, it lacks a mechanism to collaborate with LDA and LMC, the land use planning agencies. The LDA itself has little or no experience or capacity to formulate or implement land use policy in existing built-up and brownfield areas, but high-density development is gaining momentum as powerful voices are raised against the negative consequences of sprawl. For example, the Higher Education Commission Pakistan recommended that ‘in view of urban sprawl in the country, it has become imperative to establish a top-level Land Use Planning Authority at Federal Level along with parallel Provincial and District Level Authorities for land use planning and strategic development planning in the country³⁴. There is also a proposal to pass a City and Regional Planning Act in Punjab to establish a Divisional (Regional) Planning Authority (DPA), which will be responsible for spatial planning and land use and building control. It is expected that the DPA will promote and encourage a pattern of compact and mixed land use development that is convenient to existing transportation infrastructure.

Although a region-wide planning agency is desirable to focus on the bigger-picture land use and public transport issues, there is also a need to concentrate on creating innovative mechanisms to fund the public transport network. A TOD-based urban growth model will help to develop innovative sources of funding public transport. The BRT project in Lahore was built by the Punjab government and the Orange line is under construction with the help of Chinese funds. However, the financial sustainability of these projects is in question unless new and reliable sources of funding can be found to support their operation and extension³⁵. Although it is too early to claim that the BRT and Orange line will increase property values in the future, this should be the aspiration, and there is a need to develop rules to capture these increases, brought about by public investment. Many projects around the world now use value-capture models to fund high-quality public transport systems in cities³⁶. However, land value capture is generally limited to commercial properties. We also argue for value-capture mechanisms for regeneration or



redevelopment of whole corridors supported by an urban renewal programme and micro-level land use planning approaches, using the BRT and Orange line corridors as a pilot project and starting with the development of government-owned properties. Affected people can benefit from newly refurbished apartments, and new commercial areas can be developed, taking advantage of increased patronage and providing the basis for value capture to fund future transit investment. The new regeneration plan needs to be underpinned by enhanced urban design near bus and train stations and can still be informed by Patrick Geddes's suggestions to include street layouts, plot shapes and small pocket parks to promote the social and economic interaction between residents. A successful pilot project can help to mobilise the support of civic, professional and political actors beyond traditional transport operators and property developers³⁷.

The BRT and the Orange line projects in Lahore were underpinned by political will and charismatic leadership, but professional leadership is also required. Planners have the technical knowledge to justify and chart a path towards a more sustainable city³⁸. The Pakistan Council of Architecture and Town Planners (PCATP), the Institute of Planners Pakistan (IPP), Institute of Architects of Pakistan (IAP) and the Pakistan Engineering Council (PEC) need to show professional leadership and bring the smart corridor and TOD agenda to the forefront of the development debate. The establishment of a Lahore Development Forum for the ongoing debate about future development scenarios for the city could also help to inform the next generation of civic leaders. Engaged residents, professionals and politicians have the capacity over time to influence an alternative development agenda positively. In short, the BRT and the Orange line initiatives can be seen as an opportunity to break the path dependency of roads and greenfield development providing the first steps in overhauling land use planning and transport policies to make infrastructure investments sustainable over time. A comprehensive institutional framework for integrating public transport and land use planning in Lahore is required to influence policy, funding and leadership in favour of TOD. If Lahore takes the lead in developing such a framework, then the city will be at the front of the sustainable city queue in South Asia.

Endnotes

¹ JICA, 2011

² Imran, 2010; Haider, 2014; Ul Haque, 2014

³ Glover, 2007

⁴ Rudduck, 1965

⁵ Suvorova, 2011

⁶ Leonard, 1986

⁷ Talbot, 2006

⁸ GoPunjab, 1973

⁹ Rahmaan, 2013

¹⁰ Imran, 2010

¹¹ LDA and World Bank, 1980a

¹² LDA and World Bank, 1980b

¹³ Rahmaan, 2013

¹⁴ Hameed and Nadeem, 2008

¹⁵ Anjum, 2010

¹⁶ Cantonment Boards, established under the Federal Ministry of Defence are responsible for performing local government functions in their jurisdiction.

¹⁷ Coaffee *et al.*, 2009

¹⁸ <https://tribune.com.pk/story/1171773/former-undp-director-takes-aim-pakistans-elite-scathing-final-interview/> dated 29 August, 2016

¹⁹ Ali, 2016

²⁰ JICA, 2011

²¹ Anjum, 2010

²² Adeel *et al.*, 2016; Imran, 2009; Haider and Badami, 2005

²³ Imran, 2009

²⁴ Haider, 2015a

²⁵ Haider, 2015b

²⁶ Haider, 2015b

²⁷ <https://tribune.com.pk/story/1014135/metro-train-project-govt-chinese-bank-ink-rs162b-loan-agreement/> dated 22 December 2015

²⁸ <http://tribune.com.pk/story/1008500/transport-revise-metro-train-projects-model/> dated 12 December, 2015

²⁹ <http://tribune.com.pk/story/1092296/mall-culture-pakistans-booming-retail-sector/> dated 27 April, 2016

³⁰ Cervero, 1998

³¹ Ul Haque, 2014

³² Bardhan *et al.*, 2015

³³ Pakistan's administrative structure comprises four Provinces (Punjab, Balochistan, Sindh and Khyber-Pakhtunkhwa), seven Tribal Agencies, Azad Kashmir and Northern Areas. However, Punjab comprises over 56 percent of the total population of the country and is influential in popular politics. Therefore, Lahore as the capital of Punjab is called a political powerhouse of the country.

³⁴ Higher Education Commission, Pakistan, 2011, p.61

³⁵ Imran, 2015

³⁶ Burke, 2016

³⁷ Burke, 2016



³⁸ Chiodelli, 2011

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