



The Urban Unit
Urban Sector Planning & Management Services Unit (Pvt.) Ltd.



Transport & Connectivity Plan

Faisalabad Regional Development Plan

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ACRONYMS

C&WD	Communication and Works Department, Government of the Punjab
P&D	Planning and Development Board, Government of the Punjab
ADT	Average Daily Traffic
PCU	Passenger Car Unit
LOS	Level of Service
NHA	National Highway Authority of Pakistan
BRT	Bus Rapid Transit
PSS	Punjab Spatial Strategy
GDP	Gross Domestic Product
ADP	Annual Development Plan
FDA	Faisalabad Development Authority
DRTA	District Regional Transport Authority
TTS	Toba Tek Sing
SDGs	Sustainable Development Goals
VPD	Vehicles per day
HTV	Heavy Transport Vehicles
LTV	Light Transport Vehicles
FDP	Faisalabad Dry Port
GFAs	Goods Forwarding Agencies
PTIAI	Public Transport Infrastructure Accessibility Index

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INTRODUCTION

1.1 Background

Regional transport planning is the process of developing a comprehensive and coordinated transportation plan for a specific region or area. The goal of regional transport planning is to ensure that the transportation network in the region is efficient, effective, and sustainable. It is an interdisciplinary approach that involves stakeholders from various sectors including government, transportation providers, local communities, businesses, and advocacy groups.

Regional transport planning considers the current and future transportation needs of the region and its residents. This includes the demand for different modes of transportation such as roads, public transit, biking and walking paths, and air transportation. The process also considers the current and future land use patterns in the region, as well as the impact that transportation has on the environment and quality of life in the region.

One of the key components of regional transport planning is the development of a regional transportation plan. This plan outlines the goals and objectives of the transportation system in the region and provides a comprehensive vision for the future. The plan also outlines specific projects and programs that will be implemented to achieve these goals and objectives.

Another important aspect of regional transport planning is the involvement of various stakeholders in the process. This includes representatives from the public, private, and non-profit sectors, as well as community members. The input and perspectives of these stakeholders are crucial in helping to shape the transportation plan that best meets the needs of the region.

One of the main benefits of regional transport planning is that it allows for a more coordinated approach to transportation development. This can lead to the more efficient use of resources and the creation of a more cohesive transportation network. Additionally, regional transport planning can help to promote economic development in the region as well as improve access to employment, educational, and recreational opportunities.

In summary, regional transport planning is a critical process for ensuring the sustainable and efficient development of transportation networks in regions and communities. It involves considering the current and future needs of the region, as well as the perspectives and input of a wide range of stakeholders. By working together to create comprehensive and coordinated transportation plans, stakeholders can create transportation systems that serve the needs of the communities and promote sustainable growth and development.

Throughout a financial year, the Planning and Development (P&D) Board, Government of the Punjab, receives numerous funding requests for road and transport schemes put forwarded by the respective departments: Communication and Works Department (C&WD) and the Transport Department. However, these individual road schemes at times lack a regional perspective and overlook benefits that may be associated with the alternate transport and connectivity schemes.

This regional transport plan addresses this gap for Faisalabad Division for the next ten years (2023-2033). It allows for a comprehensive and coordinated approach to transportation development, which can lead to the more efficient use of resources and the creation of a more cohesive transportation network. By setting regional priorities, this rapid regional transport planning studies ensure that the transportation system in the region is efficient, effective, and sustainable.

It should be noted that the Urban Unit has the expertise, in-house spatial data repositories, and experience necessary to carry out a comprehensive assessment of the transportation needs in the region. Through this regional transport planning study, the Urban Unit provided a platform for stakeholder engagement and collaboration that allows for collecting any missing data. These stakeholders include but are not limited to the C&WD, District Regional Transport Authorities (DRTAs), Faisalabad Chamber of Commerce and Industries and Chiniot Chamber of Commerce and Industries, Trade Union Representatives, and other relevant government officials in the respective district administrations: Jhang, Faisalabad, Chiniot and Toba Tek Sing (TTS). The input and perspectives of these stakeholders helps shape the transportation plan that best meets the needs of the region.

1.2 Faisalabad Division, An Overview

Faisalabad is located in the center of Punjab Province, next to the Sargodha Division. Other nearby divisions include Rawalpindi (327 km), Sialkot (250 km), Lahore (180 km), and Multan (246 km), as shown in the Figure 1.a. The division comprises of four districts: Faisalabad, Chiniot, Jhang and Toba Tek Singh. The divisional headquarter, Faisalabad, is one of the largest cities in Pakistan and is an important center of commerce and industry. It covers an area of 2,003 square kilometers and has a population of over 7 million people. Geographically, the district is divided into two distinct regions: the flat alluvial plains of the Chenab River in the west, and the hilly areas in the east. The Chenab River and its tributaries, including the Jhang Branch and the Sundar Branch, flow through the district and provide irrigation for agriculture.

Faisalabad district is known for its fertile soil and abundant agricultural land, which supports crops such as wheat, rice, sugarcane, cotton, and various fruits and vegetables. The district is a major center for textile production, including the production of cotton, silk, and woolen fabrics. The district is located at an elevation of approximately 180 meters above sea level and has a moderate climate, with temperatures ranging from a low of 7°C in the winter to a high of 40°C in the summer. The monsoon season, which lasts from July to September, brings heavy rains to the area and provides additional irrigation for crops.

Chiniot District covers an area of 1,541 square kilometers. It is situated in the north-eastern part of the division. Geographically, the district is characterized by fertile plains, with the Chenab River and its tributaries flowing through the area. The district has a moderate climate and is known for its rich agricultural land and abundant natural resources, including fertile soil, forests, and minerals. Agriculture is the main source of livelihood for the majority of the population, with crops such as wheat, rice, sugarcane, cotton, and various fruits and vegetables being grown in the area. In addition to

agriculture, the district is also known for its handicrafts and furniture production, as well as its mining industry, which includes the extraction of iron, coal, and other minerals.



Figure 1-1: Faisalabad Division Location and Regional Positioning

Jhang District covers an area of 4,149 square kilometers. It is situated in the central part of the province and is bordered by the districts of Chiniot, Faisalabad, Toba Tek Singh, and Bhakkar. The economy of Jhang District is largely based on agriculture and small-scale industries. Agriculture is the main source of livelihood for the majority of the population, with crops such as wheat, rice, sugarcane, cotton, and various fruits and vegetables being grown in the area. In addition to agriculture, the district is also known for its cottage industries, including the production of pottery, weaving, and leather goods. The district is also home to several large-scale industries, including textiles, food processing, and chemicals.

Toba Tek Singh is located on the western part of the division. It is named after a famous Punjabi saint, Tek Singh. The city is known for its rich history, cultural heritage, and

religious significance. Toba Tek Singh is situated at the confluence of two rivers, the Chenab and Ravi, and is surrounded by fertile agricultural land. The economy of Toba Tek Singh is primarily agricultural, with crops such as wheat, cotton, sugarcane, and vegetables being grown in the surrounding farmland. The city is also home to several small-scale industries, including textile and handicrafts production.

Figure 2 shows distances between the division headquarter and key districts and Tehsil Headquarters. For example, Jhang is 77km away from Faisalabad, Chiot 37km, and TTS 86km. Likewise, the Samundri and Tandlianwala Tehsils are 55km and 52km away from the division headquarter (Faisalabad). Theseil Shortkot is farther apart (141 km) while Ahmedpur Sial is the farthest thesils from the divisional headquarter. These large distances indicate the need for a comprehensive transport planning to ensure that the satellite tehsils have the opportunity to realize their potential as much as do the nearby tehsils and district in the division.

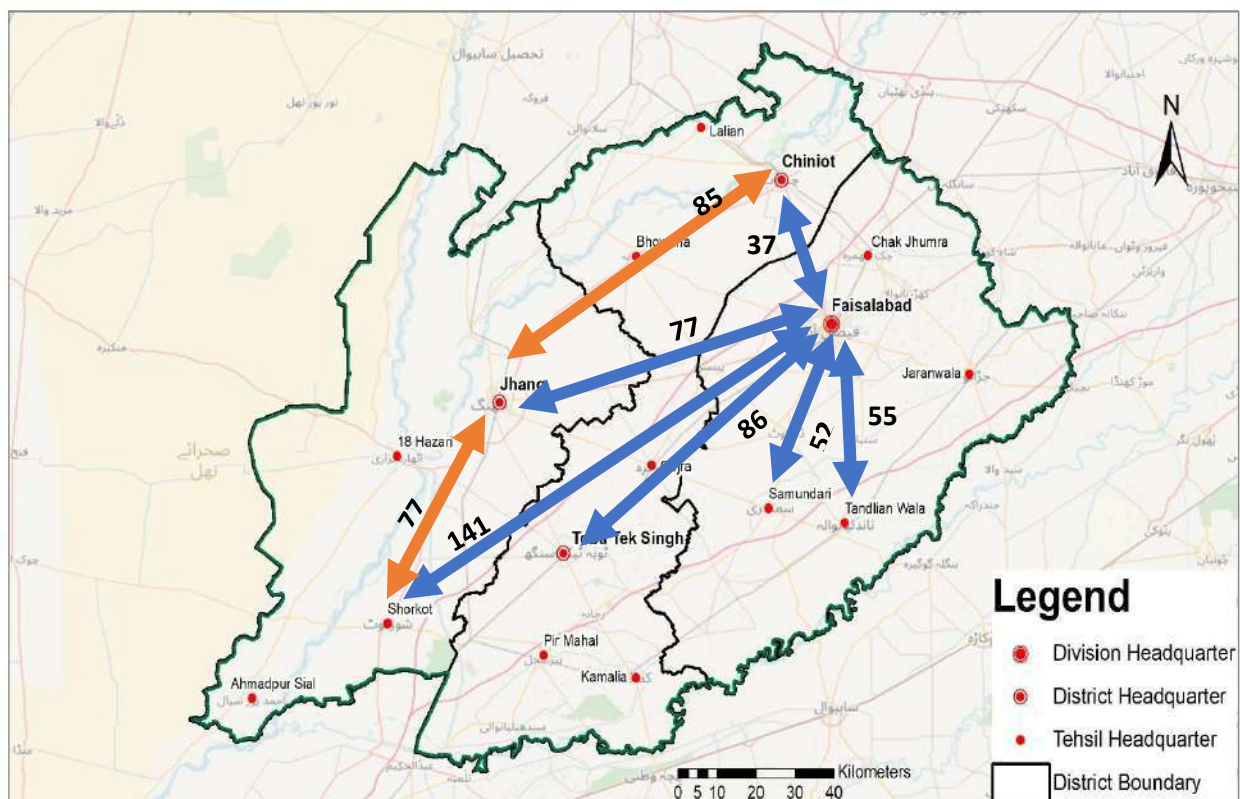


Figure 1-2: Intra-District Distances

1.3 Transport Connectivity of Faisalabad Division

Figure 1-3 summarizes the key transport nodes and links that play major role in transport connectivity within and beyond the region. The division is served by Faisalabad International Airport; one of the busiest airports in the country which witnessed 2313 aircraft movements transporting 131356 passengers and 57 megatons of cargo in 2021 (Civil Aviation Authority, 2021). Concerning roadways, the division is served by 35523km of roads including two motorways: M-3 (Lahore-Abdul Hakeem Motorway) and M-4 (Pindi-

Bhattian-Faisalabad Motorway). Additionally, there are 18 railways stations, and one dry port, namely, Faisalabad Dry Port. To support freight transport, there are 186 goods forwarding agencies in the division but only one formal truck terminal. For passenger transport, there are 37 inter-city public transport terminals in the division. However, despite huge population, Faisalabad (city) lacks urban public transit.

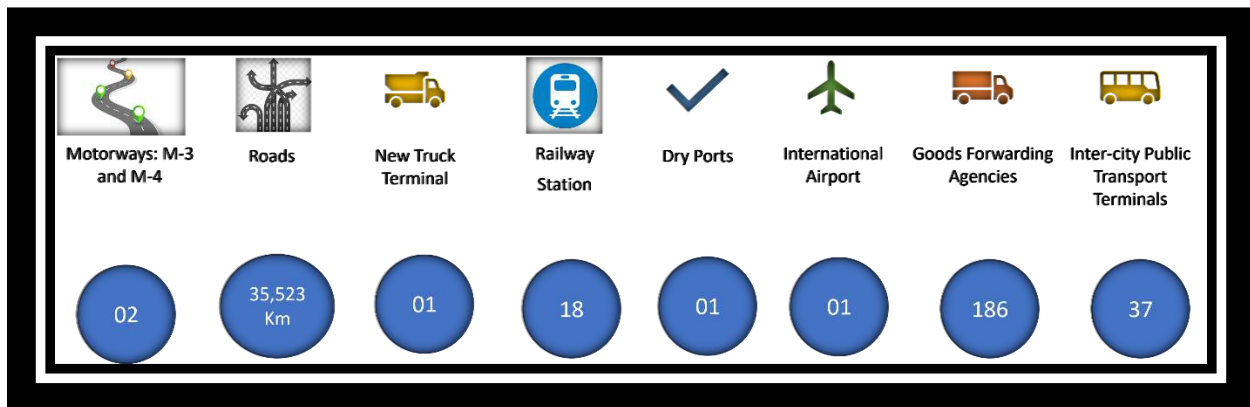


Figure 1-3: Key Transport Connectivity Nodes and Links in Faisalabad

1.4 Land-use by District Headquarters

The land-use map of Faisalabad city (Figure 1-4) shows a good mix of various facilities including residential, commercial, and industrial land-uses. These facilities are served by reasonably maintained network of roads. The major roads that serve the population and industry within and beyond the municipal committee include Hilal Road, Ilahi Abad Road, Susan Road, Jhang Road, Gulber Road, Narwala Road, Punjbpullan Road, Millat Road, Sargodha Road, Canal Expressway, and Bhaiwala Road. Industries seem to be distributed throughout the city however, there are dedicated industrial zones near Sahianwala Interchange. The city center features high density built-up area whilboundary of the municipality seems uninhabited.

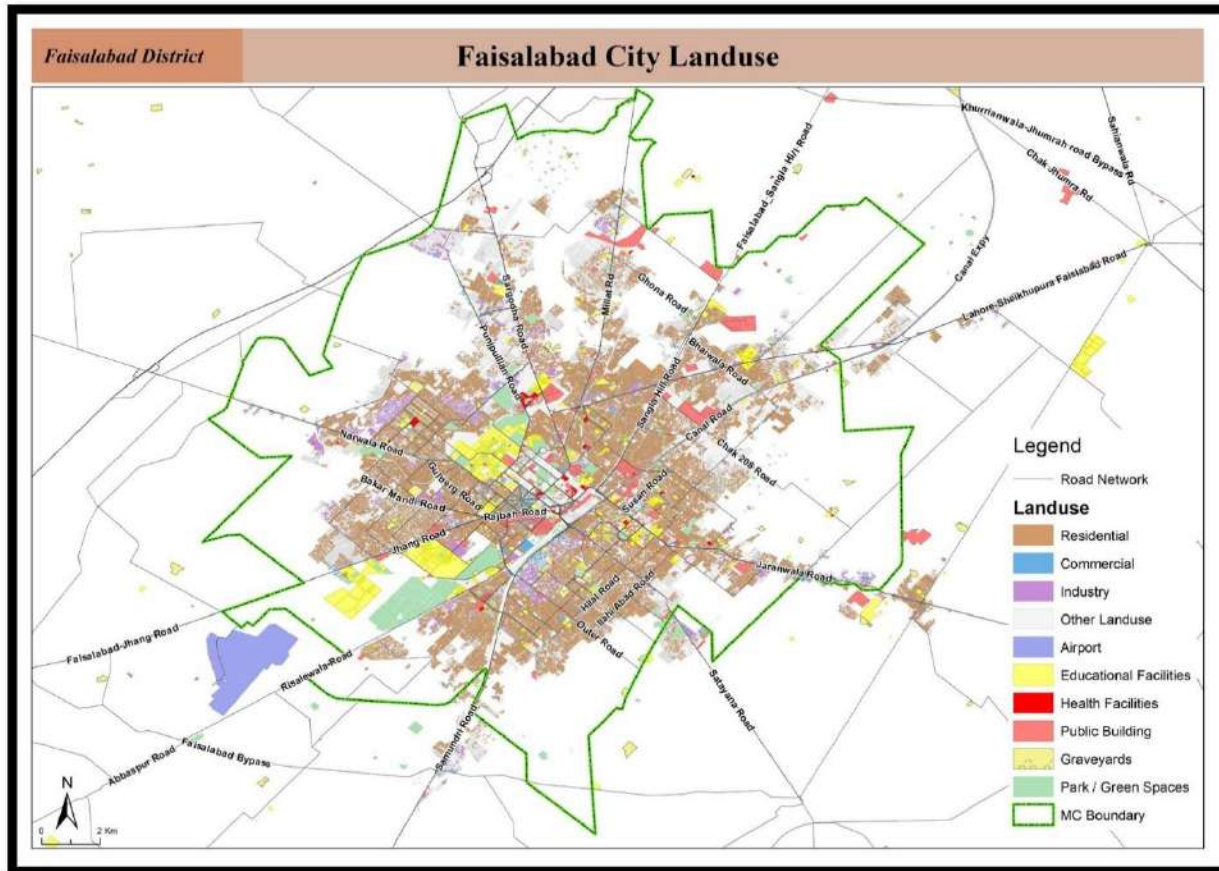


Figure 1-4: Faisalabad City Land-use

The Jhang city land-use is mainly residential with industries located in the outskirts of the city, along Jhang-Chiniot Road (Figure 1-5). The major roads of the city include Dhaji Road, Station Road, Civil Lines Road, Circular Road, Farooq Azam Road, and Looalay Shah Road. Other roads leading to the nearby districts include Jhang-Chiniot Road, Jhang-Faisalabad Road, Jhang-Sargodha Road, Jhang-TTS Road, and Jhang-Gojra Road. There are signs of urban sprawl in the northern and eastern part of the city.

Chiniot city land-use is characterized by commercial and industrial entities that include nationally famous 'Chinioti Furniture' in addition to floor and sugar-mills. Industries are mainly situated along the Faisalabad-Chiniot Road that witnesses one of the heaviest traffic volumes in Faisalabad Division. Other important roads in the city include Rodianwala Road, Baraf Khana Road, Water Works Road, Siara Road and Jhumra Road (Figure 1-6).

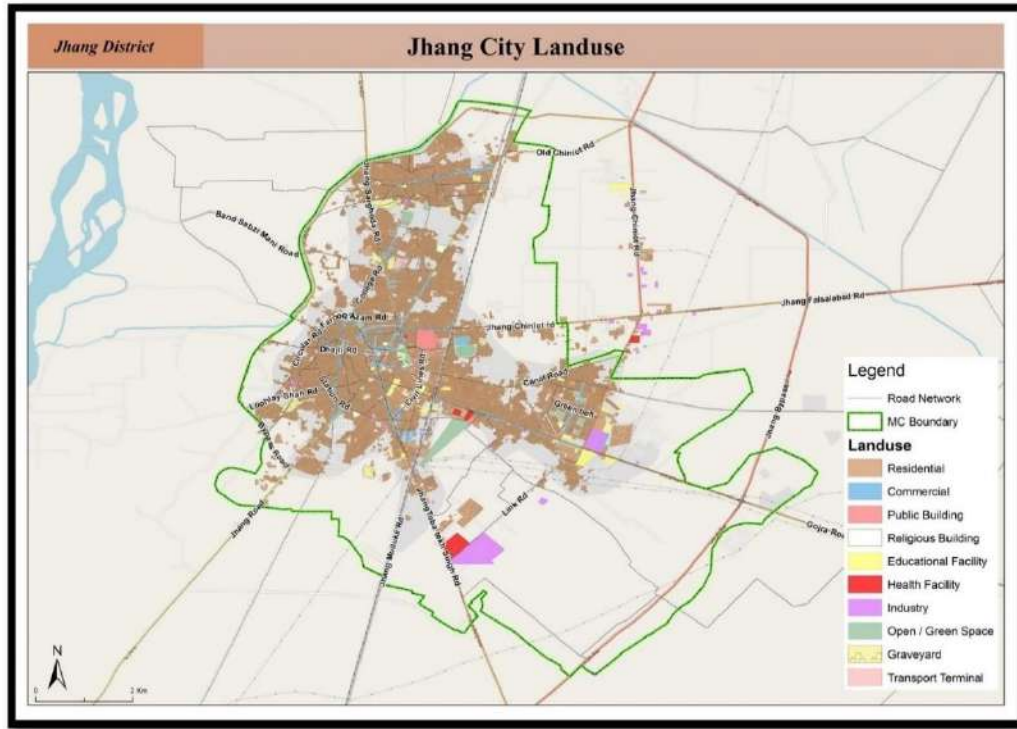


Figure 1-5: Jhang City Land-use

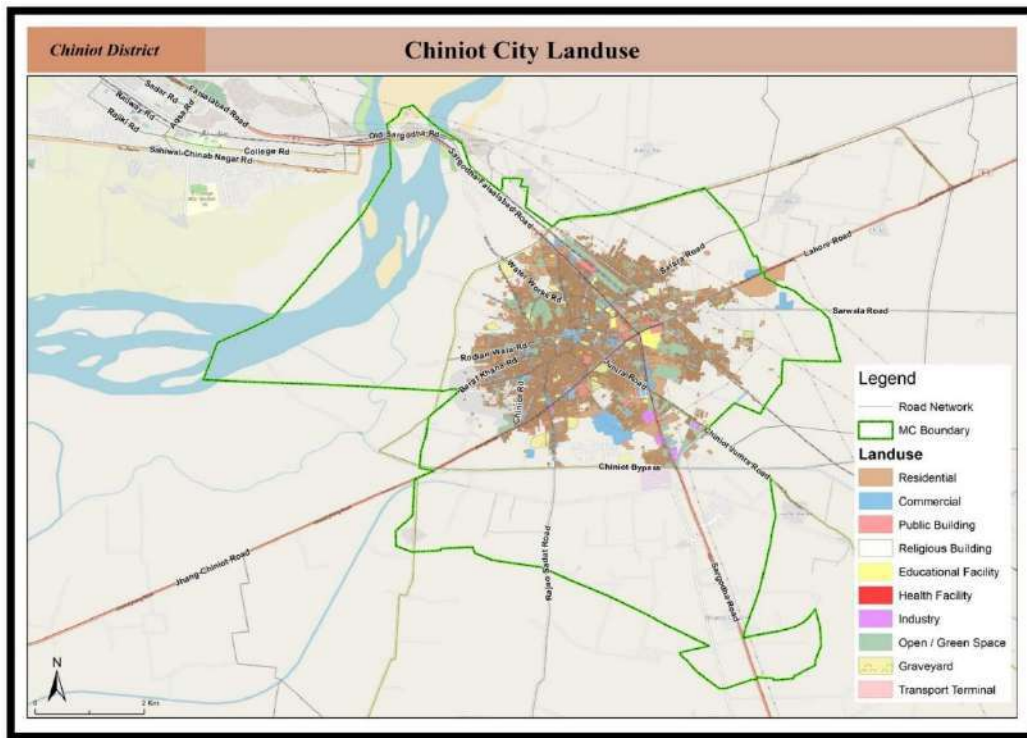


Figure 1-6: Chiniot City Land-use

Road Transport

The total length of the road network in Pakistan at present is more than 264,444 km. This network is further classified as Motorways, National and Provincial Highways, District Roads, and Farm to Market Roads. The length of the National Highways is more than 12,000 km, whereas, Provincial Highways have a length of around 93,000 km. The remaining roads are classified as Secondary and Local Roads including District Roads and Farm to Market Roads (Economic Survey of Pakistan, 2017). Punjab, being the most populace province of the country has the longest road network. Total length of roads in Punjab is around 76,234 km. Further, sub-classification of these roads includes approximately 2,062 km of National Highways, 1997 km of Motorways, 10,519 km of Provincial Highways, and 39,029 km of Secondary and Local Roads including Farm to Market roads and Sugar Cess roads.

The district wise profile of the road network statistics of Faisalabad Division are summarized in Figure 2-1 to Figure 2-4. Faisalabad has a population 7873910 (Census 2017), an area of 5841 sq.km (The Urban Unit), and a total road network length of 17,336 km. The length of motorways that fall in Faisalabad is 79 km, and the length of provincial highways is 700 km, primary roads, 153 km, secondary roads, 1896 km, and local roads 14508 km (Figure 2-1). Faisalabad District is well connected with adjacent districts through an extensive network of provincial highways. The M-4 (motorway under construction), provincial highways connect Faisalabad with Hafizabad, Chiniot, Toba Tek Singh, Nankana Sahib and Jhang.

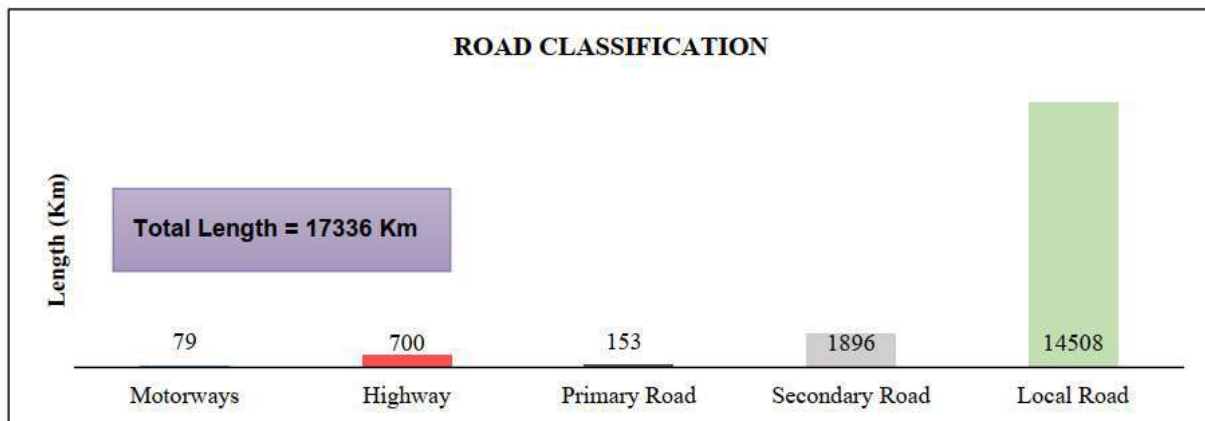


Figure 2-1: Road Network, Faisalabad District

Jhang has a population 2743416 (Census 2017), an area of 6178 sq.km (The Urban Unit), and a total road network length of 6768 km. There are no motorways within the district boundary, although M-4 passes nearby. The length of provincial highways is 494 km, primary roads, 5 km, secondary roads, 1208 km, and local roads 5061 km (Figure 2-2). Jhang relates to its surrounding districts through a network of provincial highways. Provincial highways and CPEC route (Eastern Alignment) connects the district with Chiniot, Multan, Toba Tek Singh and other districts of Punjab.

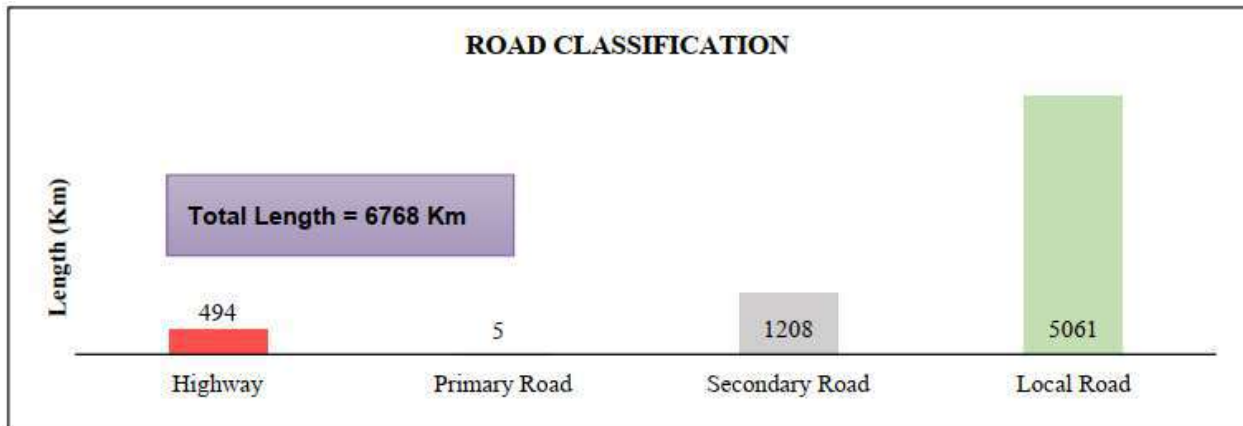


Figure 2-2: Road Network, Jhang District

Chiniot has a population 1369740 (Census 2017), an area of 2652 sq.km (The Urban Unit), and a total road network length of 4835 km. There are no motorways within the district boundary, although M-4 and M-2 pass nearby. The length of provincial highways is 311 km, primary roads, 12 km, secondary roads, 732 km, and local roads 3780 km (Figure 2-3). The Chiniot district is connected with the neighboring districts through a broad network of provincial highways. Provincial highways link the district with Faisalabad, Jhang, Sargodha and other districts of Punjab.

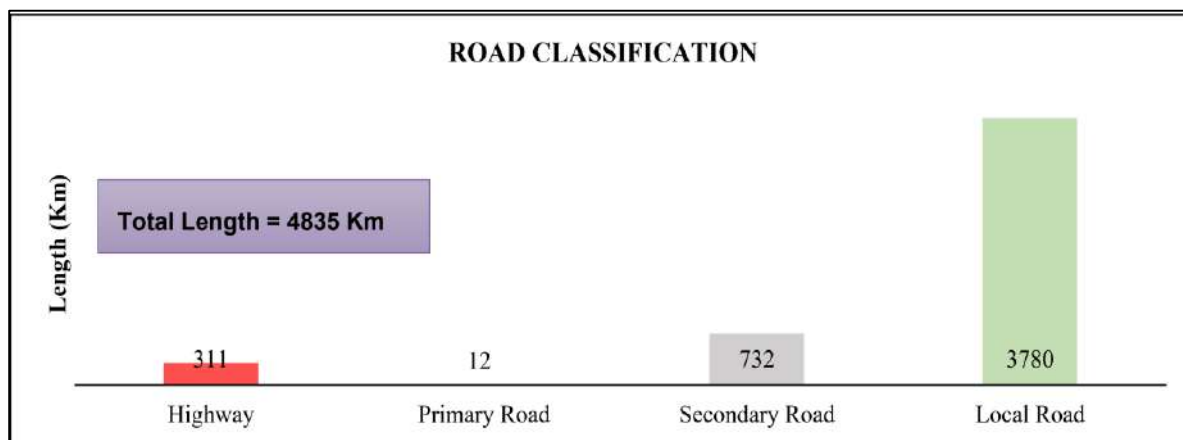


Figure 2-3: Road Network, Chiniot District

TTS has a population 2190015 (Census 2017), an area of 3273 sq.km (The Urban Unit), and a total road network length of 6584 km. The length of motorways that fall in TTS is 33 km, and the length of provincial highways is 325 km, primary roads, 153 km, secondary roads, 872 km, and local roads 5343 km (Figure 2-4). The TTS district is connected with surrounding districts through a wide network of motorways, provincial highways. M4 and CPEC route's (Eastern Alignment) serve as primary corridor. It connects

TTS with Faisalabad. Other provincial highways connect the district with Faisalabad, Khanewal, Jhang and other districts of Punjab.

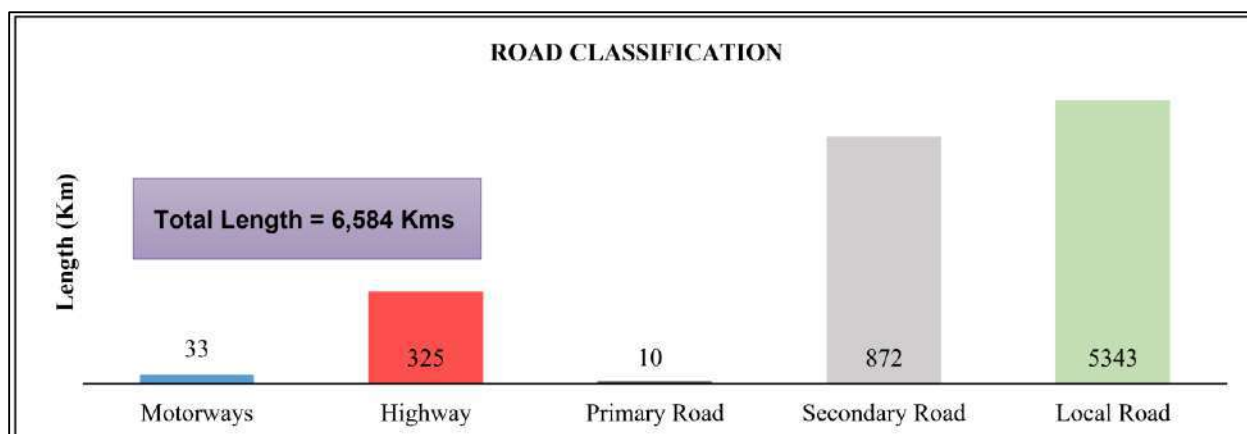


Figure 2-4: Road Network, TTS District

2.1 Road Sector Funding by Year

The total funding of annual development program in Faisalabad Division for all the sectors in shown year-wise for the year 2014 through 2022, in Figure 2-5. From 2014 to 2022, the all-sector funds ranged from 1.26 billion Pakistani rupees in 2018 to 49.79 billion Pakistani rupees in 2022. The road sector funds varied from 0 rupees in 2018 to 32.08 billion Pakistani rupees in 2022. The percentage allocations for road sector funds ranged from 0% in 2018 to 64% in 2022. The highest percentage allocation of road sector funds was observed in 2022, with 32.08 billion Pakistani rupees being allocated, which is equivalent to 64% of the all-sector funds. In contrast, the lowest percentage allocation of Road Sector Funds was observed in 2018.

This data shows that when the road repair and maintenance needs can only be postponed, and not ignored for a long time. This however results in accumulation of funding needs which at times might consume a much bigger chunk of the overall ADP funding than routinely needed. The data also highlights the need for a road asset management (RAM) tool that could equip the decision makers to foresee road repair and maintenance need and arrange for budgeting in advance. Delays in minor road repairs often lead to more expensive resurfacing requirements that put unnecessary burden on the provincial exchequer. Moreover, a RAM tool can help distribute the road sector funding among various schemes in a justified way.

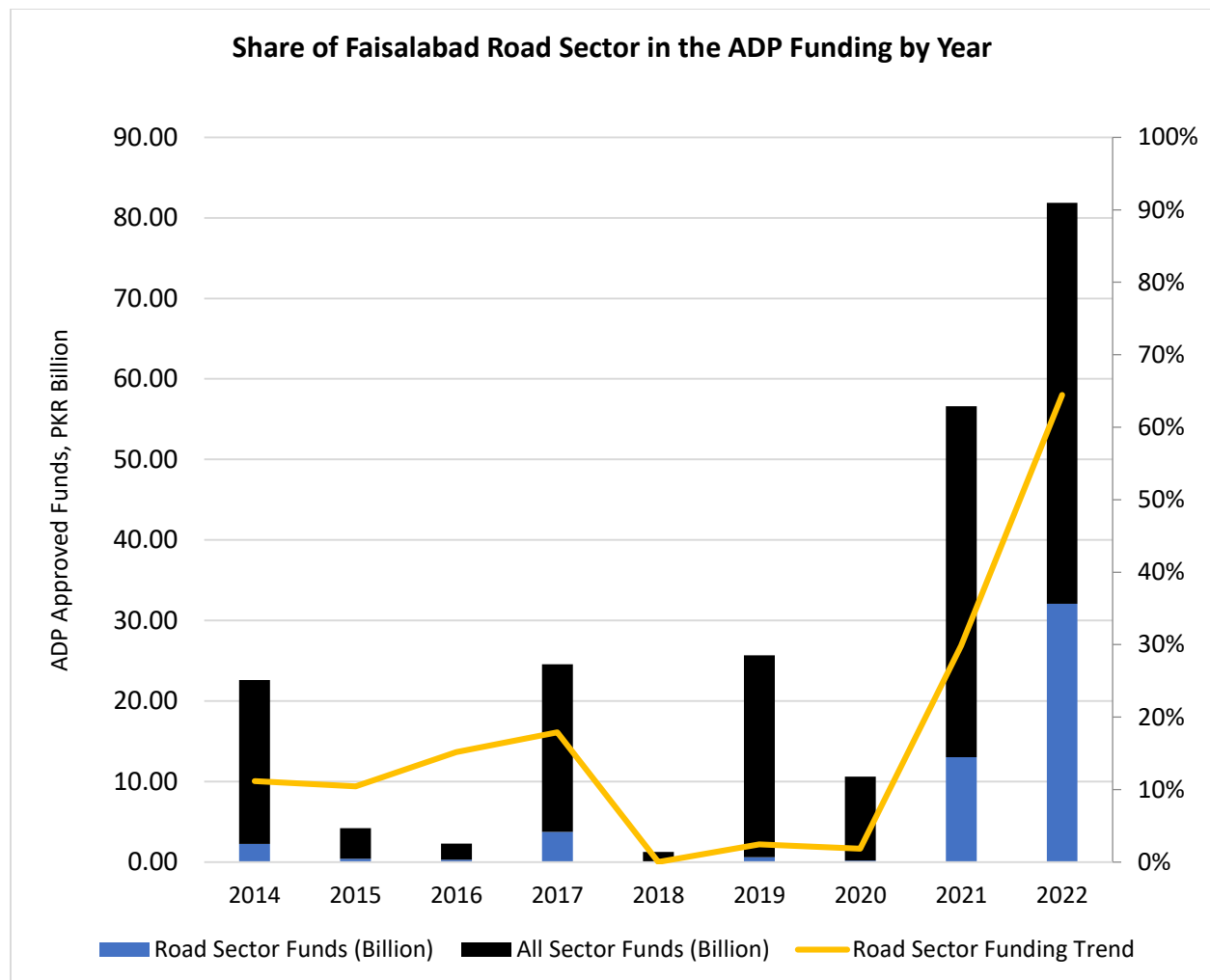


Figure 2-5: Share of Road Sector in ADP Funding

2.2 Road Network Mobility

Motorways, national highways, and provincial highways especially those with dual carriageways accommodate high speed traffic. The average design speed of motorways in Pakistan is 120 km/hr, national highways 100 km/hr, and provincial roads, 80 km/hr. However, factors such as high traffic volume and deteriorated roads often result in less than desired speeds on these roads, in particular the provincial highways that find it increasingly hard to compromise between access and mobility.

The Motorways that through Faisalabad Division include, Pindi Bhattian-Faisalabad Motorway (M-4), and Lahore-Abdul Hakeem Motorway (M-3), as shown in Figure 2-6. The Grand Trunk National Highway (N-5) passes closer to the division boundary on the southern side (Figure 2-6). Another national highway that passes near the division boundary is the Lahore-Sargodha Highway (N-60). A notable mention here is Mianwali Muzaffargarh Road, famously called MM-Road that lies in the western side of the division. This provincial highway is being considered for handing over to the national highway

authority of Pakistan, thanks largely to its strategic importance for freight and logistics transport between Karachi and Southern KP.

Key provincial roads include Faisalabad-Jhang Road, Faisalabad-Chiniot Road and Faisalabad-TTS Road. None of these inter-district roads is completely dualized which hampers the traffic speed and hence the businesses in the region. Only those parts of these key roads are dualized that fall within Faisalabad Boundary. Some of the key roads link the division with neighbouring districts and national road networks. These include Chiniot-Sargodha Road, Jhang-Sargodha Road, Faisalabad-Sheikhupura Road, and Chiniot Pindi-Bhattian Road. In many cases, according to the policy of the Communication and Works Department, Government of the Punjab, there is a need to dualize the road to accommodate high traffic volume. As a policy, the P&D Board recommends dualization of any provincial roads (arterials) that witness more than 8000 vehicles per day (P&D Board, 2018).

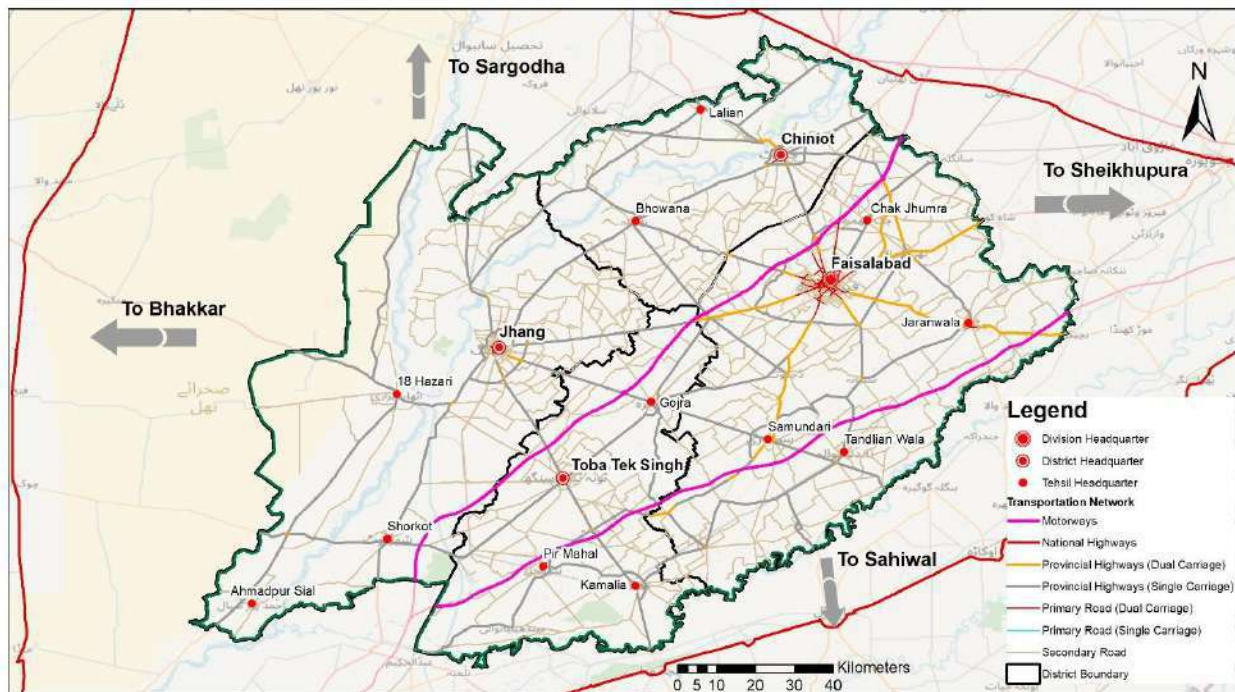


Figure 2-6: Road Speed by Link Type in Faisalabad

The total average daily traffic on the major provincial roads in Faisalabad is shown in Table 2-1 and mapped on Figure 2-7. The highest traffic volumes can be seen on Faisalabad-Sheikhupura Road, 22958 VPDs. The second and the third busiest roads are Faisalabad-Chiniot Road (16876 VPDs) and Chiniot-Lalian Road (14574 VPDs). Another road that closely competes for the third position in terms of daily traffic volumes is Jhang-Shorkot Road that witnesses 14166 vehicles per day. These roads are strong candidates for dualization (parts of these roads are already dualized). Here it is important to look at the traffic split on each of these roads to understand the impact on both passenger and freight transport.

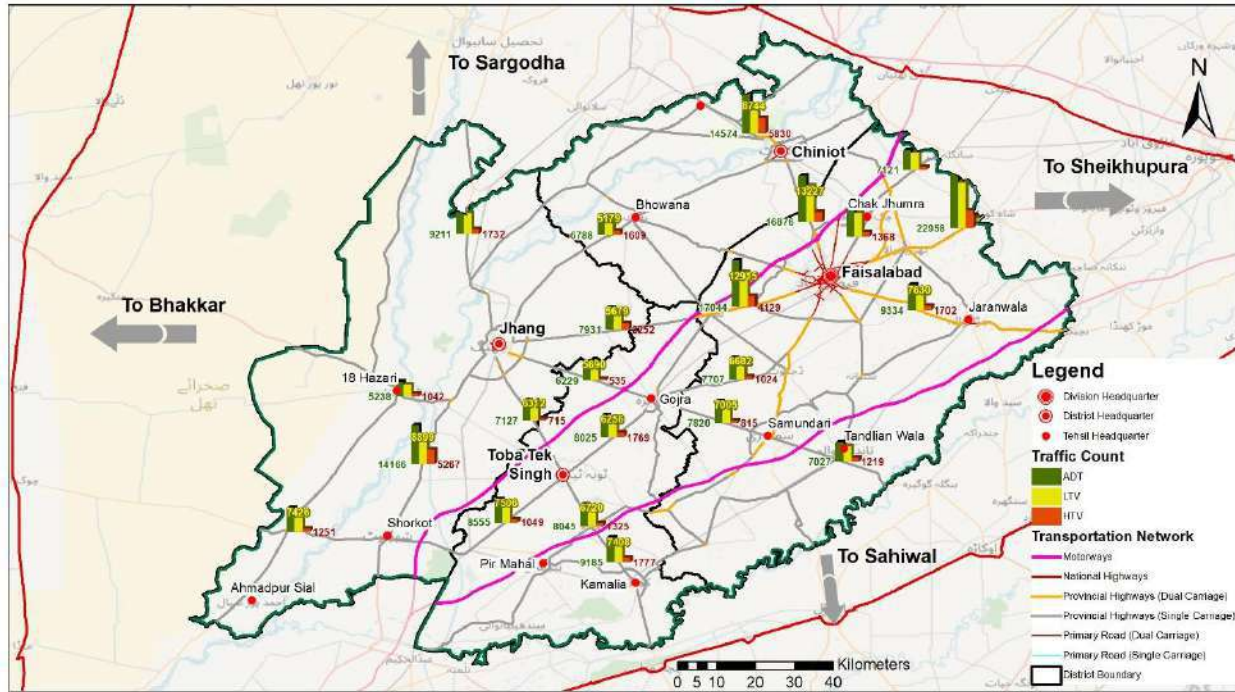


Figure 2-8: Traffic Split on Provincial Roads

So far, we do not see many systematic efforts to realize this potential of these freight transport links. The only notable initiative in this regard was the construction of a model truck terminal on the Faisalabad-Jhang Road, around three decades ago by the Faisalabad Development Authority. However, that truck terminal (locally called New Truck Stand) is now in a dilapidated state with rutted and disintegrated road pavements (Figure 2-9).



Figure 2-9: Truck Stand, Faisalabad-Jhang Road

2.3 Freight Transport Accessibility

Freight transport or logistics is attributed to the transport of goods by way of land, water or air. Having a strong logistics and transportation enhance increases economic competitiveness whereas, the inefficient transport and logistics costs may result into an increasing cost for different firms, in particularly those competing in the export market.

Freight delivery in Pakistan greatly relies on road network. The same is true for Punjab. At present more than 96% of the freight traffic is carried through roads. The main reason for this is incapability to make efficient freight operations by other modes in particularly railways.

Punjab has the largest economy in the country and is the most industrialized province with having around 68,000 industrial units. Punjab also serves as a spatial link between Khyber Pakhtunkhwa and Sindh i.e., provides North to South connectivity. All the local and international freight transport emerging from seaports of Port-Qassim and Gwadar transverse Punjab to its desired destination. Presently, there are 7 major dry ports in Punjab enlisted below in Table 2.1. These ports serve as a hub for shipment of international and domestic cargo to inland destinations.

Table 2-1: Dry Ports in Punjab

Sr No.	Dry Port	Type
1	Lahore Dry Port	Public sector
2	Multan Dry Port	Public sector

3	Rawalpindi Dry Port	Public sector
4	NLC dry port	Private sector
5	Sialkot Dry Port	Private sector
6	Premnagar dry port	Private sector
7	Faisalabad Dry Port	Private sector

Faisalabad Dry Port (FDP) provides rail freight transport to Port Qasim and is primary responsible for textile exports from the city. However, the port is not functioning to its full capacity for various reasons. One of the reasons is the lack of business. On average, 220 container shipments are transported to and from Faisalabad Division, and of these only 10 to 15 use the FDP for custom clearance. The remaining shipments are cleared using ports in Karachi. This business model has gradually weakened the FDP facility to a point that it now faces liquidity crunch. Figure 2-9 compares the freight mobility performance of Faisalabad with other districts in Punjab.

Besides freight and logistics transport agencies that mainly deal with container shipments concerning large industries, goods forwarding agencies (GFAs) play a key role in transport goods for small scale industries and vendors. There are more than 640 GFAs in Punjab (Table 2-2). Of these, 106 lie in Faisalabad, 56 in TTS, 10 IN Jhang, and 14 in Chiniot. The goods forwarding agencies operate in private capacity and there seems a lack of patronage from the public sector for the trucking industry.

Table 2-2: Goods Forwarding Agencies (GFAs) in Punjab

District	GFA's	District	GFA's	District	GFA's
T.T Singh	56	Okara	17	Layyah	6
Sialkot	16	Khushab	30	Nankana sahib	10
Jhang	10	Lodhran	6	M.B din	14
Gujrat	10	Sahiwal	6	Kasur	38
Chiniot	14	Bhakar	19	Muzaffargarh	36
Bahawalnagar	27	Hafizabad	4	Bahawalpur	8
Chakwal	11	Gujranwala	2	Narowal	17
Multan	21	Rawalpindi	102	Pakpattan	7
Vehari	23	Faisalabad	106	R.Y khan	2
Mianwali	9	Sheikhupura	0	Attock	0
Sargodha	14				

Private GFAs usually rent out open spaces and convert them into adhoc truck parking lots (Figure 2-10) that lack even basic facilities for the drivers such as eating, taking rest, and sleeping. There are not enough security provisions either and interviewed drivers expressed

concerns about the safety of loaded goods. This dehumanization of truck drivers in our country and lack of terminal facilities have been persisting for far too long. It gives rise to problems such as driver fatigue and road accidents. In addition, a lack of formal truck terminals has resulted in goods transport accessibility-issues.



Figure 2-10: A Goods-Forwarding-Agency Stand in Faisalabad

As mentioned earlier, there is only one formal goods transport truck terminal in the Faisalabad Division (Figure 2-9). An accessibility analysis of the terminal is shown in Figure 2-11. The terminal is situated on Jhang-Faisalabad Road. The terminal provides a transport coverage to 11% of the geographical extent of Faisalabad Division in a time band of 0-10 minutes. This coverage is increased to 37% when the drive time is increased to range from 20 to 40 minutes. By further increasing the drive time to 60%, around 50% of the division may be encompassed. However, these calculations assume that there are enough trucks to respond to each demand without any delay. This seems unrealistic because if it were so there would have not been more than a 100 private GFAs in Faisalabad alone. This analysis indicates the need for multiplying the formal truck stands with all the necessary facilities for drivers. To begin with, the regulator agencies can make one model truck terminal in each of the district headquarters with all the basic facilities for the trucking community. These model truck terminals can help set standards for private GFAs and the entire sector may be regulated for an improved quality of life for drivers and a better service provision for the industry.

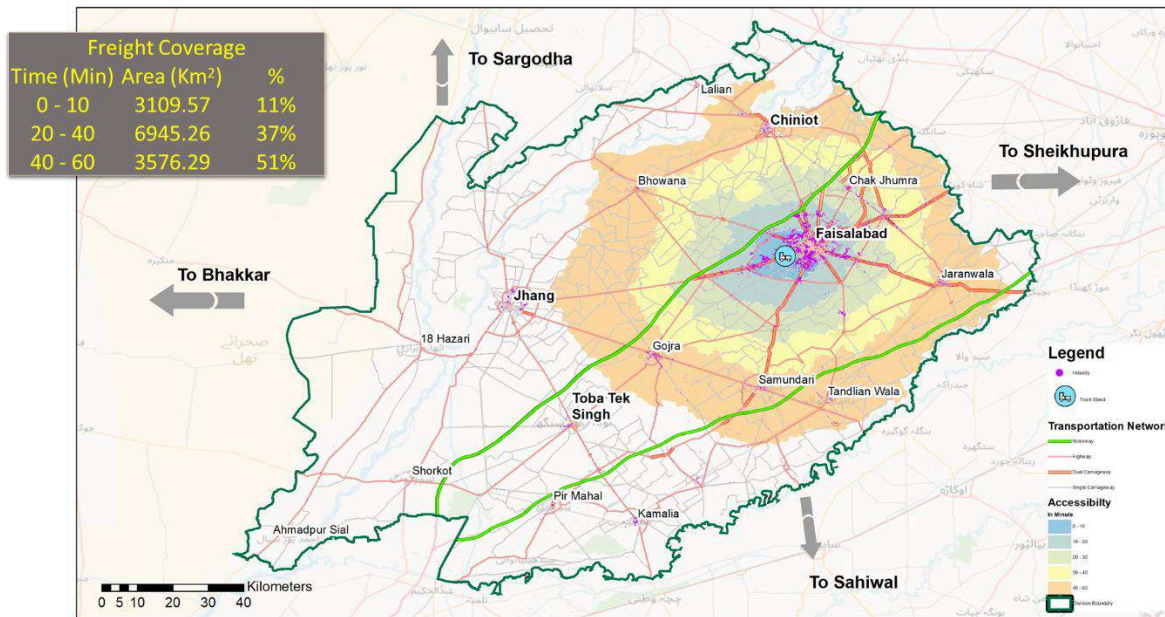


Figure 2-11: Truck Terminal accessibility analysis, Faisalabad

2.4 Public Transport

Public transport manipulates socio-economic development of cities in two ways. Inadequacies in public transport provision create barriers, limits individual and community participation in activities such as employment, health, and education, etc. These inadequacies can be due to inappropriate network link between the transport system, and activities. Secondly, operation of the public transport system results in environmental, aesthetic, and social externalities on individuals and communities, as opposed to others. In both scenarios, people are forced to opt alternate modes of travel usually private means to access their desired activities.

Rapid increase in population has resulted in more vehicular trips across the province and within the cities. Consequentially, both inter-city and intra-city public transport system has observed major changes. Apart from urbanization, other factors have also contributed to these variations. Nonetheless, multiple efforts have been made to revitalize public transport system in the province; however, share of private vehicular trips both within intercity and intra-city travel has remained higher. The public transport system in Punjab can be classified as:

1. Intercity Public Transport
2. Intra-city Public Transport

2.4.1 Inter City Public Transport

Intercity Transport in Punjab is deregulated. The Government of Punjab only regulates the fare of non-air-conditioned intercity transport to ensure equity, and convenience to the public. Presently there are more than 116,000 intercity and 26,000 intra-city vehicles playing in Punjab who has obtained route permits from regulatory authority during 2014-17. Likewise, there are three hundred and seventy-four (374) intercity bus terminals in Punjab classified as A, B, C and D Class terminals. Presently, there is no A-class terminal in the province, there are only three (3) B-class terminals. There are one hundred and fourteen (114) C-class terminals. Likewise, there are two hundred and fifty-five (255) D-class terminals in the province.

There are 34 terminals in Faisalabad division of which only 12 are owned by government while the rest are privately owned. District wise list of bus terminals with type is attached in Table 2-3. General bus stand in Faisalabad city is in good condition all the basic amenities are available to public and drivers. While poor cleanliness, pavement and drainage conditions persist in general bus stand of Jhang city and needs significant improvement in entire terminal, no development work has been done in the last 30 years. Likewise, all basic amenities are available in general bus stand in Toba Tek Singh city while presence of rikshaw stand and lesser area of terminal hinders the vehicular maneuvering. General bus stand in Chiniot city is has vast area, lacks workshop and basic facilities and needs significant upgradation.

Table 2-3: District Wise Bus Terminals in Faisalabad

District Name	Terminal Type	Number of Terminal
Chiniot	C Class Stand	01
	D Class Stand	01
Faisalabad	B Class Stand	01
	C Class Stand	06
	D Class Stand	16
Jhang	C Class Stand	01
	D Class Stand	04
Toba Tek Singh	C Class Stand	04

ANALYSIS

This chapter includes an analysis of the missing connectivity links that are crucial for passenger and freight transport in Faisalabad division. This analysis will lead to identification of the transport and connectivity schemes for the division. In particular, focus of the proposed interventions will be road sector schemes (dualizations and upgradations), freight transport schemes (truck terminals), and public transport schemes (mass transit). The analysis aims to compare the extant status of transport and connectivity infrastructure with transport demand, thereby identifying the missing transport infrastructure that the public agencies must provide to completely realize the potential of the division.

3.1 Identification of Road Schemes

With reference to Figure 2-7, there is a clear indication that most of the provincial roads, that play key role in the regional transport and connectivity of the division, are single (undivided) roads. Not only such roads fail to fulfil the mobility need of the regional traffic, but also, they present a safety hazard due to an increased possibility of head-on collision. In addition to mobility and safety, other road functions such as accessibility also play a role in identification of new road schemes. Here, a methodology for identification of road network schemes is presented that takes into account all these factors as well as the cost benefit ratio of the investment.

In short, a well versed and comprehensive solution is laid out for the road network of the Faisalabad that caters the need of present as well as future demand of the province. All the interventions are made in correspondence with the on-going projects, CPEC and future plans of the National Highway Authority organization tasked with the development of the national network. The prime aim is to maximise the utility and productivity of the provincial network by developing and upgrading links to the areas which do not have direct access to the provincial network. In addition, areas with potential economic growth highlighted in the economy and settlement section of the report are also analysed to provide access and or to improve the mobility of the people and goods.

Specifically, A methodology, shown in Figure 3-1, is devised to identify the missing links or links with poor mobility and reliability that can help obtain the highest rate of return both in economic and social terms. Identification of links is based on the analysis of directness index, travel speed, connectivity to CPEC and motorways of Pakistan, public transport infrastructure accessibility index (PTIAI), consultation with experts, quality and reliability of existing road network. Each identified link was then subjected to a detailed cost benefit analysis to ensure that the project is financially sound.

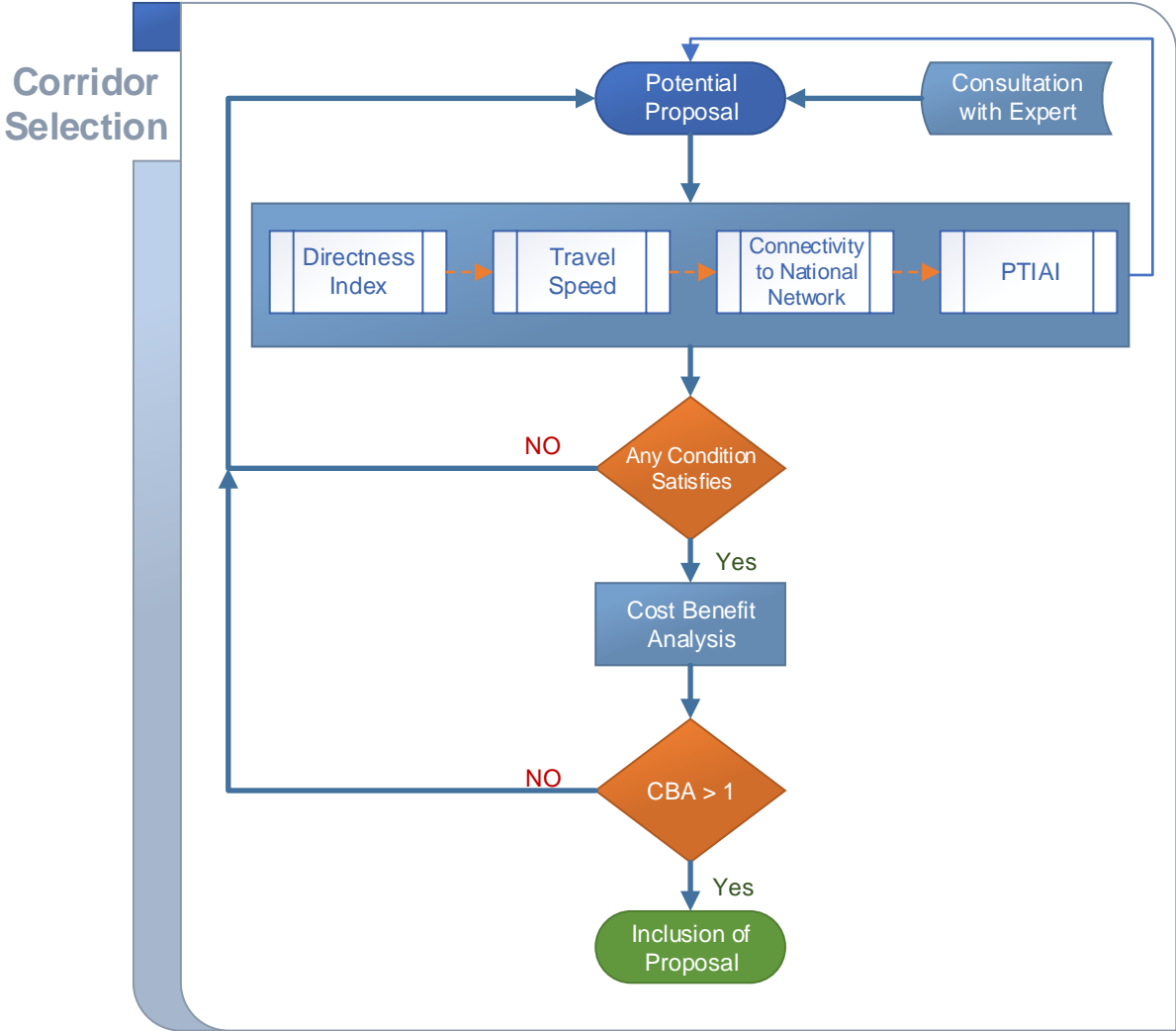


Figure 3-1: Identification and Selection of Proposed Road Corridors

A road corridor is proposed either by result of afore-mentioned analyses of indicators or by following the P&D Board criteria (> 8000 VPD for dualization schemes). Each proposal is then evaluated for its feasibility by working out the following indicators.

3.1.1 Directness Index

Directness index measures the ratio of network distance between two points; in context of Faisalabad Division, Euclidean distance between same points and or case cities is considered. It is a common indicator to measure accessibility of the two points. The index has lowest limit of 1 but upper limit is not fixed. A ratio of 1 indicates that a direct possible corridor is available between two points. Various studies have been carried to identify the benchmark value of the ratio but factors such as geography and topology of the area limits selection of absolute value. Nevertheless, some researchers through empirical analyses have found that

a value of 1.2 holds true for various settings¹. Keeping in view past studies a value of 1.2 is selected as threshold for connectivity, therefore any OD pair that have a value higher than 1.2 is considered as indirect connection and a new corridor that reduces this value is considered feasible. The indicator is calculated on ArcGIS using network analyst tool to determine the shortest corridor between origin and destination.

3.1.2 Travel Speed

Travel speed is based on the type, width, quality and class of the road network available between origin and destination under free flow condition. It determines the quality of road network available and identifies a poor link even if it provides direct accessibility. Travel speed is calculated for the identified corridor using ArcGIS network analyst tool. Free flow speeds based on road class is tabulated in Table 3-1.

Table 3-1: Road Speed in km/hr for different road classes

Road Class	Dual Carriageway	Single Carriageway
Expressway/Motorway	120	-
Highways	100	80
Primary Road	70	60
Secondary Road	50	40
Local Road	-	30

3.1.3 Connectivity to National Network

National road network of Pakistan is developed by National Highway Authority funded by the federal government. It comprises a network of motorways and national highways that are aimed to improve the mobility. High speed motorway network passes through Punjab via network of M2, M3 and M4. Moreover, 970 km of motorways (M4, M5, M11, M14, KLM) under the umbrella of CPEC are currently under construction in Punjab. To utilise the benefits of this network, it is crucial to connect cities and industries away from motorway with a high speed and reliable road link to these motorways. Hence links that provide connection with already built or under construction national network are considered as a viable option and proceeded for CBA.

3.1.4 Public Transport Infrastructure Accessibility Index

Public Transport Infrastructure Accessibility Index (PTIAI) is an index developed by the Urban Unit based on Transport Accessibility Index (TAI)². TAI was initially developed by Gamma and Trutz Haase for Department of Transport, Republic of Ireland to provide an important input in determining accessibility to assist the government in their programs. PTIAI is modified form of TAI developed to identify and estimate the population being deprived by

¹ Ballou, R., Rahardja, H. and Sakai, N. (2002), "Selected country circuitry factors for road travel distance estimation", *Transportation Research Part A*, Vol. 36(9), Elsevier, pp. 843– 848.

Love, R. and Morris, J. (1979), "Mathematical models of road travel distances", *Management Science*, Institute of Management Sciences, pp. 130–139.

² Towards the Development of Transport Accessibility Index, Gamma and Trutz Haase, 2007

transport and to identify future improvement areas where transport provision is to be enhanced. The detailed methodology of the index can be read in the Urban Unit Publication of Public Transport Infrastructure Accessibility Index. Highlights of the results of the Index are given in Figure 3-2.

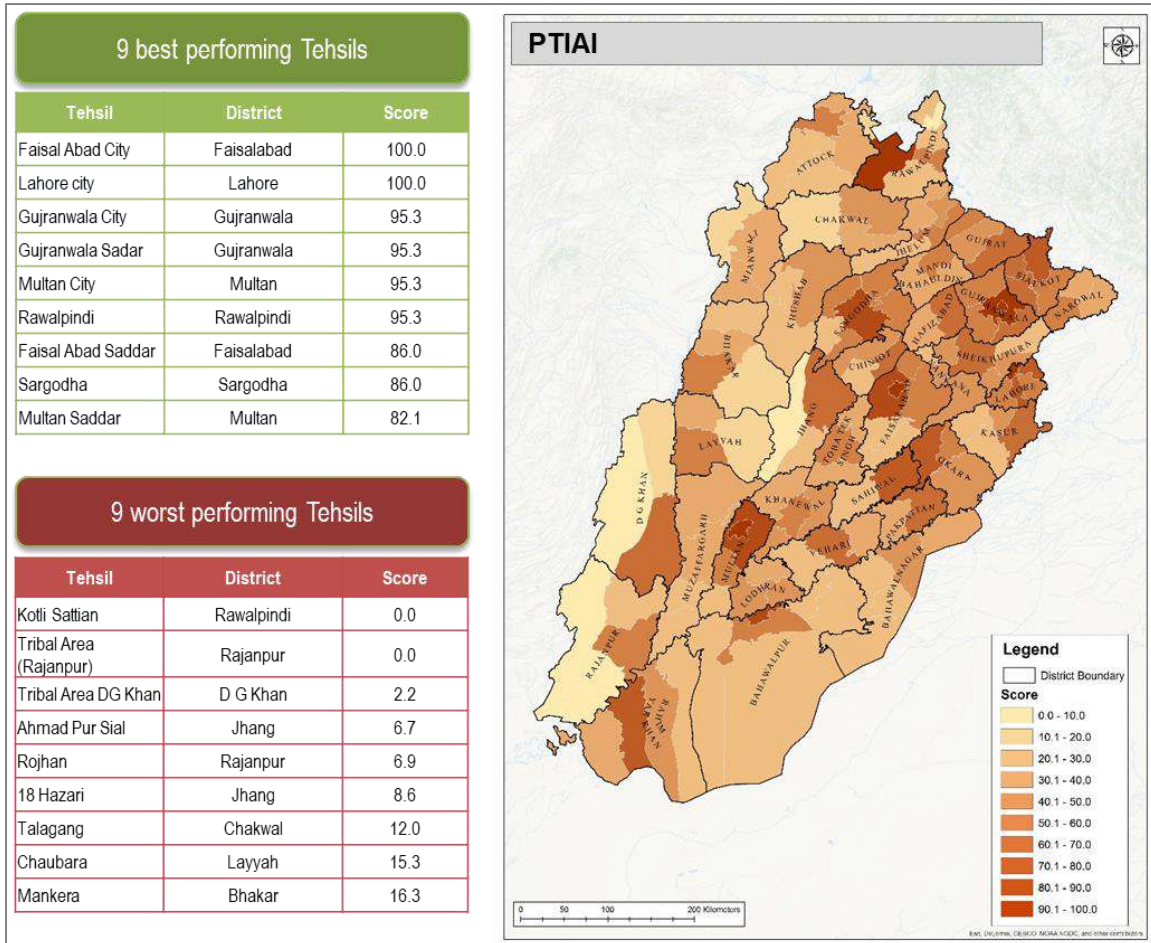


Figure 3-2: Results of PTIAI for Tehsils of Punjab

3.1.5 Cost Benefit Analysis

Cost benefit analysis (CBA) calculates a benefit cost ratio (BCR) that identifies the relationship between the cost and benefits of a proposed project. The ratio is used to measure both the quantitative and the qualitative factors, since sometimes the benefits and the costs cannot be measured exclusively in financial terms. When possible, the qualitative factors should be translated into quantitative terms for the results to be easily understandable and tangible. The BCR is calculated by dividing the total discounted benefits of a project by the total discounted costs of the project. In order to calculate the discounted values of benefits and costs, Net Present Value (NPV) is used, in which the values are divided by the sum of 1 and the discount rate raised to the number of periods. This will give the net present values of future benefits and costs.

$$NPV \text{ of Benefits} = \sum_{t=0}^n \left\{ \frac{\text{Benefits}_t}{(1+r)^t} \right\}$$

$$NPV \text{ of Costs} = \sum_{t=0}^n \left\{ \frac{\text{Costs}_t}{(1+r)^t} \right\}$$

Where:

- r = Discount rate
 t = Number of years
 n = Total number of years (design life)

Once the accumulated values of benefits and costs are calculated then just by dividing them BCR can be calculated.

$$BCR = \frac{NPV \text{ of Benefits}}{NPV \text{ of Costs}}$$

After calculating the BCR of proposed projects, if the value of BCR is greater than 1 than the proposed project is assumed to be the economically feasible and if the value of BCR is less than 1 than the proposed project is assumed to be economically not feasible.

Using the above methodology, 21 road network schemes were tested for a preliminary economic feasibility (Table 3-2). These schemes primarily aim to improve the provincial roads to fulfil the regional transport needs. Most of the proposed schemes (19 out 21) aim to dualize provincial roads to meet the eligibility standards as discussed above. Upgradation is recommended for those road projects where current operating speeds are lower than the design speeds, despite the fact that those roads are already dual (divided) carriageways. For a detailed cost benefit analysis, please refer to Annexure-I.

Table 3-2: Summary of Cost Benefit Ratio Analysis of Potential Road Schemes

S. No.	Linkage	Accumulated Benefits (Rs. Million)	Accumulated Costs (Rs. Million)	B/C Ratio
1	Dualization of Jhang to Chiraghabad interchange(M-4) Faisalabad - Jhang Rd	28,746.55	6,182.46	4.65
2	Dualization of Chiniot-Sargodha Rd via Lalian	32,320.89	7,363.14	4.39
3	Dualization Jhang Rd from Jhang city to Shorkot	37,945.22	8,778.99	4.32

4	Dualization of Faisalabad - Chiniot Rd from Faisalabad Bypass to Chiniot	13,858.88	3,217.40	4.31
5	Upgradation of Faisalabad - Jaranwala Rd Upto Jaranwala Interchange (M-3 Exit-4)	14,601.33	3,542.25	4.12
6	Dualization of Road from Jhang to Okara via Gojra, Samundari	43,499.67	15,085.92	2.88
7	Dualization of Jhang to Sargodha via Mandi Shah Jewana and Sahiwal	39,451.48	13,970.91	2.82
8	Dualization of road from Gojra to Dijkot	9,936.23	4,282.60	2.32
9	Dualization of Satiana Road from Faisalabad Bypass to Okara-Faisalabad Road.	12,043.09	5,553.28	2.17
10	Dualization of Road from Jhang to Chioniot via Bhowana	20,003.99	9,754.86	2.05
11	Dualization of Jhang to Chichawatni (GT) via T.S. Sing and Kamalia	25,413.18	13,518.95	1.88
12	Dualization of Gojra - Pensra Rd	8,095.26	4,427.47	1.83
13	Dualization of T.T.Singh - Gojra Rd	8,527.38	4,718.04	1.81
14	Upgradation of Faisalabad -Chak Jhumra Rd	5,764.85	3,350.09	1.72
15	Dualization of Road from Chak Jhumra to Sangla Hill	6,562.03	3,843.98	1.71
16	Dualization of Road from Chiniot to Pindi Bhattian Interchange	8,983.45	5,398.10	1.66
17	Dualization of T.T.Singh - Shorkot Rd	7,492.26	4,785.94	1.57
18	Dualization of Road from Bhowana to Faisalabad City (Upto Canal Expressway)	7,727.37	5,688.86	1.36
19	Dualization of Pir Mahal- MM Rd via Shorkot	19,587.46	14,569.01	1.34

20	Dualization of Jhang - Bhakkar Road from Malumor to Bhakkar	17,593.69	14,260.57	1.23
21	Dualization of Road from Chiniot to Kasur Via Salarwal & Kamalpur	21,764.74	20,287.47	1.07

3.2 Identification of Truck Terminal Sites

As discussed above, the existing truck terminals, especially those under the patronage of government, are not enough to meet the freight transport needs of the region. Therefore, 12 new potential sites for construction of truck terminals were evaluated (Table 3-3). To ensure equity, it was ensured that each of the four districts gets at least three potential sites for evaluation (Figure 3-3). The purpose of these potential sites was enhancing the accessibility of the goods transport services to the entire division.

Table 3-3: Potential Truck Terminal Sites.

Sr. No.	District	Potential Sites for Truck Terminal Construction
1	Chiniot	Near Plat (village)
2		Near Bhutto Colony
3		Near Adda Burjiyan Wala
1	TTS	Near Shorkot Cantt
2		Near Chak 267 GB (Rajana)
3		Toba Tek Singh Bypass
1	Jhang	Near Alnoor Colony Jhang
2		Near Hassan Shah Jhang
3		Near Chak 220
1	Faisalabad	Near Chak 144 RB
2		Near Ayub Agriculture Research Orchard (AARI)
3		Near Abdul Ahad Textile Mill (Lhr-Fsd Road)

Figure 3-3 shows spatial distribution of the potential sites. It can be seen that the sites are located near provincial highways for smooth movement of truck traffic. Moreover, care has been taken to select such sites that minimize the distance of the district headquarter to the major divisional, regional, and national connectivity corridors such as national highways and motorways. The nearest motorway identified for these potential sites is M-4 (Pindi Bhattian-Faisalabad Motorway). Other important transport nodes that played a role in the site selection include FSD and nearest railways stations.

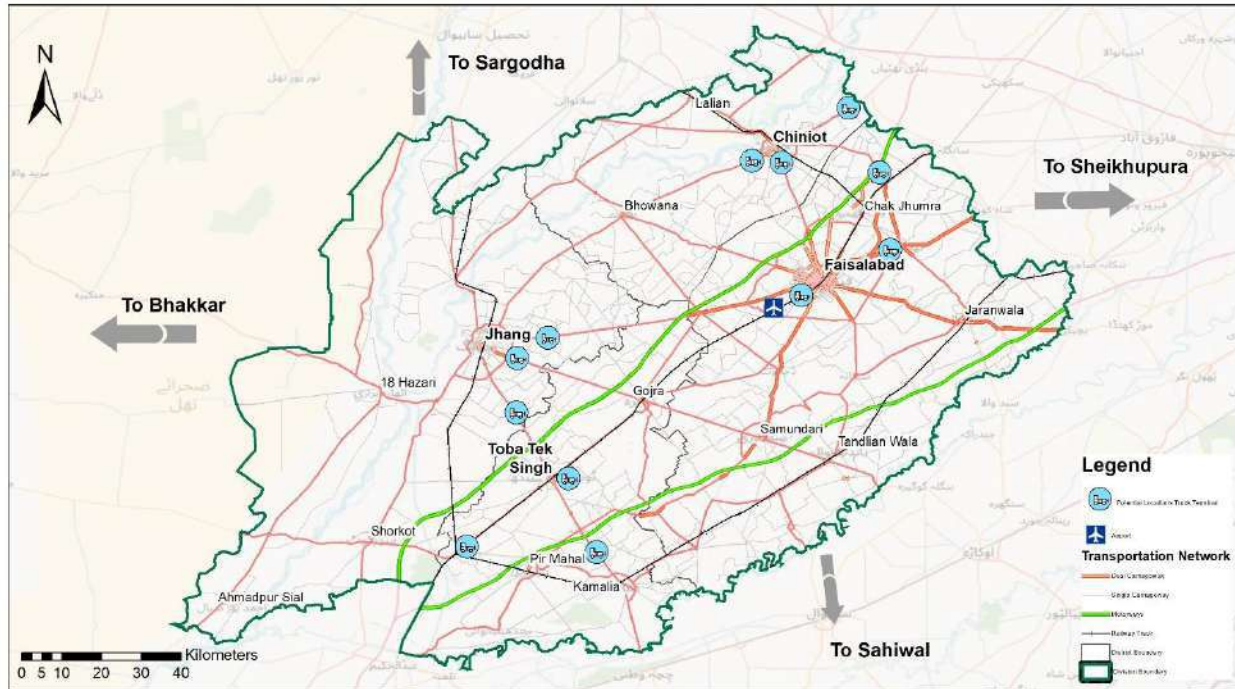


Figure 3-3: Spatial Distribution of Potential Truck Terminal Sites

3.2.1 Methodology

The connectivity of the potential sites has been modelled mathematically. Let C_j be the connectivity score of location j that depends on k factors, then it can be written as follows:

$$C_j = 1 / \sum_{k=1}^5 C_{jk}$$

For a given location j , we can calculate the corresponding C_k values as follows:

$C_{j1} = C_{jN} / C_{\max N} = \text{Distance of location 'j' from National Highway} / \text{Distance of the farthest location from the Highway.}$

Similarly,

$C_{j2} = C_{jM} / C_{\max M} = \text{Distance of location 'j' from Motorway} / \text{Distance of the farthest location from Motorway.}$

This way, we calculated the connectivity scores of each proposed location based on their distance from the key transportation facilities. Note that longer distances will translate into lower connectivity index values, indicating poor connectivity. Moreover, for each transportation facility, different weights may also be assigned to reflect the importance of

a facility for connectivity. For instance, one might want to set a factor weight of 1 for the connectivity with National Highways and 1.5 for the connectivity with Motorways. It would imply that connectivity to Motorways is 50% more advantageous than the connectivity to GT Road. For this study on Faisalabad Division, weights were kept equal to 1 for all the facilities.

Table 3-4: Connectivity Ranking of Potential Truck Terminal Sites

Sr. No.	District	Nearest Landmark for the site	National Highway (km)	Motorway, M-4 (Km)	Railway Station (Km)	Faisalabad Airport (Km)	Faisalabad Dry Ports (Km)	Distance Index	Connectivity Score	Connectivity Ranking
1	Faisalabad	Chak 144 RB	37.0	1.50	13.0	51.0	23.00	3.2	0.31	2
2		Ayub Agriculture Research Orchard	79.0	15.5	7.5	12.0	16.4	2.9	0.34	1
3		Abdul Ahad Textile Mill	60.3	25.0	18.0	31.0	16.6	4.0	0.24	3
1	Jhang	Alnoor Colony	92.3	28.0	9.4	67.0	85.0	3.9	0.25	2
2		Hassan Shah Jhang	76.3	12.0	19.8	83.40	101.0	4.0	0.24	3
3		Chak 220	108	13.4	21.0	57.0	79.0	3.9	0.25	1
1	Chiniot	Plat	50.0	33.0	15.0	51.6	45.8	4.3	0.23	2
2		Bhutto Colony	40.2	19.5	5.7	44.2	31.1	2.5	0.39	1
3		Adda Burjiyan Wala	17.7	18.6	22.8	20.2	59.5	4.8	0.21	3
1	TTS	Shorkot Cantt	65.2	14.8	5.4	98.6	118	4.3	0.23	2
2		Chak 267 GB (Rajana)	33.7	4.4	11.0	117.0	96.3	3.8	0.26	1
3		TTS Bypass	56.0	15.0	6.0	74.0	92.0	4.8	0.21	3

It can be seen that each of the potential sites has its own advantages and disadvantages. For instance, the site near Chak 144 RB in Faisalabad District is very close to the M-4 Motorway (1.5 km) but is farthest (51 km) from the airport among the three potential sites for Faisalabad District. The proximity to Motorway might help in national level trade but

remoteness from the international airport is a hindrance to pick and drop luggage for international transport. This way, each of the potential sites were evaluated and their connectivity scores and rankings were determined.

Figure 3-4 shows the impact of construction new truck terminals on the most suitable locations in all the four district-headquarters of Faisalabad Division. It can be seen that with the proposed truck terminals, the goods transport accessibility significantly improves in comparison to the existing freight transport accessibility of the districts (Figure 2-11). Most industries, particularly those in the district headquarters, would get a rapid goods transport cover (0-10 minutes availability of trucking service). Specifically, the rapid coverage increases from its current 11% to 23% (more than double) when the proposed truck terminals are constructed (Figure 3-4). This enhanced freight accessibility can be further improved in the future by introducing similar truck terminals at Tehsil Level. Alternatively, an improved road infrastructure can help shorten the travel time between truck terminals and industrial facilities.

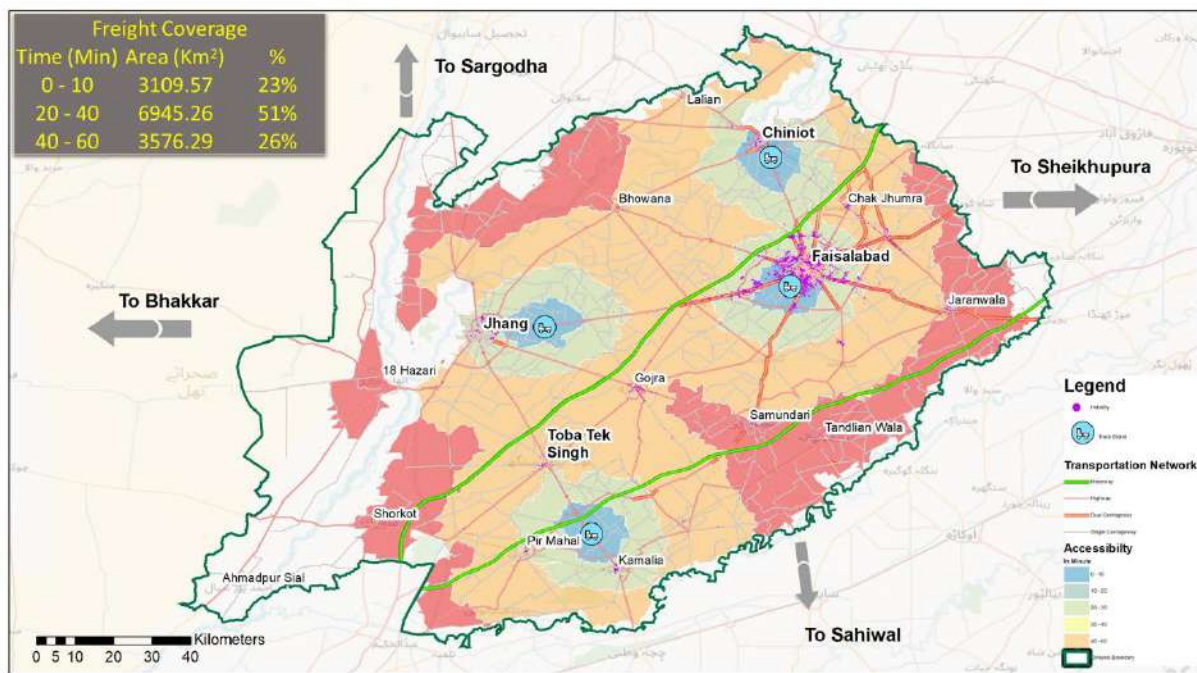


Figure 3-4: Accessibility Analysis of the Proposed Truck Terminal Locations

3.3 Identification of Public Transport Schemes

A GIS based Public Transport Accessibility analysis of inter-city transport is presented here. For this purpose, areas accessible in 20, 40 and 60 minutes drive time threshold are considered for analysis from each bus terminal in respective tehsil. Following map illustrates the area served based on drive time by each bus terminal. It is clear from the map that most of the area is accessible in 60 minute drive time threshold.

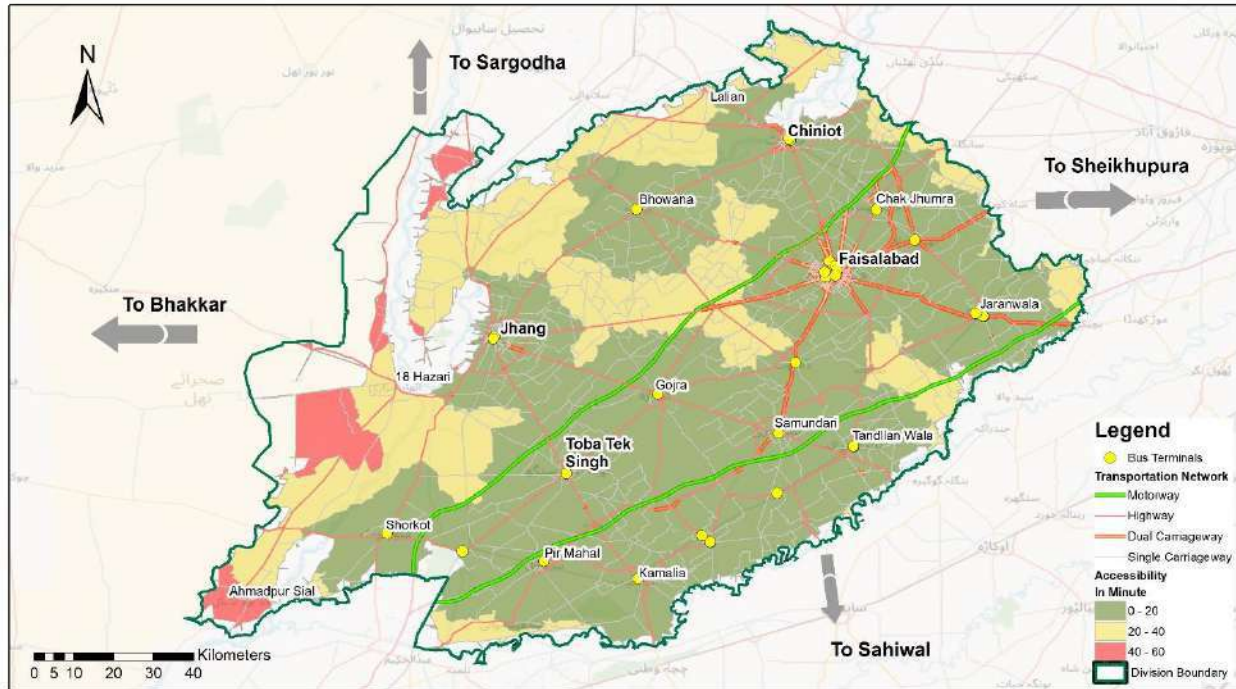


Figure 3-5: Inter-City Public Transport Accessibility Analysis

Based on service area, population served in these drive time thresholds was also calculated to estimate population served by Intercity Bus service. Following table shows the intercity bus coverage in Faisalabad division. For a time band of 0-20 minutes, 77% of population is served by the existing inter-city bus terminals. When the time range is increased to 60 minutes, almost the entire population (99 %) of the division is served (Table 3-5). It implies that the inter-city public transport is accessible to almost the entire population of the division at an acceptable level.

Table 3-5: Inter-city Public Transport Accessibility

Intercity Bus Coverage			
Time (mint)	Population	%Age	Cumulative % Age
0-20	10820398	77%	77%
20-40	2290290	16%	93%
40-60	857328	6%	99%

PROPOSED INTERVENTIONS

The proposed interventions for the upcoming ADPs target a 10-year planning horizon from the year 2023 to 2033. The proposed interventions encompass road and transport sectors. The road sector schemes include dualization and upgradation schemes while the transport sector schemes include urban and inter-city public transport interventions as well as the construction of new model truck terminals in the district headquarters. A preliminary cost estimate and the target implementation timelines for each of the projects have been proposed. It should be noted that these cost estimates rely on the average cost of similar road and transport schemes that have been completed recently in Punjab or Pakistan. Therefore, the reader should expect possibility of large variations in the cost estimates when detailed design of the proposed facilities are conceived in the future.

4.1 Road Schemes

These road schemes are aimed at improving the provincial road network for better regional connectivity. As discussed in the previous chapters, most provincial roads in Faisalabad Division are single lane, despite an ADT of more than 8000. The evaluation of benefit-cost ratio of these roads, as discussed in the previous chapter, gives forth 21 road schemes that should be completed over the next ten years to maintain the minimum required mobility on provincial roads. These road schemes are summarized in Table 4-1. A more detailed cost-benefit analysis of these roads is presented in Annexure-I and their spatial character is presented in Table 2. The benefit-cost ratio of these projects forms the basis of their funding priority. That is, a road scheme with higher benefit-cost ratio gets funding earlier as compared to a road scheme with lower benefit cost ratio.

The projects are primarily focused on dualizing existing roads, with a few upgradation projects. The benefit-cost ratio of the proposed schemes ranges from 4.65 (for Dualization of Jhang to Chiraghabad interchange) to 1.07 (for Dualization of Road from Chiniot to Kasur Via Salarwal & Kamalpur), indicating varying levels of economic viability. The projects with higher benefit-cost ratios are mostly concentrated in the Jhang region (e.g., Dualization Jhang Rd from Jhang city to Shorkot, Dualization of Road from Jhang to Okara via Gojra, Samundari), while the projects with lower benefit-cost ratios are spread out across the division. The implementation timeline for the projects is from 2023-2025 for the top 7 projects, 2026-2029 for the next 7, and 2030-2034 for the remaining projects.

The cost of the projects varies widely, with Dualization of Road from Jhang to Okara via Gojra, Samundari having the highest cost (Rs. 15,085.92 million) and Upgradation of Faisalabad -Chak Jhumra Rd having the lowest cost (Rs. 3,350.09 million). Note that these costs are primarily dependent on the road length that has been multiplied with a standard per kilometer road construction cost. The benefits of the projects also vary widely, with Dualization of Road from Jhang to Okara via Gojra, Samundari having the highest benefit (Rs. 43,499.67 million) and Upgradation of Faisalabad -Chak Jhumra Rd having the lowest benefit (Rs. 5,764.85 million).

The costs of the projects are generally lower than the benefits, indicating that they have a positive net present value. Overall, the table 4-1 provides a useful summary of the

economic viability of various road dualization projects in Faisalabad, with varying levels of benefit-cost ratios and implementation timelines.

Figure 4-1: Proposed Road Schemes

S. No.	Linkage	Accumulated Benefits (Rs. Million)	Accumulated Costs (Rs. Million)	B/C Ratio	Implementation Timeline
1	Dualization of Jhang to Chiraghabad interchange(M-4) Faisalabad - Jhang Rd	28,746.55	6,182.46	4.65	2023-2025
2	Dualization of Chiniot-Sargodha Rd via Lalian	32,320.89	7,363.14	4.39	2023-2025
3	Dualization Jhang Rd from Jhang city to Shorkot	37,945.22	8,778.99	4.32	2023-2025
4	Dualization of Faisalabad - Chiniot Rd from Faisalabad Bypass to Chiniot	13,858.88	3,217.40	4.31	2023-2025
5	Upgradation of Faisalabad - Jaranwala Rd Upto Jaranwala Interchange (M-3 Exit-4)	14,601.33	3,542.25	4.12	2023-2025
6	Dualization of Road from Jhang to Okara via Gojra, Samundari	43,499.67	15,085.92	2.88	2023-2025
7	Dualization of Jhang to Sargodha via Mandi Shah Jewana and Sahiwal	39,451.48	13,970.91	2.82	2023-2025
8	Dualization of road from Gojra to Dijkot	9,936.23	4,282.60	2.32	2026-2029
9	Dualization of Satiana Road from Faisalabad	12,043.09	5,553.28	2.17	2026-2029

	Bypass to Okara-Faisalabad Road.				
10	Dualization of Road from Jhang to Chioniot via Bhowana	20,003.99	9,754.86	2.05	2026-2029
11	Dualization of Jhang to Chichawatni (GT) via T.S. Sing and Kamalia	25,413.18	13,518.95	1.88	2026-2029
12	Dualization of Gojra - Pensra Rd	8,095.26	4,427.47	1.83	2026-2029
13	Dualization of T.T.Singh - Gojra Rd	8,527.38	4,718.04	1.81	2026-2029
14	Upgradation of Faisalabad -Chak Jhumra Rd	5,764.85	3,350.09	1.72	2026-2029
15	Dualization of Road from Chak Jhumra to Sangla Hill	6,562.03	3,843.98	1.71	2030-2034
16	Dualization of Road from Chiniot to Pindi Bhattian Interchange	8,983.45	5,398.10	1.66	2030-2034
17	Dualization of T.T.Singh - Shorkot Rd	7,492.26	4,785.94	1.57	2030-2034
18	Dualization of Road from Bhowana to Faisalabad City (Upto Canal Expressway)	7,727.37	5,688.86	1.36	2030-2034
19	Dualization of Pir Mahal- MM Rd via Shorkot	19,587.46	14,569.01	1.34	2030-2034
20	Dualization of Jhang - Bhakkar Road from Malumor to Bhakkar	17,593.69	14,260.57	1.23	2030-2034
21	Dualization of Road from Chiniot to Kasur	21,764.74	20,287.47	1.07	2030-2034

	Via Salarwal & Kamalpur				
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The spatial distribution of the proposed road network schemes is shown in Figure 4-1. The proposed network is spread across the division connecting the region with high speed road links at Tehsil Level and beyond. Moreover, high speed connectivity with national roadways has been ensured. These national roads include Lahore Islamabad Motorway (M-2), Lahore Abdul Hakeem Motorway (M-3), Pindi Bhattian Faisalabad Motorway (M-4), GT Road (N-5), and Mianwali Muzaffar Garh Road (that is still under consideration for conversion into a national highway). These national corridors then lead to international trade gateways including sea ports in Karachi and land gateways with Afghanistan. Thus, the proposed road schemes will help local trade and businesses to transport raw materials and goods at regional, national and international levels. The same roads will also allow a rapid passenger movement that would help promote service-oriented businesses.

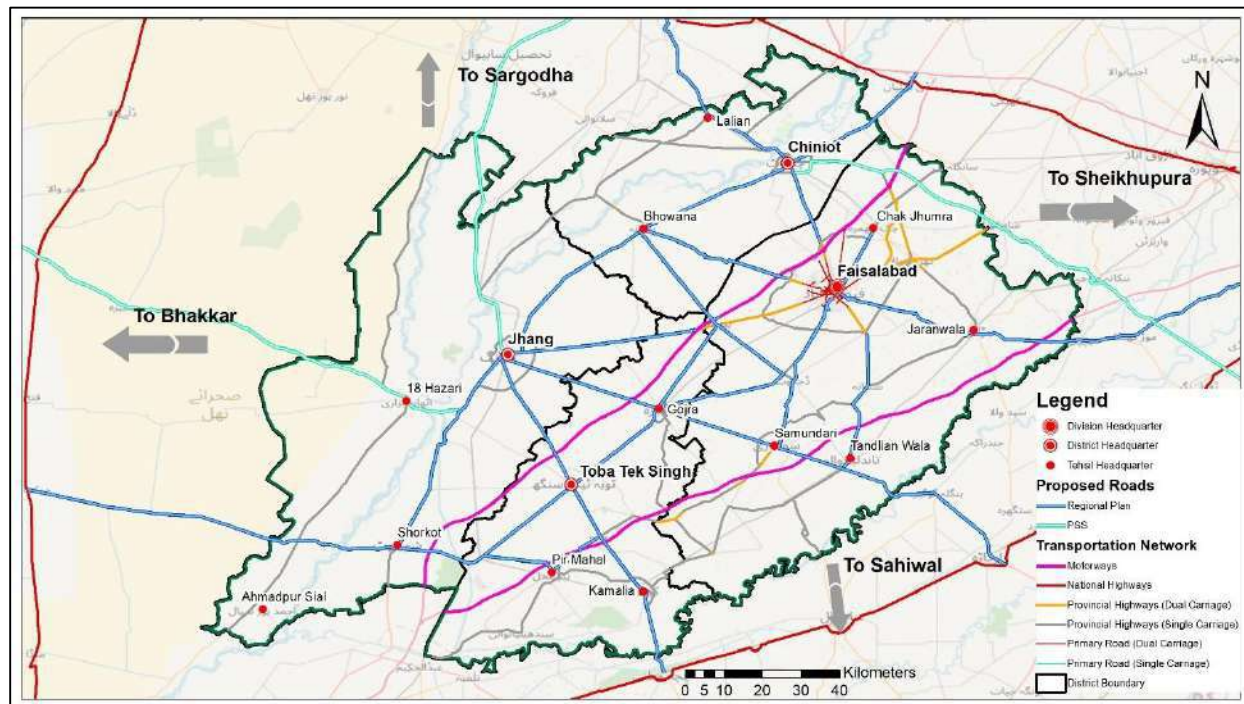


Figure 4-1: Spatial Distribution of Proposed Road Network Schemes

4.2 Truck Terminals

Four model truck terminals have been proposed, one each in every district headquarter. The proposed site for construction of truck terminal site in Faisalabad is near Ayub Agriculture Research Institute (AARI), in Jhang near Chak 446, in TTS near Chak 267 GB (Rajana), and in Chiniot near Near Bhutto Colony. Most industries, particularly those in the district headquarters, would get a rapid goods transport cover (0-10 minutes availability of trucking service). Specifically, the rapid coverage increases from its current 11% to 23%

(more than double) when the proposed truck terminals are constructed (Figure 3-4). This enhanced freight accessibility can be further improved in the future by introducing similar truck terminals at Tehsil Level. Alternatively, an improved road infrastructure can help shorten the travel time between truck terminals and industrial facilities.

Table 4-1: Proposed Truck Terminals

	Project Name	District/ Sector	Implementation Timeline
1	Construction of Modal Truck Terminal Near AARI Research Orchard	Faisalabad	2025
2	Construction of Modal Truck Terminal Near Chak 446 Jhang	Jhang	2025
3	Construction of Modal Truck Terminal Near Chak 267 GB (Rajana)	TTS	2025
4	Construction of Modal Truck Terminal Near Bhutto Colony	Chiniot	2025

4.3 Public Transport

The intercity transport service is found to be satisfactory during this study, therefore, no new schemes have been proposed in this regard. The proposed public transport schemes target urban transport in Faisalabad. These proposals are based on a study by the Punjab Mass Transit Authority and cater for the mass movement of passengers in the divisional headquarter of Faisalabad. The proposed mass transit system consists of four trunk corridors: Red Line, Orange Line, Blue Line and Purple Line. In addition, there are 35 feeder routes that are proposed to be completed in two phases (Table 4-2). These public transport facilities are expected to ease traffic congestion and smog issues in Faisalabad city while providing a cheaper way to commute for different activities such as shopping, businesses, education etc.

Table 4-2: BRT Trunk and Feeder Routes Implementation Timeline for Faisalabad City

S. No.	Proposed Interventions	Implementation Timeline
1	Construction of Red Line Trunk Route	2023-2029
2	Construction of Orange Line Trunk Route	2023-2029
3	Construction of Orange Line Trunk Route (Extension)	2023-2029
4	Construction of Blue Line Trunk Route	2030-2034
5	Construction of Purple Line Trunk Route	2030-2034
6	Construction of Feeder Routes Phase I	2023-2029
7	Construction of Feeder Routes Phase II	2030-2034

Spatial Distribution of the Trunk Routes is shown in Figure 4-2. Red Line Corridor is 21.53 km, it starts at Kamalpur Interchange near M-4, and ends at Roshanwala Bypass. Orange Line Route is 19.35km, starts from Airport Chowk and ends at Faisal Town. Orange Line extension is 9.5 km, it starts at Wapda Workshop and ends at Makuwana. Blue Line is 23.6 km long, starts at Narwala Bypass and ends at Satiana Bypass. Purple line starts at Risalaywala Bypass and ends at Gutwala (length, 25.45 km). The total length of all the trunk routes is 99.49 km.

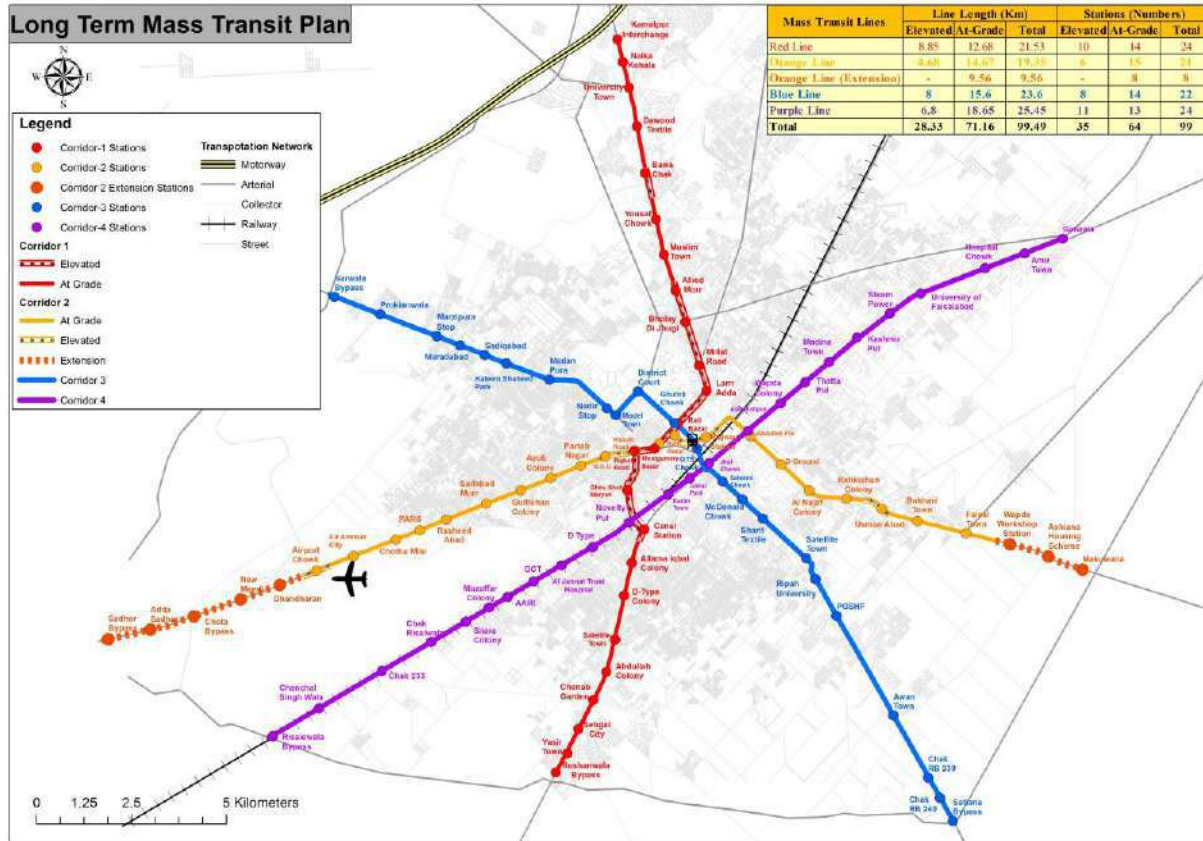


Figure 4-2: Spatial Distribution of Trunk Routes, BRT Faisalabad

4.4 Expected Outcomes

The impact of proposed interventions has been summarized in Figure 4-2. In the base year 2023, the share of dual carriageways in the entire road network is only 7.4%. The proposed interventions would enhance it to 21% by 2029 and 27% by 2034. Likewise, currently there is no form of urban transport in the district. It is proposed to introduce a BRT system for the divisional headquarter to meet the increasing needs of urban commute. By 2029, it is proposed to construct three trunk routes (red line, orange line, and orange line extension) and 16 feeder routes. By 2034, the number of trunk routes is proposed to be increased to five with the introduction of Purple Line and Blue Line Routes. Likewise, the number of feeder routes would increase to 35. There is only one formal truck terminal in the division. This would increase to four by 2034. Thus, the proposed interventions would have a multi-prong effect on enhancing the road and transport sector infrastructure in Faisalabad.

Base Line	2029	2034
<p>Road Network</p> <ul style="list-style-type: none"> Dual Carriageways: 8% <p>Mass Transit System</p> <ul style="list-style-type: none"> Non-existence <p>Freight Transport</p> <ul style="list-style-type: none"> 1 Truck Terminal 1 Container Terminal <p>Public Transport</p> <ul style="list-style-type: none"> Accessible to 99% population within 90-minute timeframe 	<p>Road Network</p> <ul style="list-style-type: none"> Dual Carriageways: 21% <p>Mass Transit System</p> <ul style="list-style-type: none"> Three trunk routes (red line, orange line, and orange line extension) and 16 feeder routes. <p>Freight Transport</p> <ul style="list-style-type: none"> 4 Truck Terminal 1 Container Terminal <p>Public Transport</p> <ul style="list-style-type: none"> Accessible to 99% population within 90-minute timeframe 	<p>Road Network</p> <ul style="list-style-type: none"> Dual Carriageways: 27% <p>Mass Transit System</p> <ul style="list-style-type: none"> Five Trunk Routes 35 Feeder Routes <p>Freight Transport</p> <ul style="list-style-type: none"> 4 Truck Terminal 1 Container Terminal <p>Public Transport</p> <ul style="list-style-type: none"> Accessible to 99% population within 90-minute timeframe

Figure 4-3: Outcomes of the Proposed Interventions

ANNEXURE I**COST-BENEFIT ANALYSIS OF THE POTENTIAL ROAD SCHEMES
SHEET 1 CANDIDATE LINKS AND PROPOSED IMPROVEMENTS**

	Linkage	Existing Link				Proposed Link			
		Carriageway	Distance (Km)	Speed (kph)	Travel Time (TT) Hours	Carriageway	Distance (Km)	Speed (kph)	TT (Hrs)
1	Dualization of Faisalabad - Chiniot Rd from Faisalabad Bypass to Chiniot	Dual	0	80	0	Dual	21.4	80	0.2675
		Singal	21.4	40	0.535	Singal	-	-	-
		Total	21.4	-	0.535	Total	21.4	-	0.2675
2	Dualization of Chiniot-Sargodha Rd via Lalian	Dual	0	80	0	Dual	51.3	80	0.64125
		Singal	51.3	40	1.2825	Singal	-	-	-
		Total	51.3	-	1.2825	Total	51.3	-	0.64125
3	Dualization Jhang Rd from Jhang city to Shorkot	Dual	0	40	0	Dual	58	80	0.725
		Singal	58	40	1.45	Singal	-	-	-
		Total	58	-	1.45	Total	58	-	0.725
4	Upgradation of Faisalabad -Chak Jhumra Rd	Dual	17.7	40	0.4425	Dual	17.7	80	0.22125
		Singal		0		Singal	-	-	-
		Total	17.7	-	0.4425	Total	17.7	-	0.22125
5	Upgradation of Faisalabad - Jaranwala Rd Upto Jaranwala Interchange (M-3 Exit-4)	Dual	47.8	40	1.195	Dual	47.8	80	0.5975
		Singal		40	0	Singal	-	-	-
		Total	47.8	-	1.195	Total	47.8	-	0.5975
6	Dualization of Jhang to Sargodha via Mandi Shah Jewana and Sahiwal	Dual	120	40	3	Dual	120	80	1.5
		Singal		40	0	Singal	-	-	-
		Total	120	-	3	Total	120	-	1.5
7	Dualization of Pir Mahal- MM Rd via Shorkot	Dual		80	0	Dual	124	80	1.55
		Singal	124	40	3.1	Singal	-	-	-

Annexures

		Total	124	-	3.1	Total	124	-	1.55
8	Dualization of T.T.Singh - Shorkot Rd	Dual		80	0	Dual	26.9	80	0.33625
		Singal	26.9	40	0.6725	Singal	-	-	-
		Total	26.9	-	0.6725	Total	26.9	-	0.33625
9	Dualization of Jhang to Chichawatni (GT) via T.S. Sing and Kamalia	Dual		80	0	Dual	91	80	1.1375
		Singal	91	40	2.275	Singal	-	-	-
		Total	91	-	2.275	Total	91	-	1.1375
10	Dualization of T.T.Singh - Gojra Rd	Dual		-		Dual	28.3	80	0.35375
		Singal	28.3	40	0.7075	Singal	-	-	-
		Total	28.3	-	0.7075	Total	28.3	-	0.35375
11	Dualization of Jhang to Chiraghabad interchange(M-4) Faisalabad - Jhang Rd	Dual	43.1	40	1.0775	Dual	43.1	80	0.53875
		Singal		40	0	Singal	-	-	-
		Total	43.1	-	1.0775	Total	43.1	-	0.53875
12	Dualization of road from Gojra to Dijkot	Dual		80	0	Dual	33.7	80	0.42125
		Singal	33.7	40	0.8425	Singal	-	-	-
		Total	33.7	-	0.8425	Total	33.7	-	0.42125
13	Dualization of Road from Jhang to Okara via Gojra, Samundari	Dual		80	0	Dual	130	80	1.625
		Singal	130	40	3.25	Singal	-	-	-
		Total	130	-	3.25	Total	130	-	1.625
14	Dualization of Road from Jhang to Chioniot via Bhowana	Dual		80	0	Dual	80.6	80	1.0075
		Singal	80.6	40	2.015	Singal	-	-	-
		Total	80.6	-	2.015	Total	80.6	-	1.0075
15	Dualization of Jhang - Bhakkar Road from Malumor to Bhakkar	Dual		80	0	Dual	123	80	1.5375
		Singal	123	40	3.075	Singal	-	-	-
		Total	123	-	3.075	Total	123	-	1.5375
16	Dualization of Pir Mahal-Kamalia Rd	Dual		80	0	Dual	24.9	80	0.31125
		Singal	24.9	40	0.6225	Singal	-	-	-
		Total	24.9	-	0.6225	Total	24.9	-	0.31125
17	Dualization of Gojra - Pensra Rd	Dual		-	0	Dual	25.2	80	0.315

Annexures

		Singal	25.2	40	0.63	Singal	-	-	-
		Total	25.2	-	0.63	Total	25.2	-	0.315
18	Dualization of Road from Chiniot to Pindi Bhattian Interchange	Dual		-	0	Dual	37.3	80	0.46625
		Singal	37.3	40	0.9325	Singal	-	-	-
		Total	37.3	-	0.9325	Total	37.3	-	0.46625
19	Dualization of Road from Chiniot to Kasur Via Salarwal & Kamalpur	Dual		80	0	Dual	173	80	2.1625
		Singal	173	40	4.325	Singal	-	-	-
		Total	173	-	4.325	Total	173	-	2.1625
20	Dualization of Satiana Road from Faisalabad Bypass to Okara-Faisalabad Road.	Dual		-	-	Dual	37	80	0.4625
		Singal	37	40	0.925	Singal	0	-	-
		Total	37	-	0.925	Total	37	-	0.4625
21	Dualization of Road from Bhowana to Faisalabad City (Upto Canal Expressway)	Dual		-	-	Dual	49	80	0.6125
		Singal	49	40	1.225	Singal	-	-	-
		Total	49	-	1.225	Total	49	-	0.6125
22	Dualization of Road from Chak Jhumra to Sangla Hill	Dual				Dual	27.7	80	0.3
		Singal	27.7	40	0.6925	Singal	-	-	-
		Total	27.7		0.6925	Total	27.7	-	0.34625

ANNEXURE I
COST-BENEFIT ANALYSIS OF THE POTENTIAL ROAD SCHEMES
SHEET 2 TRAVEL TIME SAVINGS

	Linkage	Existing Travel Time (Hrs)	Travel Time After Improvement (Hrs)	Travel Time Saved per PCU per Day (Hrs)	PCU per Day	Total Time Saved per Day (Hrs)	Total Time Saved per Year (Hrs)	Time Value of Occupants (Rs./Hr)	Total Amount Saved Annually (Rs.)	Total Amount Saved Annually (Million Rs.)
1	Dualization of Faisalabad - Chiniot Rd from Faisalabad Bypass to Chiniot	0.5	0.3	0.3	27,895	7,461.9	2,723,598.1	146.9	400,042,083.4	400.0
2	Dualization of Chiniot-Sargodha Rd via Lalian	1.3	0.6	0.6	27138.0	17,402.2	6,351,818.5	146.9	932,955,103.1	933.0
3	Dualization Jhang Rd from Jhang city to Shorkot	1.5	0.7	0.7	28180	20,430.5	7,457,132.5	146.9	1,095,303,621.6	1,095.3
4	Upgradation of Faisalabad - Chak Jhumra Rd	0.4	0.2	0.2	14029	3,103.9	1,132,929.4	146.9	166,404,674.9	166.4
5	Upgradation of Faisalabad - Jaranwala Rd Upto Jaranwala Interchange (M-3 Exit-4)	1.2	0.6	0.6	13082	7,816.5	2,853,020.7	146.9	419,051,676.7	419.1
6	Dualization of Jhang to Sargodha via Mandi Shah Jewana and Sahiwal	3.0	1.5	1.5	14161	21,241.5	7,753,147.5	146.9	1,138,782,304.8	1,138.8
7	Dualization of Pir Mahal-MM Rd via Shorkot	3.1	1.6	1.6	13640	21,142.0	7,716,830.0	146.9	1,133,447,990.4	1,133.4
8	Dualization of T.T.Singh - Shorkot Rd	0.7	0.3	0.3	11997	4,034.0	1,472,406.8	146.9	216,267,111.7	216.3
9	Dualization of Jhang to Chichawatni (GT) via T.S. Sing and Kamalia	2.3	1.1	1.1	12029	13,683.0	4,994,290.4	146.9	733,561,379.5	733.6
10	Dualization of T.T.Singh - Gojra Rd	0.7	0.4	0.4	12979	4,591.3	1,675,832.3	146.9	246,146,241.8	246.1

Annexures

11	Dualization of Jhang to Chiraghabad interchange(M-4) Faisalabad - Jhang Rd	1.1	0.5	0.5	14192	7,645.9	2,790,768.1	146.9	409,908,018.5	409.9
12	Dualization of road from Gojra to Dijkot	0.8425	0.42125	0.42125	12700	5,349.9	1,952,704.4	146.9	286,813,218.6	286.8
13	Dualization of Road from Jhang to Okara via Gojra, Samundari	3.25	1.625	1.625	10520	17,095.0	6,239,675.0	146.9	916,483,464.0	916.5
14	Dualization of Road from Jhang to Chioniot via Bhowana	2.015	1.0075	1.0075	12446	12,539.3	4,576,860.9	146.9	672,249,332.7	672.2
15	Dualization of Jhang - Bhakkar Road from Malumor to Bhakkar	3.075	1.5375	1.5375	8624	13,259.4	4,839,681.0	146.9	710,852,345.3	710.9
16	Dualization of Pir Mahal-Kamalia Rd	0.6225	0.31125	0.31125	8289	2,580.0	941,682.2	146.9	138,314,282.5	138.3
17	Dualization of Gojra - Pensra Rd	0.63	0.315	0.315	13837	4,358.7	1,590,909.1	146.9	233,672,724.9	233.7
18	Dualization of Road from Chiniot to Pindi Bhattian Interchange	0.9325	0.46625	0.46625	10374	4,836.9	1,765,460.3	146.9	259,310,807.0	259.3
19	Dualization of Road from Chiniot to Kasur Via Salarwal & Kamalpur	4.325	2.1625	2.1625	5419	11,718.6	4,277,284.4	146.9	628,247,538.2	628.2
20	Dualization of Satiana Road from Faisalabad Bypass to Okara-Faisalabad Road.	0.925	0.4625	0.4625	14020	6,484.3	2,366,751.3	146.9	347,628,423.6	347.6
21	Dualization of Road from Bhowana to Faisalabad City (Upto Canal Expressway)	0.925	0.6125	0.3125	7605	2,376.6	867,445.3	146.9	127,410,367.5	127.4
22	Dualization of Road from Chak Jhumra to Sangla Hill	0.6925	0.34625	0.34625	10204	3,533.1	1,289,594.3	146.9	189,415,607.1	189.4

ANNEXURE I
COST-BENEFIT ANALYSIS OF THE POTENTIAL ROAD SCHEMES
SHEET 3- VEHICLE OPERATING COSTS SAVINGS

Sr No	Linkage	Existing Distance (km)	New Distance (Km)	Vehicle Operating Cost (Rs./km/PCU/Day)		PCU per Day	Vehicle Operating Cost (Rs./Year)		Per Annum	Million/Annum
				Before	After		Before	After		
1	Dualization of Faisalabad - Chiniot Rd from Faisalabad Bypass to Chiniot	21.4	21.4	8.9	6.8	27,895	1,937,458,718	1,479,894,243	457,564,475	458
2	Dualization of Chiniot-Sargodha Rd via Lalian	51.3	51.3	8.9	6.8	27,138	4,518,429,617	3,451,324,107	1,067,105,510	1,067
3	Dualization Jhang Rd from Jhang city to Shorkot	58	58	8.9	6.8	28,180	5,304,705,775	4,051,907,515	1,252,798,260	1,253
4	Upgradation of Faisalabad -Chak Jhumra Rd	17.7	17.7	8.9	6.8	14,029	805,920,680	615,588,536	190,332,144	190
5	Upgradation of Faisalabad - Jaranwala Rd Upto Jaranwala Interchange (M-3 Exit-4)	47.8	47.8	8.9	6.8	13,082	2,029,524,787	1,550,217,314	479,307,473	479
6	Dualization of Jhang to Sargodha via Mandi Shah Jewana and Sahiwal	120	120	8.9	6.8	14,161	5,515,279,006	4,212,750,226	1,302,528,780	1,303
7	Dualization of Pir Mahal- MM Rd via Shorkot	124	124	8.9	6.8	13,640	5,489,444,189	4,193,016,749	1,296,427,440	1,296
8	Dualization of T.T.Singh - Shorkot Rd	26.9	26.9	8.9	6.8	11,997	1,047,411,306	800,046,962	247,364,343	247
9	Dualization of Jhang to Chichawatni (GT) via T.S. Sing and Kamalia	91	91	8.9	6.8	12,029	3,552,738,446	2,713,697,652	839,040,793	839
10	Dualization of T.T.Singh - Gojra Rd	28.3	28.3	8.9	6.8	12,979	1,192,120,034	910,580,215	281,539,819	282
11	Dualization of Jhang to Chiraghabad interchange(M-4) Faisalabad - Jhang Rd	43.1	43.1	8.9	6.8	14,192	1,985,240,796	1,516,391,755	468,849,041	469

Annexures

12	Dualization of road from Gojra to Dijkot	33.7	33.7	8.9	6.8	12,700	1,389,075,784	1,061,021,449	328,054,335	328
13	Dualization of Road from Jhang to Okara via Gojra, Samundari	130	130	8.9	6.8	10,520	4,438,655,208	3,390,389,808	1,048,265,400	1,048
14	Dualization of Road from Jhang to Chioniot via Bhowana	80.6	80.6	8.9	6.8	12,446	3,255,795,788	2,486,883,152	768,912,635	769
15	Dualization of Jhang - Bhakkar Road from Malumor to Bhakkar	123	123	8.9	6.8	8,624	3,442,755,476	2,629,689,068	813,066,408	813
16	Dualization of Pir Mahal-Kamalia Rd	24.9	24.9	8.9	6.8	8,289	669,875,054	511,672,444	158,202,611	158
17	Dualization of Gojra - Pensra Rd	25.2	25.2	8.9	6.8	13,837	1,131,709,080	864,436,355	267,272,725	267
18	Dualization of Road from Chiniot to Pindi Bhattian Interchange	37.3	37.3	8.9	6.8	10,374	1,255,877,830	959,280,502	296,597,328	297
19	Dualization of Road from Chiniot to Kasur Via Salarwal & Kamalpur	173	173	8.9	6.8	5,419	3,042,689,057	2,324,105,272	718,583,785	719
20	Dualization of Satiana Road from Faisalabad Bypass to Okara-Faisalabad Road.	37	37	8.9	6.8	14,020	1,685,126,890	1,287,512,680	397,614,210	398
21	Dualization of Road from Bhowana to Faisalabad City (Upto Canal Expressway)	49	49	8.9	6.8	7,605	1,210,537,283	924,904,890	285,632,393	286
22	Dualization of Road from Chak Jhumra to Sangla Hill	27.7	27.7	8.9	6.8	10,204	918,191,124	701,539,286	216,651,838	217

ANNEXURE I
COST-BENEFIT ANALYSIS OF THE POTENTIAL ROAD SCHEMES
SHEET 4- FUEL COSTS SAVINGS

Sr No	Link	Carriageway	Distance (Km)	Speed (kph)	Fuel Consumption (Rs./km/veh/day)	Fuel Consumption (Rs./veh/day)	Vehicles ADT (PCU)	Total Fuel Cost (Rs./Day)	Total Fuel Cost Annually (Million Rs.)	Savings
1	Dualization of Faisalabad - Chiniot Rd from Faisalabad Bypass to Chiniot	Dual	21.4	80	7.144	152.8816	27,895	4,264,632	1,556.59	977.01
		Singal	-	-	11.628	-	27,895			
		Total	21.4	-	-	152.8816	27,895	4,264,632.23		
2	Dualization of Chiniot-Sargodha Rd via Lalian	Dual	51.3	80	7.144	366.49	27138	9,945,729.63	3,630.19	2,278.52
		Singal	-	-	11.628	-	27138			
		Total	51.3	-	-	366.49	27138	9,945,729.63		
3	Dualization Jhang Rd from Jhang city to Shorkot	Dual	58	80	7.144	414.35	28180	-	4,261.90	2,675.02
		Singal	-	-	11.628	-	28,180			
		Total	58	-	-	414.35	28,180	11,676,439.36		
4	Upgradation of Faisalabad - Chak Jhumra Rd	Dual	17.7	80	7.144	126.45	14029	-	647.49	406.40
		Singal	-	-	11.628	-	14,029	#VALUE!		
		Total	17.7	-	-	126.45	14,029	1,773,950.22		
5	Upgradation of Faisalabad - Jaranwala Rd Upto Jaranwala Interchange (M-3 Exit-4)	Dual	47.8	80	7.144	341.4832	13,082	-	1,630.56	1,034.54
		Singal	-	-	11.628	-	13,082	#VALUE!		
		Total	47.8	-	-	341.4832	13,082	4,467,283.22		

Annexures

6	Dualization of Jhang to Sargodha via Mandi Shah Jewana and Sahiwal	Dual	120	80	7.144	857.28	14,161	12,139,942.08	4,431.08	2,781.21
		Singal	-	-	11.628	-	14,161	#VALUE!		
		Total	120	-	-	857.28	14,161	12,139,942.08		
7	Dualization of Pir Mahal- MM Rd via Shorkot	Dual	124	80	7.144	885.86	13640	-	4,410.32	163.08
		Singal	-	-	11.628	-	13,640	#VALUE!		
		Total	124	-	-	885.86	13,640	12,083,075.84		
8	Dualization of T.T.Singh - Shorkot Rd	Dual	26.9	80	7.144	192.1736	11,997	2,305,506.68	841.51	528.18
		Singal	-	-	11.628	-	11,997	#VALUE!		
		Total	26.9	-	-	192.1736	11,997	2,305,506.68		
9	Dualization of Jhang to Chichawatni (GT) via T.S. Sing and Kamalia	Dual	91	80	7.144	650.104	12,029	7,820,101.02	2,854.34	1,791.55
		Singal	-	-	11.628	-	12,029	#VALUE!		
		Total	91	-	-	650.104	12,029	7,820,101.02		
10	Dualization of T.T.Singh - Gojra Rd	Dual	28.3	80	7.144	202.18	12,979	2,624,031.92	957.77	601.15
		Singal	-	-	11.628	-	12,979			
		Total	28.3	-	-	202.1752	12,979	2,624,031.92		
11	Dualization of Jhang to Chiraghabad interchange(M-4) Faisalabad - Jhang Rd	Dual	43.1	80	7.144	307.91	14,192.00	-	4,662.82	2,926.66
		Singal	-	-	11.628	-	14,192			
		Total	43.1	-	-	900.14	14,192	12,774,843.65		
12	Dualization of road from Gojra to Dijkot	Dual	33.7	80	7.144	240.7528	12,700	3,057,560.56	1,116.01	700.47
		Singal	-	-	11.628		12,700			

Annexures

		Total	33.7	-	-	240.7528	12,700	3,057,560.56		
13	Dualization of Road from Jhang to Okara via Gojra, Samundari	Dual	130	80	7.144	928.72	10,520	9,770,134.40	2,010.73	3,793.66
		Singal	-	-	11.628	-	10,520			
		Total	130	-	-	523.66	10,520	5,508,852.70		
14	Dualization of Road from Jhang to Chioniot via Bhowana	Dual	80.6	80	7.144	575.8064	12,446	7,166,486.45	3050.65	1,206.93
		Singal	-	-	11.628	-	12,446	#VALUE!		
		Total	80.6	-	-	671.536	12,446	8,357,937.06		
15	Dualization of Jhang - Bhakkar Road from Malumor to Bhakkar	Dual	123	80	7.144	878.71	8,624	7,578,012.29	3696.96	805.10
		Singal	-	-	11.628	-	8,624			
		Total	123	-	-	1,174.47	8,624	10,128,660.33		
16	Dualization of Pir Mahal-Kamalia Rd	Dual	24.9	80	7.144	177.89	8,289	1,474,493.74	538.19	337.80
		Singal	-	-	11.628	-	8,289			
		Total	24.9	-	-	177.89	8,289	1,474,493.74		
17	Dualization of Gojra - Pensra Rd	Dual	25.2	80	7.144	180.0288	13,837	2,491,058.51	909.24	570.69
		Singal	-	-	11.628	-	13,837			
		Total	25.2	-	-	180.0288	13,837	2,491,058.51		
18	Dualization of Road from Chiniot to Pindi Bhattian Interchange	Dual	37.3	80	7.144	266.4712	10,374	2,764,372	1009.00	633.31
		Singal	-	-	11.628	-	10,374			
		Total	37.3	-	-	266.4712	10,374	2,764,372.23		
19	Dualization of Road from Chiniot to Kasur Via Salarwal & Kamalpur	Dual	173	80	7.144	1235.912	5,419	6,697,407	2444.55	1,534.35
		Singal	-	-	11.628	-	5,419			
		Total	173	-	-	847.993	5,419	6,697,407.13		
20	Dualization of Satiana Road from Faisalabad Bypass to Okara-Faisalabad Road.	Dual	37	80	7.144	264.328	14,020	3,705,878.56	1352.65	849.00
		Singal	0	-	11.628	-	14,020			
		Total	37	-	-	264.328	14,020	3,705,878.56		
21	Dualization of Road from Bhowana to Faisalabad City (Upto Canal Expressway)	Dual	49	80	7.144	350.056	7,605	2,662,175.88	971.69	609.89
		Singal	-	-	11.628	-	7,605			
		Total	49	-	-	350.056	7,605	2,662,175.88		
22		Dual	27.7	80	7.144	197.8888	10204	2019257.315	737.03	462.60

Annexures

	Dualization of Road from Chak Jhumra to Sangla Hill	Singal	-	-	11.628	-	10,204		
		Total	27.7	-	-	197.8888	10,204	2,019,257.32	

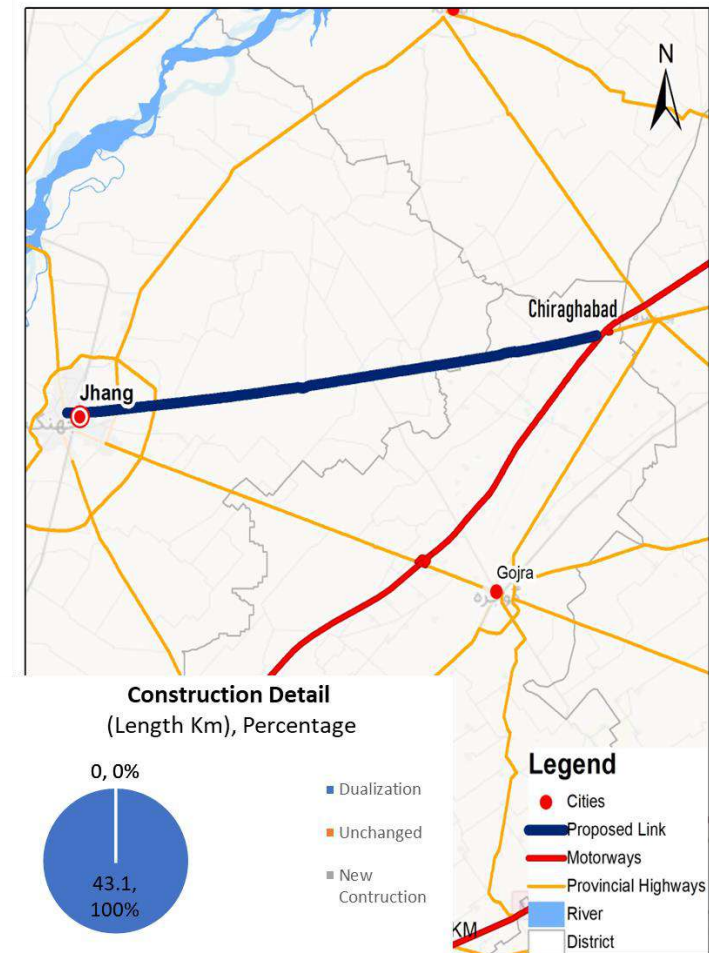
ANNEXURE II

PROPOSED ROAD SCHEMES

1: Jhang to Chiraghabad(M-4)

Project Name	Dualization of Jhang to Chiraghabad interchange(M-4) Faisalabad - Jhang Rd
Via	
Districts	Jhang
Length	43.1 km
Type	4-Lane Dual Carriageway
Phase	I (Year 2023 – 2025)
Total Cost	Rs. 4,741 Million
Benefit Cost Ratio	4.65

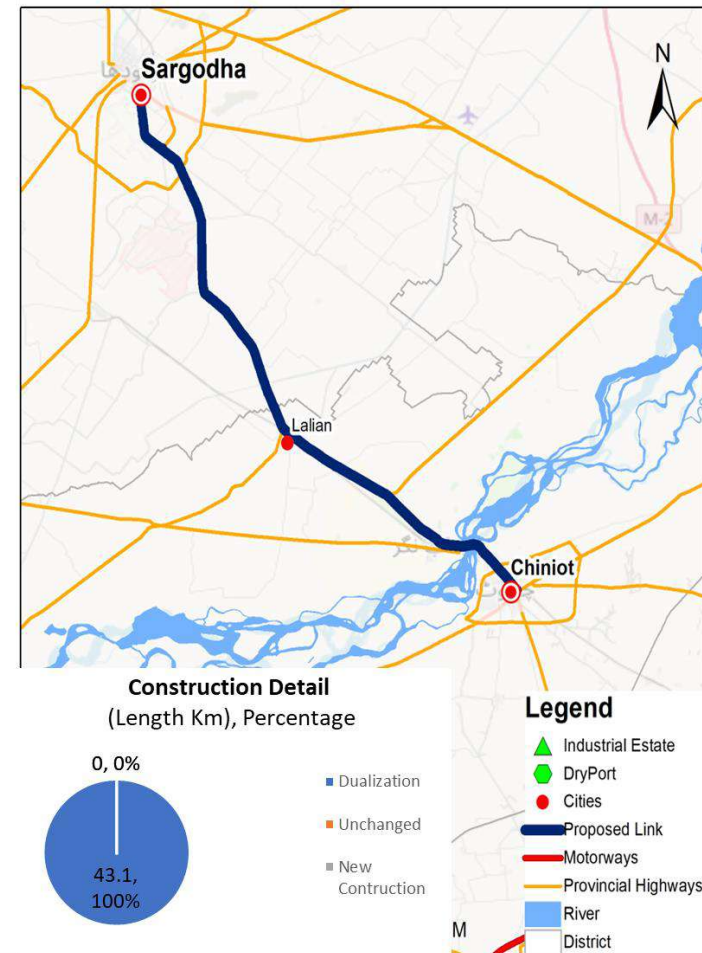
District	Industrial Produce	Agriculture Produce	Tourism Site
Jhang	Sugar, Cotton and Wool	Wheat, Rice, Cotton, Sugarcane, Corn (Maize), Oilseeds, Fruits, And Vegetables.	NA



2: Chiniot to Sargodha

Project Name	Dualization of Chiniot-Sargodha Rd
Via	Ahmed Nagar, Lalian, Chak 46
Districts	Chiniot & Sargodha
Length	51.3 km
Type	4-Lane Dual Carriageway
Phase	I (Year 2023 – 2025)
Total Cost	Rs. 5,643 Million
Benefit Cost Ratio	4.39

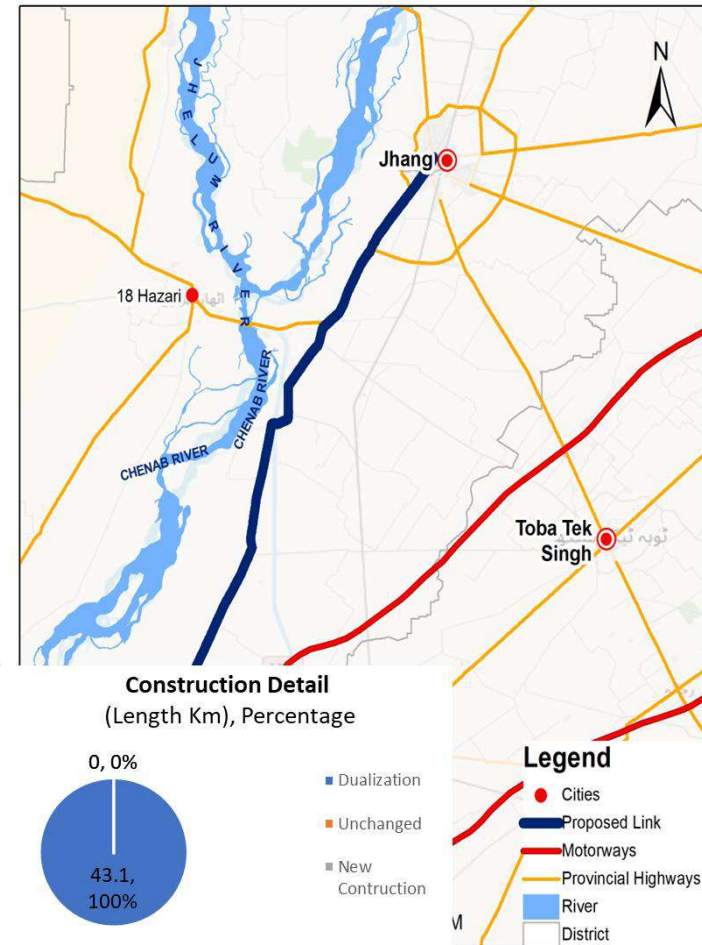
District	Industrial Produce	Agriculture Produce	Tourism Site
Chiniot	Silk, Cotton Pottery, Wooden Furniture	Sugar, Rice, Milk, Sugarcane, Potato, Wheat, Rice, Peas, Maize	NA
Sargodha	Citrus Industry	Sugarcane, Rice, Wheat, Potato And Tomato	Uchali & Kabeiki Lakes Etc



3: Jhang city to Shorkot

Project Name	Dualization Jhang Rd from Jhang city Shorkot
Via	Malumor, Bharwana
Districts	Jhang
Length	57 km
Type	4-Lane Dual Carriageway
Phase	I (Year 2023 – 2025)
Total Cost	Rs. 6,270 Million
Benefit Cost Ratio	4.32

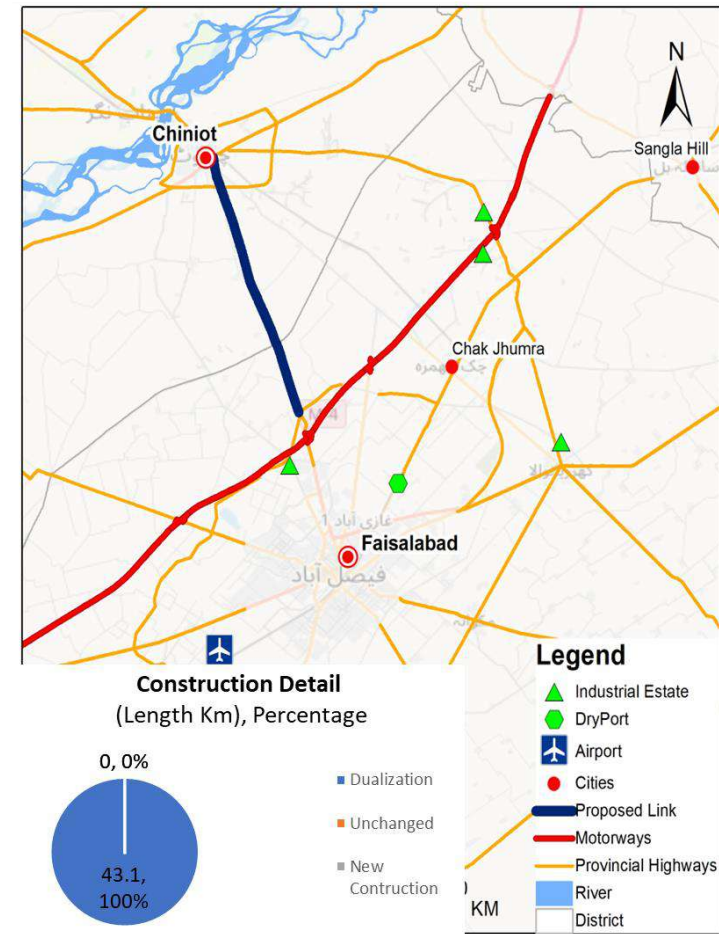
District	Industrial Produce	Agriculture Produce	Tourism Site
Jhang	Sugar, Cotton and Wool	Wheat, Rice, Cotton, Sugarcane, Corn (Maize), Oilseeds, Fruits, And Vegetables.	NA



4: Faisalabad to Chiniot

Project Name	Dualization of Faisalabad - Chiniot Rd from Faisalabad Bypass to Chiniot
Via	Chak No. 1 J.B. Rasulpur, Thethian, Kashmir Colony
Districts	Faisalabad & Chiniot
Length	21.4 km
Type	4-Lane Dual Carriageway
Phase	I (Year 2023 – 2025)
Total Cost	Rs. 2,354 Millions
Benefit Cost Ratio	4.3

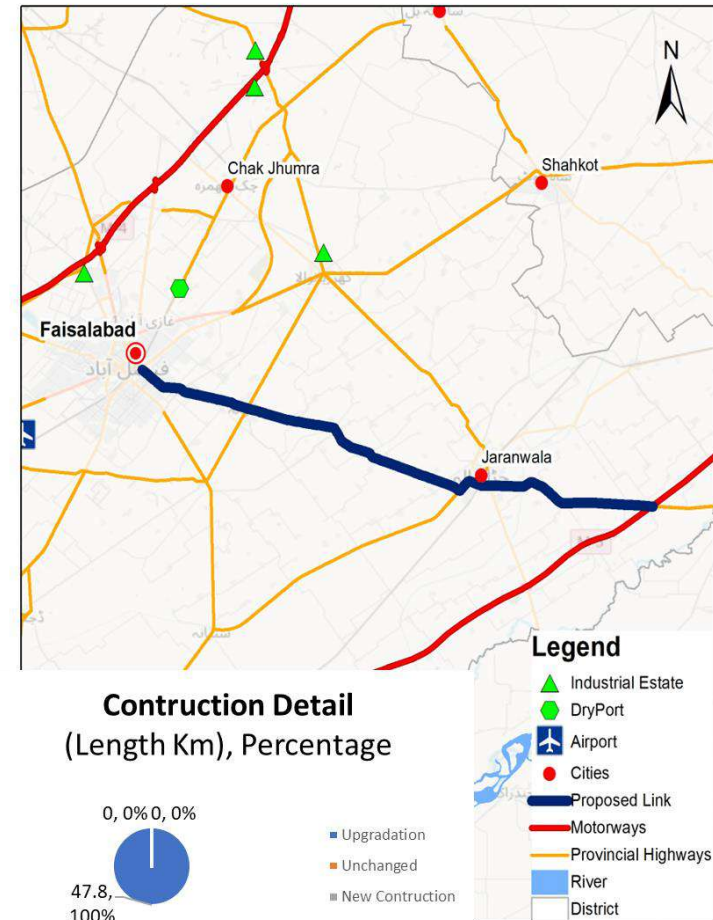
District	Industrial Produce	Agriculture Produce	Tourism Site
Faisalabad	Textile-related Products, Fertilizers, Hosiery, Industrial Chemicals, Dyes, Pulp, Paper And Agricultural Equipment	Rice, Wheat, Sugarcane, Cotton, Maize, Moong, Mash, Bajra And Jowar	NA
Chiniot	Silk, Cotton Pottery, Wooden Furniture	Sugar, Rice, Milk, Sugarcane, Potato, Wheat, Rice, Peas, Maize	NA



5: Faisalabad to Jaranwala

Project Name	Upgradation of Faisalabad - Jaranwala Rd Upto Jaranwala Interchange (M-3 Exit-4)
Via	
Districts	Faisalabad
Length	47.8 km
Type	4-Lane Dual Carriageway
Phase	I (Year 2023 – 2025)
Total Cost	Rs. 3010.92 Million
Benefit Cost Ratio	4.12

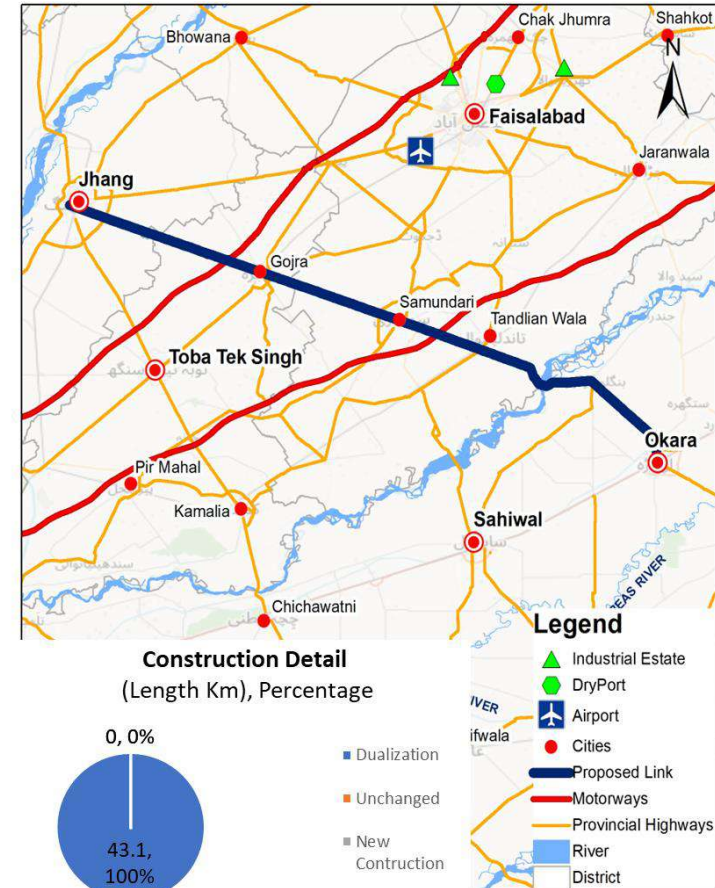
District	Industrial Produce	Agriculture Produce	Tourism Site
Faisalabad	Textile-related Products, Fertilizers, Hosiery, Industrial Chemicals, Dyes, Pulp, Paper And Agricultural Equipment	Rice, wheat, Sugarcane, Cotton, Maize, Moong, Mash, Bajra And Jowar	NA



6: Jhang to Okara

Project Name	Dualization of Road from Jhang to Okara
Via	Gojra, Samundari
Districts	Jhang & Okara
Length	130 km
Type	4-Lane Dual Carriageway
Phase	I (Year 2023 – 2025)
Total Cost	Rs. 14,300 Million
Benefit Cost Ratio	2.88

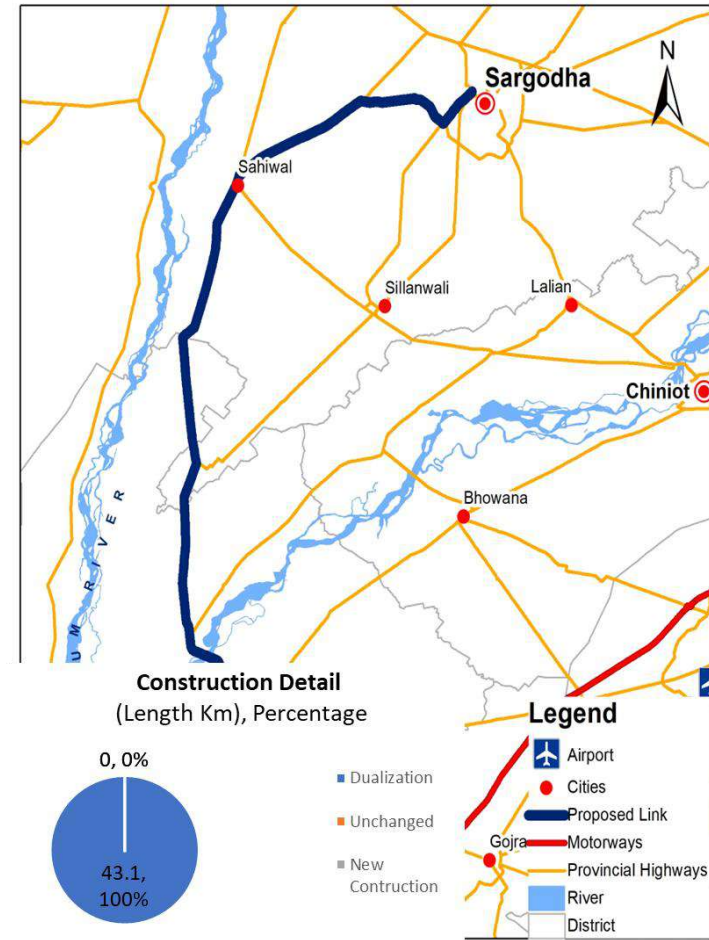
District	Industrial Produce	Agriculture Produce	Tourism Site
Jhang	Sugar, Cotton and Wool	Wheat, Rice, Cotton, Sugarcane, Corn (Maize), Oilseeds, Fruits, And Vegetables.	NA
Okara	Sugar Mills, Flour Mills, Textile Spinning/Weaving Mills, Rice Husking Units, Cotton Ginning/Press- Ing Factories	Potato, Tomato, Sugarcane, Wheat, Rice And Maize Crops	NA



7: Jhang to Sargodha

Project Name	Dualization of Jhang to Sargodha
Via	Mandi Shah Jewana and Sahiwal
Districts	Jhang & Sargodha
Length	120 km
Type	4-Lane Dual Carriageway
Phase	I (Year 2023 – 2025)
Total Cost	Rs. 13,200 Million
Benefit Cost Ratio	2.82

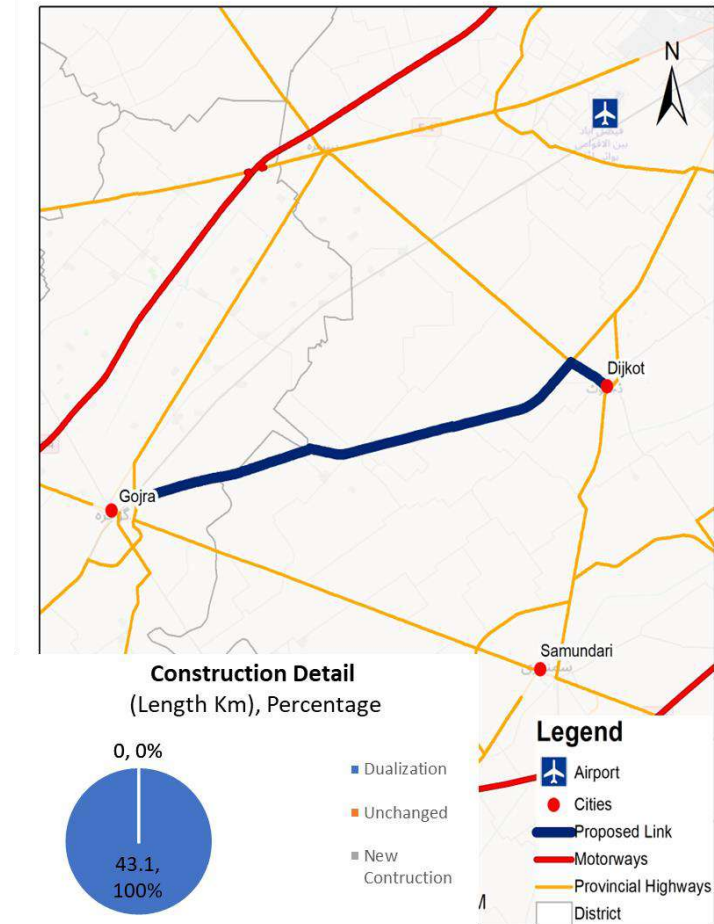
District	Industrial Produce	Agriculture Produce	Tourism Sites
Jhang	Sugar, Cotton and Wool	Wheat, Rice, Cotton, Sugarcane, Corn (Maize), Oilseeds, Fruits, And Vegetables.	NA
Sargodha	Citrus Industry , Juices	Sugarcane, Rice, Wheat, Potato And Tomato	Uchali & Kabeiki Lakes etc



8: Gojra to Dijkot

Project Name	Dualization of road from Gojra to Dijkot
Via	
Districts	Jhang & Faisalabad
Length	33.7 km
Type	4-Lane Dual Carriageway
Phase	II (Year 2026-2029)
Total Cost	Rs. 4,741 Million
Benefit Cost Ratio	2.32

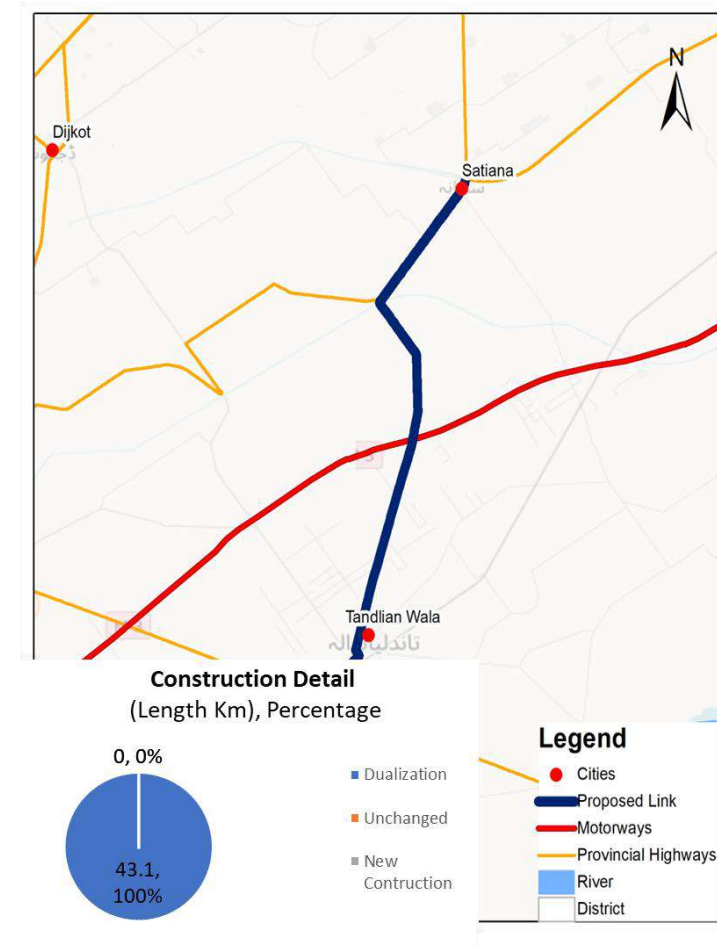
District	Industrial Produce	Agriculture Produce	Tourism Site
Jhang	Sugar, Cotton and Wool	Wheat, Rice, Cotton, Sugarcane, Corn (Maize), Oilseeds, Fruits, And Vegetables.	NA
Faisalabad	Textile-related Products, Fertilizers, Hosiery, Industrial Chemicals, Dyes, Pulp, Paper And Agricultural Equipment	Rice, wheat, Sugarcane, Cotton, Maize, Moong, Mash, Bajra And Jowar	NA



9: Faisalabad Bypass to Okara-Fsd Rd

Project Name	Dualization of Satiana Road from Faisalabad Bypass upto Okara-Faisalabad Road.
Via	
Districts	Faisalabad & Okara
Length	37 km
Type	4-Lane Dual Carriageway
Phase	II (Year 2026-2029)
Total Cost	Rs. 4,070 Million
Benefit Cost Ratio	2.17

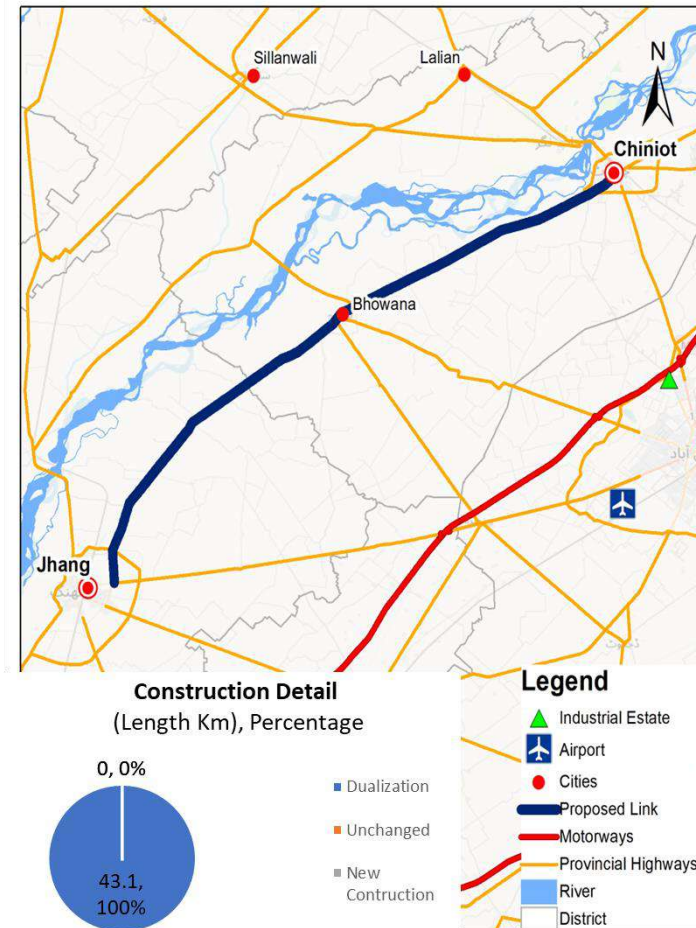
District	Industrial Produce	Agriculture Produce	Tourism Site
Okara	Sugar Mills, Flour Mills, Textile Spinning/Weaving Mills, Rice Husking Units, Cotton Ginning/Press-Ing Factories	Potato, Tomato, Sugarcane, Wheat, Rice And Maize Crops	NA
Faisalabad	Textile-related Products, Fertilizers, Hosiery, Industrial Chemicals, Dyes, Pulp, Paper And Agricultural Equipment	Rice, wheat, Sugarcane, Cotton, Maize, Moong, Mash, Bajra And Jowar	NA



10: Jhang to Chioniot

Project Name Dualization of Road from Jhang to Chioniot
Via Bhowana
Districts Jhang & Chioniot
Length 80.6 km
Type 4-Lane Dual Carriageway
Phase II (Year 2026-2029)
Total Cost Rs. 8,866 Million
Benefit Cost Ratio 2.05

District	Industrial Produce	Agriculture Produce	Tourism Site
Jhang	Sugar, Cotton and Wool	Wheat, Rice, Cotton, Sugarcane, Corn (Maize), Oilseeds, Fruits, And Vegetables.	NA
Chioniot	Silk, Cotton Pottery, Wooden Furniture	Sugar, Rice, Milk, Sugarcane, Potato, Wheat, Rice, Peas, Maize	Na



11: Jhang to Chichawatni Rd (N-5)

Project Name Dualization of Jhang to Chichawatni Rd (N-5)
Via T.T. Sing and Kamalia
Districts Jhang, T T Singh, Sahiwal
Length 91 km
Type 4-Lane Dual Carriageway
Phase II (Year 2026-2029)
Total Cost Rs. 10,010 Million
Benefit Cost Ratio 1.88

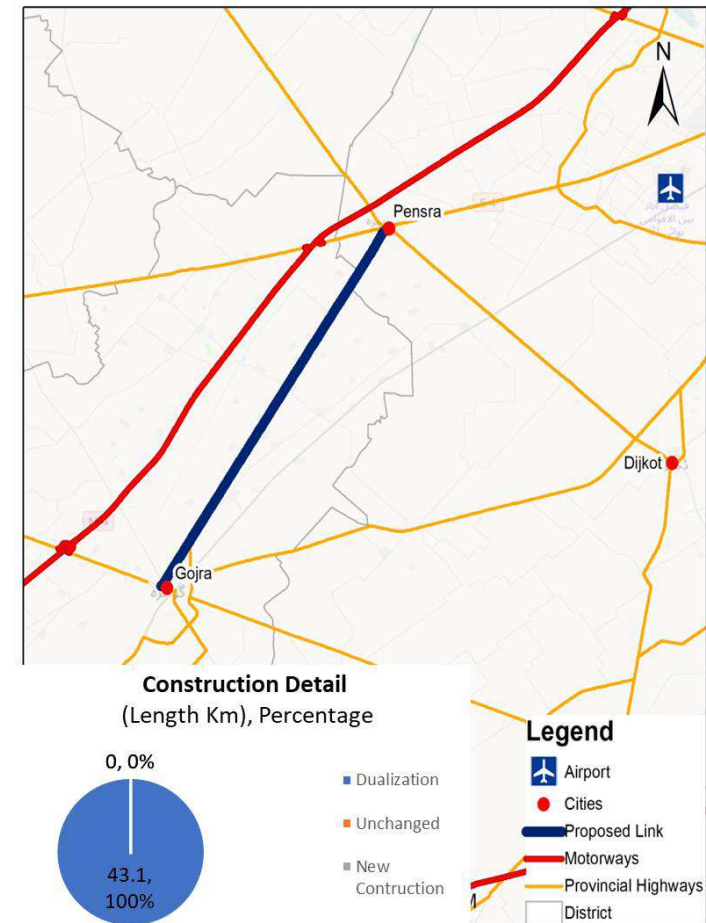
District	Industrial Produce	Agriculture Produce	Tourism Site
T T Singh	Textile, Wearing Apparel, Leather Products, Breeding, Fishing	Wheat, Sugarcane, Cotton And Maize	NA
Jhang	Sugar, Cotton and Wool	Wheat, Rice, Cotton, Sugarcane, Corn (Maize), Oilseeds, Fruits, And Vegetables.	NA
Sahiwal	Ginning Factories, Textile And Carpet Production	Wheat, Sugarcane, Cotton, Tobacco, Rice, Mustard Seed And Maize	NA



12: Gojra to Pensra

Project Name	Dualization of Gojra to Pensra Road
Via	
Districts	T T Singh & Faisalabad
Length	25.2 km
Type	4-Lane Dual Carriageway
Phase	II (Year 2026-2029)
Total Cost	Rs. 2,772 Million
Benefit Cost Ratio	1.83

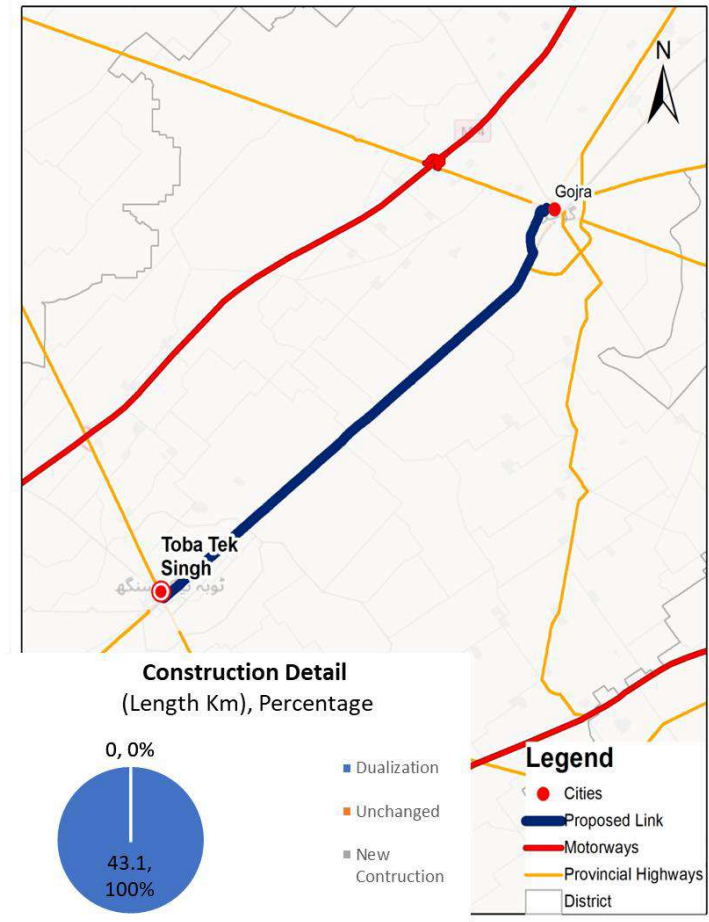
District	Industrial Produce	Agriculture Produce	Tourism Site
T T Singh	Textile, Wearing Apparel, Leather Products, Livestock Breeding, Fishing	Wheat, Sugarcane, Cotton And Maize	NA
Faisalabad	Textile-related Products, Fertilizers, Hosiery, Industrial Chemicals, Dyes, Pulp, Paper And Agricultural Equipment	Rice, wheat, Sugarcane, Cotton, Maize, Moong, Mash, Bajra And Jowar	NA



13: T.T.Singh to Gojra

Project Name	Dualization of T.T.Singh to Gojra Rd
Via	Chak 287, Chak 321
Districts	T T Singh
Length	28.3 km
Type	4-Lane Dual Carriageway
Phase	II (Year 2026-2029)
Total Cost	Rs. 3,113 Million
Benefit Cost Ratio	1.81

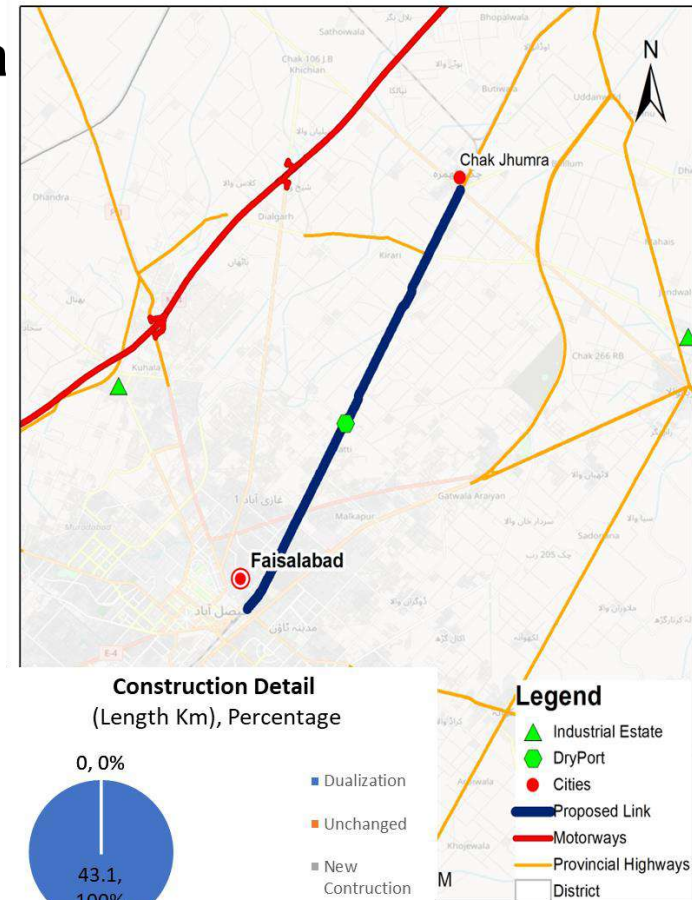
District	Industrial Produce	Agriculture Produce	Tourism Site
T T Singh	Textile, Wearing Apparel, Leather Products, Breeding, Fishing	Wheat, Sugarcane, Cotton And Maize	NA



14: Faisalabad City to Chak Jhumra

Project Name Upgradation of Faisalabad -Chak Jhumra Rd
Via
Districts Faisalabad
Length 17.6 km
Type 4-Lane Dual Carriageway
Phase II (Year 2026-2029)
Total Cost Rs. 1108 Million
Benefit Cost Ratio 1.72

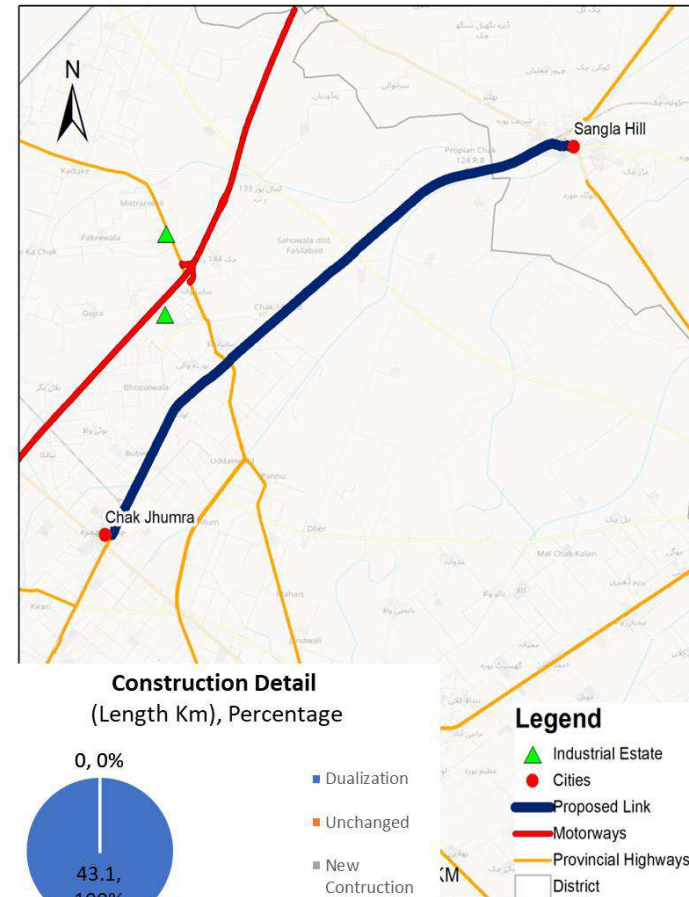
District	Industrial Produce	Agriculture Produce	Tourism Site
Faisalabad	Textile-related Products, Fertilizers, Hosiery, Industrial Chemicals, Dyes, Pulp, Paper And Agricultural Equipment	Rice, Wheat, Sugarcane, Cotton, Maize, Moong, Mash, Bajra And Jowar	NA



15: Chak Jhumra to Sangla Hill

Project Name	Dualization of Road from Chak Jhumra to Sangla Hill
Via	
Districts	Faisalabad
Length	27.7 km
Type	4-Lane Dual Carriageway
Phase	III (Year 2030 - 2034)
Total Cost	Rs. 3,047 Million
Benefit Cost Ratio	1.71

District	Industrial Produce	Agriculture Produce	Tourism Site
Faisalabad	Textile-related Products, Fertilizers, Hosiery, Industrial Chemicals, Dyes, Pulp, Paper And Agricultural Equipment	Rice, wheat, Sugarcane, Cotton, Maize, Moong, Mash, Bajra And Jowar	NA



16: Chiniot to Pindi Bhattian Interchange

Project Name Dualization of Road from Chiniot to Pindi Bhattian Interchange (M-2)

Via

Districts Chiniot & Hafizabad

Length 37.3 km

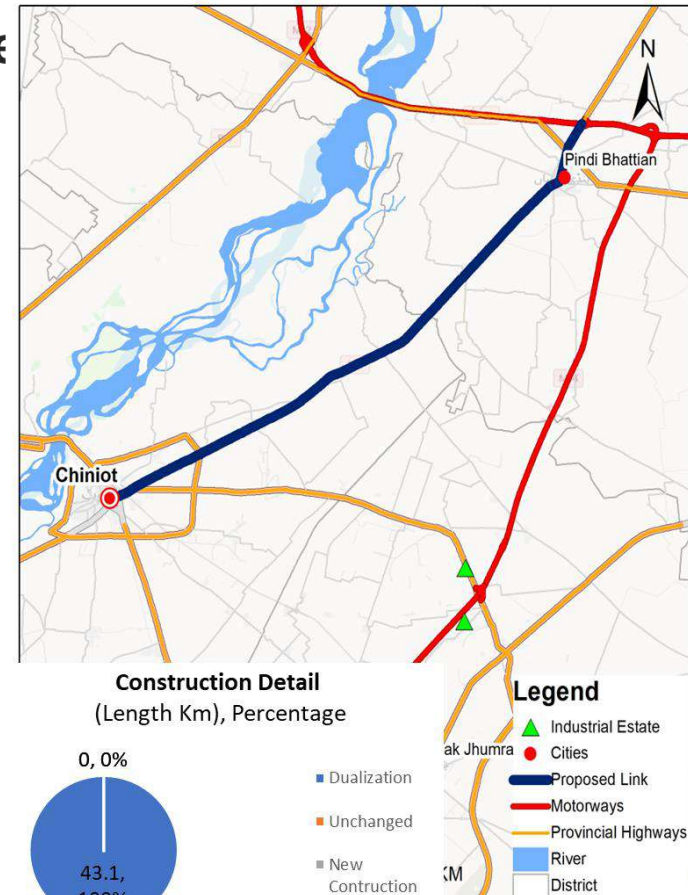
Type 4-Lane Dual Carriageway

Phase III (Year 2030 - 2034)

Total Cost Rs. 4,103 Million

Benefit Cost Ratio 1.66

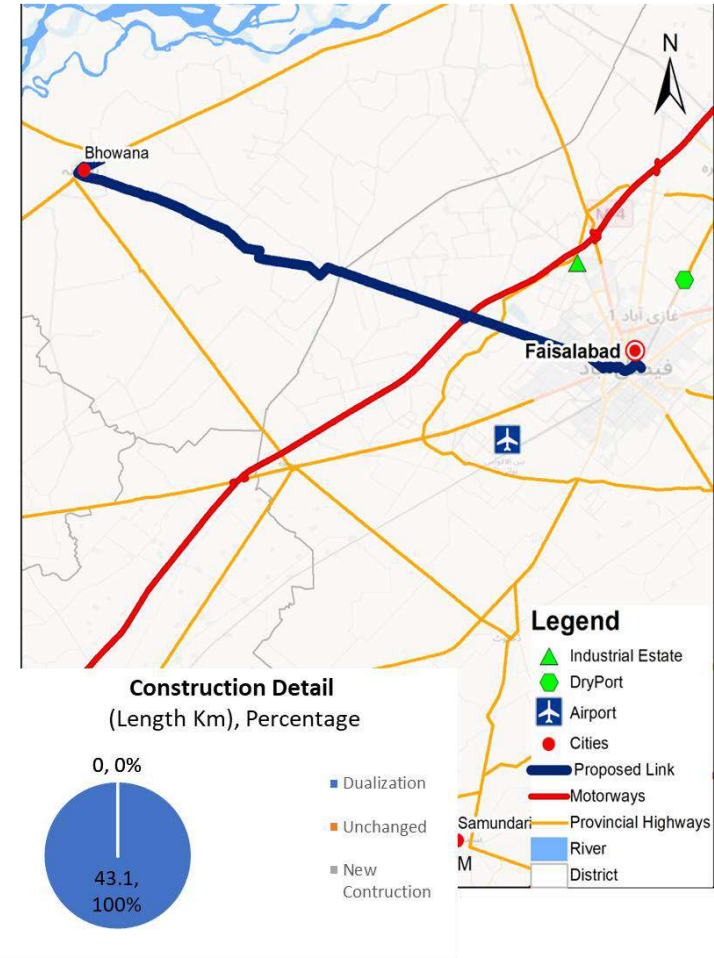
District	Industrial Produce	Agriculture Produce	Tourism Site
Chiniot	Silk, Cotton Pottery, Wooden Furniture	Sugar, Rice, Milk, Sugarcane, Potato, Wheat, Rice, Peas, Maize	NA
Hafizabad	Textile Power Loom & Rice Mills	Wheat, Rice, Fruits, Vegetables	NA



18: Bhowana to Faisalabad City

Project Name	Dualization of Road from Bhowana to Faisalabad City (Upto Canal Expressway)
Via	
Districts	Jhang & Faisalabad
Length	49 km
Type	4-Lane Dual Carriageway
Phase	III (Year 2030 - 2034)
Total Cost	Rs. 5,390 Million
Benefit Cost Ratio	1.36

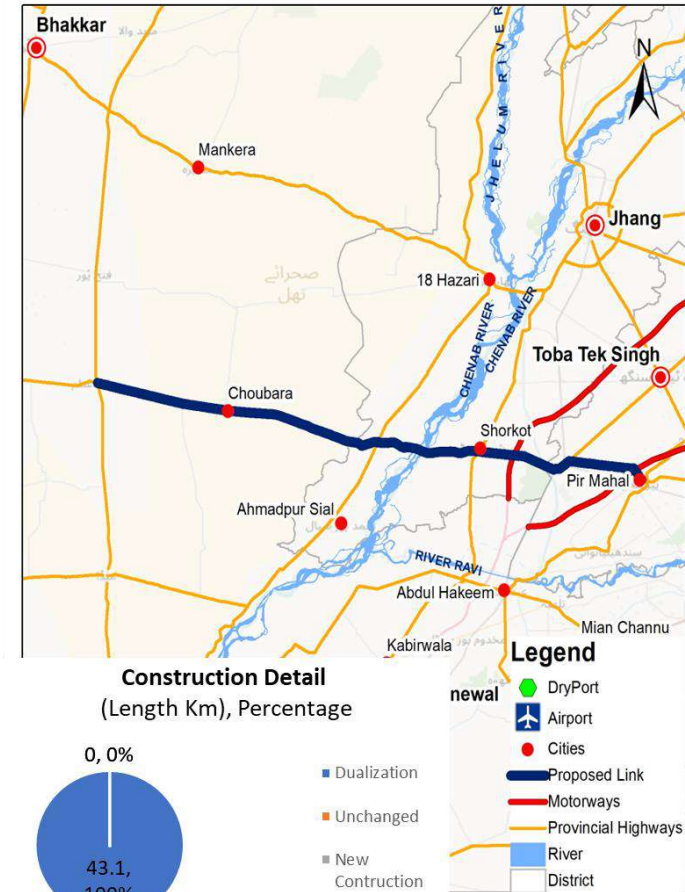
District	Industrial Produce	Agriculture Produce	Tourism Site
Jhang	Sugar, Cotton and Wool	Wheat, Rice, Cotton, Sugarcane, Corn (Maize), Oilseeds, Fruits, And Vegetables.	NA
Faisalabad	Textile-related Products, Fertilizers, Hosiery, Industrial Chemicals, Dyes, Pulp, Paper And Agricultural Equipment	Rice, wheat, Sugarcane, Cotton, Maize, Moong, Mash, Bajra And Jowar	NA



19: Pir Mahal to MM Road

Project Name Dualization of Pir Mahal to Mianwali Muzaffargarh Road
Via Shorkot, Garh Maharajah
Districts T T Singh, Jhang & Layyah
Length 124 km
Type 4-Lane Dual Carriageway
Phase III (Year 2030 - 2034)
Total Cost Rs. 13,640 Million
Benefit Cost Ratio 1.34

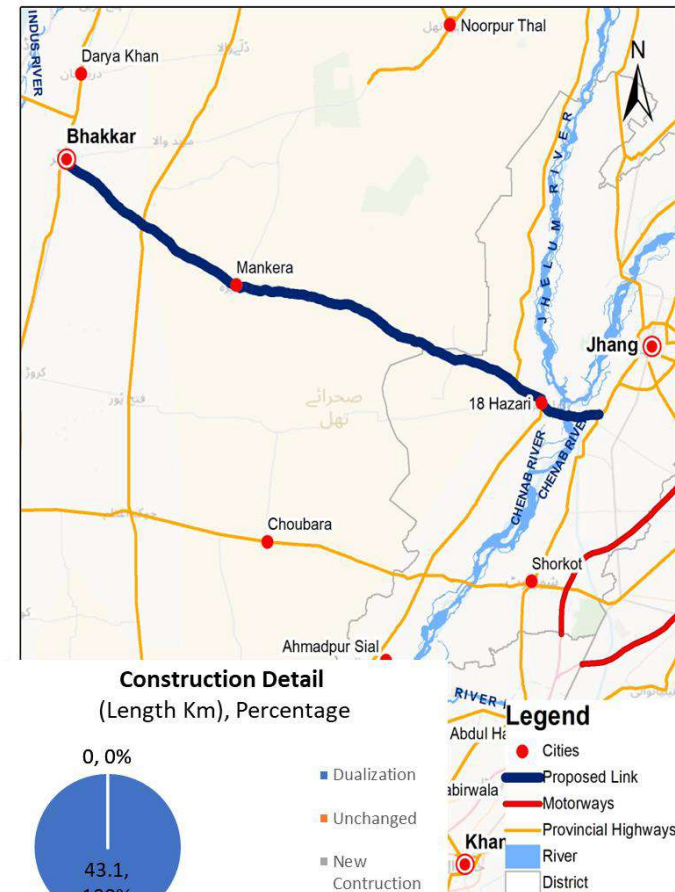
District	Industrial Produce	Agriculture Produce	Tourism Site
T T Singh	Textile, Wearing Apparel, Leather Products, Livestock Breeding, Fishing	Wheat, Sugarcane, Cotton And Maize	NA
Jhang	Sugar, Cotton and Wool	Wheat, Rice, Cotton, Sugarcane, Corn (Maize), Oilseeds, Fruits, And Vegetables.	NA
Layyah	Cotton Ginning, Flour Mills, Oil Mills, A polypropylene woven bags/cotton bags	Wheat, rice, maize, millet, barley, Mash , masoor , gram, moong	NA



20: Malumor to Bhakkar

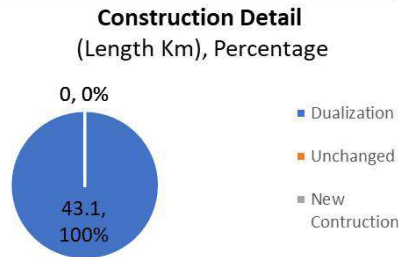
Project Name	Dualization of Jhang - Bhakkar Road from Malumor to Bhakkar (PSS,C-3)
Via	18 Hazari, Mankera
Districts	Jhang & Bakkar
Length	123 km
Type	4-Lane Dual Carriageway
Phase	III (Year 2030 - 2034)
Total Cost	Rs. 13,530 Million
Benefit Cost Ratio	1.23

District	Industrial Produce	Agriculture Produce	Tourism Site
Jhang	Sugar, Cotton and Wool	Wheat, Rice, Cotton, Sugarcane, Corn (Maize), Oilseeds, Fruits, And Vegetables.	NA
Bhakkar	Cold Storage, Cotton Ginning & Pressing, Flour Mills, Paper & Paper Board, Soap & Detergents, and Textile Spinning	Wheat, Grams, Cotton, Sugarcane, Citrus, Mango, Guava, Dates, Turnip, Onion, Tomato and Carrot.	



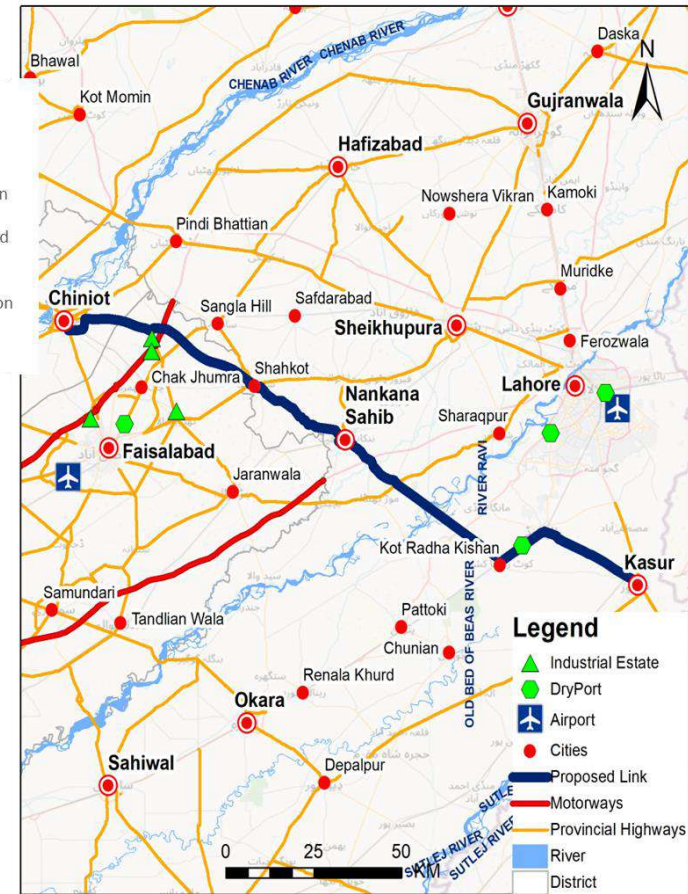
21: Chiniot to Kasur

Project Name Dualization of
Via Salarwal & Kar
Districts Chiniot, Faisalabad
Length 173 km
Type 4-Lane Dual Ca
Phase III (Year 2030 - 2034)
Total Cost Rs. 19,030 Million



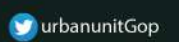
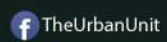
Benefit Cost Ratio 1.07

District	Industrial Produce	Agriculture Produce	Tourism Site
Faisalabad	Textile-related Products, Fertilizers, Hosiery, Industrial Chemicals, Dyes, Pulp, Paper And Agricultural Equipment	Rice, Wheat, Sugarcane, Cotton, Maize, Moong, Mash, Bajra And Jowar	NA
Chiniot	Silk, Cotton Pottery, Wooden Furniture	Sugar, Rice, Milk, Sugarcane, Potato, Wheat, Rice, Peas, Maize	NA
Kasur	Textile Industries	Sugarcane, wheat, rice, cotton, maize, millet, sorghum, moong, mash, masoor, oilseeds, rapeseed/mustard and sunflower	





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