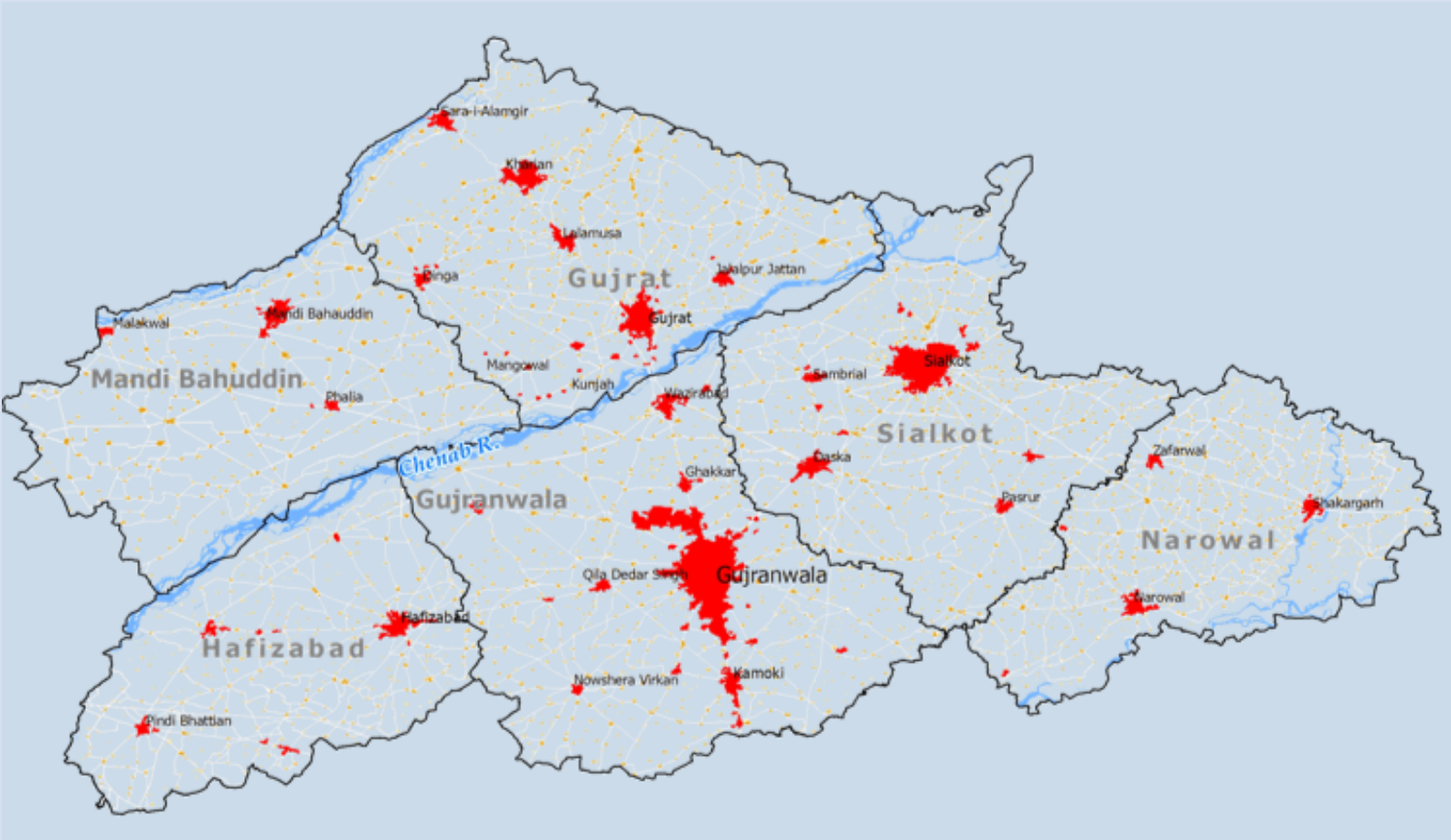
REGIONAL
DEVELOPMENT PLAN OF GUJRANWALA



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

Overview

Overview

1.1. Context

Punjab Spatial Strategy identifies growth corridors and nodes for future development of Punjab. Significant public and private investments were undertaken in last few decades that have enhanced the competitiveness of some areas. PSS identified four growth areas that have higher level of competitiveness owning to infrastructure, regulatory and entrepreneurship related investments. Gujranwala Division is has two major growth areas that needed to be analyzed and placed in regional development contest.

Both Gujranwala and Sialkot are developing rapidly and accept increasing number of private companies that are contributing in job creation and exports to the world. On the other hand, the private sector claims that lack of growth infrastructure, difficult business environment and incoherent & incomplete policies as bottlenecks for investments.

Planning and Development Board has repeatedly emphasized on the importance of area development planning that leverage comparative advantages of the region and prioritizes investments around focused concentrations through preparation of the Comprehensive Regional Perspective Plan (CRPP) for this area.

In addition to the development of the Regional Economic Growth Strategy (REGS), other work for development of CRPP for Gujranwala division is also under process that will include prioritized infrastructure projects from livability perspective in a detailed investment plan for the region.

This CRPP and REGS will serve as basic repository of knowledge for administrative secretaries (at departmental level) and local administration (at division, district and tehsil level). The baseline data, analysis and projects digest will guide future development in this area.

The basic outline of the study framework is the following.

Aim: Aim is to prepare a Comprehensive Regional Perspective Plan (CRPP) for the Gujranwala division, along with Regional Economic Growth Strategy (REGS) for transforming the region into a globally competitive investment destination that create jobs and grow exports.

Objectives: To identify potential projects & programs that can contribute to economic growth, employment opportunities and exploit the competitive advantages of the Gujranwala Region

The unique feature of this analysis is that it uses recently developed spatial data sets in conjunction with on ground assessments with local stakeholders to rapidly develop a plan that can be put into execution in the shortest period of time

Such a plan will fulfill a longstanding demand of local officials to have a document that can provide them a strategic vision for the development of the region and have a voice in the overall planning process in the province.

Framework for REGS: Identify the macro level development vision and target for the region through identification of agricultural and industrial development plan for the region. Identify focus areas and nodes (locations) for future interventions that result in growth in production, leading to job creation and exports. The REGS to culminate into phased recommendations for growth infrastructure and policies necessary for production sector growth. The REGS will inform CRPP

Focus Area: Identify suitable nodes and clusters to be taken up for regional economic development within the project influence area.

Target Year: The Plan will cover 10 years period i.e., from 2020 to 2030.

Target Area: Target of the study would be Gujranwala Division spread over six Districts i.e., Gujranwala, Gujrat, Hafizabad, Mandi Bhauddin, Narowal and Sialkot.

1.2. Defining a Region…

A 'region' can be defined in multiple ways depending upon the scale of analysis. It could be any administrative or politically/economically/spatially defined area which may cover different states/countries or could be at national / sub-national / local scale and has role in certain level of development.

In Pakistan, the administrative jurisdictions are divided into divisions, districts and tehsils. After the partition, the Punjab province was primarily divided into three divisions i.e. Lahore, Rawalpindi and Multan. In the mid-90s, with an escalation in population, Gujranwala and Faisalabad emerged as major cities and acquired the status of divisional headquarters as exhibited in Figure 1. Currently Punjab has 9 divisions, 36 districts and 194 cities.

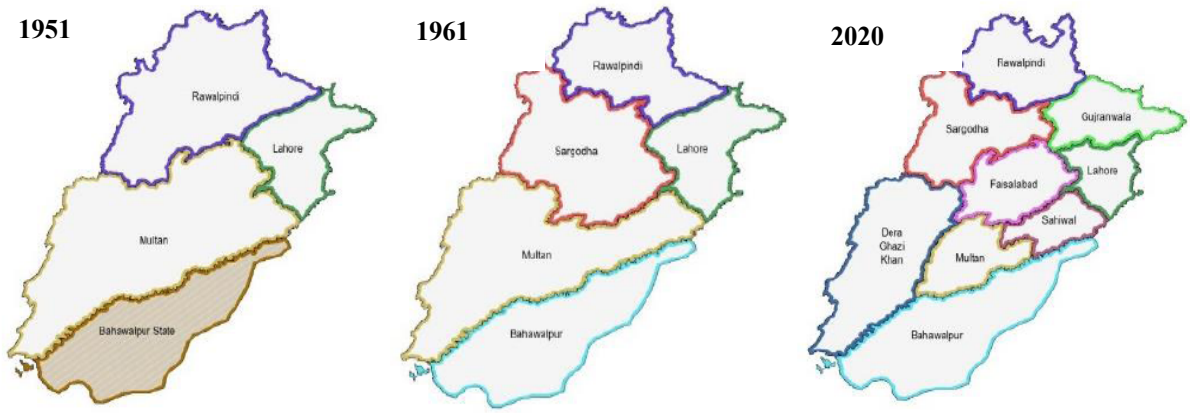


Figure 1: Evolution of Divisional Headquarters of Punjab

These administrative units serve as the baseline for public spending from various tiers of government. As we move up the administrative hierarchy from cities and districts, division plays a crucial role in providing public services more efficiently due to economies of scales and higher decision making power.

Punjab Spatial Strategy 2047 outlines division as a good boundary for achieving larger development goals in harmony with districts and cities as well as for assessing the comparative advantages at a macro scale. **The strategy identifies division as a 'region' which form the economic units based on a regional vision and development plans which not only enhance competitiveness and productivity of the region but also enable efficient resource allocation and more economic returns.** In international context, China has successfully achieved its economic transition from an agrarian economy to an industrialized economy by focusing regional developments and integrated planning frameworks.

Considering the existing administrative structure of Punjab, **the term division will be used as an economic 'Region'** so that adoption of the plan requires minimal changes to existing processes on which current planning and systems have evolved. Gujranwala is one of the economic hubs of Punjab and has high potential for economic growth and provides higher opportunities for private sector investments. Therefore, Gujranwala Region[1] (division) is chosen for the first Regional Development Plan of Punjab.

[1] The Term 'Region' will be used in the entire document instead of the term 'Division'.

Spatial Portrait of Gujranwala Region

Spatial Portrait of Gujranwala Region

Gujranwala Region stand out as center of development, with a support from cluster of intermediate and small cities which do not follow arbitrary boundaries and has a unique role in economic growth of the region. Escalated Population growth in the mega cities of Punjab (including Gujranwala city) has created a lot of pressure on these cities' capacity to maintain the pace of sustainable development. Thus, demanding a regional level development plan where development efforts are focused on the creation of system of cities which foster intercity networking, create more jobs and increase productivity as well.

Gujranwala Region (Division) is one of the nine administrative divisions of Punjab which are further divided in to six districts and twenty tehsils, with Gujranwala serving as the Divisional head quarter, which has pull factor to wards North, East and South.

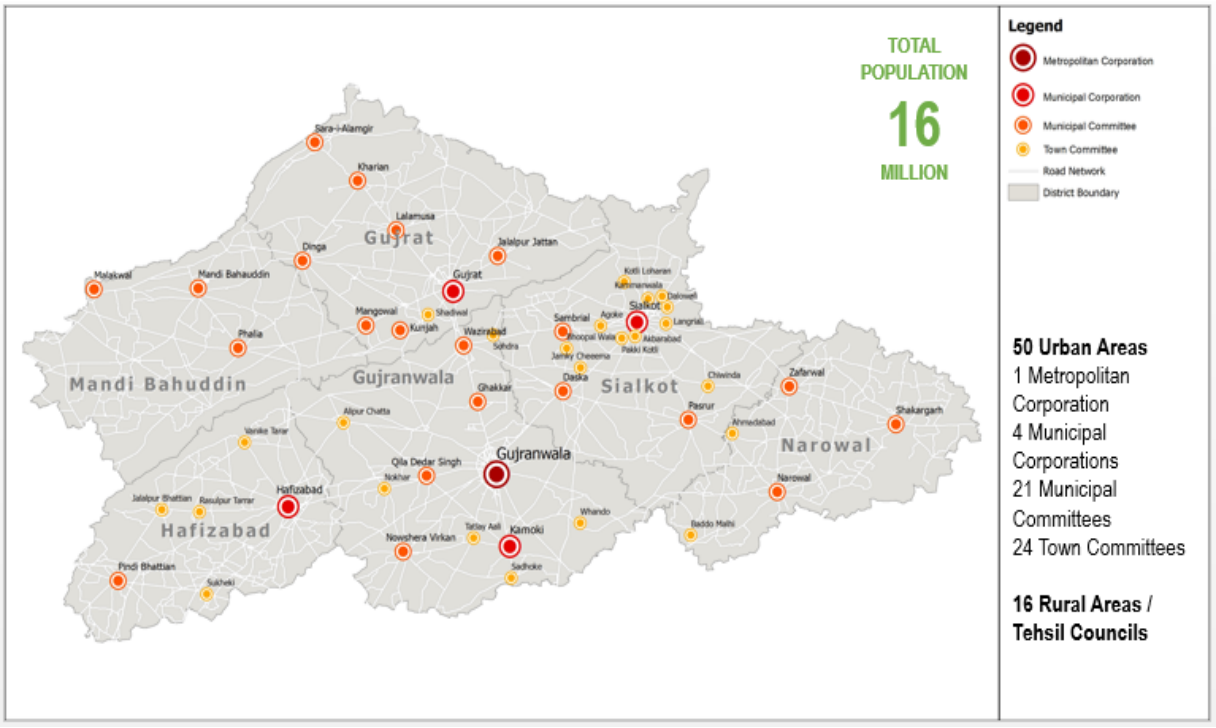


Figure 2: Map of Gujranwala Region with MCR/MC, Tehsil and District Level Boundaries

The size of settlements in Punjab is associated with the decision-making hierarchy where all larger cities correspond to divisional headquarters; Intermediate and smaller cities mostly at district headquarters; and towns at the tehsil headquarters. Gujranwala Region is governed by the Commissioner while districts are governed by Deputy Commissioners (DCs).

According to the Punjab Local Government Act 2019 (PLGA-19) and the Punjab Village Panchayats and Neighborhood Councils Act 2019 (VP&NCA-19) passed by Punjab assembly, the updated local government areas are shown in Table 1.

Table 1: Administrative set-up of Gujranwala Region

The Local Government Areas			
PLGA 2013	Total	PLGA 2019	Total
District Council	6	Metropolitan Corporation	1
Municipal Corporation	3	Municipal Committee	21
Municipal Committee	26	Municipal Corporation	4
Union Councils (Rural)	558	Town Committee	24
Union Councils (Urban)	19	Tehsil Councils	16
Wards (Urban)	536		

The breakup of areas notified under the Local Government System 2019 is shown in the following table.

Table 2: Total Local Government Areas (Urban and Rural) as PLGA 2019

District Name	Total LG Areas	Urban Areas	Rural Areas
Gujranwala	16	12	4
Gujrat	12	9	3
Sialkot	19	15	4
Narowal	8	5	3
Mandi Bhauddin	6	3	3
Hafizabad	8	6	2
Total	**69**	**50**	**19**

The details of these areas with area, population and density is shown in Annex – A.

2.1. Geography and Population Density

Gujranwala Division is located in the North-East region of Punjab. Its total land mass is of approximately 17,000 sq km, a land mass size that is greater than the average size of European Union countries. The region holds over 16 million population in which Gujranwala district is more populated with almost 5.0 M population in the region

The overall population density of the division is comparable to that of Multan and Faisalabad division[2]. This area is mostly known for its industrial base and the industrial cluster formed by the "Golden Triangle" (formed by the three cities of Sialkot, Gujranwala and Gujrat). It consists of two major cities Sialkot and Gujranwala, which are the major export and trading centers of Pakistan.

Table 3: District Wise population, area size and population density of Gujranwala Region

District	Area (km²)	Population (2017)	Population (Per sq km)
Gujranwala	3,622	5,014,196	1,384
Sialkot	3,016	3,893,672	1,291
Gujrat	3,192	2,756,110	863
Narowal	2,337	1,709,757	732
Mandi Bahauddin	2,673	1,593,292	596
Hafizabad	2,367	1,156,957	489
Total	**17,206**	**16,123,984**	**937**

[2] Ibid

2.2. Demography and Labor Force

The demographics of Gujranwala region are comparable to that of Punjab's. The largest cohort is that of children aged between 0 to 5 years of age. Approximately 57% of the region's total population lies in the working age range (aged 15-65 years)[3]. Overall, there are 3.67% more females than males in the division. These demographics are comparable to that of Punjab's average.

According to PSS estimations, the population of the division will be x1.8 times higher by 2047 and the urbanization rate will be 57% by 2047 (current: 44%)[4].

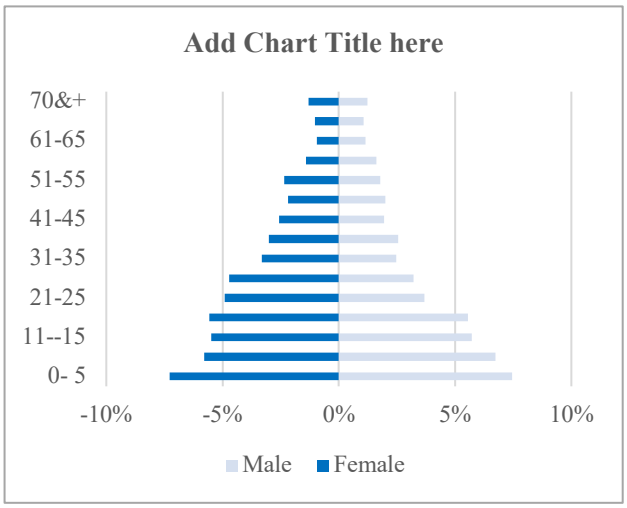


Table 4: Projected Population of Gujranwala Region (based on PSS-2047 Estimation)

Administrative Set-up	1,998	2,017	2,027	2,037	2,047
Gujranwala Region	11,431,058	16,123,984	19,463,681	23,589,562	28,686,701
Gujranwala District	3,400,940	5,014,196	6,162,261	7,580,588	9,332,798
Sialkot District	2,723,481	3,893,672	4,726,433	5,755,230	7,026,212
Gujrat District	2,048,008	2,756,110	3,260,027	3,882,569	4,651,662
Hafizabad District	832,980	1,156,957	1,387,514	1,672,345	2,024,226
Narowal District	1,265,097	1,709,757	2,026,197	2,417,129	2,900,089
M.B. Din District	1,160,552	1,593,292	1,901,249	2,281,701	2,751,714
Gujranwala (Urban share in %)	44.4%	57.4%	59.9%	59.5%	56.8%

The following figure shows that almost 11.2% (83% Male, 17% Female) of total labor force of Punjab is in Gujranwala region, the female participation in LF is 28% (slightly better than Punjab, which is 17%). Unemployment Rate is bit higher in the region as compared to Punjab's overall rate of unemployment[6].

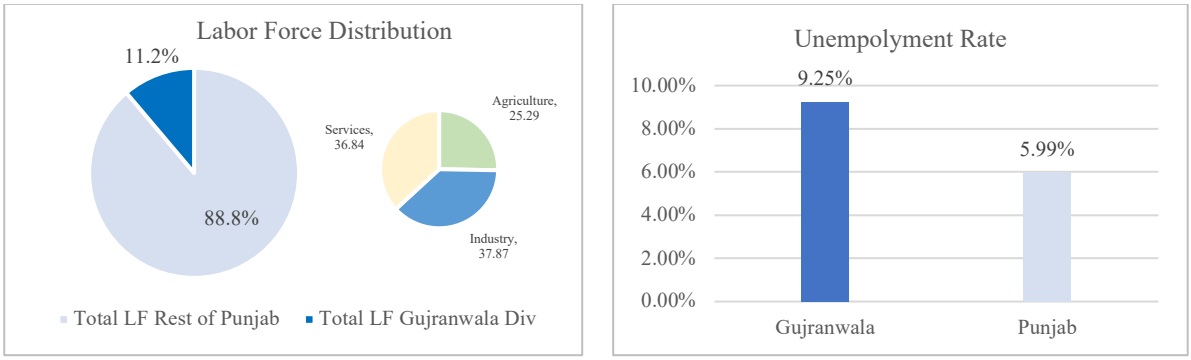


Figure 3: Labor Force Distribution and Unemployment Rate of Gujranwala region and Punjab Province

This region is mostly known for its manufacturing base and economic corridors. It contains the largest number of registered factory units, with approximately 30% of the province's units situated in the

3 PSLM 2015
4 PSS 2047 BAU scenario estimation

division alone[5]. Data indicates thirty-eight percent of the total divisional labor force to be concentrated in the industrial sector, followed by services (37%) and agriculture (25%). Further breakdown into sub sectors indicates the concentration of labor force in Manufacturing (26.28%); Agriculture, forestry and fishing (25.29%); Wholesale and repair and repair of motor vehicles (16.26%) and Construction (11.1%) as exhibited below.

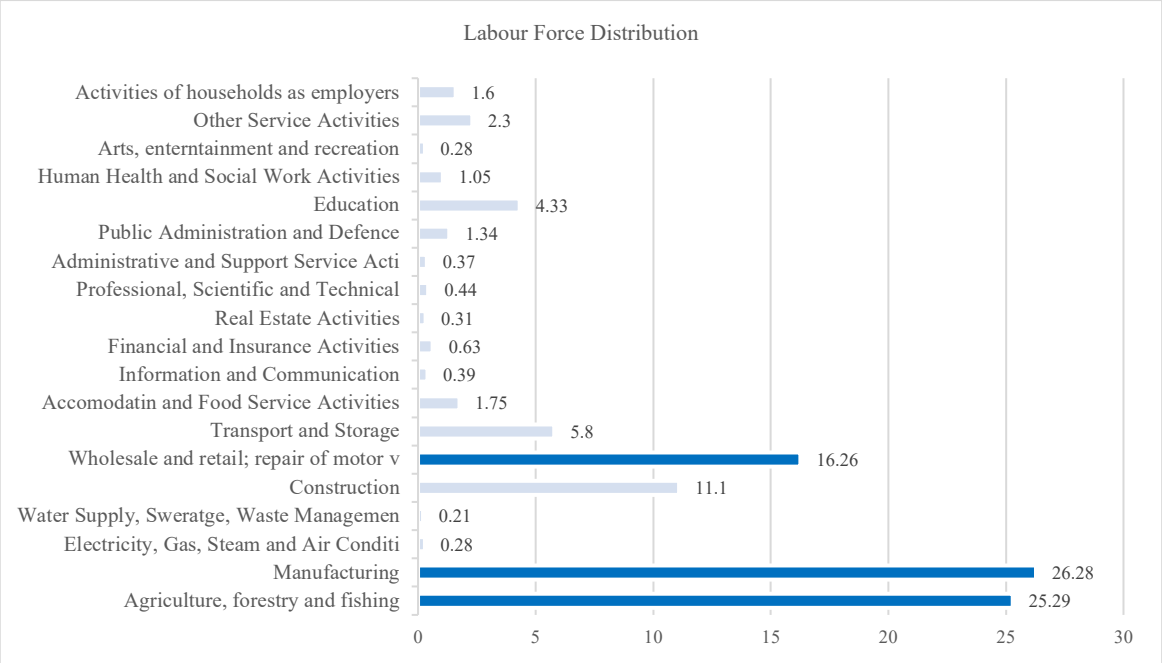


Figure 4: Labor Force Distribution in … sector

2.3. Urban and Rural Settlements

Within Gujranwala region, there is a substantial rural-urban difference in the population size. According to the Census 2017, 37% of total population of Gujranwala division lives in urban areas whereas overall annual growth rate is 2.27 as compared to census 1998. District level analysis shows that majority of the people residing in rural areas of the division except the Gujranwala district where rural-urban population account for 41% and 59% respectively.

Table 5: Average Annual Growth Rate 1998-2017[6]

Administrative Units	Area	Household	Population 1998	Population 2017	Average Annual Growth Rate 1998 - 2017
Gujranwala Region	Rural	1,524,221	7,578,765	10,217,791	1.58
	Urban	906,751	3,852,293	5,906,193	2.27
Gujranwala District	Rural	301,072	1,523,106	2,065,260	1.61
	Urban	446,142	1,877,834	2,948,936	2.40
Gujrat District	Rural	308,668	1,456,342	1,928,714	1.49
	Urban	133,731	591,666	827,396	1.78
Hafiz Abad District	Rural	114,058	605,865	754,106	1.16
	Urban	61,122	227,115	402,851	3.05
Mandi Bahauddin	Rural	199,336	943,983	1,266,892	1.56

[5] "Number of Registered Factories, Employment Level by Division and District. "The Punjab {As on 30th June) Punjab Development Statistics, 2018

[6] Punjab District Wise Population Census, 2017. Population Welfare Department, Government of Punjab.

District	Urban	52,784	216,569	326,400	2.18
Narowal	Rural	200,434	1,110,711	1,452,509	1.42
District	Urban	39,482	154,386	257,248	2.72
Sialkot	Rural	400,653	1,938,758	2,750,310	1.85
District	Urban	173,490	784,723	1,143,362	2.00

The urban areas comprise of one Metropolitan Corporation (Gujranwala), four Municipal Corporations (Gujrat, Sialkot, Gujrat and Hafizabad), twenty-one Municipal Committees and twenty-four Town Committees according to Local Government System in Punjab. Total population residing in urban areas is 7.378 million, which is 46% of total population in the Gujranwala Division. 64% of this urban population lives in top five urban areas i.e., Gujranwala, Sialkot, Gujrat, Hafizabad and Kamoki, and 75% in top 10 urban areas.

2.4. Socio-Economic Profile

2.4.1. Household Income

The graph demonstrates that the income distribution of the Gujranwala region is not far from Punjab's average income distribution. On average the poorest household in Gujranwala division earns an average income of about 3,000 PKR per month and the richest household earns about 66,000 PKR per month, which is slightly below Punjab's average.

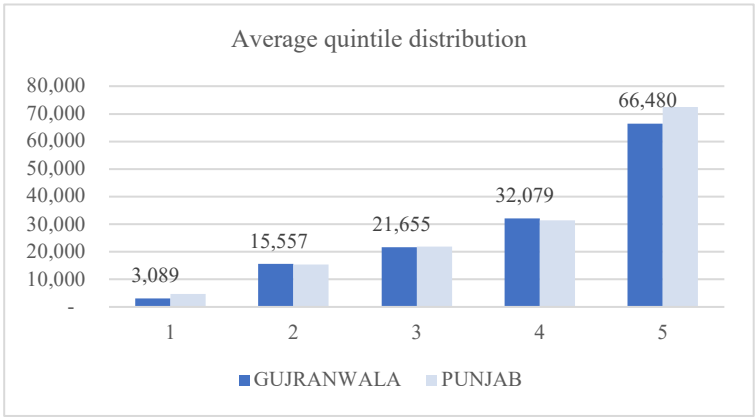


Figure 5: Average quintile distribution of Gujranwala Region and Punjab[7]

2.4.2. Multi-dimensional Poverty

The average incidence of poverty, which represents the percentage of people that are multi-dimensionally poor is almost 23% at the divisional level. This number is below Punjab's average of 35%. Whereas, incidence of poverty is the highest in the districts of Hafizabad and Mandi Bahauddin.

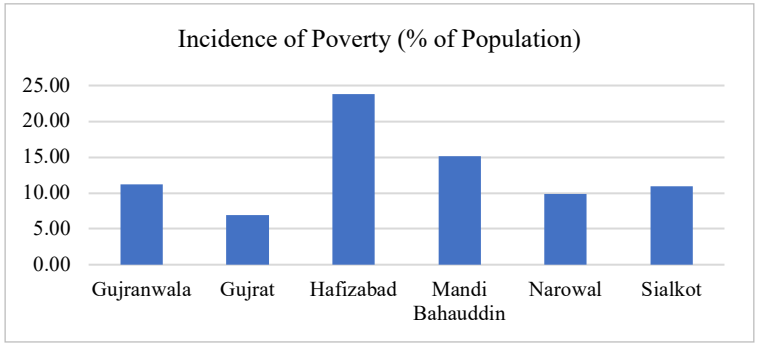


Figure 6: Incidence of Poverty at District Level [8]

2.4.3. Education

Spatial Coverage and Accessibility of Education Infrastructure map shows that the division has a good coverage of the primary, middle, secondary schools, and colleges. But is poor at higher levels of education (universities) as there are nine universities (private university and some campuses of public/private universities) only.

[7] PSLM, 2019
[8] UNDP, 2015

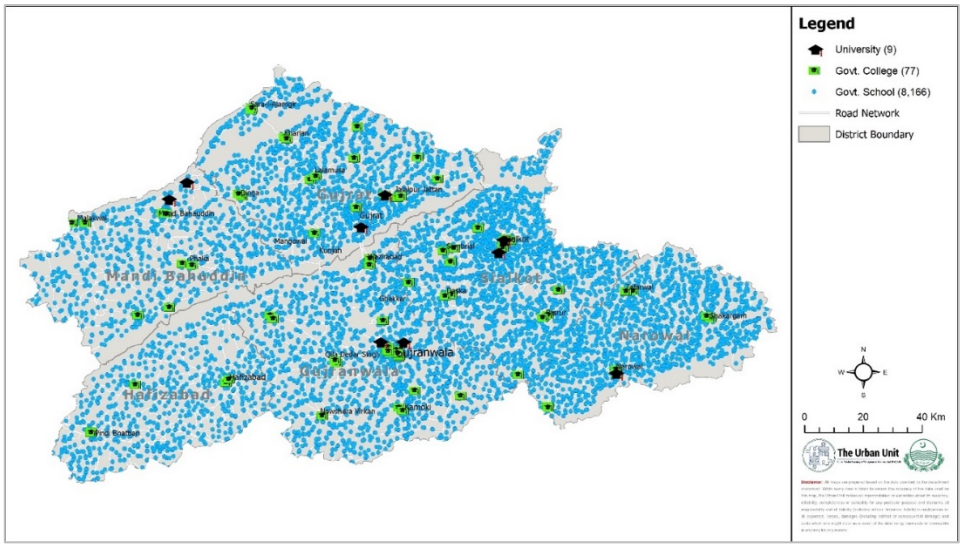


Figure 7: Educational infrastructure – Overall spatial coverage across the division

There are 8 Universities or university campus and 58 TEVTA institutes in the division. So, the coverage of technical and vocational institutes with colleges is vast but quality aspect needs to be improved. During rapid assessment visit, it has been identified that businesses are not satisfied with learning outcomes of the graduating students. So, there is need of industry driven demand base courses at TEVTA institutes and state of the art industry demanded degree programs in the universities.

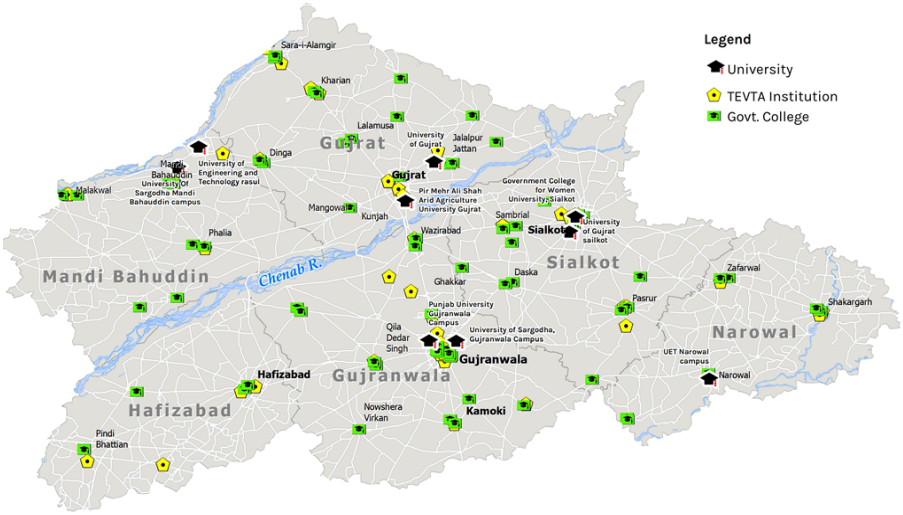


Figure 8: Government Colleges, Universities and TEVTA Institutions

2.4.4. Health Sector

The overall health indictors[9] for the division when compared to Punjab's average performance level shows that apart from Hafizabad district (which has the highest infant mortality rate in the province) most districts are at par at Punjab's average performance level. In certain cases, the districts perform better than Punjab such as the case for Sialkot in post-natal care.

[9] MICS, 2018

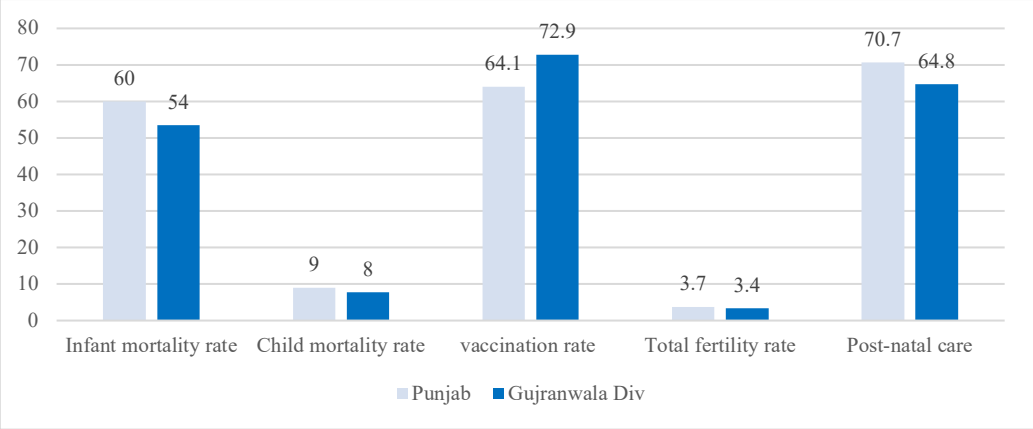


Figure 9: Division's average health performance level with that of Punjab's average performance level

The coverage of health infrastructure (hospitals, RHCs, BHUs) is shown below which shows reasonable spread of the health facilities across the division.

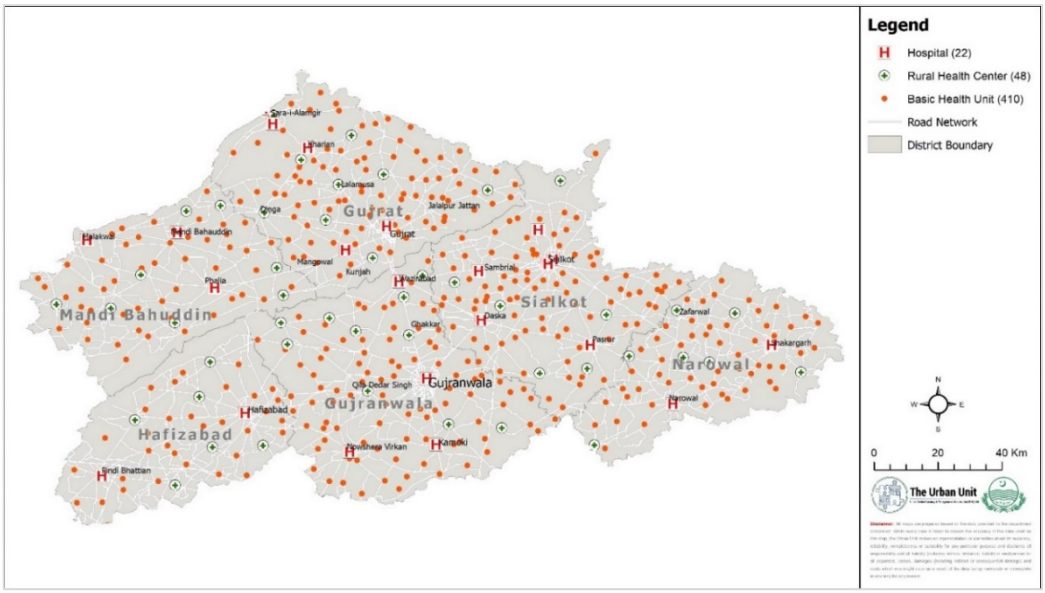


Figure 10: Health infrastructures – Overall spatial coverage across the division

However, coverage of hospitals in the division, seems scattered and uneven. For instance, some areas near Mandi Bahauddin and Hafizabad district have comparatively less or no coverage (areas less accessible within 30 or 45 minutes walking time). These needs to be seen in detail if there is some population settlement.

2.5. Economic Activity

The correlation between night light intensity and socio-economic development is obvious in economic literature. The hypothesis is based on the presumption that areas with high level of socio-economic activity would require nighttime lightening. The map demonstrates that major activities of the division are concentrated in its urban centers (especially the major cities of Sialkot, Gujranwala and Gujrat). Apart from that the night light path can be traced through the N-5 National Highway (Grand Trunk Road); which has historically served as the economic and trade corridor for the entire province.

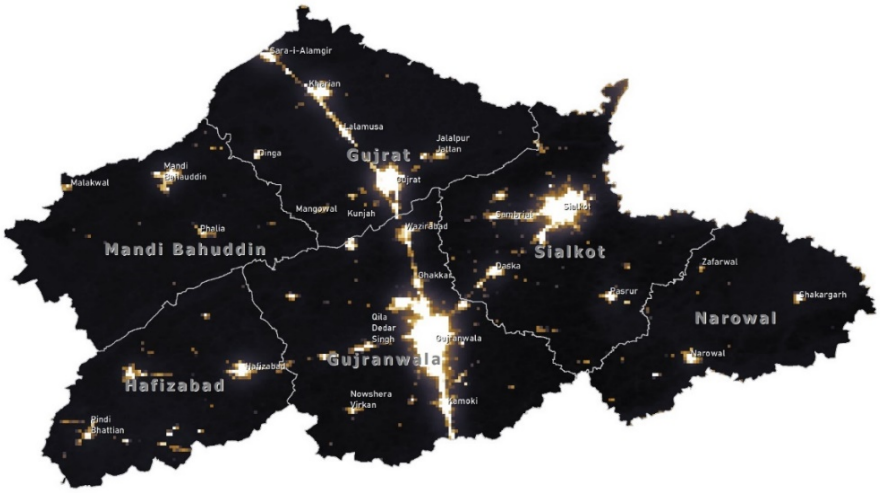


Figure 11: Light Map of Gujranwala Region

Table 6: Key manufacturing and agricultural products in tehsils of Gujranwala Region

District	Tehsil	Garlic	Tomato	Citrus	Turnip	Masoor	Wheat	Rice	Sesame	Bajra	Mash	Jowar	Rice	Surgical	Sports Goods	Wearing Apparel	Furniture	Cutlery	Electrical Equip	Light Engineering
Gujranwala	Guj City	x	x					x											x	x
	Guj Saddar	x	x					x											x	x
	Kamoke	x	x					x												
	N. Virkan	x	x					x												
	Wazirabad	x	x					x										x		
Gujrat	Gujrat									x		x					x			
	S. Alamgir									x		x								
	Kharian									x		x								
Hafizabad	Hafizabad							x												
	P. Bhatian							x												
Mandi Bahauddin	MBDin			x								x	x							
	Phalia			x								x	x							
	Malikwal			x								x	x							
Narowal	Narowal	x				x				x			x							
	Safarwal	x				x				x			x							
	Shakargarh	x				x				x			x							
Sialkot	Sialkot	x											x	x						
	Sambrial	x											x	x	x	x				
	Pasrur	x											x							
	Daska													x	x					

The economy of Gujranwala region is moderately balanced between the three sectors of the economy. Overall, the region is usually known for its production in apparels, textiles, surgical equipment and sporting goods. These products are also marketed internationally, showing approximately 77, 000 PKR per month division has 14,474 units[10], which is the highest number of industrial units for any division

[10] Citation needed as taken from regional snapshot

in the province. In terms of agricultural production, the area is mostly known for its production in wheat, rice and masoor.

2.6. Industries

Gujranwala is known to be Pakistan's third largest industrial centre, and contributes approximately 5% to Pakistan's national GDP. The city is part of a network of large urban centres in north-east Punjab province that forms one of Pakistan's mostly highly industrialized regions. Along with the nearby cities of Sialkot and Gujrat, Gujranwala forms part of the "Golden Triangle" of industrial cities with export-oriented economies, having a vibrant and strong industrial base producing for both domestic and international markets. The triangle represents one of the highest SME base in Punjab employing millions of skilled workforce and having one of the highest per capita income in the province.

The industrial concentrations can be seen in and around the 3 major cities; Sialkot, Gujranwala & Gujrat. The triangle holds its unique importance because of its production of export-oriented commodities.

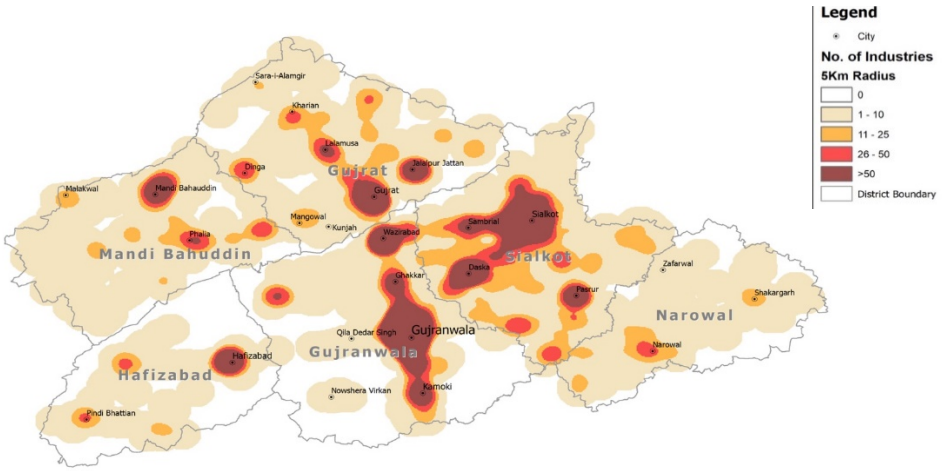


Figure 12: Add Title Here

From the total manufacturing units 96.84% are small industries, 2.75% are medium and 0.40% are large. Industry is highly agglomerated in this region, large and medium firms are concentrated in Sialkot, while Gujranwala is a base for SMEs operations, Sialkot competitiveness is spread over three industrial clusters that are all export oriented.

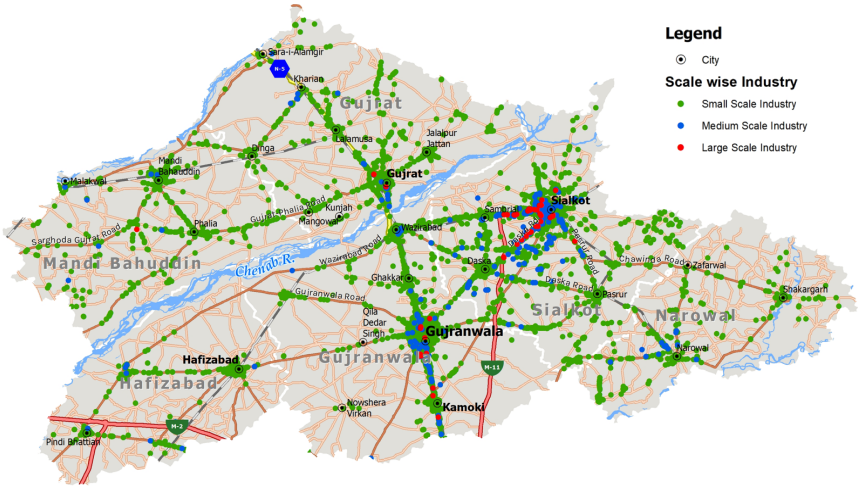


Figure 13: Scale Wise Industries in Gujranwala Region

2.7. Land Cover

Gujranwala division comprises of six districts: namely Gujranwala, Gujrat, Hafizabad, Mandi Bahuddin, Narowal and Sialkot. The total land mass of this division is 17,214 Sq Km; a geographical size bigger than the average European Union country size. Almost 80% of this land mass is categorized under cultivatable area. With the built up constituting the remaining.

Most of this built-up to be concentrated in the major cities of Gujranwala and Sialkot. There are two major urban conurbations. One starting from Kamoki in south and passing through Gujranwala to end at Ghakar. Second is Sialkot till Sumribal from one prong and Daska from another prong. The district wise land cover area is shown as under:

Table 7: District wise Land Cover Statistics

Administrative Set-up	Barren Land	Built-up	Vegetation	Water	Total
Gujranwala Region	2,363	791	13,823	238	17,214
Gujranwala District	361	245	2,976	41	**3,622**
Sialkot District	406	178	2,395	36	**3,015**
Gujrat District	682	166	2,287	61	**3,196**
Hafizabad District	185	43	2,103	29	**2,359**
Narowal District	382	94	1,842	13	**2,331**
M.B. Din District	347	65	2,221	59	**2,691**

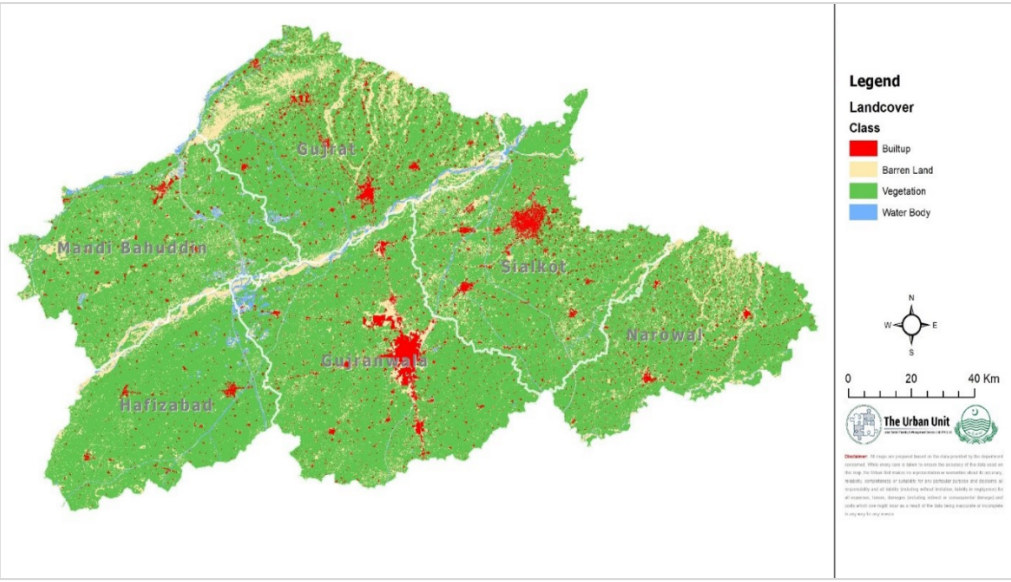


Figure 14: Land Use Map of Gujranwala Region

2.8. Agriculture

A number of crops are sown in Gujranwala region. Current cropping pattern of 30 Rabi and 29 Kharif Crops shows that wheat, fodder & kinnow are major Rabi crops whereas Rice, Bajra fodder and sugarcan are enlisted as major Khareef crops in the region.

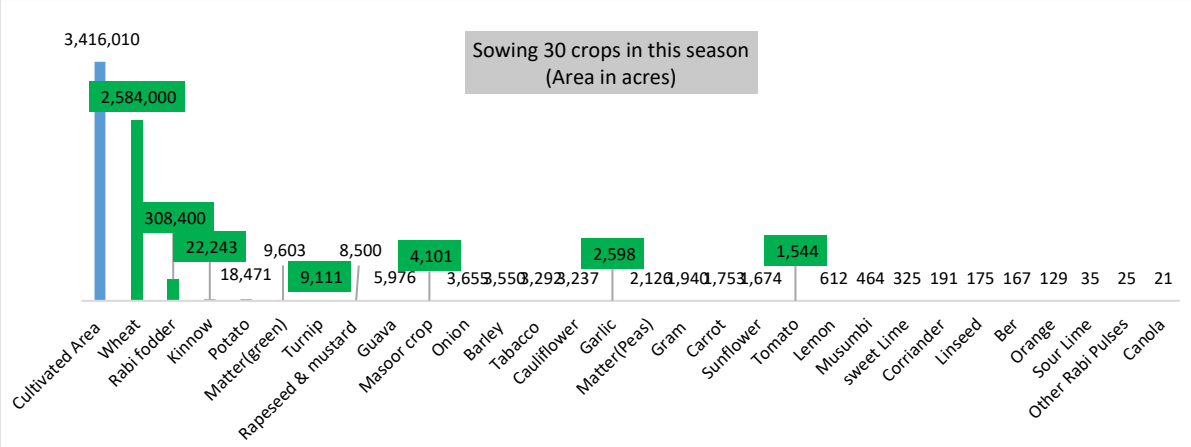


Figure 15: Current Cropping Pattern of Rabi crops in Gujranwala Region

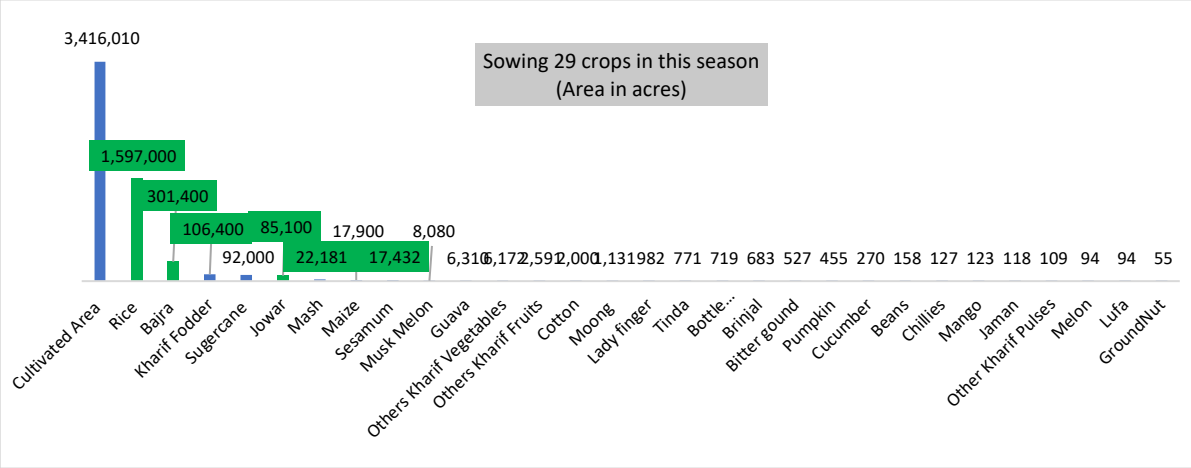


Figure 16: Current Cropping Pattern of Kharif crops in Gujranwala Region

Crop intensification efforts would require higher costs on part of farmers related to fertilizer and other soil nutrients. For Rabi season garlic, tomato, citrus, turnip, masoor and wheat crops are recommended high-value crops for Gujranwala division.

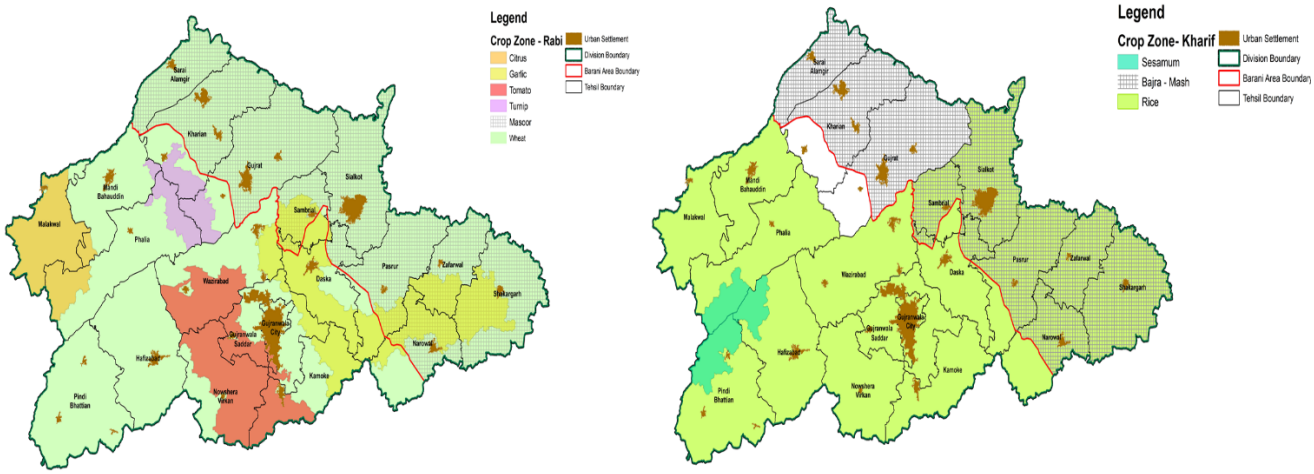


Figure 17: Rabi and Kharif Crops for Gujranwala Region

For Kharif season rice, bajra, sesame, mash and jowar crops are recommended high-value crops for Gujranwala division. The following shows the spatial location of Rabi crops for Gujranwala division.

2.9. Irrigation:

Most of Gujranwala, Mandi Bhauddin, and Hafizabad Districts are fed through irrigation system, including South-Western areas of Gujrat, Sialkot and Narowal. Remaining areas of the division are mainly rain fed.

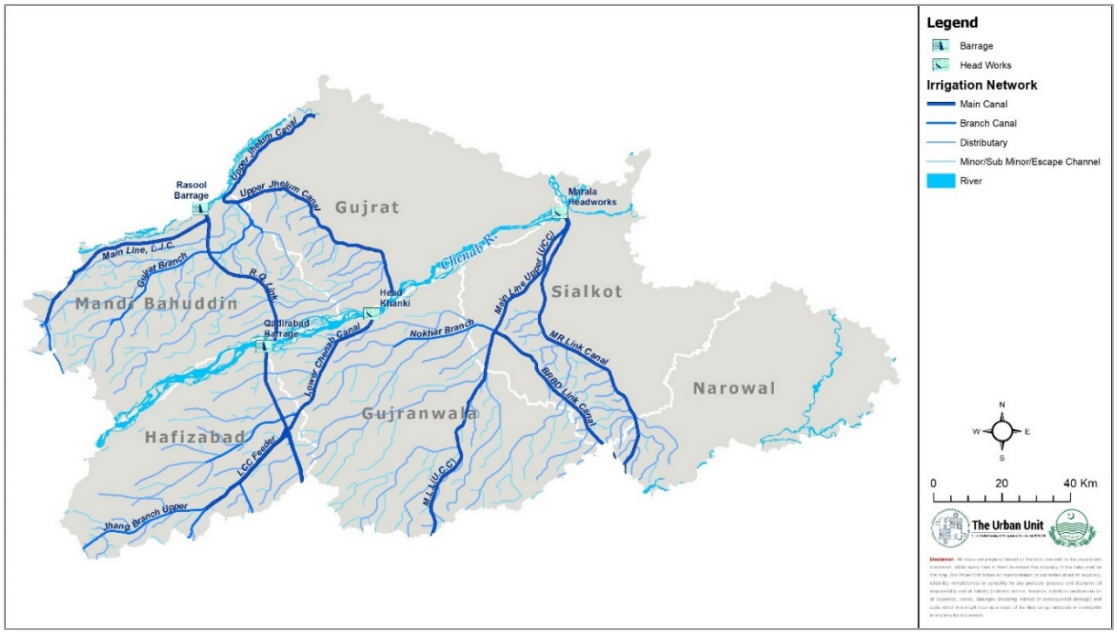


Figure 18: Irrigation Network in Gujranwala Region

There are four major canal systems that serve the Gujranwala region i.e., Lower Chenal Canal, Upper Jehlum Canal, Upper Chenab Canal and Marala-Ravi Link Canal. Total cultivated area is Gujranwala division is nearly 3.4 million acres, out of which 2.2 million acres (62%) is served by this canal system.

Table 8: Add Title Here

	LCC	UJC		UCC			MRLC	
Units	**Hafizabad**	**M.B.D**	**Gujrat**	**Sialkot**	**Gujranwala**	**Hafizabad**	**Narowal**	**Sialkot**
Total cultivated area (acres)	467,000	548,340	615,030	622,440	726,180	466,830	437,190	622,440
Area under canal system (acres)	373,000	587,455	151,944	54,704	779,196	13,004	56,395	132,194
Current area used under major crops	Rice	Rice, Bajra, Jawar	Jawar, Bajra & Masoor	Rice, Mash	Wheat & Rice	Rice	Wheat, rice,	Wheat, rice,
Horticulture Potential	Garlic			Garlic	Tomato & Garlic	Garlic	Potato / ladyfinger	Garlic / ladyfinger
Fruit Orchard	Guava	Citrus				Guava	Guava	Guava

Total water availability is the sum of all sources of water available at the field from the surface water supply, groundwater abstraction, and rainfall. Spatial information of all the resources of water was added for the estimation of the total water available at the field level.

Thus, the maximum water availability in the irrigated area was 4,500 mm, the highest in this region as compared to other areas of Punjab, and the higher contribution from the groundwater due to the freshwater availability. The maximum total water availability in barani area is 1,634 mm.

2.10. Water Supply and Sewerage

Gujranwala Region has inadequate water supply and sanitation infrastructure. In some cases, the WSS infrastructure is reasonable but poor maintenance undermines service delivery. Division wise percentage distribution of households shows deprived results in case of provision of piped water facility in dwelling.

↑60%

Population of Gujranwala Region is using motorized pump as main drinking water source.

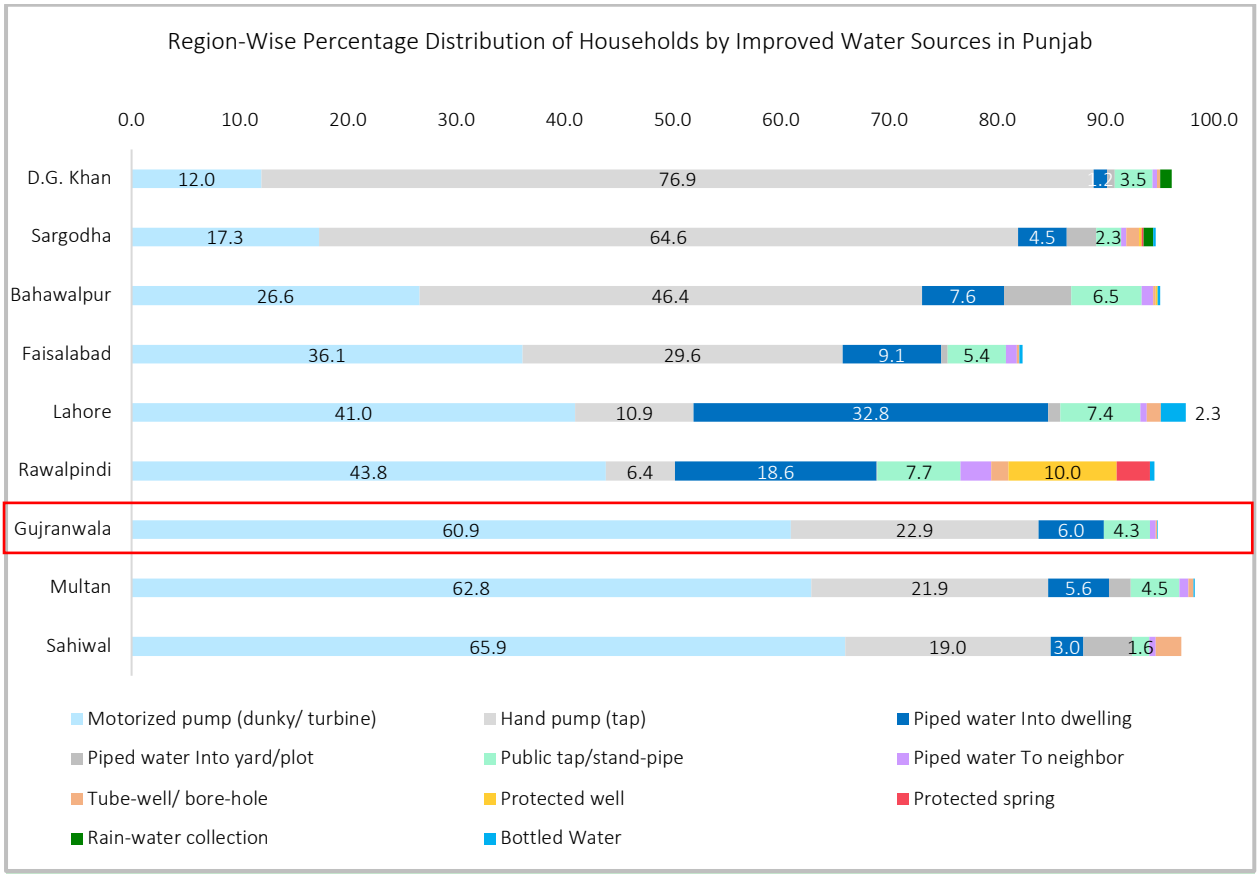


Figure 19: Region-Wise Percentage Distribution of Households by Improved Water Sources in Punjab

Majority of urban and rural households in Gujranwala division continue to rely motorized pumping and hand pumps. In 2014/15 access to piped water was highest in urban Gujrat and Sialkot (35 %) followed by urban Narowal (33%), Gujranwala (9%), Hafizabad (5%) and finally, Mandi Bahaudin (4%). Motorized pumps is the second-most common source of drinking water followed by hand pumps in the division. [11]

Almost 81% of Gujranwala region use septic tanks as a major sanitation facility which is highest in the province. In contrast to this, flush/pour flush in piped sewer system is just 8.8% (Fig. 8).

[11] MICS 2014-15

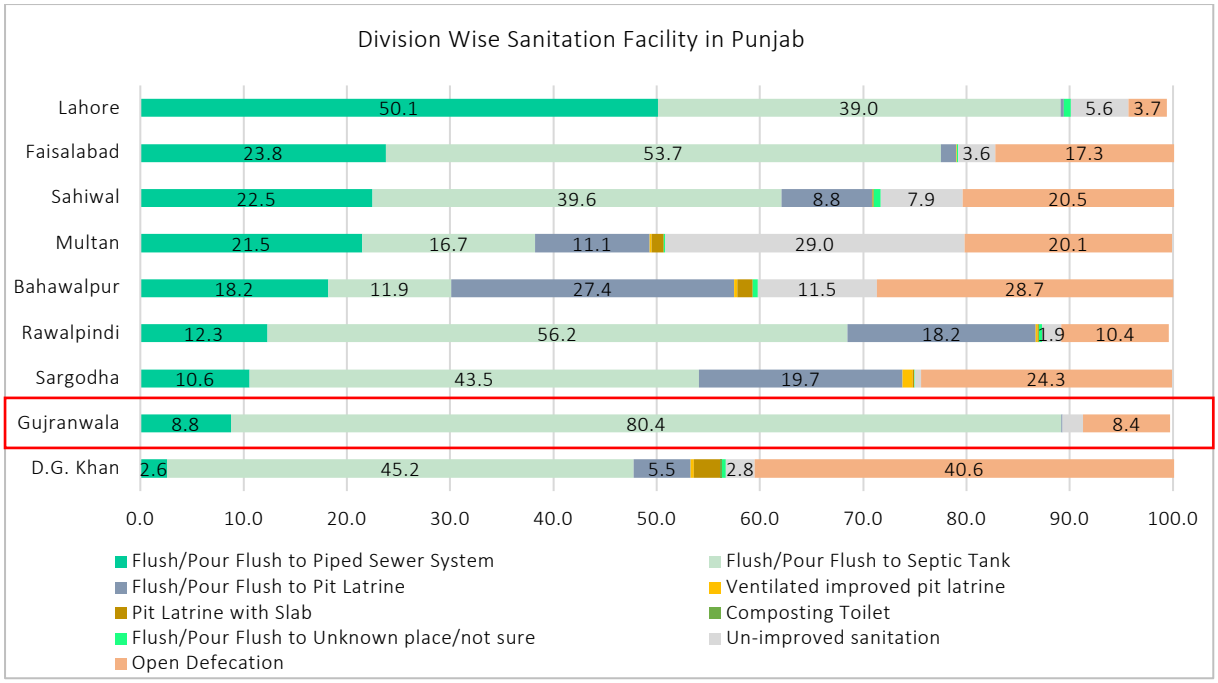


Figure 20: Division Wise Sanitation Facility in Punjab (Total) by MICS 2014-15[12]

2.11. Climate Risks and Natural Hazards

Gujranwala division has a tropical hot dry climate with long summers when temperature rises to maximum in the month of June, and lowest in the month of January. The summer season starts from April and continues till end of the September. On the other hand, the winter season starts from November and continue till February and Moon soon starts from the later part of June and lasts over the period of two and half months.

As per the 5th Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), the climate change risks are concentrated in urban areas for the citizens, infrastructure, economies, and ecosystems. Heat stress/Urban Heat Island (UHI), extreme precipitation, inland and coastal flooding, landslides, air pollution, drought, and water scarcity are some of them. The Climate Change Profile of Pakistan provides ranking of districts based on climate risks and hazards classification as exhibited below;

Table 9: District Level Climate Risk and Hazard Assessment Classification [13]

Rank	District	Flood Risk	Landslide Risk	Earthquake Risk	Tsunami Risk	Cyclone Risk	Drought Risk	Avalanche	GLOF Risk
55	Gujranwala	5	2	4	-	2	2	1	1
60	Gujrat	5	2	5	-	2	1	1	1
72	Sialkot	5	1	5	-	2	1	1	1
74	Narowal	5	1	5	-	2	1	1	1
96	Mandi Bahaudin	3	1	4	-	2	2	1	1
102	Hafizabad	3	1	3	-	2	2	1	1

Scoring Key					
Very High	High	Medium	Low	Very Low	Non-Hazard
5	4	3	2	1	-

[12] Pakistan Social and Living Standards Measurement (PSLM) 2014-15.

[13] Chaudhry, Q. 2017. *Climate Change Profile of Pakistan*. Asian Development Bank, Philippines.

The above table shows that Flood risks are much higher in Gujranwala region. Four of its districts (Gujranwala, Gujrat, Sialkot and Narowal) have experienced heavy flooding in the past and are at a high risk of Floods. With inadequate storm and wastewater infrastructure in the districts, the situation can even worsen in the upcoming years.

2.12. Environmental Trends

The whole Gujranwala region has moderate to poor air quality due to high level of industrial pollutants and particulate matter in the air. The air quality map of Punjab province clearly indicates that eastern corridor has alarming level of PM 2.5.

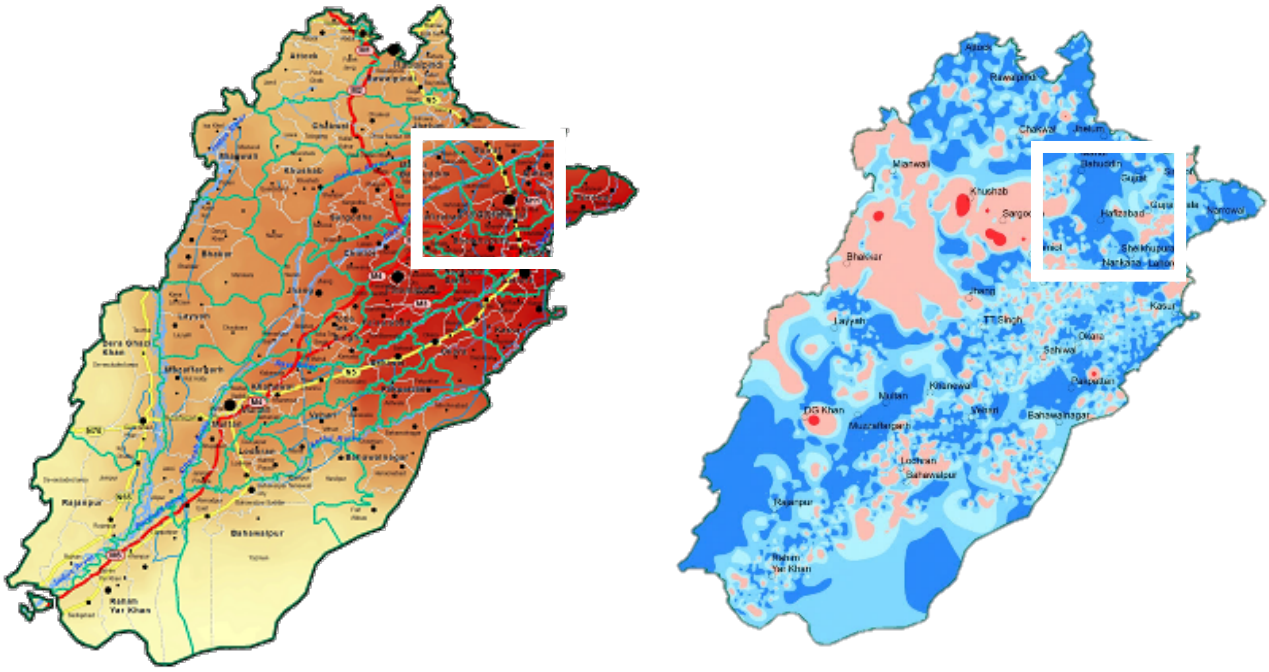


Figure 21: Air and water quality map of Punjab indicating Gujranwala region

According to the Air Quality Life Index (AQLI), high particulate matter (PM 2.5) in the air is shortening the average Pakistani's life expectancy by about 2.7 years annually and unsafe water & sanitation may cut lives by as much as 1.2 years.[14] Whereas, the index reported up to 4.5 years loss of life expectancy in Gujranwala due to unhealthy air. Effective policy implementation may result in gain in the life expectancy. AQLI 2020 analysis shows Years of Life Expectancy Gain through Reducing PM2.5 from 2018 Concentration to 25% and 40%, as exhibited below;

Table 10: Years of Life Expectancy Gain through Reducing PM2.5 Concentration (from 2016[15]/2018[16]) in Gujranwala Region

#	District	PM2.5 Concentration (µg/m3)	Years of Life Expectancy Gain	
			By 25%	By 40%
1	Gujranwala	38 (2018)	2.3	1.2
2	Gujrat	40 (2018)	2.4	1.6
3	Sialkot	46 (2018)	3.0	1.8

[14] Air Quality Life Index, 2020. University of Chicago
[15] Ibid
[16] Pakistan Fact Sheet, 2020. Air Quality Life Index. University of Chicago.

4	Narowal	60 (2016)	1.9	-
5	Mandi Bahaudin	51 (2016)	1.6	-
6	Hafizabad	-	-	-

The ground water in most of the area of Gujranwala is sweet and occur in abundance. However, the secondary data analysis of ground water quality shows deprived results, specifically, in case of Nitrates.

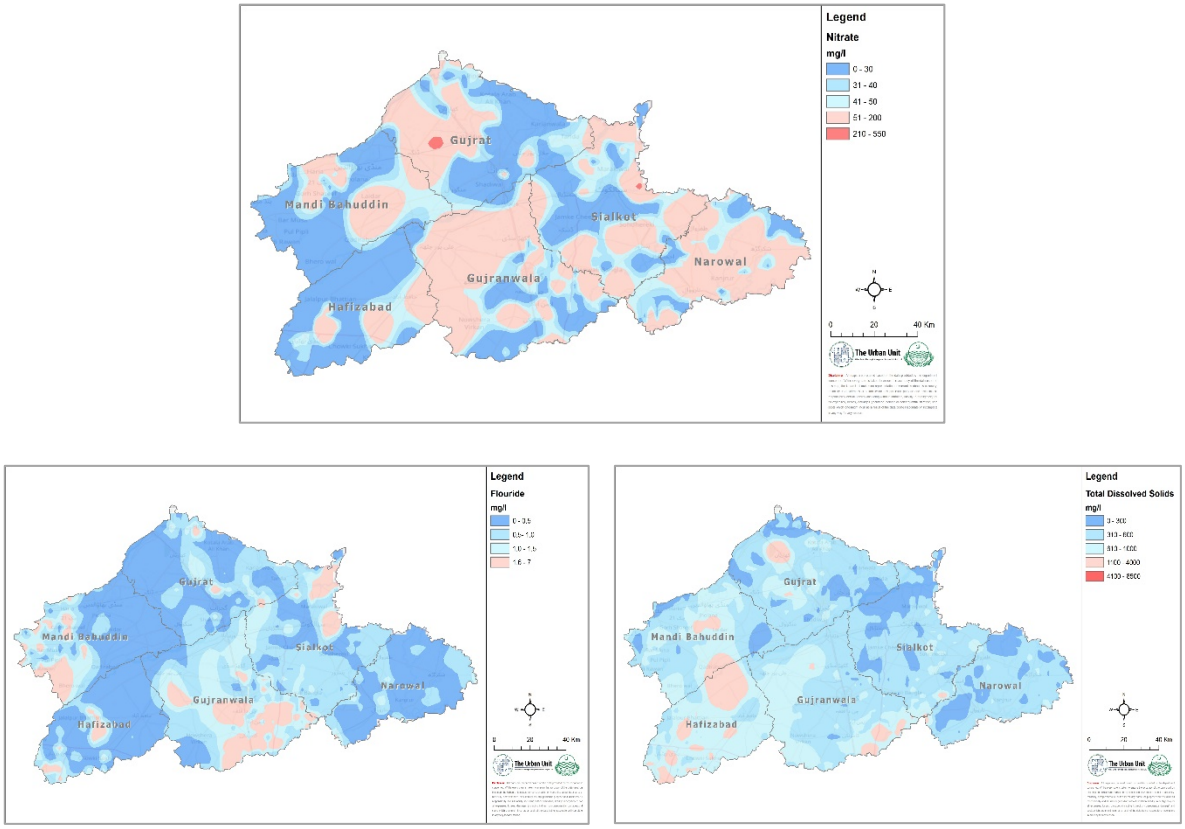


Figure 22: Nitrate, Fluoride and TDS Concentration in Ground Water of Gujranwala Region

As per Punjab Environmental Quality Standards (PEQS) for drinking water, the thresh hold limit for nitrate is ≤50 mg/l. Figure shows high level of nitrates in the ground water of most of the areas of Wazirabad and Moshhra Vikran. Whereas, some areas of Gujranwala Sadar, city and Kamoki also contains higher concentration of nitrates. It is evident from the literature review that groundwater drawn from relatively shallow aquifer and shallow groundwater is more susceptible to nitrate contamination particularly in areas with more porous and well drained soils. Shallow wells less than 120 feet deep are more susceptible to nitrate contamination, where soils are very porous and where the underlying material is very gravelly. Since, it is very soluble and completely mobile in dissolved form so it can readily move with water through the soil and heavy rainfall or over irrigation moves the nitrate into groundwater systems that may be used for drinking purpose. On other hand, high levels of nitrate in well water often result from improper well construction, well location, overuse of chemical fertilizers, or improper waste disposal[17].

[17] M. K. Daud, etal. 2017. Drinking Water Quality Status and Contamination in Pakistan. *BioMed Research International*. Pg 18 pages. https://doi.org/10.1155/2017/7908183

Similarly, fluoride concentration is much higher than the permissible limit i.e. ≤1.5 ppm in Majority of the areas of Kamoki and some areas of Gujranwala Saddar and Gujranwala city. High concentration of fluoride could be due to geological as well as anthropogenic sources such as improper or overutilization of fertilizers and inappropriate irrigation practices. Whereas, Total Dissolved Solids (TDS) and Arsenic are found in the permissible limit of PEQS.

2.13. Forests and Protected Areas

According to World Forest Watch, Gujranwala had 1.32kha of tree cover in 2010, extending over 0.076% of its land area. Whereas, in 2012 it lost 7.16ha of tree cover, equivalent to 1.48kt of CO_2 of emissions. The Forest Atlas of Gujranwala division (2014) shows almost 8.5k acre of irrigated planation and 44.5k acres of riverine forests. The irrigated plantation mainly dependent upon irrigation water supply from the canal system and use for timber and firewood purposes.

Head Qadirabad game reserve in Gujranwala District; Daphar Wildlife Sanctuary in Mandi Bahaudin; Rabbi Scub Forest in Gujrat; Bajwat Wildlife Sanctuary in Sialkot; Boarder Belt Game Reserve in Narowal; Rah Cha Kiyal in Hafizabad are some of the protected areas present in the Gujranwala region. Some scattered woodland patches of deciduous woodland are also reported in Narowal district.

2.14. Solid waste Management

Waste management is a complex process which implies a control of the entire waste management system (from waste generation, through collection and transportation of waste, to waste treatment and disposal). According to Department of Solid Waste Management, The Urban Unit, Lahore, Pakistan the waste generation per capita for rural areas is 0.3kg/capita per day while for urban it varies from 0.40 to 0.46kg/ capita per day[18] therefore the current waste generation of Gujranwala Division is calculated around **6200 TPD** as given in table below.

Table 11: Urban and Rural Areas Waste Generation of Gujranwala Region

District	Name of Tehsil	Waste Rural (TPD)	Waste Urban (TPD)	Total Waste (TPD)
Gujranwala	Gujranwala City	22	78	100
	Gujranwala Saddar	193	909	1,102
	Kamoke	100	105	204
	Nowshera Virkan	146	21	167
	Wazirabad	159	126	285
Sialkot	Daska	193	86	279
	Pasrur	216	51	267
	Sambrial	82	58	140
	Sialkot	334	286	620
Gujrat	Gujrat	287	228	514
	Kharian	234	97	331
	Sarai Alamgir	58	23	81
Hafizabad	Hafizabad	120	111	231
	Pindi Bhattian	106	58	165
Mandi Bahauddin	Malakwal	99	18	117
	Mandi Bahauddin	135	91	226
	Phalia	146	28	174
Narowal	Shakargarh	178	35	212
	Zafarwal	120	16	136
	Narowal	138	57	195

[18] Waste Amount Survey and Physio-Chemical Analysis of Municipal Solid Waste Generated in Gujranwala-Pakistan Kashif Nadeem*, Kiran Farhan and Hassan Ilyas

Total	**3,064**	**2,482**	**5,546**

Considering the above table, MSW generation of whole division is approximately 2.024 million Ton per year and is expected to reach 2.616 million Ton per year taking 1.5% average annual increase[19,20] waste generation rate for next ten years.

2.15. Connectivity

Gujranwala division has an extensive network of transportation infrastructure. It is well-connected with Regional and International market through a network of Motorways and National Highways. The division enjoys direct connectivity to CPEC corridor through Motorways M2, M4 and M11 that runs deep into the division. In addition, National Highway N5, and ML1 railway track also facilitates north-south connectivity providing access to the sea-ports of Pakistan. The division also have an international gateway through Sialkot International Airport. The dry port of Sialkot facilitates the freight movement in the division.

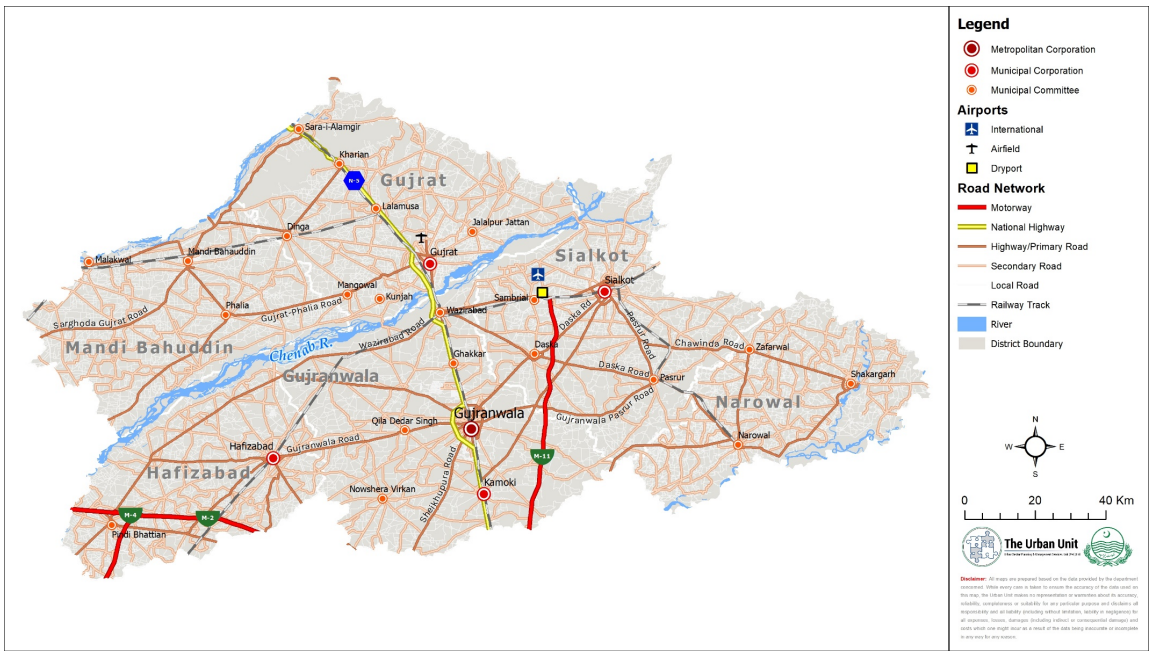


Figure 23: Road Network in Gujranwala Region

Although the infrastructure is available in the region, the quality and condition of the road infrastructure especially the provincial road network is deplorable. This inhibits the region's growth and competitiveness. Similarly, there is no proper urban transport system in the urban areas of the region, creating unstainable load on the road network of the region and resulting in poor mobility and commuting patterns. The following section will provide glance of existing infrastructure followed by the present condition and adequacy of this network.

The region is well connected and provides public transport to the other parts of the country. Buses/ public transport from bus terminals use high speed road network to take passengers to other parts of the country. However, public transportation utilizes provincial highways for intra-regional movement of passengers and there are no designated public transport routes for Karachi and Quetta.

[19] Municipal Solid Waste Management Manual for India – Part II, Ministry of Urban Development Report 2016.
[20] What a Waste: A Global Review of Solid Waste Management, The World Bank report, March 2012

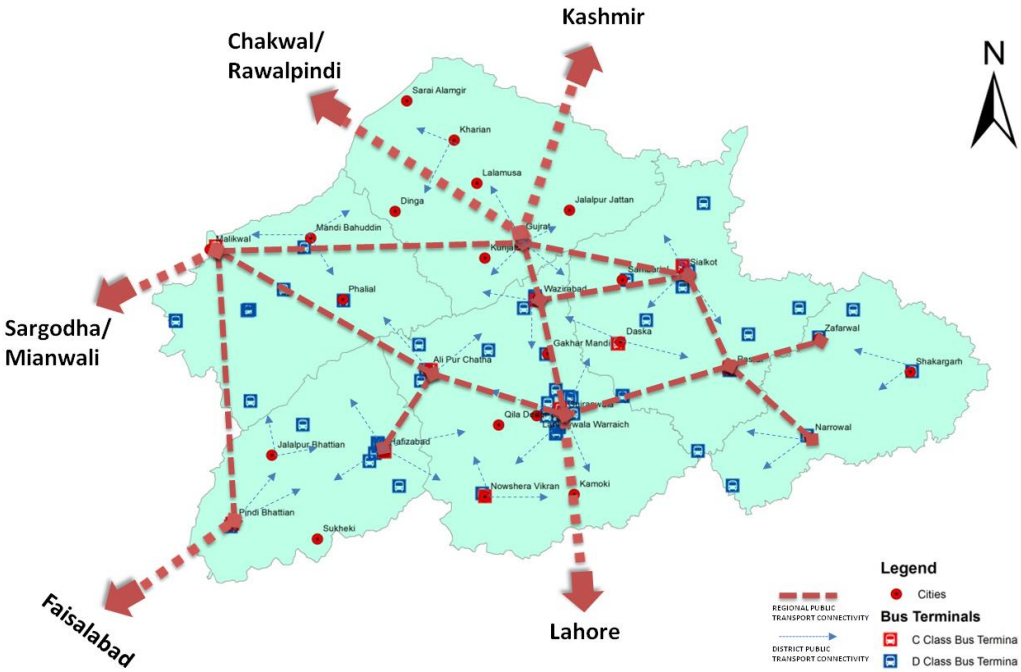


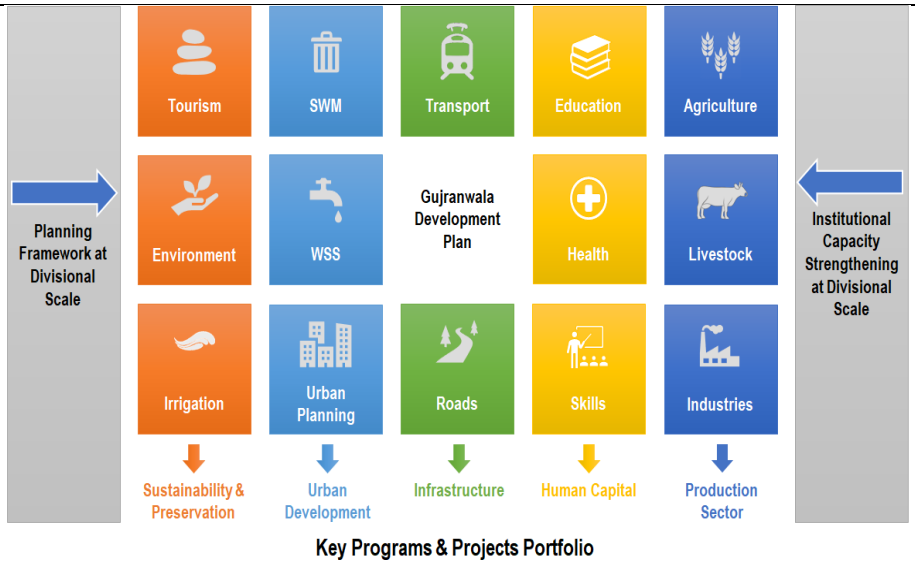
Figure 24: Intra-regional and inter-regional public transportation connectivity in Gujranwala Region

Approach

Approach

Following work plan outlines the process flow for activities and mechanisms that will be undertaken to develop REGS and CRPP:

Data Consolidation	Consolidation of existing datasets and analysis done under Punjab Spatial Strategy
Ground Truthing	• Stakeholder Consultations with Business Chambers & Associations, Farmers etc • Government Stakeholders; Deputy Commissioners, Commissioners & Local & Provincial Government Officials in the Division • Focus Group with Research Institutes, Government Depts, Farmers & local industry reps • Field visit to key production & population cluster and service area to collect data specific to the Cluster
Gap Analysis	• Spatial Data Analysis • Scenario Analysis • Need Assessment • Defining Issues • Identification of Priority Areas • Review of existing Development Portfolio • Gaps in the portfolio • Policy Recommendations
REGS	Identifying strategy for public sector investments to make economically competitive and high productivity agricultural and industrial areas that contribute towards GDP growth, job creation and export growth
Data Deepening	• Field level data collection • Review of regulatory framework and institutions • Spreading coverage to Intermediate Cities • Sampling at local area level i.e., villages and towns
CRPP	Specific area based key policies and actions culminating into a medium-term development project digest spanning over public sector investments as well as public-private partnerships portfolio. Coverage as per following:


Planning Framework at Divisional Scale
Tourism
SWM
Transport
Education
Agriculture
Environment
WSS
Gujranwala Development Plan
Health
Livestock
Irrigation
Urban Planning
Roads
Skills
Industries
Institutional Capacity Strengthening at Divisional Scale
Sustainability & Preservation
Urban Development
Infrastructure
Human Capital
Production Sector
Key Programs & Projects Portfolio

Strategic Vision, Goals and Objectives

Strategic Vision, Goals and Objectives

4.1 Vision

As part of vision for development of Gujranwala division, it is envisaged that competitiveness of each of the agricultural and industrial nodes needs to be enhanced. An ecosystem around competitive products needs to be built that provide competitive edge to firms and persons operating in the area. It is recognized that global investors tend to zoom into their investment destination decision, firstly based on the country's macro environment, followed by careful consideration amongst regional and local options before deciding on the final investment location.

The vision for Gujranwala is developed through structured analysis of its strengths, potential and the vision set out to develop the industrial node and future agglomeration of diversified economic, commercial, and civic activities.

As a first step, a SWOT analysis was conducted based on existing and potential sectors present in the region. Based on a competitiveness framework, a vision was developed for the region that plays around strengths of firms operating in the area with focus on enhancing their core competencies & productivity. Scaling up of existing firms would be first step to reach the desired potential by opening of other ancillary areas.

Gujranwala's unique selling proposition is its proximity to the mega city centers like Lahore and Rawalpindi, established connectivity to motorway connecting Gujranwala with the rest of Punjab, a good rail connectivity, a dry port & an international airport in the region.

Gujranwala acts as a gateway to the Golden Triangle; a light engineering hub comprising the districts of Gujranwala, Sialkot, Hafizabad, Narowal, M.B Din and Gujrat. The Census of Manufacturing Industries, Punjab 2015-16 shows that Gujranwala is the second most populous division with 13,912 Industrial units and having an enormous potential of growth and employment creation. Gujranwala specializes in basic iron and steel casting of iron and steel cutlery, hand tools, wearing apparel, sports goods, surgical equipment and general hardware domestic appliances. Additionally, it is already exporting rice globally as part of its agricultural production.

Strategically located in 100 km of Lahore, the area has a high potential to develop as a hub for resource-driven industries servicing both for exports and imports, it can also facilitate the development of SME industries. Strategy sims to make it the center of economic activity of Punjab given its potential for employment generation and in turn improving the socio-economic profile of the region.

The vision for Gujranwala manifests into enhancing agricultural productivity by concentrating production centers and enhancing their yields. It should dovetail with product diversification and value addition strategy for industrial products. Once these two levers are pulled in right direction, then services sector growth would be ancillary and logical outcome. For services sector growth, provincial regulatory framework would require to be transformed to create a business enabling environment for economic growth.

The medium-term vision of the Gujranwala is to develop itself as ***"a globally competitive production hub in Punjab that promotes industrial diversification and agricultural productivity with sustainability."*** For this reason, the Gujranwala strategy can be summarized as RAPIDS (***Rapid Investments for Agricultural Productivity and Industrial Diversification & Sustainability***). The vision is articulated across five principle themes that capture the manifested comparative advantage for further value addition and also highlights the missing focus on latent comparative advantages.

<table>
<tr><th colspan="4">Rapid Investments for Agricultural Productivity and Industrial Diversification & Sustainability</th></tr>
<tr><th colspan="3">Vision</th><th>Theme</th></tr>
<tr><td>R</td><td>RAPID</td><td>Rapid & Right Investments</td><td>High priority area for public sector investment due to private investment.</td></tr>
<tr><td>A
P</td><td>AGRICULTURAL
PRODUCTIVITY</td><td rowspan="2">Agricultural Productivity Enhancement</td><td rowspan="2">Enhancing agricultural productivity through resource efficiency, yields growth & integrated production to create better quality exportable surplus in crops.</td></tr>
<tr><td>I
D</td><td>INDUSTRIAL
DIVERSIFICATION</td><td rowspan="2">Industrial Product Diversification</td><td rowspan="2">Diversifying entry into sub-products in the existing production sectors, so complete market coverage for exports is ensured.</td></tr>
<tr><td rowspan="2">S</td><td rowspan="2">SUSTAINABILITY</td><td rowspan="2">Industrial Systems Sustainability</td></tr>
<tr><td>Sustaining & growing existing product exports by intensifying production by creating enabling environment</td></tr>
<tr><td></td><td></td><td></td><td>Scaling up the sustainable production systems for capturing export market and ensure local natural resource protection</td></tr>
</table>

4.2 Themes & Strategy

A shift to structural transformation from primary sectors to secondary and tertiary sectors is necessary to absorb youth bulge. Creation of jobs is the ultimate goal for REGS for Gujranwala and also by placing focus on export growth, which dovetail with national objective and priority. The key goal would be to revive its industrialization appetite for a paradigm shift from the predominant agrarian and inward-looking economy to an outward-looking economy.

Gujranwala division can unlock opportunities for investment, exports and growth in existing sectors where it is already producing few products for world markets. These are the areas where there is already an established competitive advantages and further investments can expand such opportunities. Additionally, new products entry is also warranted owning to changing international market dynamics by leveraging China-Pakistan Economic Corridor (CPEC).

For agriculture, the strategy revolves around following:

- Efficient use of resources, to enhance productivity and generate value addition in the agriculture and other sectors for economic wellbeing of people especially rural communities
- From subsistence level agriculture to high value-added export-oriented agriculture
- Low productivity to high productivity (Lessening the productivity gap in all crops & livestock)
- Identify the potential areas for each crop and make cluster/zone of each crop
- Provide all ancillary facilities and specialized support system for each crop in cluster/zone

- Gradually shift crop-mix pattern from low value crops to high value crops (identifying potential crops from high value crops on priority basis for the next five years)
- Wasteful use of water to efficient use of water and develop agriculture corridors along main canals and focus on integrated rural development in these corridors

4.3 Strategic Direction

Following is the outcome oriented strategic direction for Gujranwala:

Theme	Strategy	Outcome
Investment Priority	First phase of investments would be to leverage the existing endowments and then further investments will be made in new areas.	Focused on enhancing efficiency of existing investments in infrastructure and at later stages in scaling up new investments.
Agricultural Productivity	Enhancing the productivity growth in key exportable crops through resource efficiency, technology and market development. This will include crops like citrus and rice, which are already being exported. Productivity growth for domestic consumption and import substitution in garlic, masoor, sesame, and tomato.	Focused towards yields enhancement and better quality of products that are exportable. Secondary focus on import substitution and food security.
Industrial Diversification	Focused investments are made to develop new industrial clusters in similar products that are also exportable. This will include diversification of products in medical devices, sports goods and electrical appliances to create exportable products that leverage the existing industrial base. New production systems need to be introduced that are scaled up by entrepreneurs. An enabling environment built for capturing emerging opportunities in new sectors would be created.	Focused towards investment climate reforms, technological acquisition, and entrepreneurship development for new manufacturing, export growth and job creation.
Sustaining Industrial Production	Focused investments are made that ensure manufacturing activity to integrated into hi-tech and up-stream products by creating higher value add per unit produced. This will include special intervention packages for boosting MSMEs. Promote higher value addition in sectors that are already producing and exporting products. These sectors include electrical appliances, surgical instruments,	Focused towards technological acquisition, infrastructure investments and ease of doing business for manufacturing growth and job creation.

	sports goods, furniture, wearing apparel and cutlery.	
Sustainable Production Systems	The region will prioritize environmental responsibility that focuses on green technologies that are centric to exports in developed markets. It would promote greener product development to reduce externalities associated with industrial production in Gujranwala. This will include specific interventions in down-stream industrial production systems of light engineering, cutlery, surgical instruments and furniture.	Focused towards technological acquisition sustainable production, which would also result in export growth.

4.4 Theory of Change

The interventions emanating from this strategy follows following theory of change:

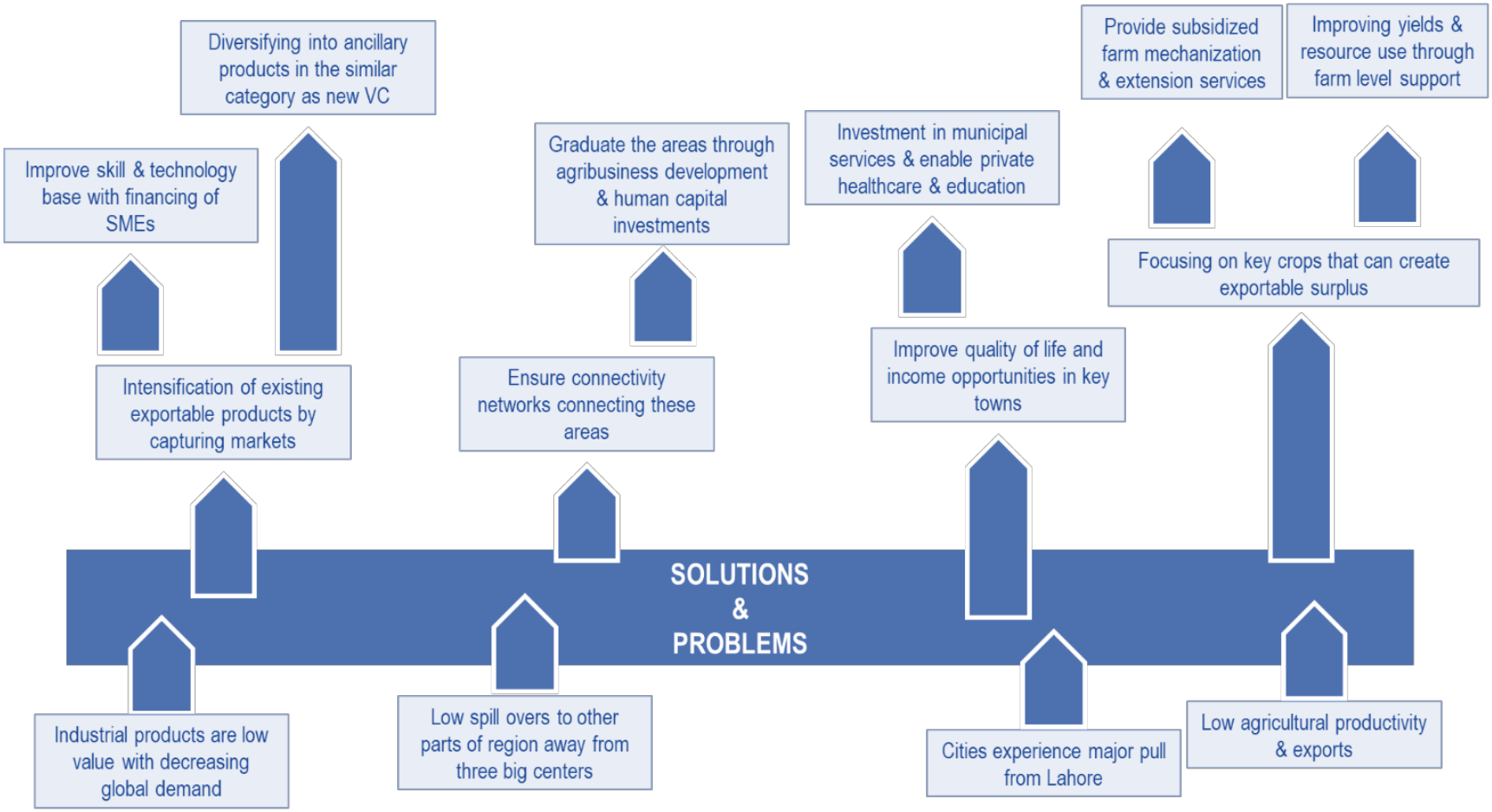


Figure 25: Theory of Change for Gujranwala Region

4.5 Growth Product Selection

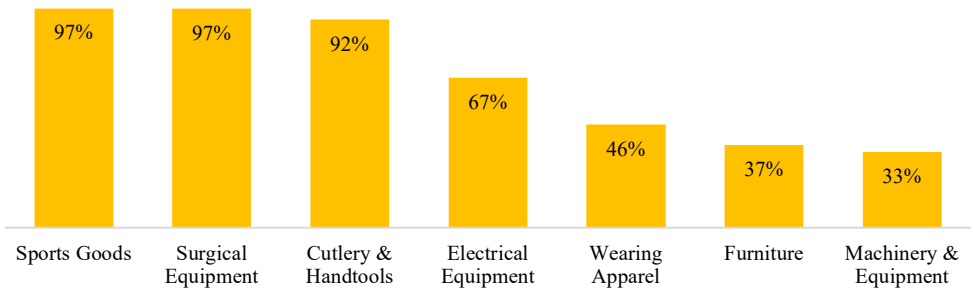
11 crops out of 59 crops are recommended on the basis agro-ecological conditions, production, yield & value of crops. International market value versus local production costs offer significant spread for further interventions. Additionally, some crops are import replacement crops where interventions can further develop local markets. Need to develop value chain of these recommended crops in this region by providing incentives:

Potential Rabi Crops						
District	**Garlic**	**Tomato**	**Citrus**	**Turnip**	**Masoor**	**Wheat**
Gujranwala	✓	✓				✓
Gujrat				✓	✓	✓
Hafizabad						✓
M.B.Din			✓	✓	✓	✓
Narrowal	✓				✓	✓
Sialkot	✓					✓
Potential Kharif Crops						
District	**Rice**	**Bajra**	**Sesame**	**Mash**	**Jowar**	
Gujranwala	✓				✓	
Gujrat		✓		✓	✓	
Hafizabad	✓		✓		✓	
M.B.Din	✓		✓		✓	
Narrowal	✓	✓		✓	✓	
Sialkot	✓			✓	✓	

Census of Manufacturing Industries, Punjab 2015-16 reveal that 23 manufacturing sectors exist in this region and some are leading the province, for example 67% electrical equipment 97% of surgical equipment and sports goods industry, 92% of cutlery and hand tools and 46% firms of wearing apparel of Punjab exist in this region. Below is the table of some leading sectors of this region.

In industrial manufacturing, each selected cluster of this region are contributing more than 25% in its respective sectoral GDP share. Intervention in these clusters will be promising; considering the historical existence, regional competitive strength and export potential.

Percentage of Punjab's Total Firms in Gujranwala Region



Pakistan's Exports (2019)	$ 679 M	$ 409 M	$ 114 M	$ 55 M	$ 5,843 M	$ 95 M	$ 278 M
%age of Pakistan's Total Exports	2.85%	1.71%	0.47%	0.2%	24.5%	0.4%	1.2%

Figure 26: Percentage of Punjab's Total Firms in Gujranwala Region

Following are the key products that are currently being produced in the region, although the concentration of industries is high in this region, however they are producing low-value added products impeding exports and making it difficult for them to compete in the world

Gujranwala	Gujrat	Sialkot
• Electric Motors, Generators, Transformers • Domestic Appliances • Other Pumps, Compressors, Taps And Valves • Forging, Pressing, Stamping And Roll Forming of Metal • Other Fabricated Metal Products	• Furniture • Electrical Appliances for home & domestic use • Electrical machinery, Motors, Generators and other parts	• Sports Goods • Tanning And Dressing Of Leather; Dressing And dyeing of Fur • Wearing Apparel, Except Fur Apparel • Cutlery, Hand Tools And General Hardware • Medical And Dental Instruments And Supplies • Other Manufacturing

Pakistan's overall economic growth has also been impeded due to too much reliance on textile industry and not focusing on export diversification products hailing from the golden economic triangle including the sports goods and apparel, surgical instrument, leather products, cutlery, ceramic ware, sanitary products, metal processing, switch gears and transformers, pumps and motors, articles and made-ups of plastic and PVC, fans, carpets and furniture to name a few, the graph below shows the complexity levels of the key sectors selected for development in Gujranwala.

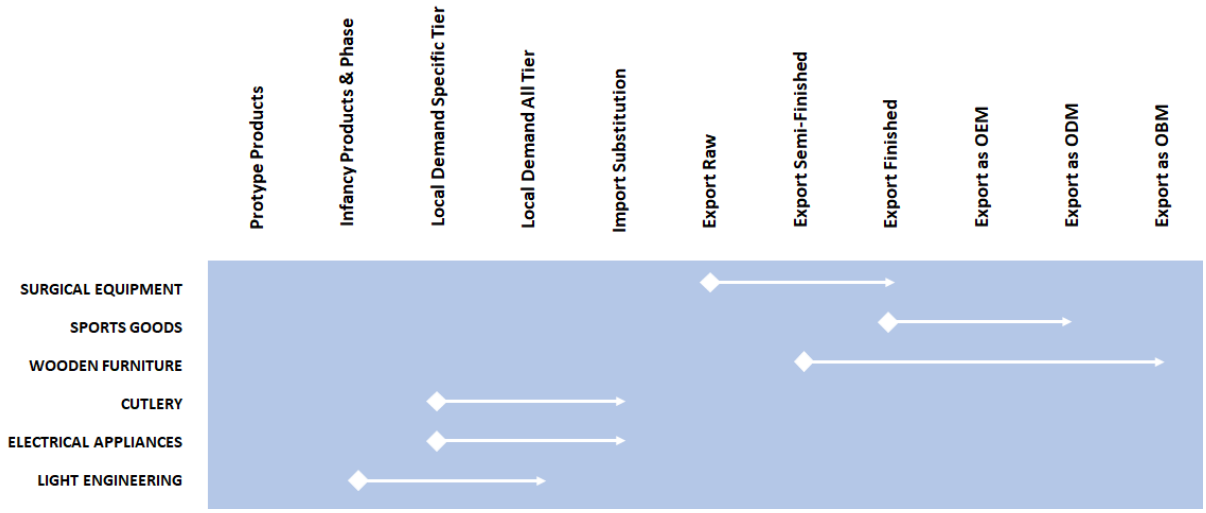


Figure 27: Stage of Development … ? (Incomplete)

4.6 Strategic Approaches

Different approaches are utilized based on level of product graduation in Gujranwala. This would ensure right interventions at that different level of technological progress for specific outcome.

The first approach will primarily promote factor-driven growth and concentrate on the existing strengths. The focus is on the available resources and comparative advantages to exploit maximum opportunities with limited investment requirement. This phase would require spatial intensification of production activities based on cluster development. High value cropping zones and integrated production systems are hallmark of approach. The focus would be on increased efficiency through investment to be guided through spatial lens.

The second approach focuses on low & medium technology industrial products. The focus is on achieving maximum efficiency in the given paradigm. Human capital development and investment climate reforms will be key policy actions for this transformation to occur.

The third approach is to capitalize on the improved production systems & making them environment friendly by technology acquisition and human & institutional capacity building. The focus on human capital investment will be to deepen knowledge in innovation, research and technology. This would lead to development of a more sophisticated product portfolio with products that are of medium to high technology.

4.7 Growth Scenario

4.7.1 GDP of Gujranwala

In most of the developing countries like Pakistan, National Accounts are maintained at national level only and GDP is not measured at regional level. There is no such official breakup of the GDP at regional/provincial level (i.e. GRP) is available. The Urban Unit attempted to approximate the regional (division level) GDP share in provincial GDP (54% of national GDP is produced by Punjab as per PERI 2017 report). The Urban Unit estimated divisional GDP of Gujranwala by averaging the share of Gujranwala's Labour Force and Household Income in the provincial Labour Force and Household Income using LFS 2018 and PSLM 2018 ensuring the corresponding rural-urban proportions. So, the GDP of Pakistan is US$ 270 billion in 2020 (and Punjab is 54% of i.e. US$ 146 billion. And, as per above-mentioned methodology, the Gujranwala division has 14.7% of total provincial GDP (i.e. US$ 21.4 billion) which is almost 8% of National GDP. Out of this Gujranwala city has 22% of total regional GDP and 34% of Urban GDP of Gujranwala region. The sectoral breakup of Gujranwala GDP shows that 30% is from manufacturing sector, 57% from services sector and 13% form agriculture sector is contributed. The share of manufacturing sector is higher than the national and provincial sectoral breakup.

4.7.2 GDP Growth Scenario: Future Projections

Currently, the national economy is experiencing downturn and almost having negative growth rate. The Gujranwala is expected to have 099% - 1.2% growth rate. Keeping an optimistic assumption of 1.2% growth an optimistic business as usual scenario shows that keeping in view past national growth trends of recovery from downturn and future projections by some international agencies, Gujranwala can achieve growth rate of 4.5% by 2040. However, considering the manufacturing potential of the region (golden triangle – Gujranwala, Gujrat & Sialkot), if the investment are made in the potential value chain, then under this business induced scenario, the growth rate of 6.75~7.0% seems achievable by 2040.

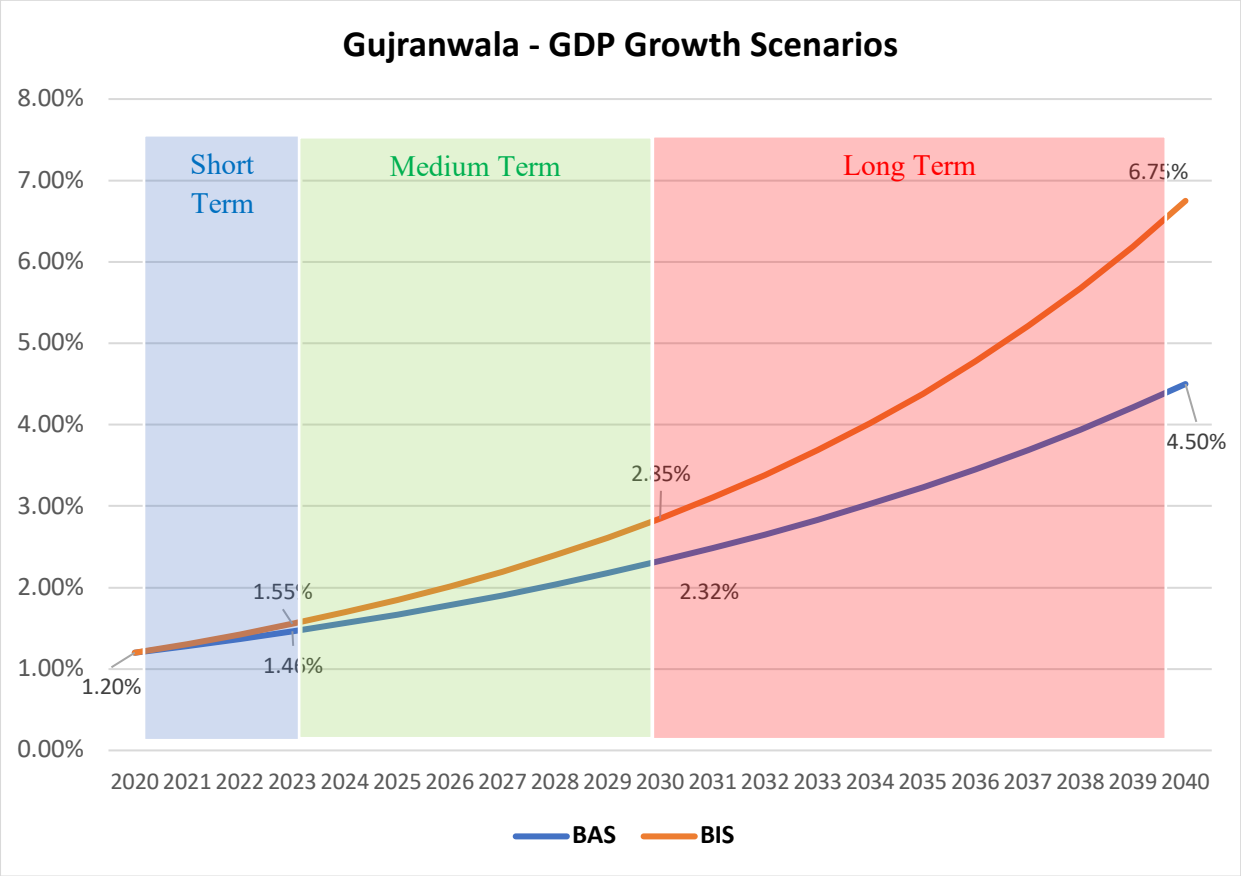


Figure 28: Gujranwala GDP Growth Scenario

Agriculture

Development Plan

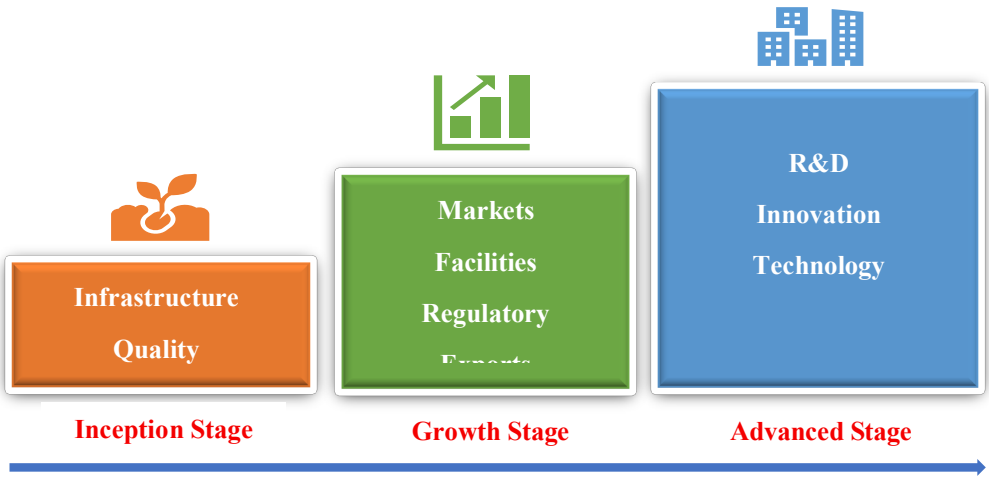
5.1 Agricultural Development Plan

The agricultural development strategic plan is to maximize agriculture potential through interventions in the value chains of the key selected crops. The proposed plan envisages the above growth through a planned and controlled development in of the zones in initial phases.

First Phase – Inception Stage: Crop zone development will be focused on ensuring availability of core farm level infrastructure to meet essential production needs, such as seed nurseries, water supply, market availability, farm to market roads, focused extension services and skilled workforce. Any crop issues related to SPS, quality and standardization will be ensured at this stage. In addition, the foundation will be laid for policy level enabling environment to ensure enabling business environment that create competitive produce that can be exported.

Second Phase – Growth Stage: After the inception stage, the infrastructure would be enhanced by building machinery support centers, common facilities, market facilities, regulatory environment and sustainable farming methods that create spillovers in the surrounding areas. At this stage, the zone development strategy is to become a fully functional unit that is able to enhance its export share in the global markets. Market access and marketing support will be arranged through federal windows.

Third Phase – Advanced Stage: The infrastructure development will be geared more toward improving productivity enhancement to gain competitiveness and economic efficiency. This may include development of facilities related to R&D, innovation, advanced university education and research, and enhanced natural-disaster risk management etc. that will improve agricultural services knowledge-based in the region. ,. At this stage, the zone development will become more proactive as an area that has wider spill overs to other regions and areas outside the Gujranwala division.



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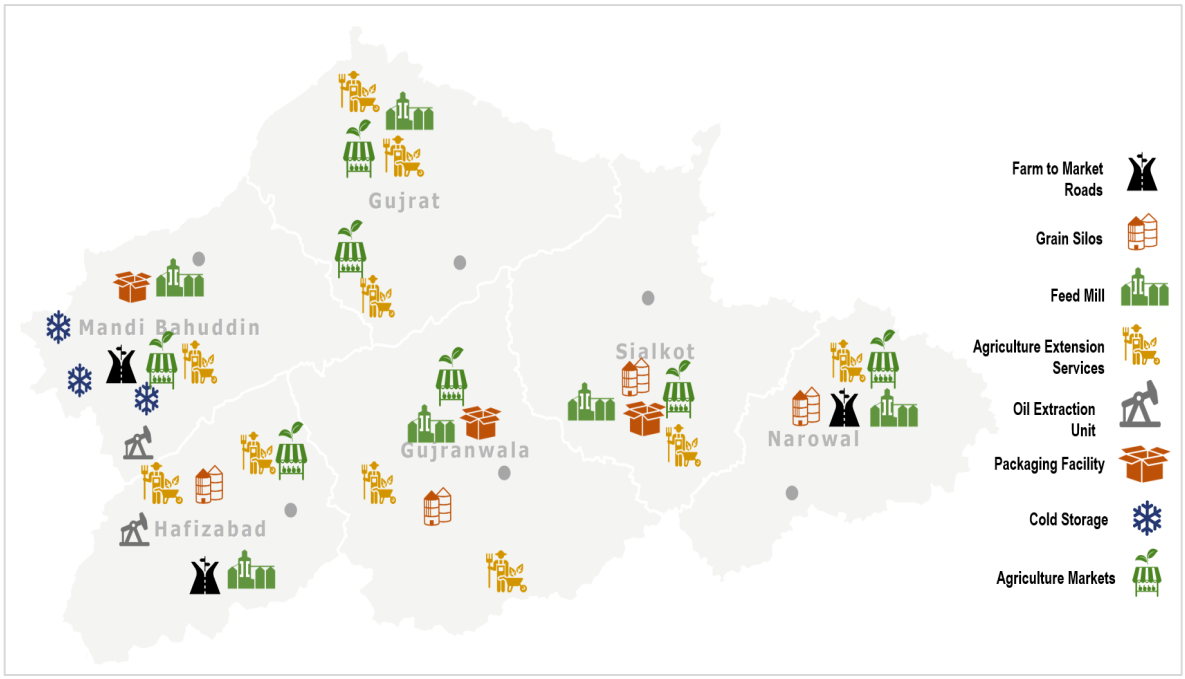


Figure 30: Proposed Interventions for Agriculture

6.1.1.1 Propose Projects & Programs

S#	Project	Districts	Cost (Million PKR)	Crop
1	Program to promote gypsum & green manuring and supporting farms	All Districts	1,717.3	Wheat
2	Provision of farm implements and support tools for small farmers	All Districts	856.0	
3	Seed replacement programs (17-50%) through half cost subsidy	All Districts	1,488.4	
4	Program to support prevention from disease through subsidized supply of weedicides	All Districts	1,183.6	
5	Development of high yielding & hybrid varieties for rice	All Districts	300.0	Rice
6	Awareness raising regarding improved farming practices & technical training on sop's for warehouse & operations & access to technology for harvesting & post harvesting practices in rice	All Districts	300.0	
7	Provision of rice implements on 50% cost sharing basis	All Districts	800.0	
8	Provision of Certified seed @ 200/kg	All Districts	21.0	
9	Program to support yield and quality enhancement through subsidized supply of micronutrients	All Districts	457.7	
10	Database of new plants/ plantation according to zoning and identification of new disease-free areas for new varieties of citrus	M B Din	250.0	Citrus
11	Conduct market survey to identify demand in international and local market for kinnow and other varieties and identifying protocol for export of citrus to the various markets & conduct survey of registered nurseries & all nurseries to be given targets to produce 20 million plants & monitor them	M B Din	200.0	
12	Upgradation of CRI to develop 1 million certified plants / annum of existing & new varieties.	M B Din	350.0	
13	DNA & all other required testing for mother plant and scion varieties (annual indexing, monitoring mechanism, track report) for citrus	M B Din	1,000.0	
14	Establishment of Fruit processing unit	M B Din	80.0	
15	Establishment of Fruit juice processing unit	M B Din	200.0	
16	Establishment of Cold storage	M B Din	300.0	
17	Establishment of Garlic powder and paste production unit	Sialkot	42.0	Tomatoes and garlic
18	Establishment of CA storage	Gujranwala	10.0	
19	Establishment of Tomatoes paste unit	Gujranwala	200.0	
20	Provision of specialized extension services; on farm practices, water management, harvesting techniques, etc.	All Districts	100.0	Common projects
21	Establishment of common packaging facility for value addition	M B Din, Sialkot, Gujranwala	1,000.0	
22	Storage and warehousing support program to support establishment of drying, storage and warehousing facilities on international standards	M B Din, Sialkot, Gujranwala	300.0	Common projects
23	Ease of financial access & insurance services to farmers	All Districts	300.0	
24	Seed oil extraction unit	Hafizabad	200.0	
25	Upgradation & establishment of agriculture markets for each cluster	All Districts	500.0	
26	Establishment of grain silos	Narowal, Gujrat	300.0	
27	Establishment of feed mill	Gujrat, Gujranwala	300.0	
	TOTAL		**12,756.0**	

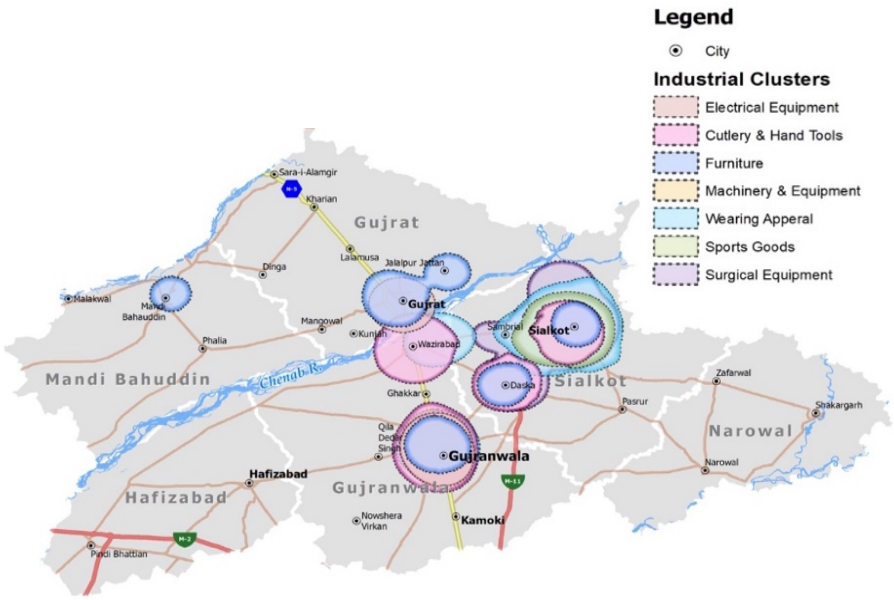
Industrial

Development Plan

6.2 Industrial Development Plan

6.2.1 Context

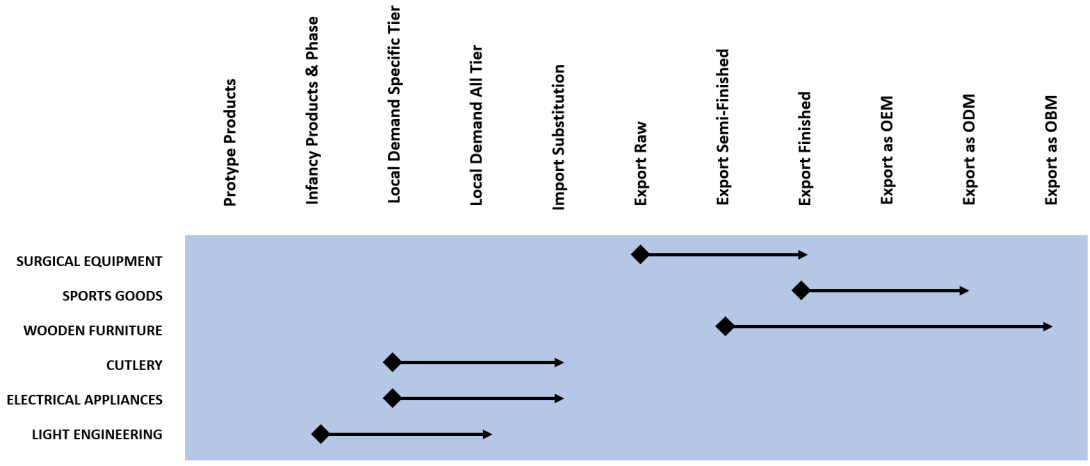
The industrial sector of Punjab is marred with low productivity and competitiveness in the international market. Gujranwala's industrial sector is currently facing the issue of inadequate skills and a mismatch of skillset with industrial demand for skilled labour hindering industrial development. For example there are no universities in the district offering engineering disciplines such as Automobiles, Electronics, Metal formation all of which have been identified as high potential sectors in the district.



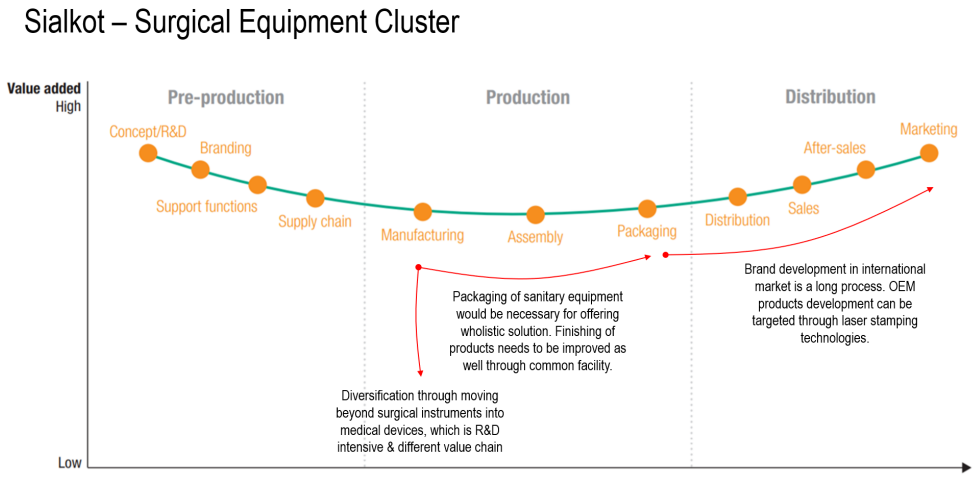
Gujranwala is dominated by small scale and low-medium tech industries with diversity of manufacturing sectors having an immense potential of growth and job creation. Agglomerated industries, excellent connectivity, clusters of small and medium enterprises and dominance in more than 5 manufacturing sectors in Punjab gives this region a competitive edge over other divisions in the manufacturing industry.

The industrial development is proposed with two-pronged approach; (1) specific interventions into value chains through hard and soft infrastructure that culminate into cluster development, (2) Development of existing industrial corridors with infrastructure facilities that lead to product intensification, graduation and diversification.

Since development level of each product is at different stages therefore following maps propose interventions to move along the value chain:



: Development Spectrum of Value Chains in Gujranwala



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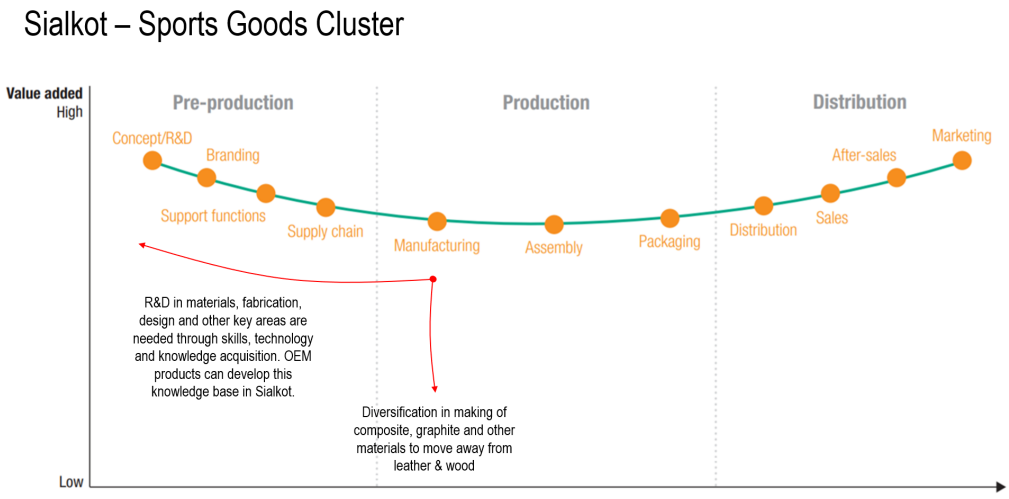

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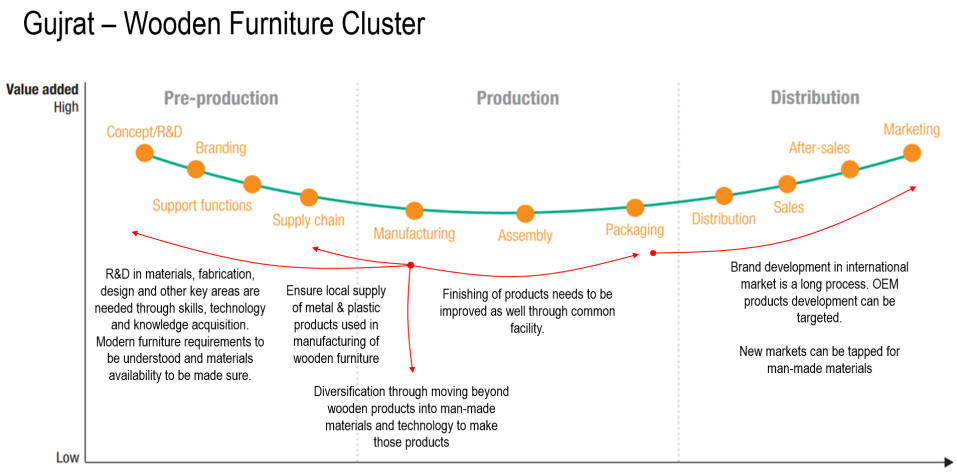

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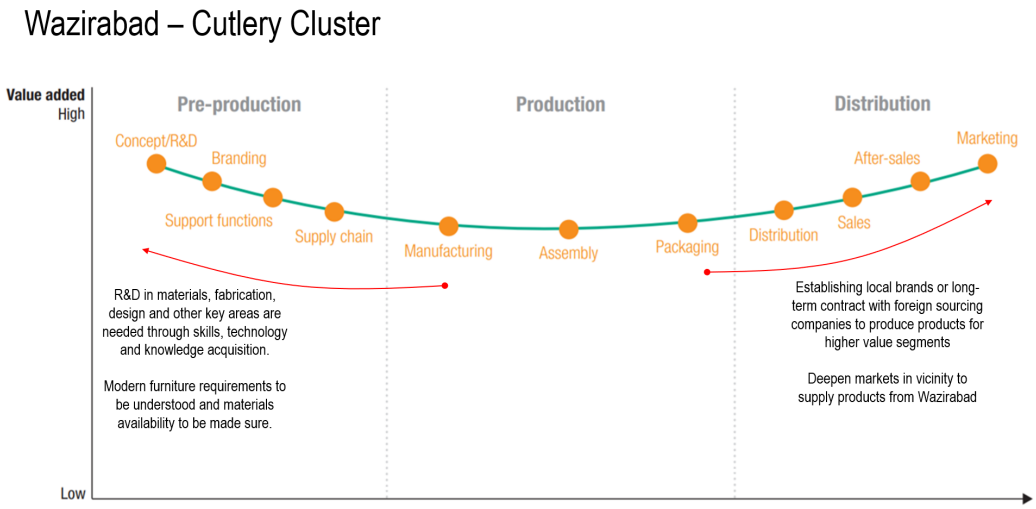


Figure 34: Add Title

Gujranwala – Ceramics Cluster

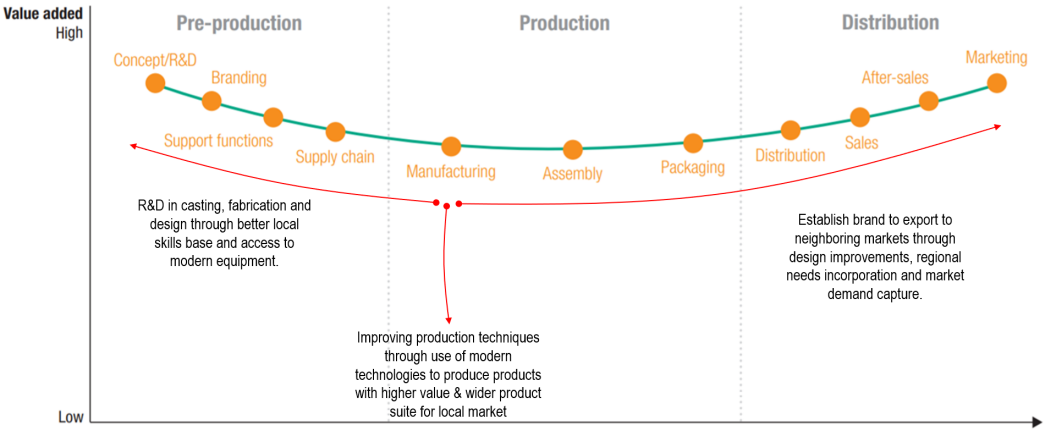
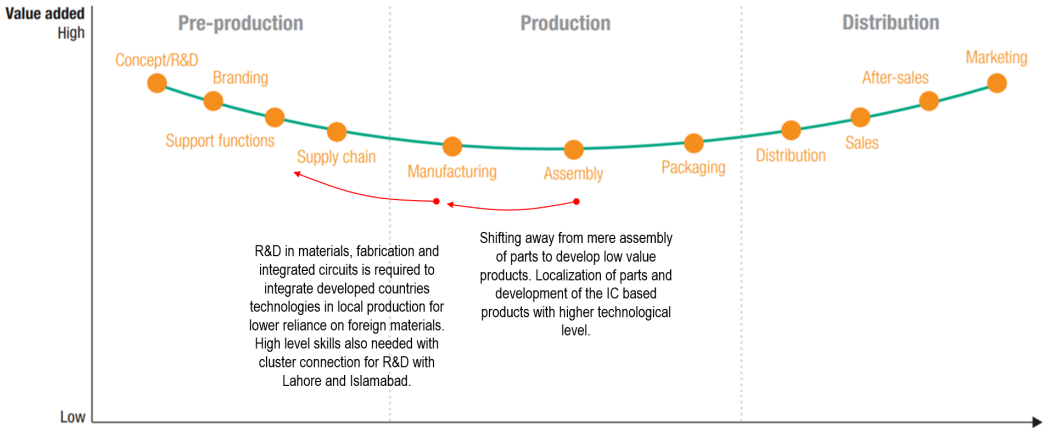


Figure 35: Add Title

Gujranwala – Electrical Appliances Cluster



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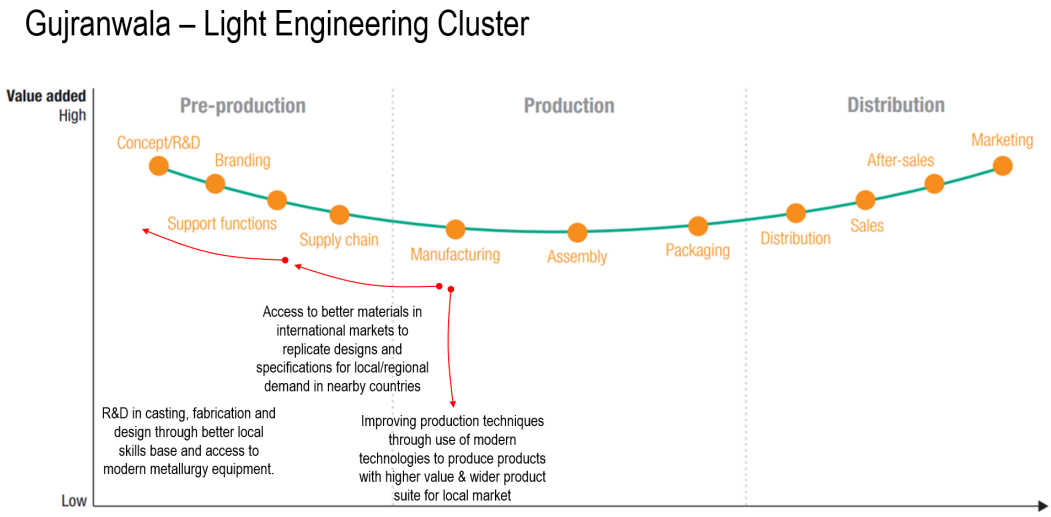


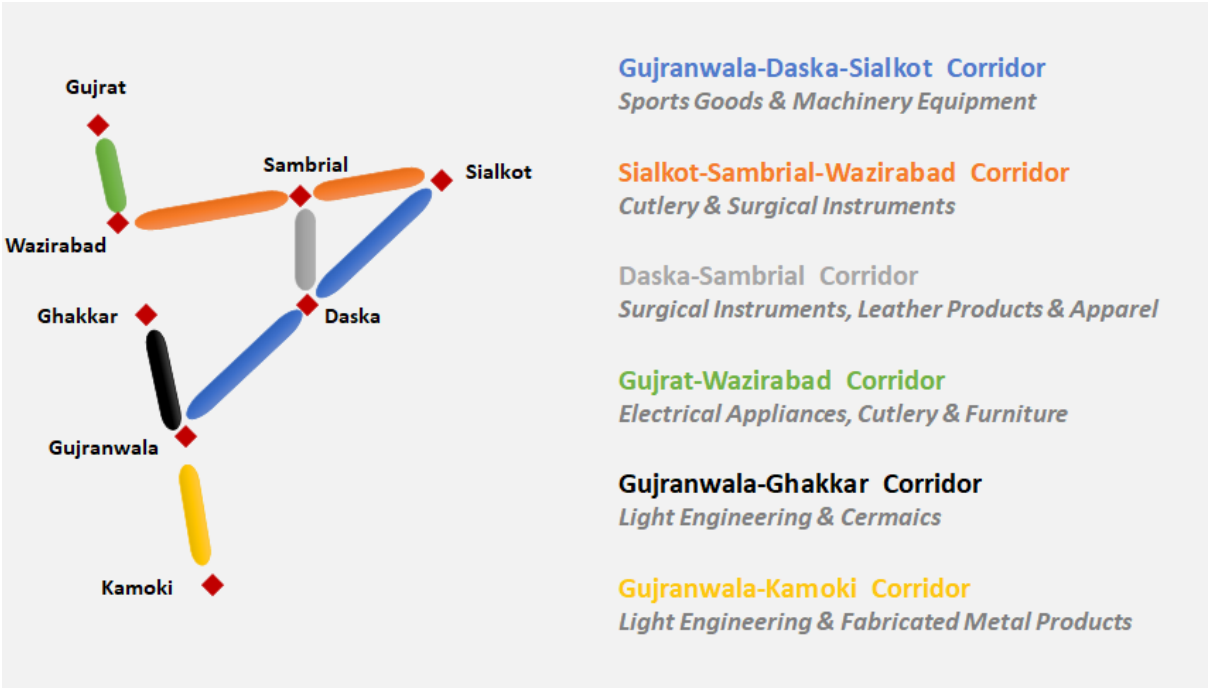
Figure 37: Add Title

6.2.2 Project Digest (Analysis of current/on-going ADP schemes and proposed projects)

Industrial Corridor Development

Globally, industrial corridors have supported the development of strong industrial clusters and contributed to industrial growth. Integrated industrial development, including the establishment of hard and soft infrastructure, along with the alignment of backward and forward linkages, is required to support the industries and develop the export-oriented value chains. Cluster development through sector level interventions and the provision of specific allied infrastructure and facilities is essential to support the growth of priority sectors in industrial corridors.

There is high potential for growth of export-oriented manufacturing sectors in Gujranwala division. Gujranwala division's corridor development is a pivotal project to support the development of strong industrial clusters within the division. The industrial development aspect endorses node based industrial growth supported by SEZs, Free Zones and Export Processing Zones within and around the node. Following industrial corridors are identified for development in Gujranwala region:



The industries here have already developed indigenously along major inter-city roads in form of ribbon developments as well as within urban areas. These existing industrial establishments cannot be relocated, but the development of the industrial corridors will help to establish future industries in an organized manner, apart from ensuring balanced and sustainable growth, with productive urban development. The proposed industrial corridors will focus on the overall conditions, levels of service, missing links, future projects planned by public/private sector, load and capacities of infrastructure and proposals for the future. The framework used would ensure that infrastructure proposals are in line with overall industrial growth and development patterns.

The corridor's strategic locations as described above, coupled with its existing industrial base, enhanced road connectivity, the railways network for passenger and goods, etc. are factors conducive for promoting and developing the corridors as industrial hubs. Once the industrial corridors are established, the haphazard industrial activity could be relocated, in phased manners, to the proposed industrial areas. The developed industrial corridors will also have a spill-over effect. The improved infrastructure including transport, natural gas, electric power, water and waste-water, will play key role in industrial development of the region, including movement of inputs and outputs, labour, raw materials, employment and other applications in various industries and for process requirement in industrial units.

The industrial corridors development framework must be cognizant and responsive to the differential needs and nature of the industrial establishments already existing to ensure optimal outcomes within the overall industrial-urban development synergy. It is therefore important to examine the number and nature of industries already existing in the corridors.

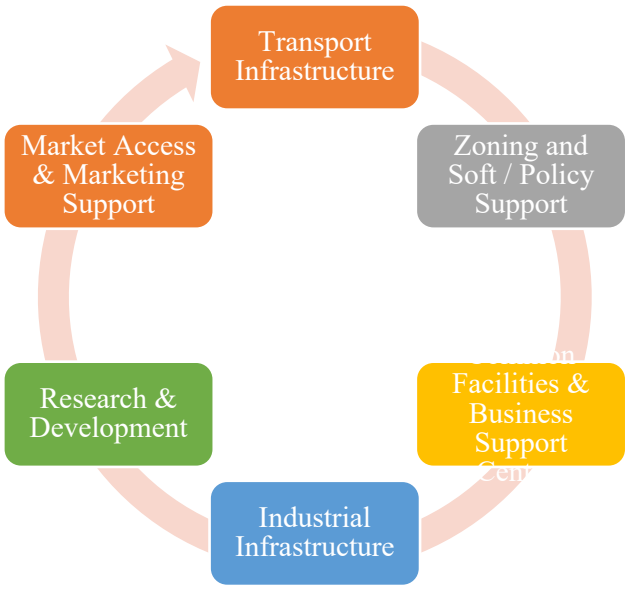


Figure 38: Add Title

Figure 39: Proposed Interventions for Industries

6.4.1.1 Proposed Projects & Programs

S#	Project	Districts	Cost (PKR Million)
1	Establishment of SEZ in Sambrial (1,000 acre) with all amenities in Sambrial for Golden Triangle	Sialkot	10,000.0
2	Establishment of Education & Skills City for industry specific trainings and skills to meet the demands	Sialkot	1,000.0
3	Colonization issues of EPZ and PSIC Wazirabad for industrial growth and expansion at a substantially low rates for the SME's	Sialkot	250.0
4	Upgradation of power infrastructure (transmission lines & Grid stations) along the identified industrial corridors	Gujranwala, Gujrat & Sialkot	TBD
5	Upgradation of National Institute of Design & Analysis for the surgical instruments, sports goods and leather industries	Sialkot	500.0
6	Establishment of one window facility for import of raw material for SME's and micro enterprises	Sialkot	100.0
7	Establishment of design house for product development and diversification to meet the international demand for surgical and sports goods	Sialkot	500.0
8	Establishment of Standard and Testing center with affiliations with all the major international standards to enhance exports	Sialkot	500.0
9	Establishment of design house for product development and diversification to meet the international demand for light engineering	Gujranwala	500.0
10	Upgradation of Gujranwala Tools, Dies and Moulds Centre to provide design, machining, manufacturing services, training and consultancy services to the local industry	Gujranwala	500.0
11	Establishment of value addition center for new product development and guide in product graduation phases along with helping in technology upgradation.	Sialkot	500.0
12	Construction of Combined Effluent Plant for industrial clusters in Gujranwala division	Gujranwala, Gujrat & Sialkot	1,000.0
13	International Business Center for industrialists to collaborate and interact with local and international business community for export promotion, trade shows and JV opportunities	Sialkot	500.0
14	Agro Processing Small Industrial Estate	MD Bahuddin, Narowal & Hafizabad	15,000.0
	TOTAL		**30,850.0**

Socio-economic

6.5 Socio Economic Development Plan

6.5.1 Context

6.5.1.1 Education Sector

The overall average educational performance level of the division is better than that of Punjab's average performance level (represented in blue) on all the education indicators[21].

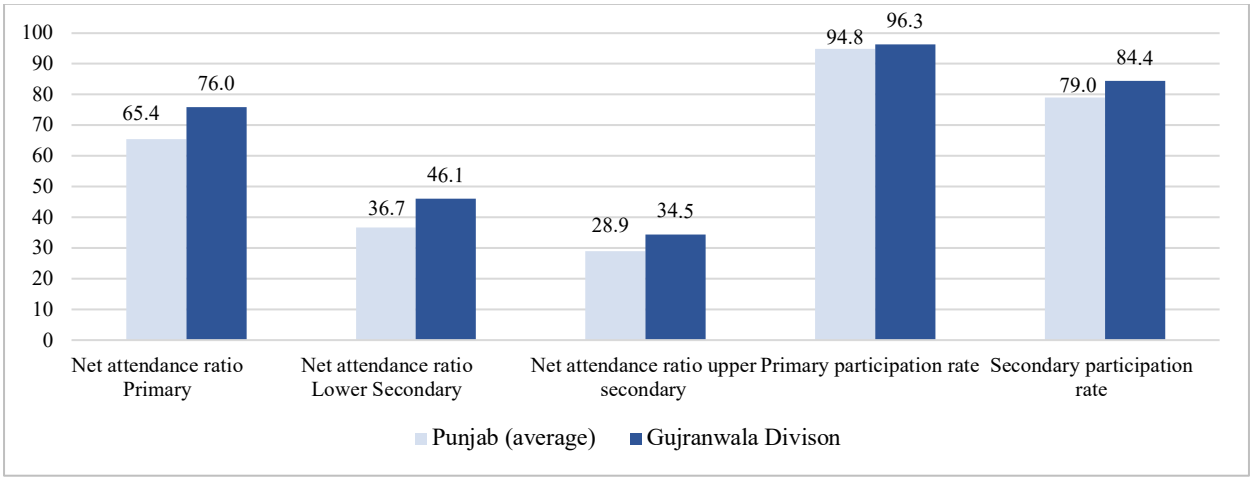
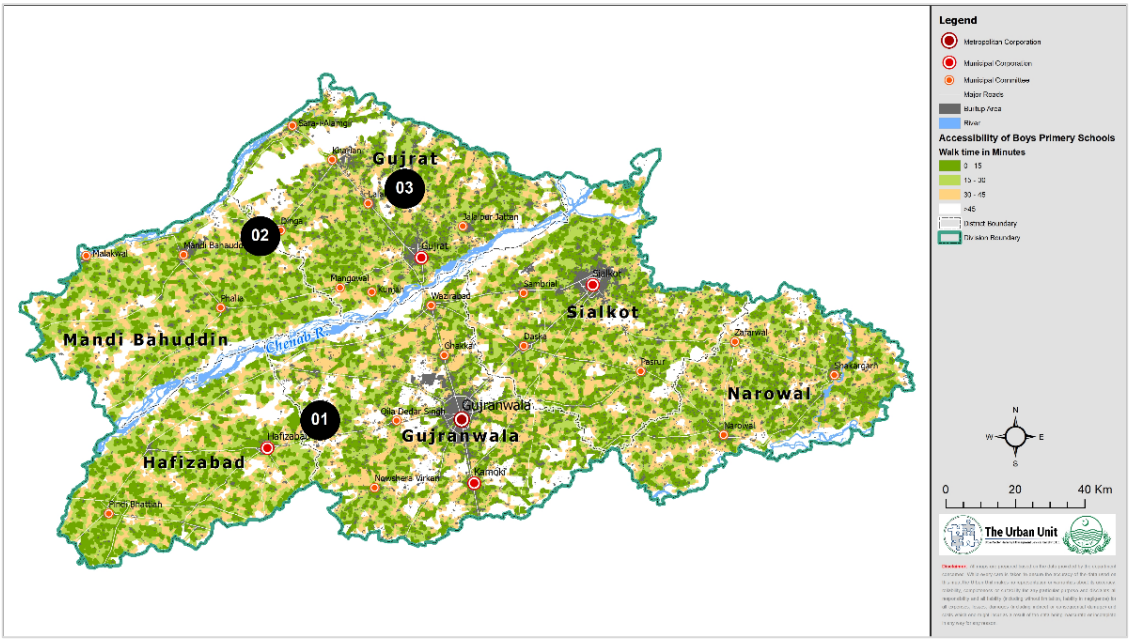


Figure 40: Average division performance level against Punjab's average

- Accessibility of primary schools

The boys' primary school coverage, as depicted in the following, seems good coverage with exceptions. For instance, there is a bug white pocket of no school coverage (areas not accessible within 45 minutes walking time) near Sari Alamgeer which needs to be seen in detail if there is some population settlement.



[21] MICS, 2018

Figure 41: Boys Primary Schools - Spatial coverage across the region

The following three maps display a more detailed images of the three major under-served areas for deeper analysis. Figure 4 shows that there is a total 31,858 thousands of unserved population in the Gujranwala tehsil, as they have more than 40 minutes of travel time.

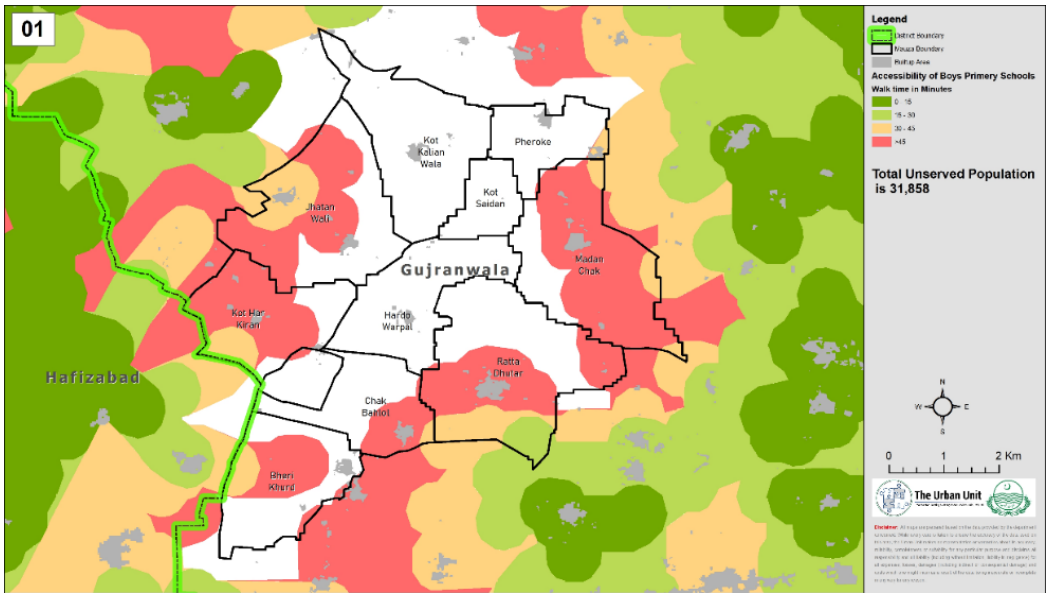


Figure 42: Boys Primary Schools - Total unserved population in Gujranwala Tehsil

The total unserved population in Gujrat tehsil is about 21,079 thousand, as depicted in the figure below.

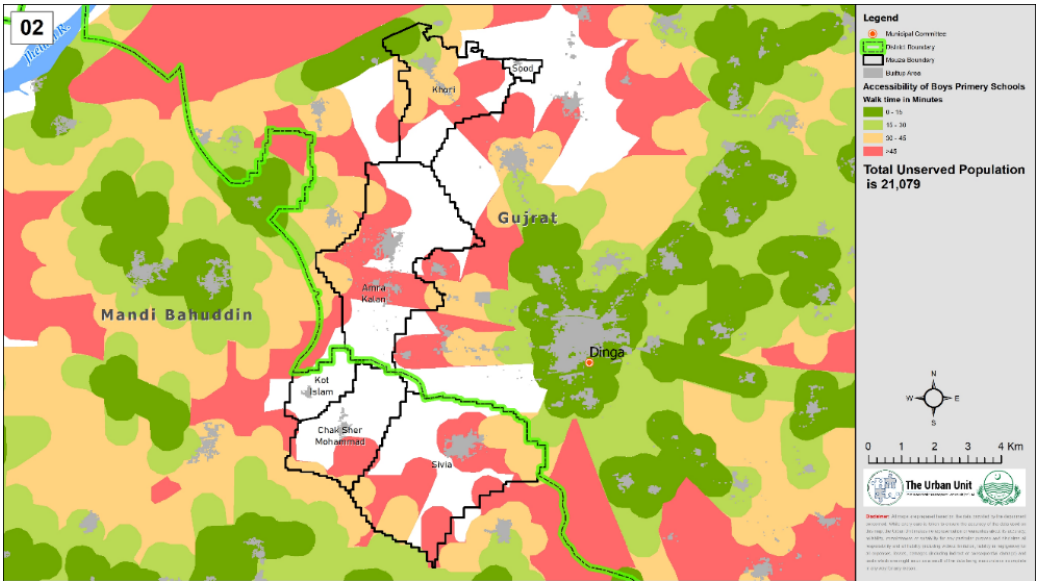


Figure 43: Boys Primary Schools - Total unserved population in Gujrat and MB

A deeper analysis of Gujrat Tehsil shows that the areas of Dhota, Nitherm Laambrah, Hanj, Nindowal, Sher Garh and others towns have a large number of unserved population.

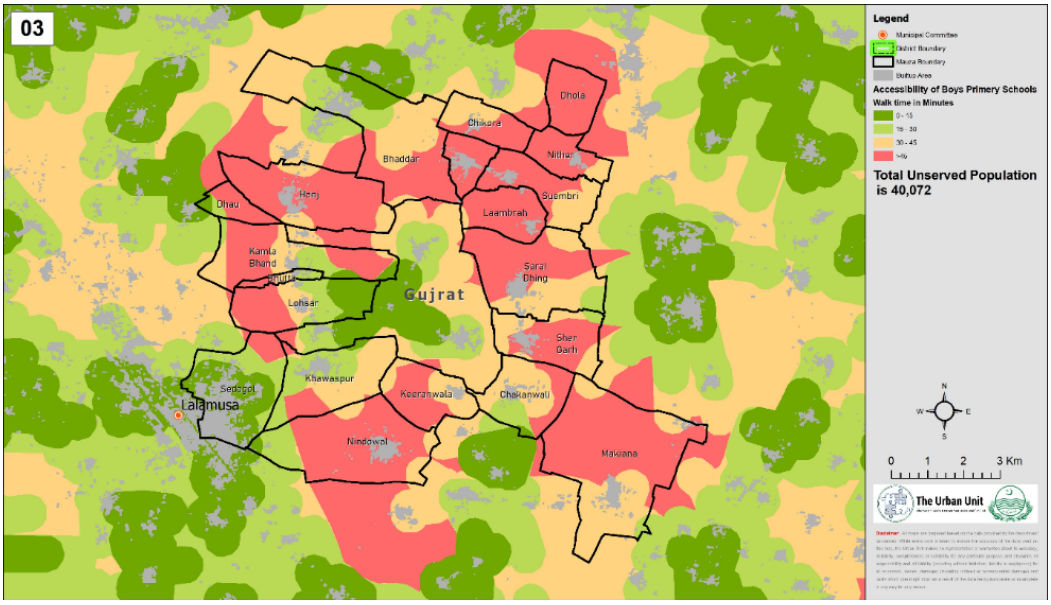


Figure 44: Boys Primary Schools – Total unserved population in Gujrat Tehsil

The girls' primary school coverage, as depicted in the following, seems good with exceptions and follows the same pattern as the boys' primary schools.

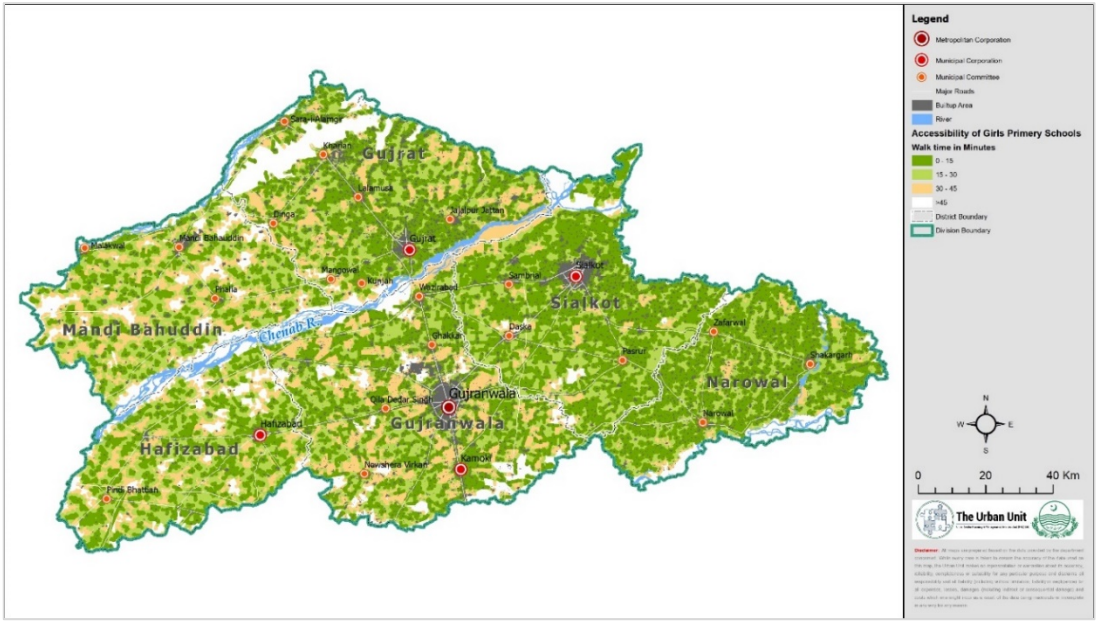


Figure 45: Girls Primary Schools - Spatial coverage across the region

Accessibility of middle schools

The figure below, shows the boys' middle school coverage, which seems scattered and uneven and follows the same pattern as of entire province where boys' middle schools are less and the girl's middle school coverage is comparatively more than boys.

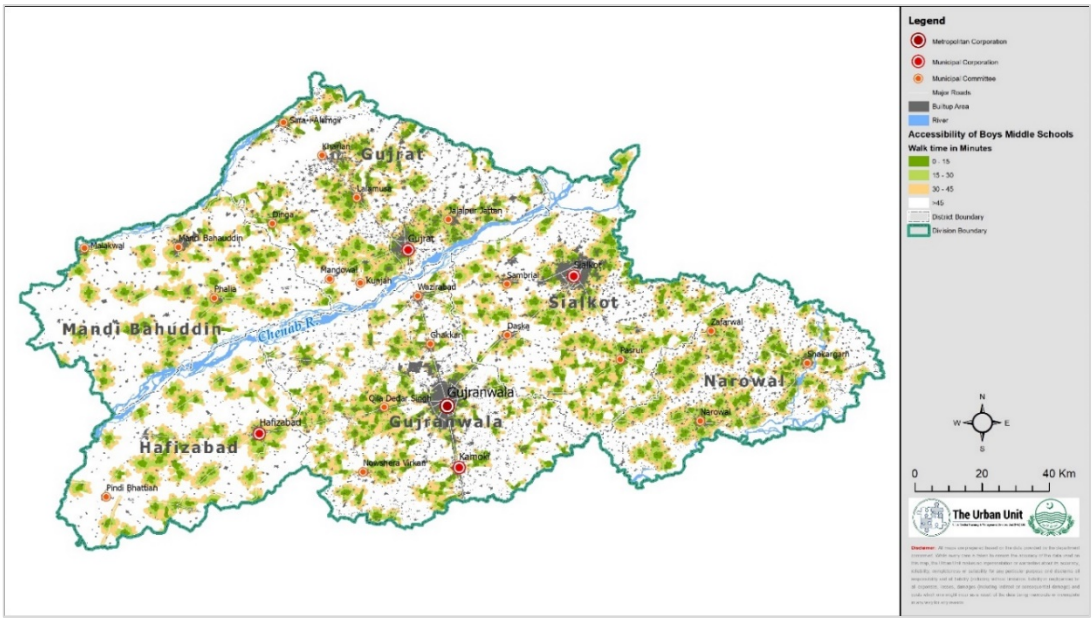


Figure 46: Boys' middle school - Spatial coverage across the region

As discussed earlier, the spatial spread and coverage of the girl's middle school is slightly better than boys' middle schools. Because, in entire Punjab, it follows the same patterns.

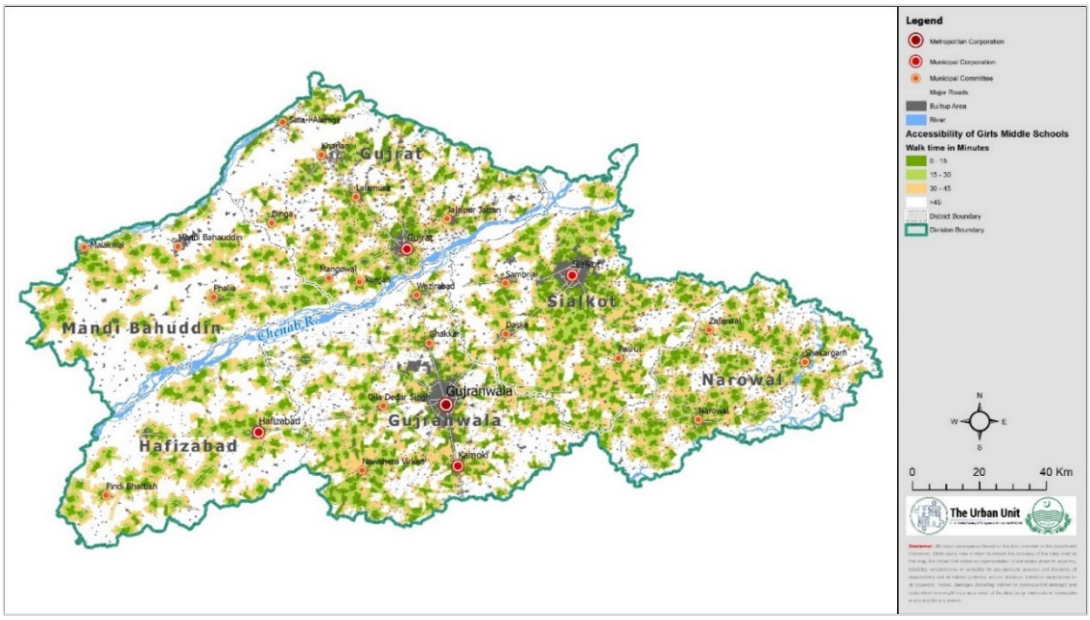


Figure 47: Girls middle school - Spatial coverage across the region

Accessibility of high schools

The boys' high school coverage, as depicted in the following map, seems evenly distributed with exceptions.

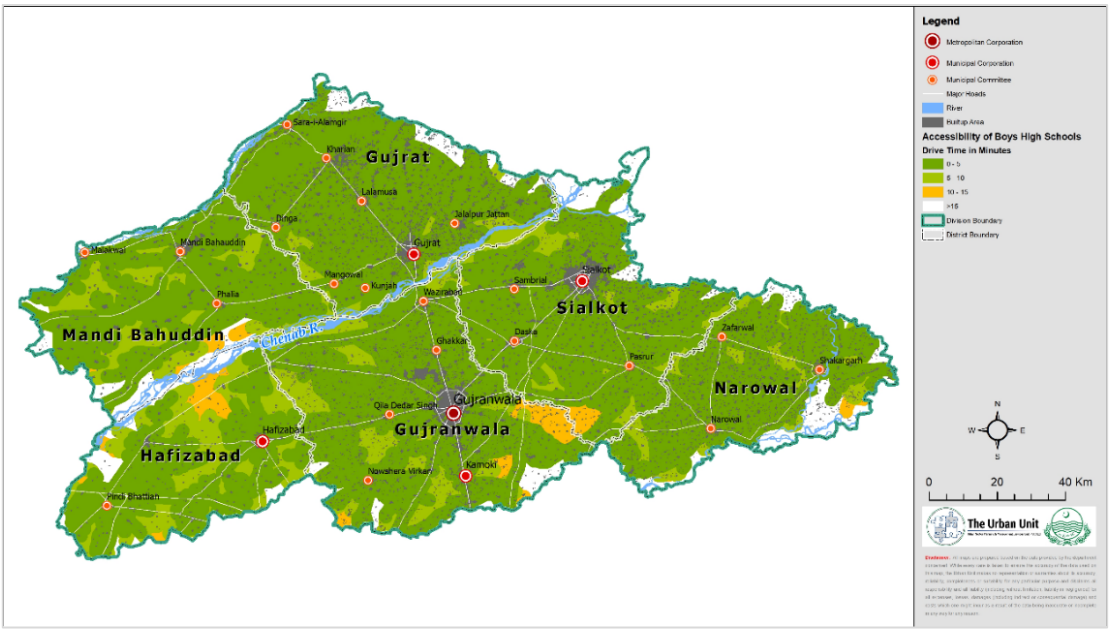


Figure 48: Boys High Schools - Spatial coverage across the region

The spatial spread and coverage of the girl's high school is slightly worse than boys' high schools. Greater attention is needed towards areas around Shakargarh, Sara-i-Alamgir, Pindi Bhattian and others.

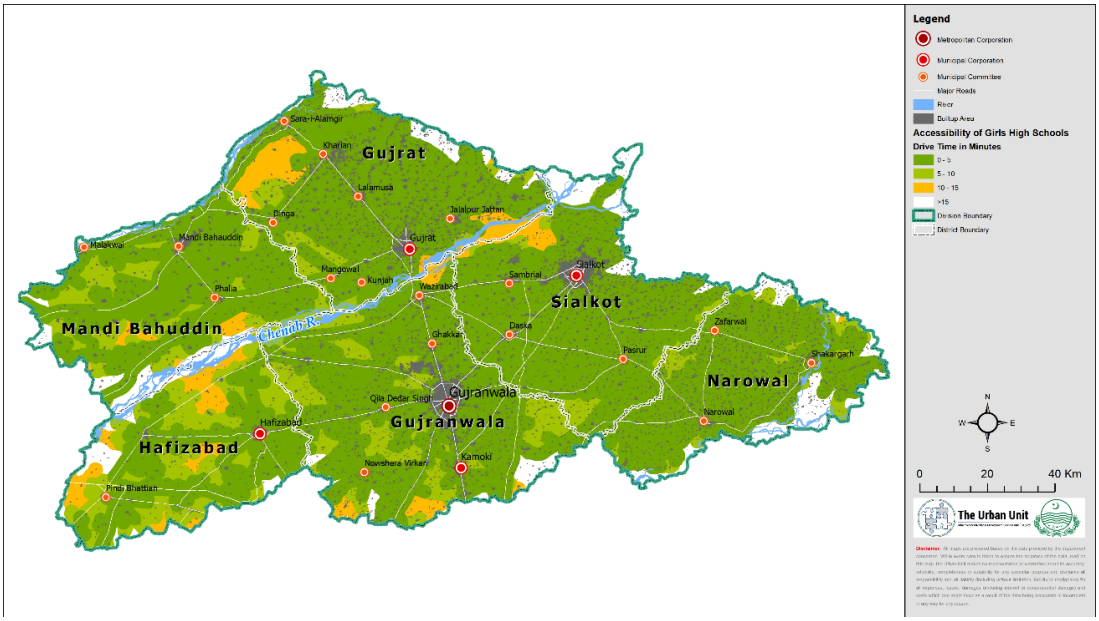


Figure 49: Girls high school - Spatial coverage across the region

Accessibility of government colleges

The spatial spread and coverage of the government colleges in the division is shown in the following map. There will be need of more colleges if the transition from matric to college education increases.

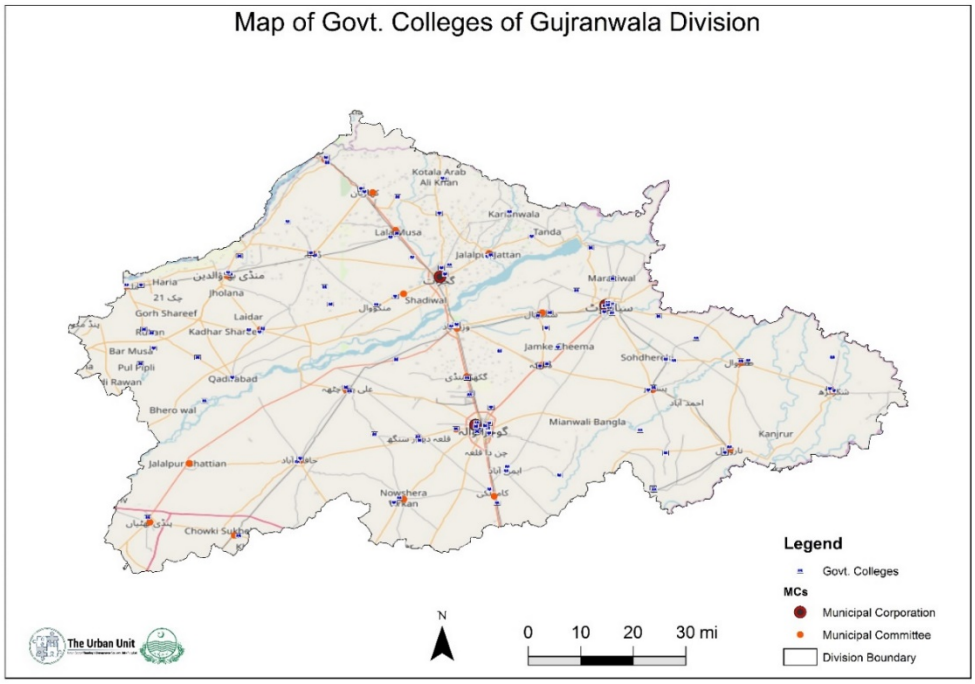


Figure 50: Government Colleges - Spatial coverage across the region

6.5.1.2 Health Sector

The graph below indicates the overall health indictors[22] for the division when compared to Punjab's average performance level.

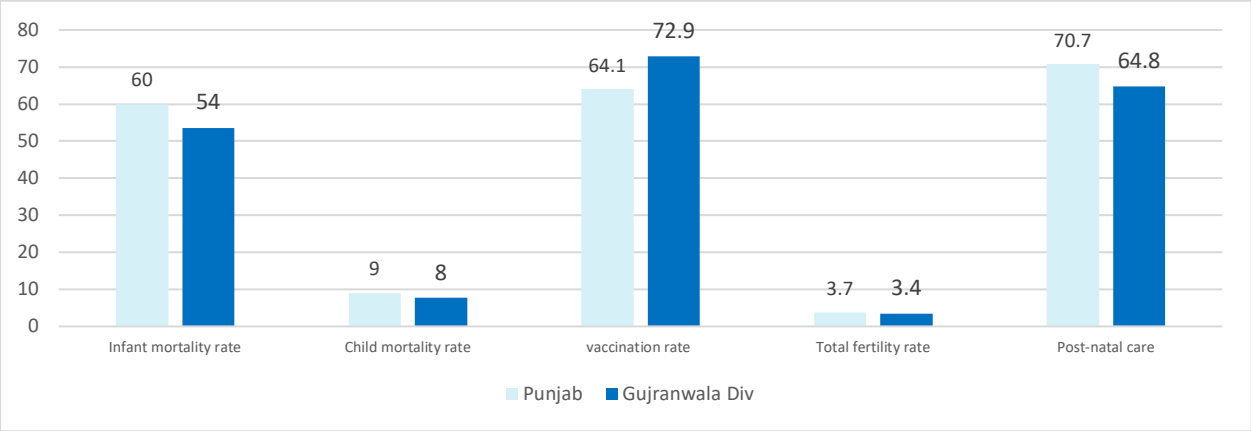


Figure 51: Average health performance level with that of Punjab's average performance level in the region

Apart from Hafizabad district (which has the highest infant mortality rate in the province) most districts are at par at Punjab's average performance level. In certain cases, the districts perform better than Punjab such as the case for Sialkot in post-natal care.

Accessibility and Spatial Coverage of Health infrastructure

The coverage of health infrastructure (hospitals, RHCs, BHUs) is shown below which shows reasonable spread of the health facilities across the division.

[22] MICS, 2018

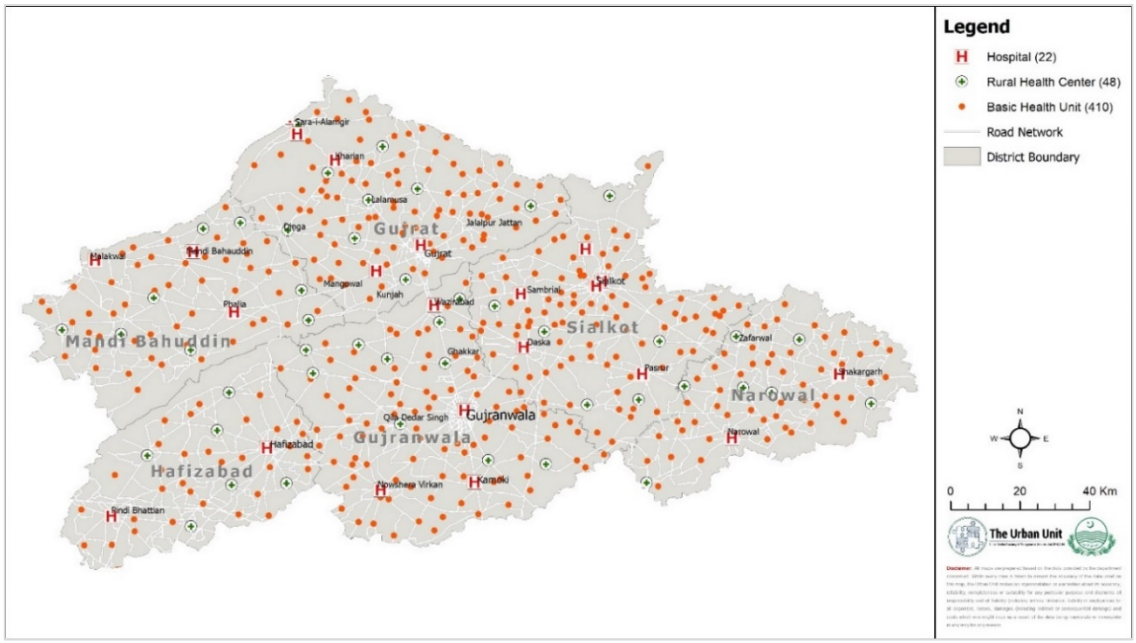


Figure 52: Girls middle school - Spatial coverage across the region

Accessibility of hospitals

The figure below, showing the coverage of hospitals in the division, seems scattered and uneven.

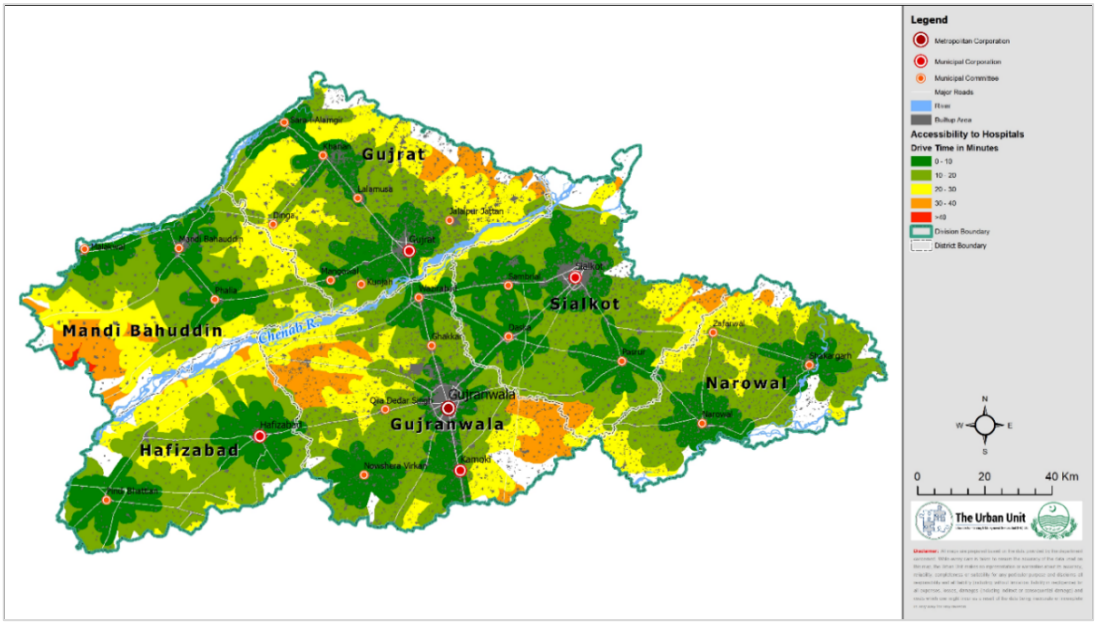


Figure 53: Hospitals - Spatial coverage across the region

For instance, some areas near Mandi Bahauddin and Hafizabad district have comparatively less or no coverage (areas less accessible within 30 or 45 minutes walking time). These needs to be seen in detail if there is some population settlement.

Accessibility of RHUs

The spatial spread and coverage of RHUs in the division is shown in the following map. The overall accessibility of RHUS in the division seems good as compared to the hospital accessibility, with exception. For instance areas near Nowshera Virkan, with greater travel time (more than 30 minutes), require more attention.

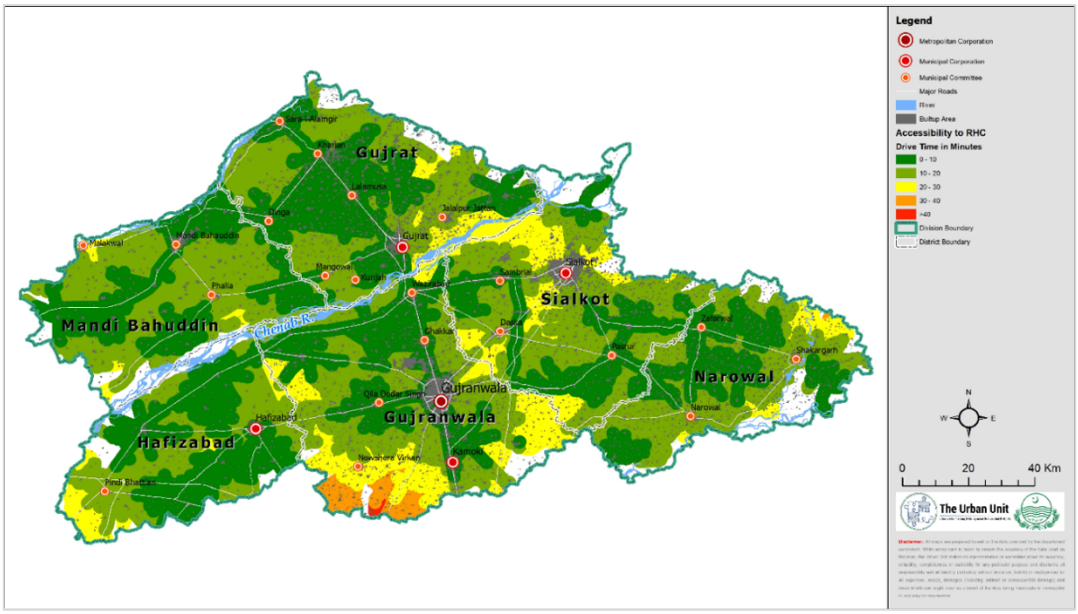


Figure 54: Hospitals - Spatial coverage across the region

Accessibility of BHUs

The coverage of BHUs, as depicted in the following map, seems good as the facilities are accessible to the population with less than 15 minutes of travel time.

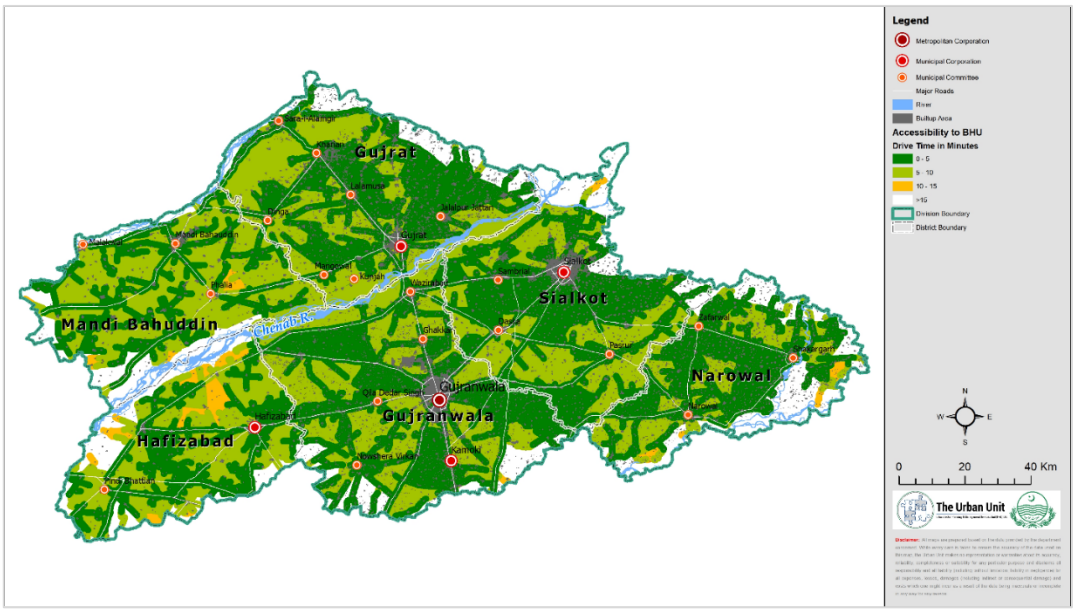


Figure 55: BHUs - Spatial coverage across the region

Provision of Health infrastructure with respect to population

The health infrastructure (per million of population) is shown below which corroborates with above-mentioned health outcome/performance figures. i.e. Hafizabad and Mandi Bahauddin has lowest medical beds per million population.

Table 2: Hospitals and Hospital Beds per ten thousand population in Gujranwala division by districts

	No. of Hospitals	Medical Beds	Hospitals per million population	Medical beds per million population

Gujranwala Div	**61**	**5,368**	**4**	**333**
Gujranwala	16	1,689	3	337
Gujrat	20	1,250	7	454
Hafizabad	2	185	2	160
M.B.D	7	251	4	158
Narowal	2	380	1	222
Sialkot	14	1,613	4	414

Similarly, the number of hospitals beds per million of population shows access to hospital beds per million of population by tehsil. The Tehsils such as Kamoke, Malikwal, Zafarwal, Pasrur, Noshehra Virkan, Phalia, and Sambarial are very poor access of hospital beds per million population.

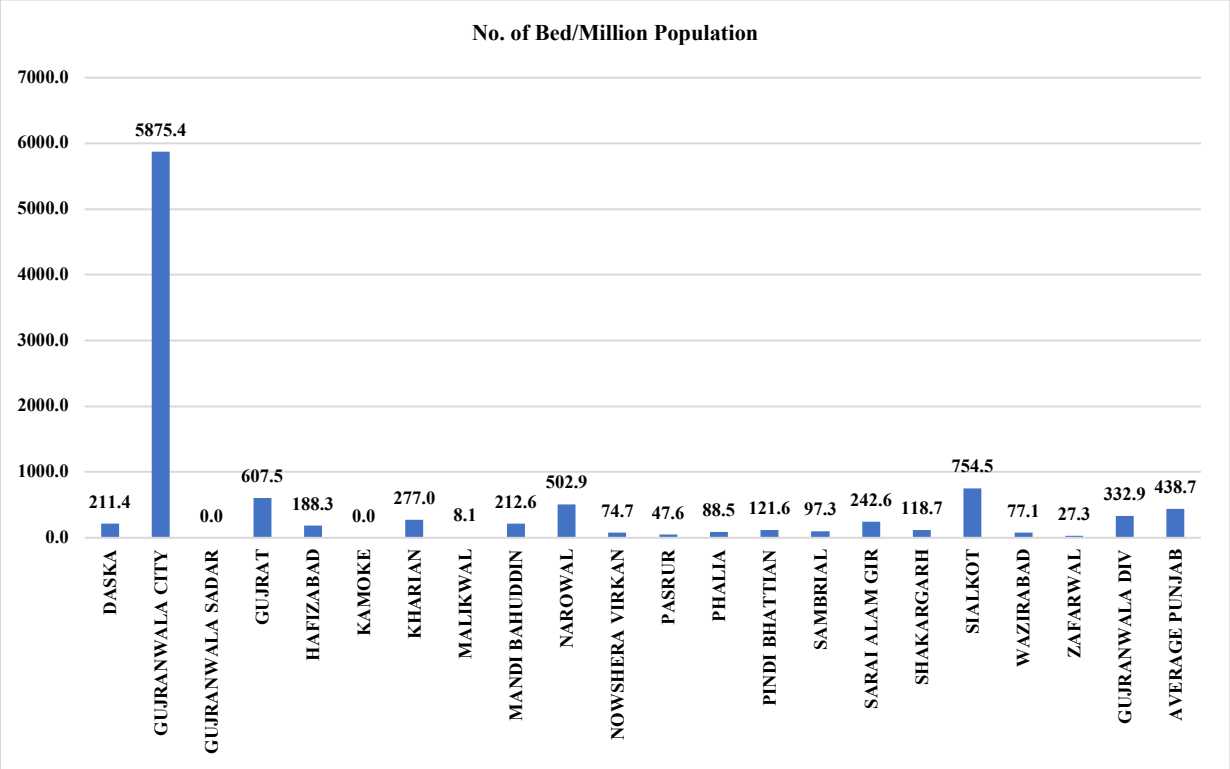


Figure 56: Region's average health performance level with that of Punjab's average performance level

6.5.1.3 District-wise provision of school infrastructure

The district-wise access to schools and teachers (per ten thousand of population) in the division is shown in the following table. It shows that Gujranwala district has the least schools/teachers per thousand population, whereas, the Narowal district has the highest number schools/teachers per thousand of population.

Table 12: Proposed Project in Schools and teachers per ten thousand population in Gujranwala division by districts

	No. of Schools	No. of Teachers	No. of schools/ Ten thousand population	No. of teachers / ten thousand population
Gujranwala Div	**5,579**	**25,863**	**3**	**16**

Gujranwala Distt	1,086	4,871	2	10
Gujrat	956	4,353	3	16
Hafizabad	609	2,242	5	19
M.B.D	548	2,712	3	17
Narowal	929	4,970	5	29
Sialkot	1,451	6,715	4	17

The tehsil-wise student-teacher ratio (i.e. students per teacher) in public schools in the division is shown in the following figure. It shows most of the tehsils have the 30+ students per teacher showing the over-crowding in classroom or over-burdened teachers. The tehsils with over 30 per teachers need more teachers and even more classrooms as well.

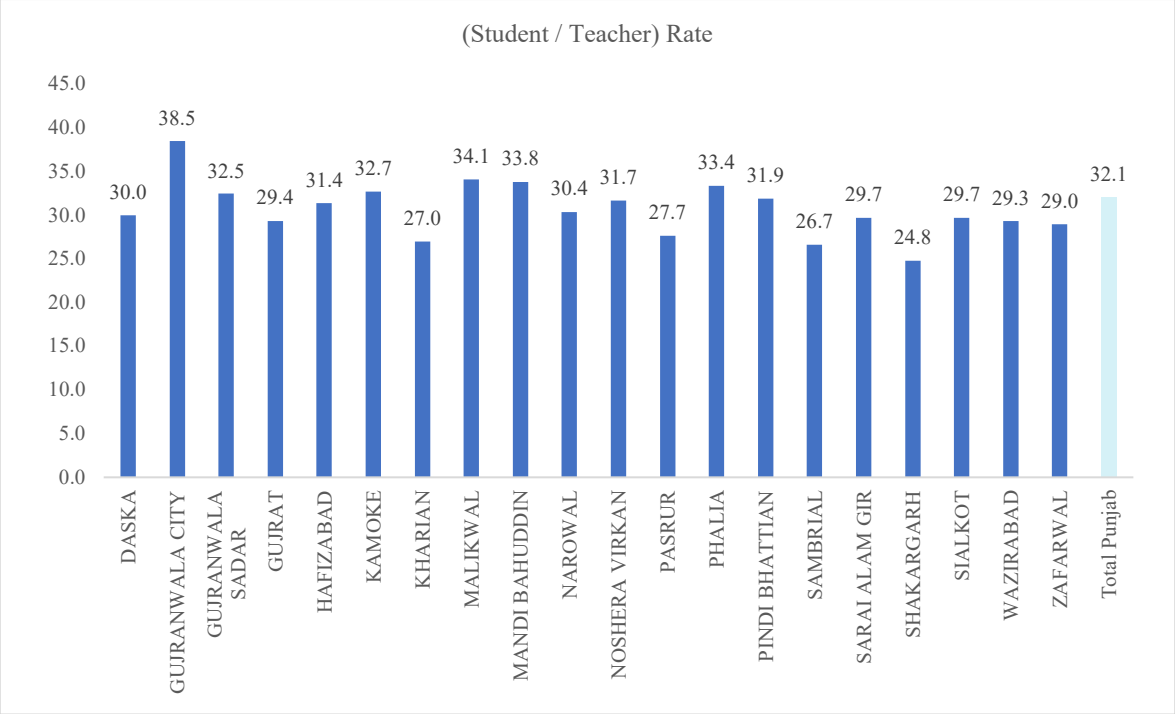


Figure 57: Student-Teacher Ratio in Gujranwala by Tehsil

6.5.2 Project Digest (Analysis of current/on-going ADP schemes and proposed projects)

Education Sector

Overall the division is better in educational performance than rest of the province. However, there are some inaccessible or less accessible pockets for colleges which need to be looked into detail. The following are the recommendations:

- There must be state of the art public sector university at district Gujranwala, which is despite being the divisional headquarter, don't have full public sector university (only one private university and couple of campuses).
- There must be sufficient number of technical and vocational college programs as per the need of the local industry. And, TEVTA should align its courses, curriculum with the industry needs and must upgrade the labs with the updated modern equipment.
- The tehsils which have student-teacher ratio above 30, must be provided with more teaches and classrooms to resolve the issue of overcrowding.

Health Sector

Overall, the division is better in health performance (outcome indicators), except Hafizabad and Mandi Bahauddin district, than rest of the province. The following are the recommendations:

- Tehsils such as Kamoke, Malikwal, Zafarwal, Pasrur, Noshehra Virkan, Phalia, and Sambarial, having poor access of hospital beds per million population, needs hospitals with more bedding capacity.
- There must be state of the art public sector medical college/university (teachings hospital) with paramedics, lab technology and nursing colleges.

4

RURAL VALUE CHAINS

Rural Value Chains

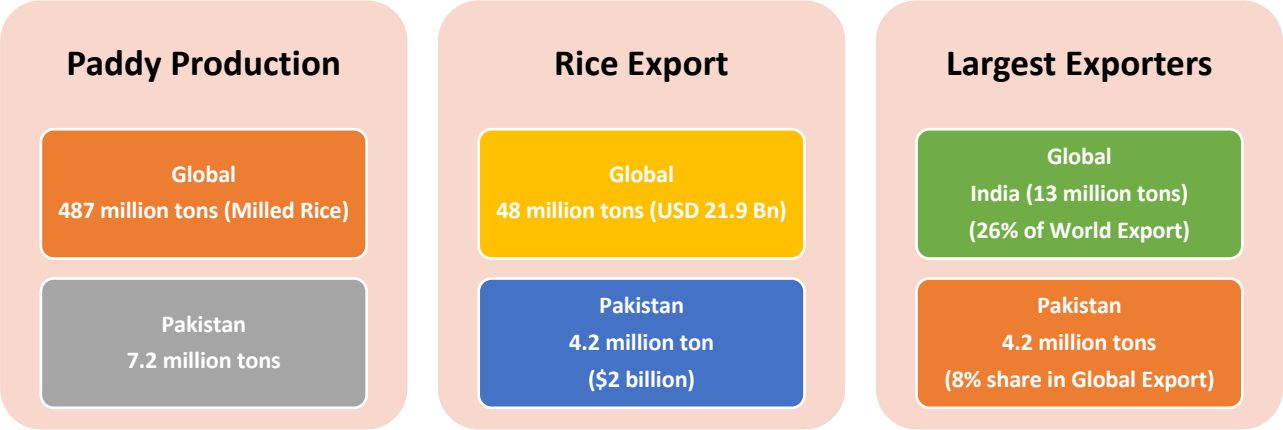
Following four product value chains are selected for intervention, owning to their local production, export potential, local import replacement and high margin of value addition:

	Citrus
	Tomato
	Rice
	Sesame

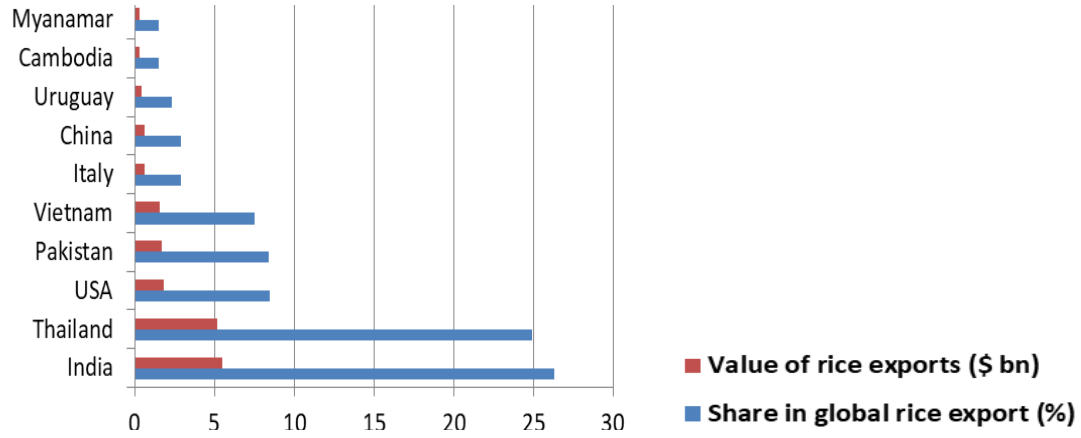
1.1. Rice Value Chain

Global Market

Rice is a global staple food crop grown in over one hundred countries. 158 Million Hectares are under rice production globally, producing 478 Million Tons of Milled Rice. Asia produces over 90% of global rice production, with China contributing 35% to global production.



According to FAOSTAT and the International Grain Council, 487 Million tons of milled rice was produced globally in 2018-2019. Worldwide rice exports in 2019 totaled 48 Million Tons, or US$ 21.9 Billion, down by about 5.9% since 2015. Pakistan's share out of this was 4.2 Million tons, or US$ 2 Billion, ranking Pakistan as 4th Largest exporter, following India in first position. The global rice market is dominated by five major rice varieties, indica, japonica aromatic, basmati and glutinous.



Rank	Country	Bil $ value	% global value
1	Iran	1.6	7.5%
2	Saudi Arabia	1.4	6.5%
3	China	1.3	5.7%
4	USA	1.1	5%

5	Philippines	1	4.6%

The graph shows the top exporting countries of the world with their global share. India has the largest export volume of rice worldwide, but also had the lowest average export price per ton in 2018/2019, followed by Thailand and USA. Pakistan ranks at number 4 in global exports, yet Pakistan Basmati commanded the highest average export price in the same period. The table shows the top importing countries in the world, Iran has the largest share of global imports, followed by Saudi Arabia and China.

Pakistan's Landscape & Gujranwala Division

Pakistan is the producer of some of the finest long grained aromatic basmati rice in the world. As such, rice is a key export crop for the country. In Pakistan, rice Basmati and IRRI varieties is an important food and cash crop. Both varieties are in demand in domestic and export markets, with Basmati rice bearing a premium price in the export market. Pakistan produces enough rice for domestic demand and carries excess supply for exports, which accounts for 5.5 percent of value added in agriculture and 1.1 percent of gross domestic product (GDP). The performance of this commodity in terms of competing in export markets has been impressive and there is the potential for increasing export performance in a growing world market. Rice is also providing a food safety net for the country as global food costs have increased. The rice sector in Pakistan is extremely important in terms of export earnings, domestic employment, rural development, and poverty reduction.

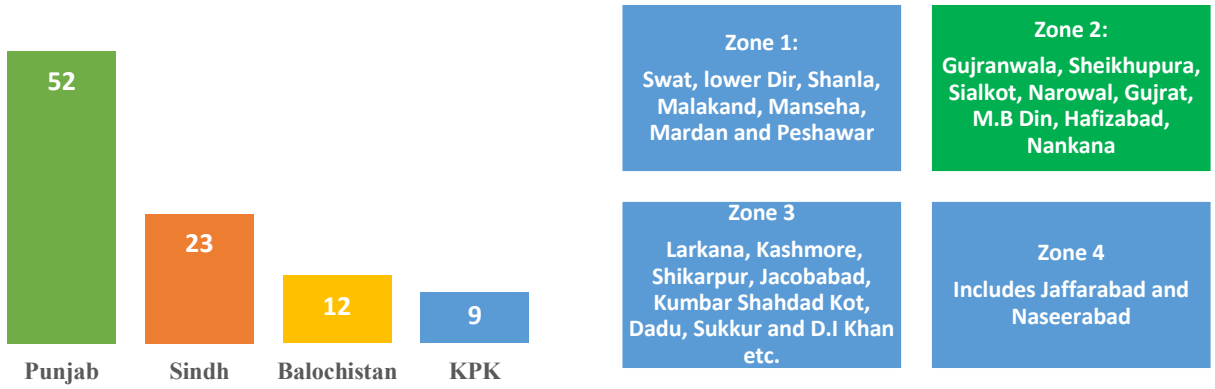
In recent years, exports share of Pakistan in the global rice market has registered a decline, which can be attributed to quality and production constraints in the domestic rice value chain. High price, production constraints and quality constraints have led to a reduced market share for Pakistan's rice exports. It is imperative for Pakistan to take steps to strengthen the local rice value chain in order to boost its rice exports and remain competitive in the international market.

Rice is the second largest export-oriented sector with more than US $ 2 Billion of annual exports. It has a fragmented supply chain, resulting in lower than potential exports. India is Pakistan's only competitor in the Basmati export market. Basmati, being a niche variety may always have a lower yield than other varieties. However, the premium price it commands is enough to compensate for the lower yields. However, lack of advances in Basmati research can, and is, impacting it's profitability. Despite multiple issues, Pakistan continues to be a major player on the global scene. As competitor countries improve the quality and quantity of the rice they produce and their rice value chains, Pakistan risks being left behind unless it aggressively makes necessary changes, particularly on research in developing new commercial varieties, improving yield and handling practices.

Rice was cultivated on an area of 2,899 thousand hectares in 2017 with a total production of 7 thousand tons (GOP, 2019). This production is higher than the previous year when production faced an acute

decline subject to reduction in cultivated area and less economic returns to farmers. In addition, poor export of basmati rice led restricted farmers to cultivate the rice crop (GOP, 2016). The average yield of rice crop obtained is 2,567 kg/hectare which is considerably lower than the potential (GOP, 2019). This under-potential production is attributed to several factors termed as agricultural risks.

Rice Cultivation (%)



Rice is primarily cultivated in the alluvial plains of Punjab and Sindh. Both these provinces significantly contribute to the production of rice that is locally consumed and internationally traded. The two main varieties of rice exported by Pakistan are Basmati and IRRI. The total area under rice cultivation is 2,891,000 hectares (FAO). Some of the important rice producing districts in Pakistan are Gujranwala, Sheikhupura, Sialkot, Okara, Hafizabad, Sukkur, Larkana, Nawabshah, Mandi Bahaudin and Jhang.

Punjab is the largest rice-producing province and Zone 2 or the "Kalar" tract - the bowl of the world-famous Basmati rice is located between the Ravi and Chenab rivers, which includes the Gujranwala division. Rice crop is planted once a year from May to November, under irrigated conditions.

Districts	Acre (000 hectares)	Production (000 tons)	% of Total Production in Districts
Punjab	**1,841**	**3,898**	
Gujrat	37.6	64.1	1.64
M.B Din	65.15	135.1	3.46
Sialkot	138	264.6	6.78
Narowal	72.02	133.4	3.42
Gujranwala	227.4	546.3	14.01
Hafizabad	140.02	338.9	8.6

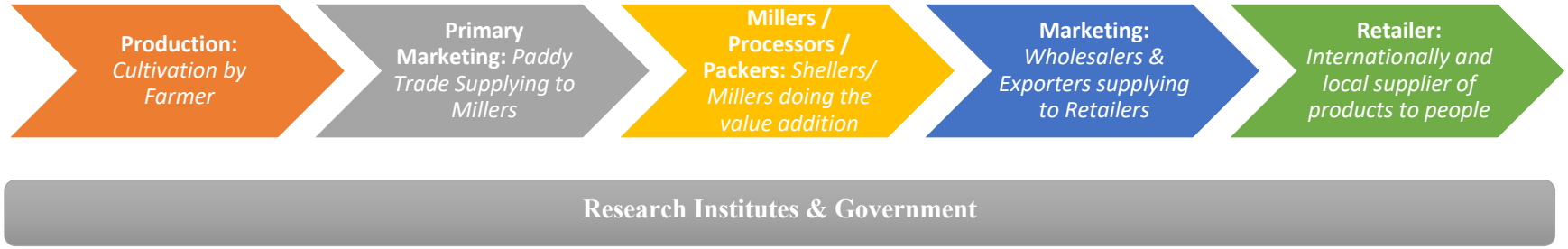
1.1.1.

The rice value chain in Gujranwala is short and highly disconnected. Most of the actors involved in the rice value chain perform their duties in isolation. Knowledge sharing mechanisms and advisory services are nearly non-existent. The lack of coordination between direct actors (farmers and millers) and indirect actors (research institutes and government) has resulted in limited innovation in farming practices, milling activities and development of new varieties. It is mainly due to this lack of coordination that Gujranwala has been unable to improve its productivity in the last few years. There are several key factors that are affecting the competitiveness of the rice sector, they have been unable to develop and introduce new varieties of rice in the international market due to poor research and development infrastructure. The limited public sector intervention in the rice sector has also affected its competitiveness

As a large part of the rice output is exported, it is important that production, harvesting, postharvest management and its processing is done according to good global agriculture practices in a cost effective mode to enhance profit and its competitiveness. This should start with paddy producers or farmers, who are the first agent in this chain that provides the basic quality and quantity of produce to be used and sold in domestic and export markets

Some of the major problems facing rice production small land holdings, use of obsolete technology, lack of awareness, high cost of production, lack of financial access, unavailability of quality inputs and lack of use of fertilizers etc

Rice Value & Supply Chain



1.1.2.

Challenges & Issues

Small Land Holding	Obselete & Indigenous technology & lack of awarness	High Cost of Production
Less Mechanization & Unavailablity of Working Capital	Unbalanced use of fertilizer and post-harvest losses	Unavailability of quality inputs like seed, pesticides etc.

Rice productivity in Pakistan is on the lower side compared to its counterparts, given its strategic position in the global markets for premium rice. Yield for the Basmati crop is lower, however, enhancing productivity can improve competitiveness, while helping to reduce rural poverty through income generation opportunities.

Yields obtained by progressive farmers point to the vast potential through adoption of improved technology and better crop management practices like seed bed preparation, certified seed, optimal plant population, balanced fertilizer application and pest management. Reforms are needed along the entire value chain to increase cohesiveness and remove fragmentation, while upgrading the functions and actors which can make the rice VC competitive globally.

Recommendations

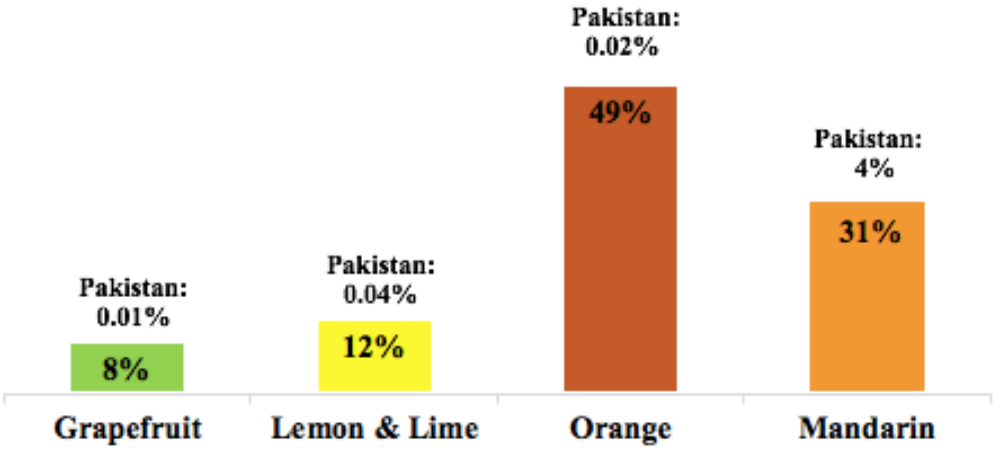
Inputs	Increasing yeild & Productivity	Harvesting & Handling	Drying, Storage & Warehousing	Marketing Channels & Access to Fiance	Institutional Support
•Strengthening of Openly Pollinated (OP) varieties	•Using laser leveling equipment to help create seedbeds with uniform soil moisture and ensure uniform germination	•Development of SPS standards and requisite training	•Availability/facilitation to private sector for introduction of modern storage and drying technologies	•Promotion of contract farming	•Develop Rice processing zones with all ameneties and extension services available
•Development of Basmati and Non-Basmati long grain varieties	•Precision transplanting by introducing improved methods and technology for nursery raising and mechanical transplantation	•Awareness about and integration with SRP international volunteer standards	•Technical trainings according to SOPs for storage/warehousing operations workers	•Offering ease of financial access and insurance bundle services	•Declaration of Rice sector as an Industry for formation of consolidated policy that will benefit integration of all supply chain stake holders into one chain.
•Develop Hybrid seed	•Capacity building of farmer on soil management		•Considering warehouse receipt financing model to increase the accessibility for small and medium farmers	•Inclusion of fin-tech services for provision of credit (along with extension)	•Facilitate bi-lateral trade agreements with Iran, as it is the biggest global importer of rice
•Encourage demand-driven development of varieties by private sector.	•Promoting use of harvesting and threshing using equipment specifically for rice				•Facilitate rice exporters to obtain the required certification of GMP and organize trade fairs for the Iranian market
•Shift current MNFSRD regime for seed certification to truth-in-labeling regime	•Use of DSR technology				
•Regulatory Framework to be devised for development of high yielding, commercially viable varieties, registering them for IPR.					
• Promote R& D for developing new seed varities through collaborations with international instuites and academia					

1.2. Citrus Value Chain

Pakistan is producing more than 30 types of different fruits of which citrus fruit is leading among all fruit and constitutes about 30% of total fruit production in the country. Above 90% of citrus fruits are produced in Punjab province and distributed through different value chains in domestic as well as in international markets. A large part of citrus fruit produced in Pakistan is mostly consumed locally without much value addition; however, 10–12% of total production is exported after value addition

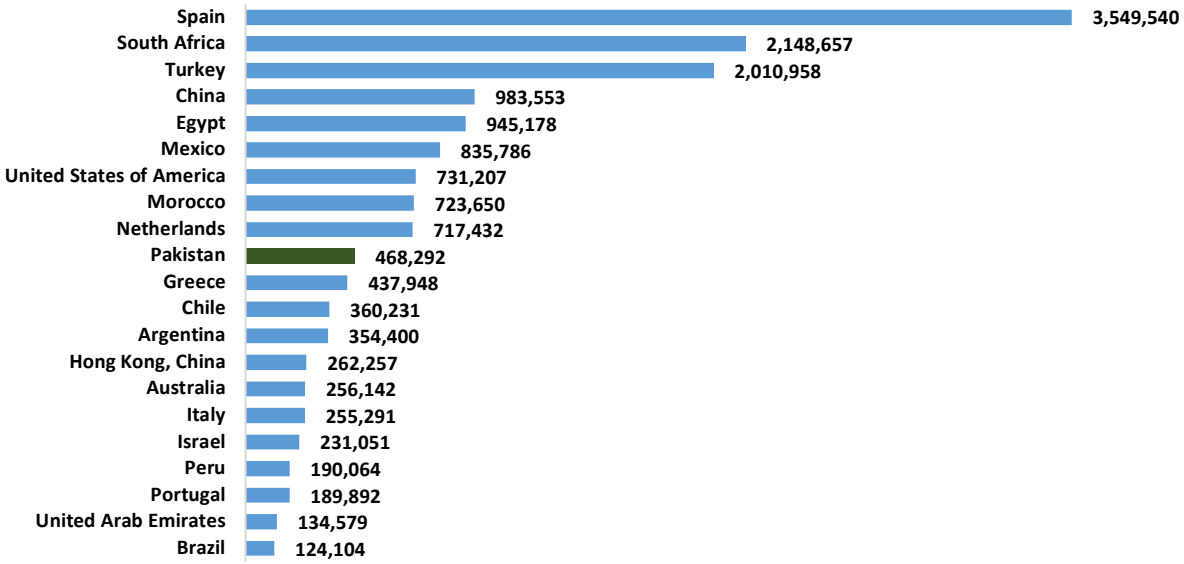
	Pakistan	World
CITRUS PRODUCTION	2.13 (Million Tons) (1.2%)	153 (Million Tons)
CITRUS EXPORT (FRESH)	0.468 (Million Tons) 177 (USD Million) (2.7%)	17.3 (Million Tons) 14.7 (USD Billion)
ORANGE JUICE (EXPORT)	-	153 (Million Tons) 5.26 (USD Billion)
PULP	6,743 (Tons) 11.5 (USD Million) (0.6%)	17.3 (Million Tons) 14.7 (USD Billion)

In Pakistan citrus fruits are the most important fruit crops grown on an area of approximately 160,000 hectares with production of 2.13 MMT annually, making it the 14th largest producer with global exports share of 2.7% making it the 19th largest exporter in terms of value and 10th largest in terms of quantity. It is grown in all four provinces of Pakistan but Punjab produces over 95% of the crop because of its greater population, favorable growing conditions and adequate water, in Gujranwala it is mainly grown in Mandi Bahuddin District. Citrus is divided into different groups Sweet oranges, Mandarine, Grape fruit, Lemon and Lime which are being grown commercially. The graph below shows citrus production by groups in the world and Pakistan's share in them, it can be seen that Pakistan is not producing as per global demand.

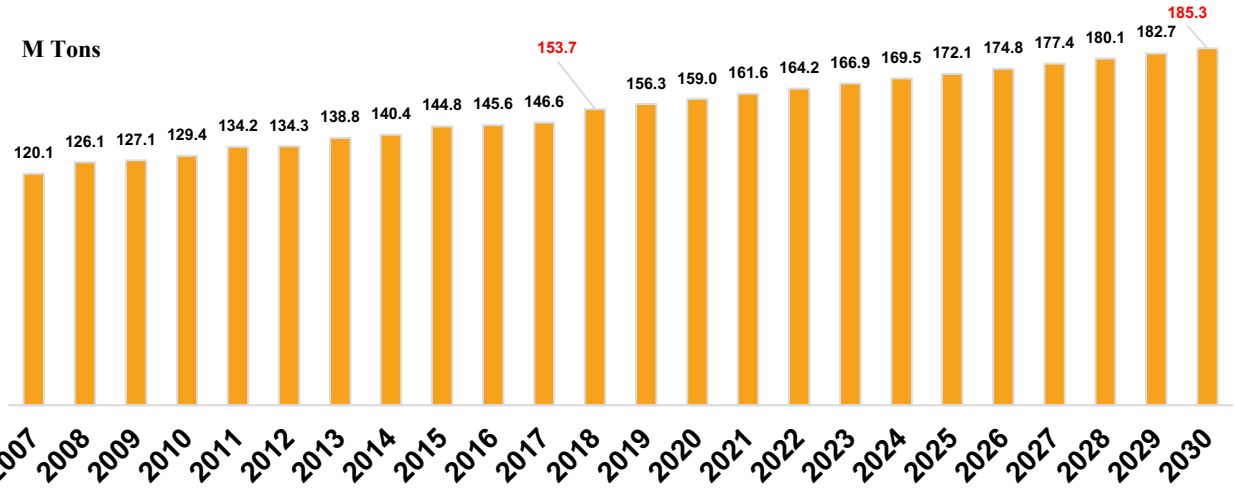


Global Citrus Market

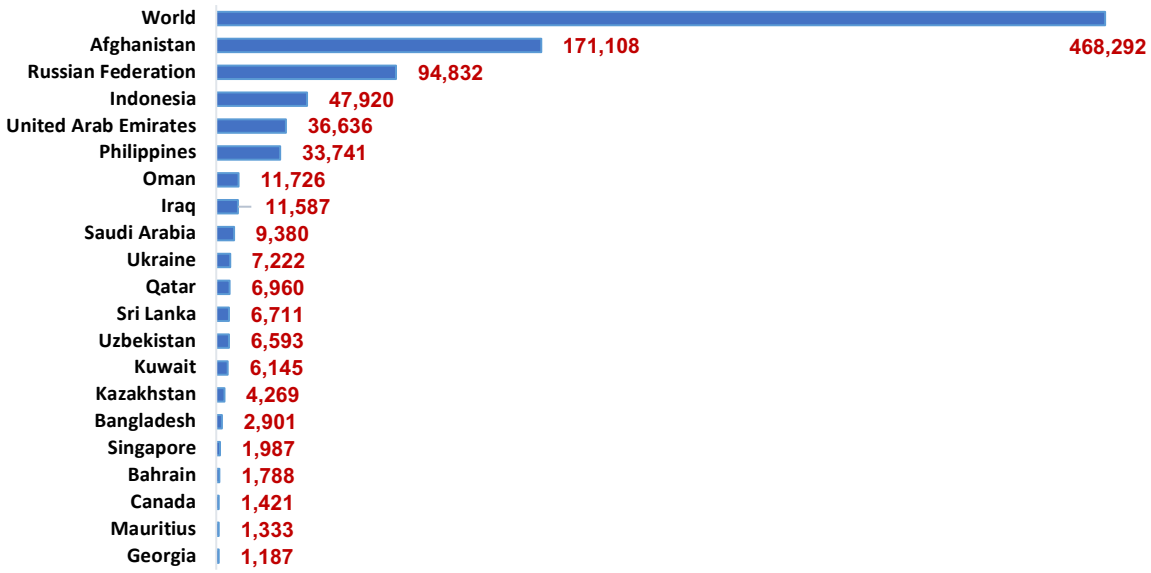
Pakistan ranks at number 10 among citrus exporting countries, Spain leading with 3,549,540 tonns export value, there is a need to improve citrus quality to be among the top.



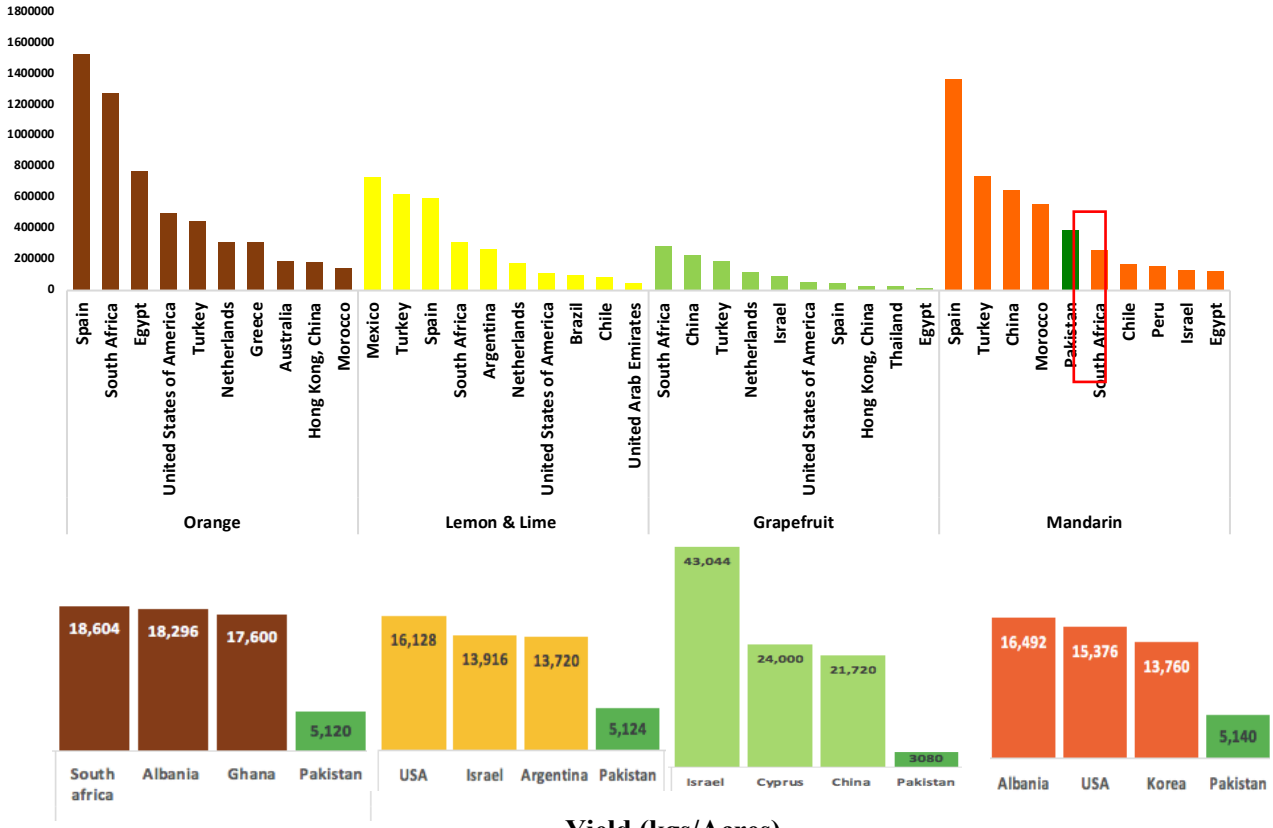
World citrus production is increasing at 2.24% per annum, there is a huge potential to increase citrus production, which can be achieved with accurate interventions. Similarly exports are increasing by 2.57%, hence in order to remain in the top citrus exporting countries there is an urgent need for the Government to provide an enabling environment with the requisite interventions to enhance productivity of citrus.



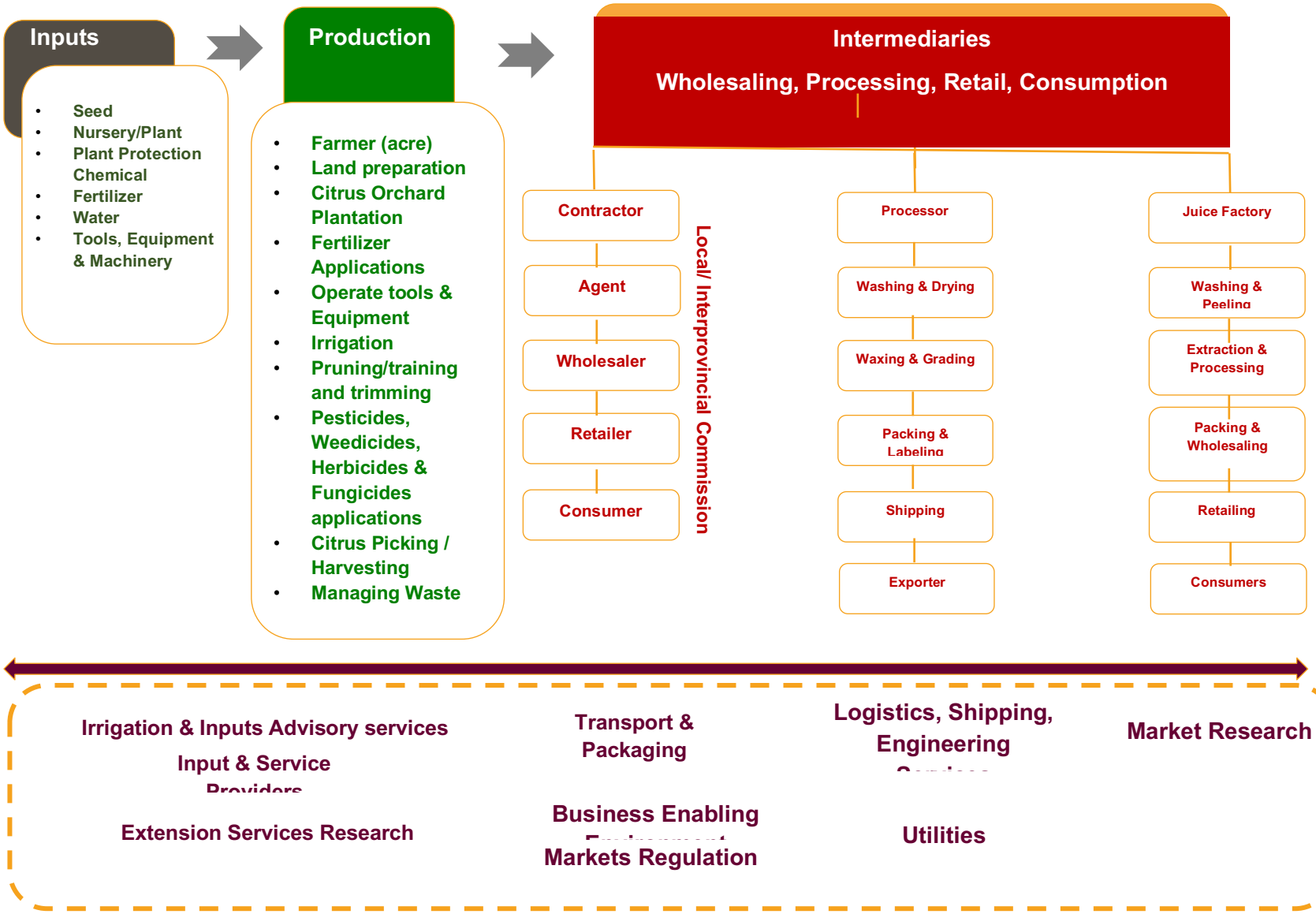
The graph below highlights Pakistan's top exporting countries by quantities in tons, the largest amount of citrus are exported to Afghanistan followed by Russia and Indonesia.



Due to low quality of citrus produced in Pakistan, it does not fall in the top 10 leading exporters when looked into by type of citrus exported, Pakistan only comes in the top 10 for Mandrain. Similarly it can be seen that Pakistan produces extremely low yield (kgs/Acres) when compared to top 3 countries yield in all citrus types, there is a need to adopt good agriculture practice and high density in orchards



Yield (kgs/Acres)


Inputs
Seed
Nursery/Plant
Plant Protection Chemical
Fertilizer
Water
Tools, Equipment & Machinery
Production
Farmer (acre)
Land preparation
Citrus Orchard Plantation
Fertilizer Applications
Operate tools & Equipment
Irrigation
Pruning/training and trimming
Pesticides, Weedicides, Herbicides & Fungicides applications
Citrus Picking / Harvesting
Managing Waste
Intermediaries
Wholesaling, Processing, Retail, Consumption
Contractor
Agent
Wholesaler
Retailer
Consumer
Local/ Interprovincial Commission
Processor
Washing & Drying
Waxing & Grading
Packing & Labeling
Shipping
Exporter
Juice Factory
Washing & Peeling
Extraction & Processing
Packing & Wholesaling
Retailing
Consumers
Irrigation & Inputs Advisory services
Input & Service Providers
Extension Services Research
Transport & Packaging
Business Enabling Environment
Markets Regulation
Logistics, Shipping, Engineering Services
Utilities
Market Research

Challenges & Issues

Inputs	Production	Logistics & Process	Markets
• Unapproved / uncertified varieties • Lack of institutional support to provide database and inventorying of certified, disease free seed plants. • Unreliable supply of certified plants. • Lack of registered nurseries • Poor nursery management practices	• Fail to meet Demand annually because of limited capacity. • Inadequate supply of plants required for new zones. • Old outdated orchard management practices • Inefficient Irrigation systems • No disease free zones identified for new plantation • No standardized curriculum for orchard management • Reduced shelf life of fresh fruits • Food safety issues • Spread of diseases	• Inadequate and scarcity of existing facilities for Grading, Polishing and sizing for local market demands.. • Quality assurance mechanisms and standardized certifications for export is missing. • Limited value addition opportunities • Existing capacity of frozen juice is low • Increase life of product to improve exportability • Lack of modern technology • Access to finance problem • Low and inadequate quality of existing storage facilities	• Lack of regulation • Poor marketing infrastructure • Lack of marketing campaign for local consumption • Marketing/trading Citrus under one brand from Pakistan as a premium product • Lack of integrated citrus marketing plan • Lack of market research/ market identification • Poor access to high end market • Lack of presence at international exhibitions/ trade shows

	• Low Price • Post-Harvest Losses up to 20% • Lack of extension Services and technical assistant • Poor pest / disease management • Imbalance use of Nutrition • Intercropping	• Transportation supply chain needs to be made efficient • Low automation	• Lack of support from trade counsellors posted abroad in opening new markets/relationship management in existing markets

Recommendations

Inputs	Farms Management & Zoning	Marketing & Access to Finance
• CRI to develop new seed varieties • DNA & all other required testing for mother plant and scion varieties • Identification of demand in international and local market • Identify protocol for export of citrus to the various markets. • Upgradation of CRI and capacity building of theri staff • Linkages with academia and international researchers for R&D • Survey of nurseries to identify capacity to produce/ multiply disease free plants • Timely availability of water and other inputs • Provision of extension services • On-going varietal development based on market research	• Farm Mechanization • Need for compliances and certificates for export • Develop Standardized Manual on Citrus Orchard Management practices • Declare Citrus emergency situation to enforce adoption of standardized manual practices • Develop 75,000 acres (through EMFP) on improved orchard management practices to target export market • Awareness and training of farmers on standardized orchard management and improved irrigation practices • Training of labor on Grading, Sorting, Packaging, usage of processing equipment	• Developing state-of-the-art Cold-Storage • Improved local markets, & international linkages • Provide incentive for setting up new industries • Develop packaging manufacturing industry for fresh fruit • Develop local manufacturing industry to manufacture Grading/Sorting/Packing lines • DPP to develop online processing for export certification • Develop concerted media campaign for increasing consumption of citrus products • Develop feasibilities for new value add industries • Develop zoning-based state-of-the-art citrus trading market

5

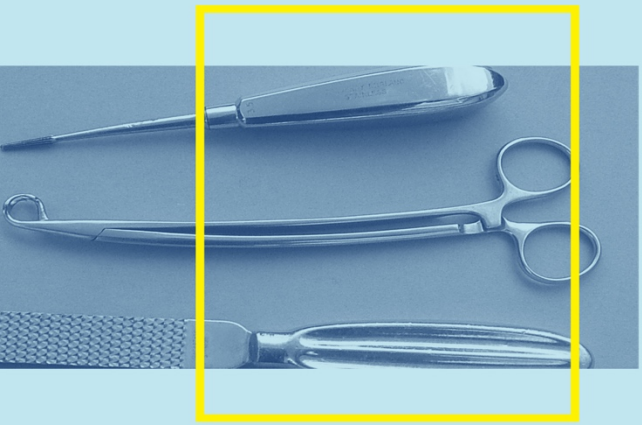
URBAN VALUE CHAINS

Urban Value Chain

Following product value chains are selected for intervention, owning to their local production, export potential, local import replacement and high margin of value addition:

	Surgical Instruments
	Sports Goods
	Cutlery
	Wearing Apparel
	Electrical Appliances & Equipment
	Light Engineering
	Furniture

Ceramics

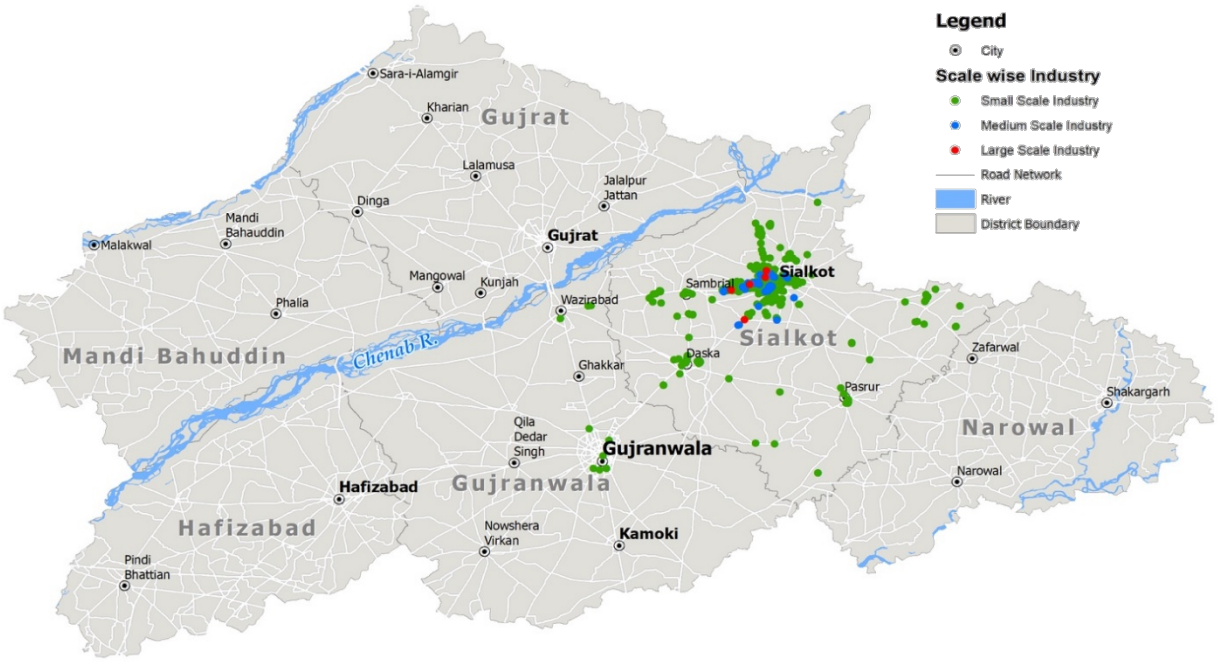


Surgical Goods

1.3. Surgical Goods

Overview

In Pakistan, the surgical instruments manufacturing cluster is mainly located in and around Sialkot, covering around 99% of the country's production of surgical instruments. There are around 1,092 firms in Pakistan out of which 1,061 (97%) are based in Gujranwala Division. The total people employed in this industry are 22,206 in Punjab out of which 21,430 (97%) are employed in Gujranwala.



The industry predominantly consists of small and medium units; there are very few large units, which have a 90% integrated system. Most of the larger and medium sized firms are exporting, however, the smaller/vendor units usually supply to commercial exporters/traders.

The total production capacity of the cluster is around 200 Million pieces per annum however the industry is producing around 150 million pieces a year with an estimated value of Rs. 22 billion of which around 95 % are exported. Currently there are around 10,000 different types of instruments being produced and exported from Pakistan to different countries in the world.

Product Categories

The surgical instruments manufactured in Sialkot can be classified into four broad categories:

- **Disposable Instruments:** These represent instruments, which are for a single use. Being single use instruments, they are manufactured from low quality stainless steel, which is produced locally and is available at nearly half the price of imported stainless steel. America is the largest market of

these single use instruments, where these instruments are packed in sets, which are used to carry out simple surgical procedures.

- **Operating Room Instruments:** This category of surgical instruments represents the instruments, which are used in operating rooms to carry out complex surgical procedures. This segment includes over 30,000 different types and varieties. The OR instruments have to be reused and to maintain a desired level of sterility they are sterilized very frequently. This requires that the raw material used in the manufacture of OR instruments should be of proper grade so as to sustain the rigor of sterilization process. For Pakistani made OR instruments, Europe is the biggest market. Most of the manufacturers of OR instruments use imported stainless steel. Due to the nature of the usage, special care has to be taken in the production of these instruments. Especially in the finishing process a great deal of skill and precision is needed to produce an instrument.
- **Beauty Instruments:** These instruments include manicure and pedicure instruments include nail clippers, ring cutters, nail files, etc. which are exported in large volumes to USA.
- **Dental Instruments:** The dental instruments include tooth extraction forceps, impression trays, carvers, etc. The export of dental instruments is much less as compared to the surgical instrument category.

Export Market

Pakistan is exporting surgical instruments to the world market mainly under Harmonized System (HS) Code 90. HS Code 9018 covers Instruments and appliances, used in medical, surgical, dental or veterinary sciences, including scintigraphy apparatus, other electro-medical apparatus, sight-testing instruments & Neuro Endovascular Surgery (NES).

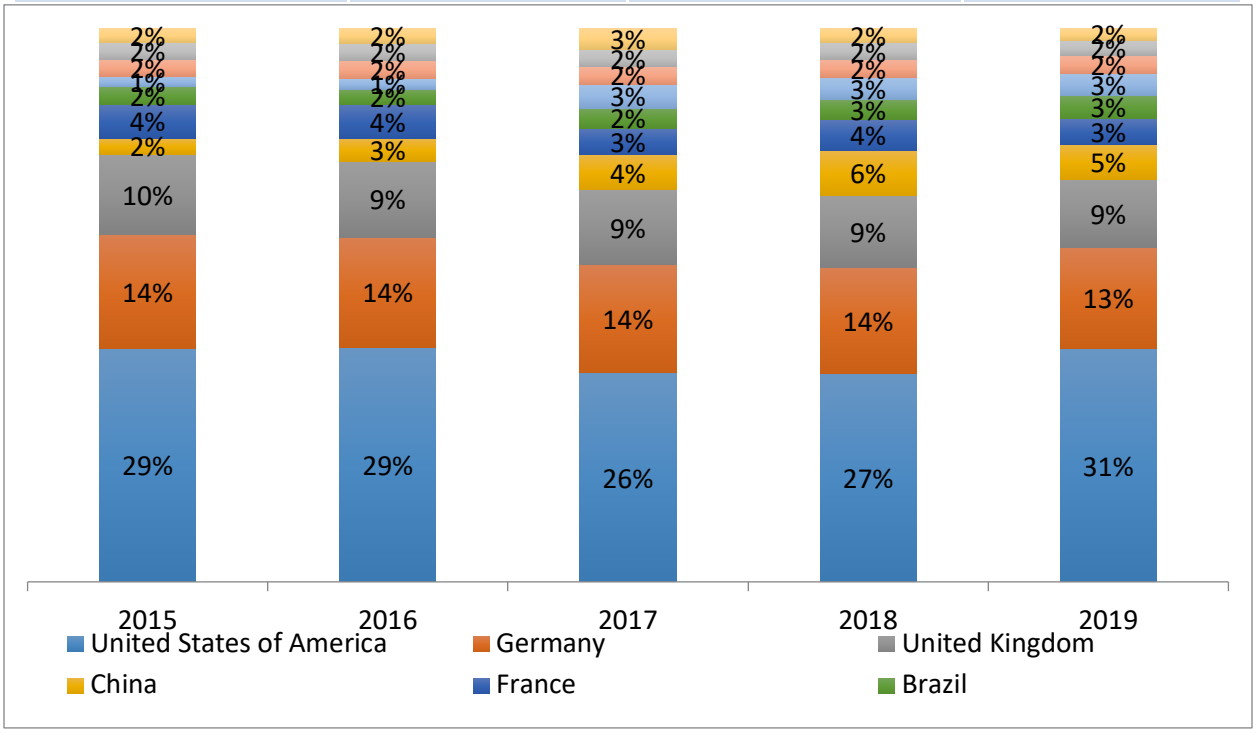
USA is the biggest exporter of Pakistan's surgical instruments with almost 31% share, followed by Germany with 13% share and UK with 9% share. Over the years the exports have decreased to the EU based countries; however, they are increasing to USA & China.

Pakistan is importing $288 Million worth of instruments and exporting $ 409 Million under the same HS code, this highlights a good potential for import substitution. The surgical manufacturers are not inclined towards selling locally as they seem to experience delayed payments and bureaucratic procedures. Exporting instruments is less cumbersome and more profitable. This signifies a need for developing local brands and facilitating firms to market their products locally.

Pakistani exports make up only a small fraction 0.3% of world trade in surgical instruments. This is one sector where Pakistan has developed special capabilities to penetrate high-income markets such as Germany, USA, UK and China etc. The average export price of goods made in Sialkot is around $1.5-2.5 (Note: some products sell for much higher prices – the price quoted is the average trade price for disposable products), which is much higher than what Chinese products fetch (US$0.35 – in disposable products). However, the price is lower than some of the more sophisticated producers such as Germany, highlighting

a competitive advantage and signifying a huge potential for international markets, hence most of the production from Germany has shifted to Pakistan, however, this transfer of production did not result in transfer of any major international brands to Pakistan. This has resulted in Pakistan making semi-finished goods, which are repackaged in Germany, Europe or USA and then sold under international price at over five times the price.

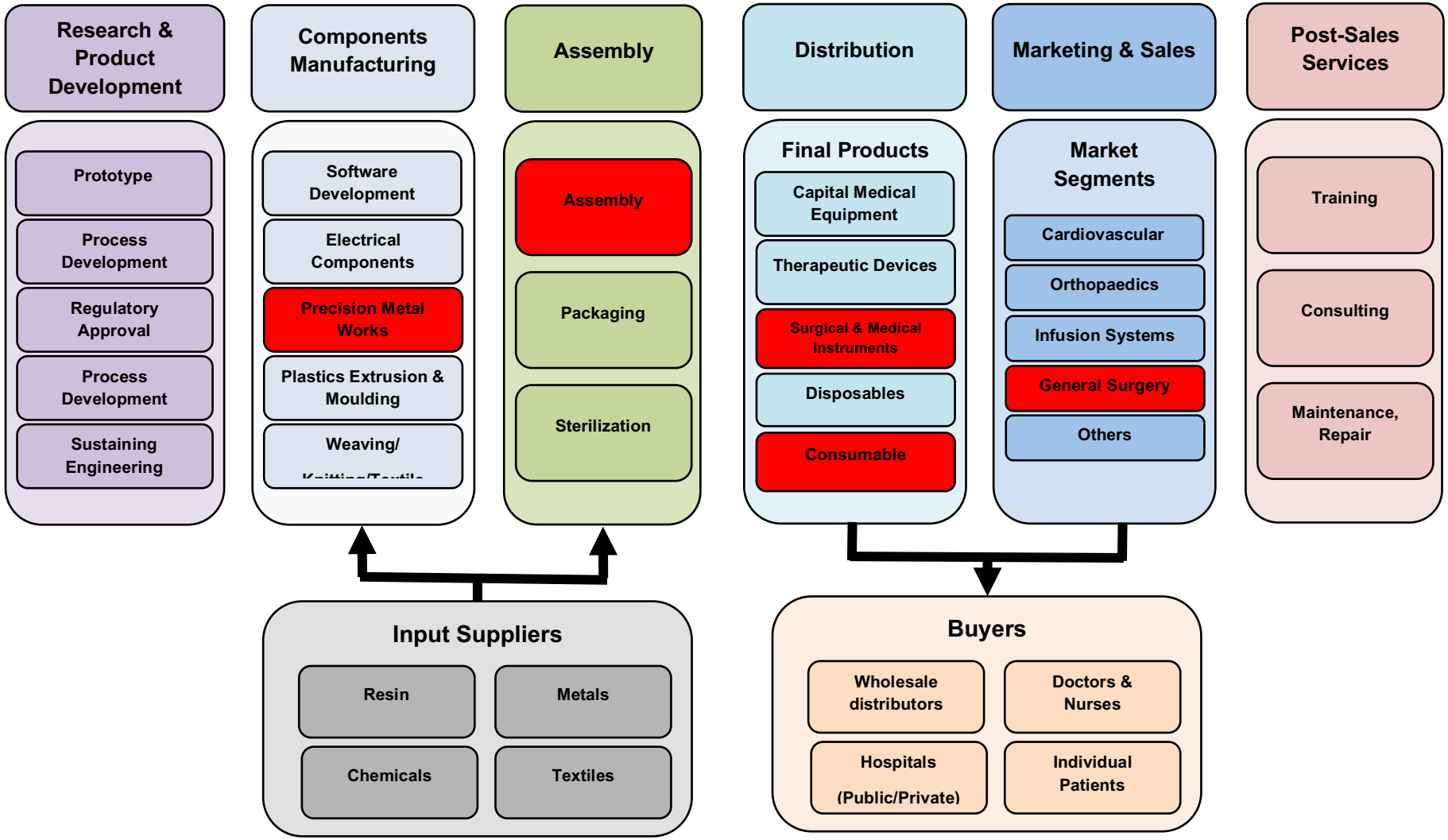
Pakistan share in world Exports	Pakistan's Exports	Pakistan share in world Imports	Pakistan's Imports
0.30%	$ 409 Million	0.24%	$ 288 Million



Pakistan's Position in the Global Markets

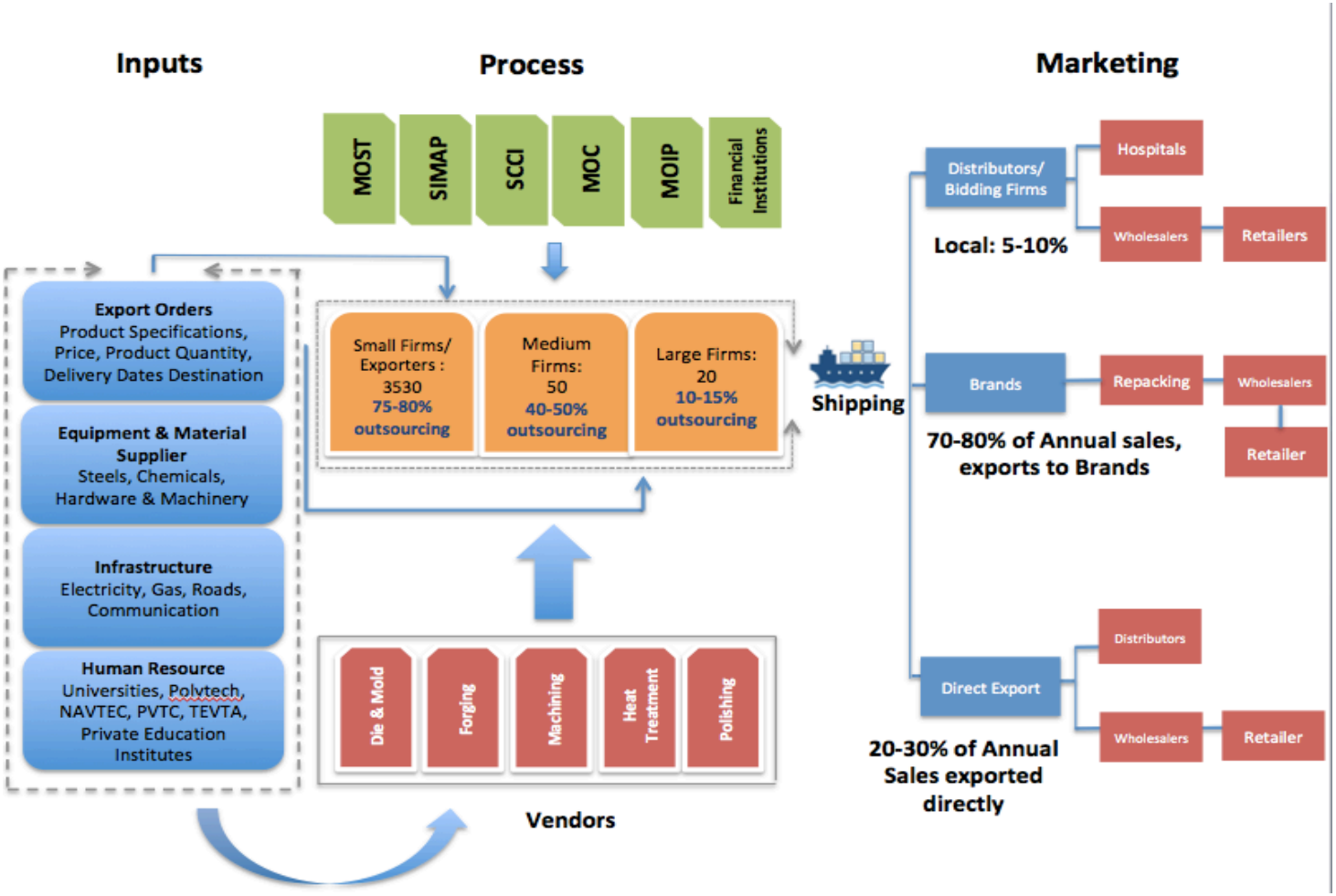
Despite the expertise available in Pakistan and its competitive advantages, it captures a very small percentage share in the Global Value Chain of surgical instruments. Pakistan's participation in the GVC is concentrated on manufacturing of Precision Metal works only and the assembly segment, most of the products are sent to other destinations for final packaging and branding, precision metals account for almost 98% of the exports. Pakistan immensely lacks the Research & Product Development component in the GVC, resulting in low productivity and quality of products and lack of product and market diversification. There are very few firms in Pakistan who have the certifications needed to export to global markets.

Value Chain

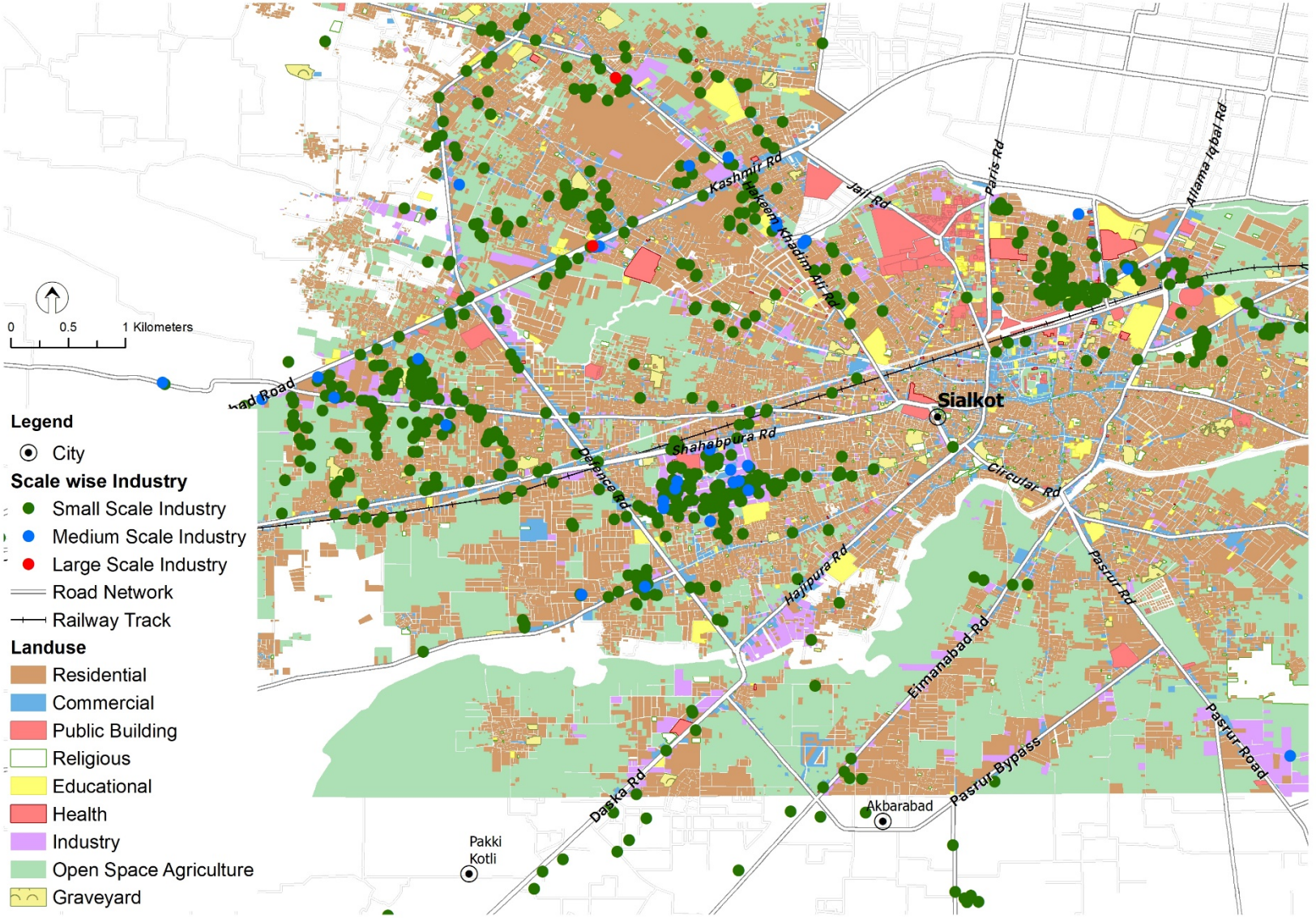

Research & Product Development
Components Manufacturing
Assembly
Distribution
Marketing & Sales
Post-Sales Services
Prototype
Process Development
Regulatory Approval
Process Development
Sustaining Engineering
Software Development
Electrical Components
Precision Metal Works
Plastics Extrusion & Moulding
Weaving/
Assembly
Packaging
Sterilization
Final Products
Capital Medical Equipment
Therapeutic Devices
Surgical & Medical Instruments
Disposables
Consumable
Market Segments
Cardiovascular
Orthopaedics
Infusion Systems
General Surgery
Others
Training
Consulting
Maintenance, Repair
Input Suppliers
Resin
Metals
Chemicals
Textiles
Buyers
Wholesale distributors
Doctors & Nurses
Hospitals (Public/Private)
Individual Patients

Supply Chain

All manufacturing process, from dyeing and molding to final components is undertaken in Pakistan, however only the larger firms are able to perform all activities, smaller firms sub contract different stages to more specialized vendors. Approximately only 5- 10% of the products are used locally, 70 – 80% are rebranded and exported and 20- 30% are exported directly.



Cluster Map


0 0.5 1 Kilometers
Legend
City
Scale wise Industry
Small Scale Industry
Medium Scale Industry
Large Scale Industry
Road Network
Railway Track
Landuse
Residential
Commercial
Public Building
Religious
Educational
Health
Industry
Open Space Agriculture
Graveyard
Sialkot
Akbarabad
Pakki Kotli
Kashmir Rd
Jail Rd
Paris Rd
Allama Iqbal Rd
Shahabpura Rd
Defence Rd
Circular Rd
Hajipura Rd
Pasrur Rd
Eimanabad Rd
Pasrur Bypass
Daska Rd

Challenges & Issues

Surgical instruments sector of Pakistan has achieved reasonable export performance growth in past years however it has suffered from lack of product diversification, inadequate shift out of low value-added instruments to high value sophisticated products and uncertain business environment. The major impediments of the sector are low levels of productivity, lack of branding and market diversification, inadequate technology upgrade and shortage of skilled staff.

Inputs	Technology	Skills	Market
High price of good quality raw material High duties and taxes on imported raw materials Inadequate supply & high energy costs for the industry Fluctuating prices of imported raw materials Lack of material certificates for local materials Lack of institutional support	Majority of the industry still uses conventional refurbished machinery High defect rates due to usage of obsolete machinery Lack of awareness and access to new technology No technology acquisition mechanism Poor production practices leading to lower productivity Lack of availability of support services Absence of testing and accreditation facilities Weak R&D infrastructure	Structural unemployment due to skills mismatch Weak in house training and development of existing workforce Lower labor productivity level due to organizational weakness Low rate of induction of semi skilled workforce trained through vocational centers due to uncompetitive wages Management perceives training as an expense rather than an investment Non conducive working environment	Absence of Branding Lacking production and market diversification Strong price competition among firms Poor Marketing strategies Limited direct selling to end consumers No preparation to tap new markets through CPEC Loosing market share due to lack of adoption in latest technology Stringent legislation and compliance requirements Lack of regulations Lack of marketing campaign for local consumption

Recommendations

Industry in the years to come will face higher compliance requirements, especially as the industry tries to diversify into more value added products and enter into more sophisticated markets. Compliance, testing and certifications are critical for the surgical industry to move up the value curve. Pakistan needs to upgrade its processes to increase productivity, diversify its products portfolio and strengthen the industry's ties with emerging markets. The country's past success in textiles and apparel also offer an opportunity for the country to become a more significant player in the medical textiles industry and diversify its products.

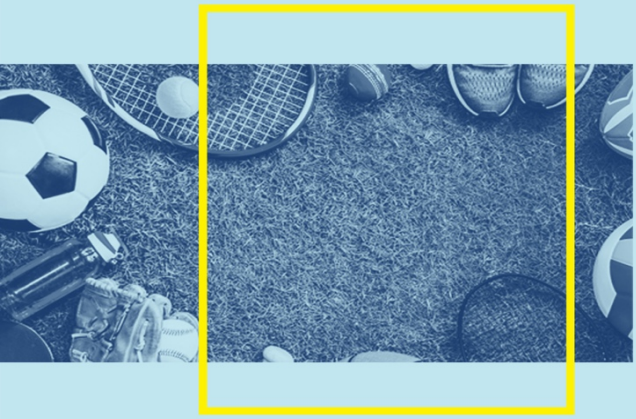
Innovation	Marketing & Branding	Workforce	Others
•Increasing awareness among firms •Improving innovation support system through collaborative actions and mechanism •Establishment of Public sector universities or Center of Excellence •Collaborative innovation mechanism in the wake of CPEC •Evidence based support policies through industry oriented research •Knowledge transfer through international & local R&D institutes.	•Strategies for Market penetration and diversification •Development of networks and export consortia •Strategies for enhance outreach to regional and Far East countries through CPEC •Adoption of e commerce tools for promotion of surgical products •Promoting import substitution strategies	•Develop strategies to assess supply & demand of labor force •Adoption of new technologies to enhance labor productivity •Better remuneration to attract workforce •Training & Development of labor •Improving health and safety conditions •Stronger collaborations with TVET institutions	•Information & Market intelligence sharing with the firms •Access to finance •Establishment of labs for testing •Registration of Exporters with health authorities in countries export •Promoting linkages between Health institutions and Surgical Firms •Development of new Economic Zones under CPEC

Way Forward

Immediate Intervention; Low hanging fruit: Sialkot is mainly exporting low value products such as Forceps and Scissors that have limited world market. There is a need to focus on product diversification and develop capacity in high in demand products globally. Low hanging fruits are medical needles and other instruments for anesthesia imported in large quantities from the US. The US has established brands such as Wisconsin Companies exporting to Germany. Currently, most firms in Sialkot are engaged in production and export of operation room instruments and not disposables. To support export of high-quality disposable instruments, skills and marketing needs to be improved. Institutes such as Metal Industries Development Centre (MIDC) Sialkot city are providing mainly Surgical Mechanist courses. Provision of important skills needs to be insured including Grinding, Heat Treatment Expert, Quality Assurance workers, Etching Machine Operators.

Long-term intervention: Major imports of USA and China constitute of Dialysis equipment and Endoscopes. The technology and skills level is insufficient for manufacture of such high-end medical equipment. The cluster can push for assembly of advanced and high-value equipment to leverage price competitiveness and CPEC.

Specific Interventions: Establishment of an institute for manufacture/ assembly of high-tech equipment, in particular— dialysis equipment and endoscopes. The institute will play a key role of streamlining manufacturing process and transference of technology and skills to top firms in the cluster with binding export targets. These leader firms will then have cluster-wide spill overs and augment cluster capacity to manufacture and export of high-end equipment. The institute will also have a specific center dedicated to research and development of the industry.



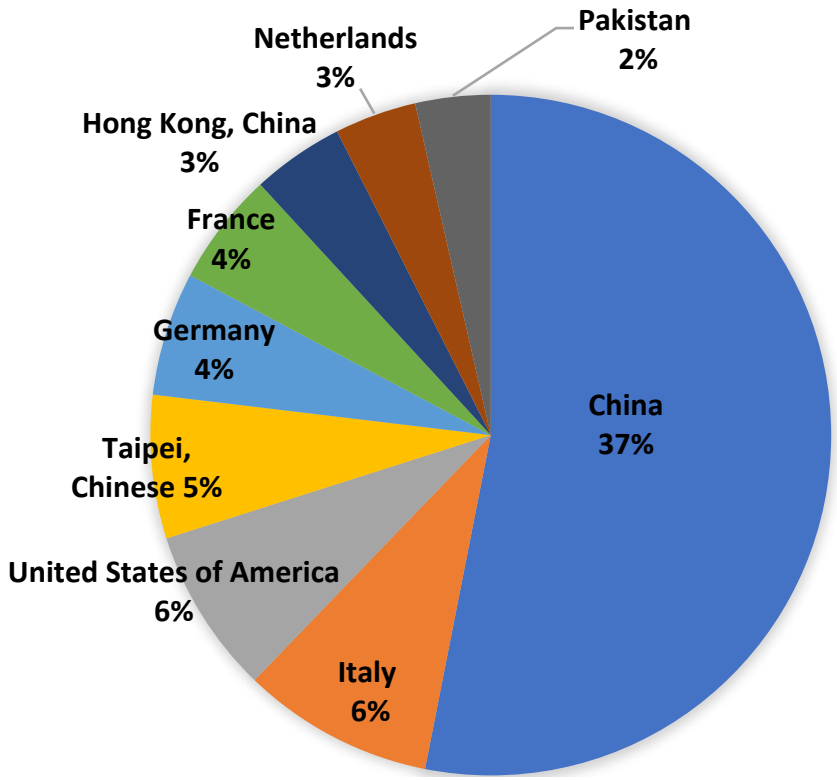
Sports Goods

1.4. Sports Goods

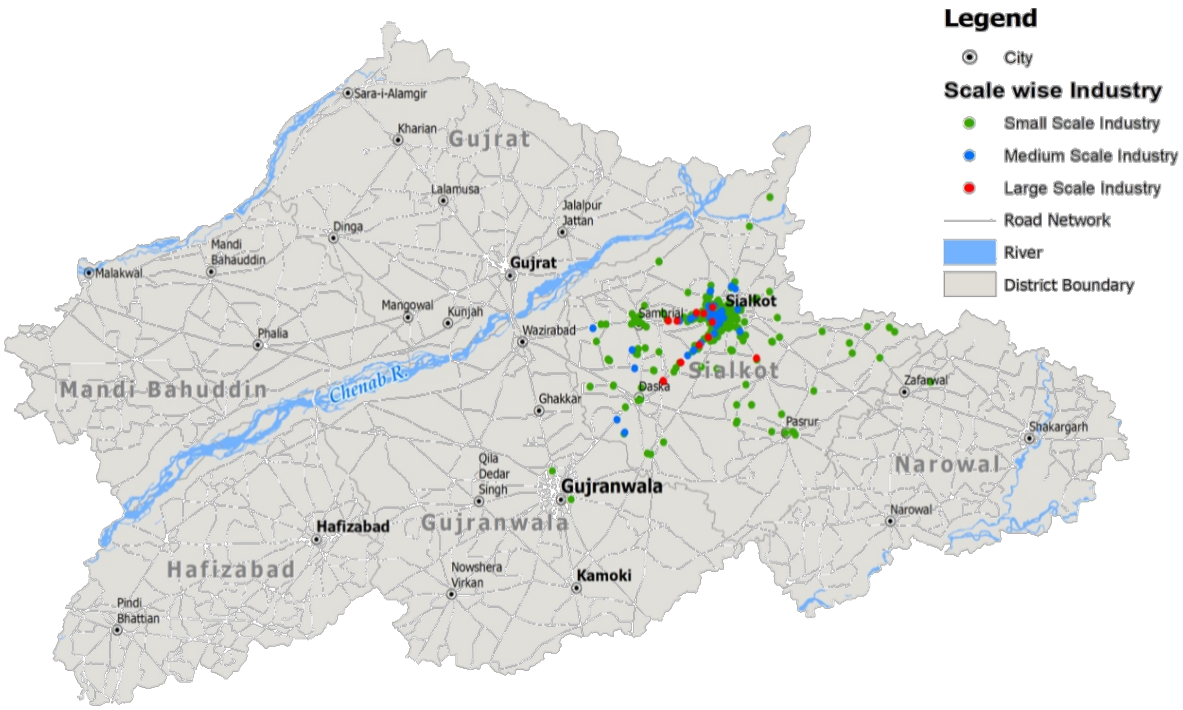
Overview

The value of global sports goods industry is around $ 40 Billion, with USA having the largest share of 25%, followed by Germany with 7% and France 6%. The largest exporter for this category is China, with 37% of the total market share, followed by Italy and USA with 6% share each. Despite having substantial competitive advantages Pakistan ranks at number 10 with only 2% market share, the total export market is almost $ 40 Billion.

Figure: Countries Export Share in Sports Goods



The sports goods industry of Pakistan is mostly concentrated in and around Sialkot city, with 95% small industries, 3% medium and 2% large industries. The Sports Goods industry can be categorized into 2 major categories: gloves & hard sports goods.



	Punjab	Gujranwala Division	% in Gujranwala Division
Firms	421	410	97%
Employment	22,600	22,315	99%

Product Categories

The major products exported in this sector from Pakistan along with their percentage are:

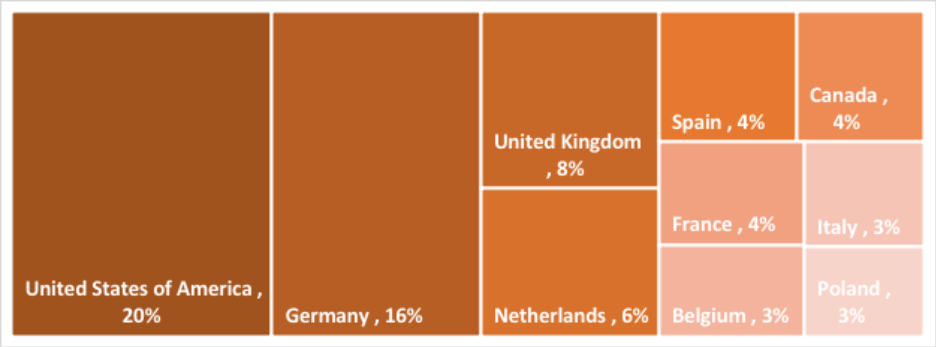
HS Code	Product	2019
'4203	Articles of apparel and clothing accessories, of leather or composition leather (excluding ...	58%
'9506	Articles and equipment for general physical exercise, gymnastics, athletics, other sports, ...	22%
'6116	Gloves, mittens and mitts, knitted or crocheted (excluding for babies)	20%

The largest shares of exports are of HS 4203 with 58% share, these include specially designed gloves used in sports and leather gloves etc. The second largest share is of HS 9506, these include equipment for exercise, golf balls, inflatable balls, ski equipment, tennis rackets etc.

Export Market

Sports goods industry of Pakistan plays a vital role in international trade of sports goods, the sports goods industry comprises of 4% of the total exports of Pakistan. Pakistan is exporting a large portion of its sports goods from Sialkot to international famous brands like Adidas, Nike, Puma, Lotto, Umbro, Mitre, Micassa, Diador, Wilson and Decathlon. More than 90 per cent of the total production is exported every year.

Figure: Importing Countries Share in Sports Goods



Pakistan's sports goods exports for 2019 were US $ 1,018 Million, which makes only 2% of the global sports goods exports market. USA (20%) is largest exporter of sports goods from Pakistan, followed by Germany with 16% share and UK with 8% share.

Figure: Exporting Countries Share in Sports Goods

Pakistan's total import market for this category was $ 15 Million in 2019, with 68% of its imports from China which majorly consists of HS 9506, Articles and equipment for general physical exercise, gymnastics and athletics.

Pakistan's Position in the Global Markets

Sialkot used to cater to around 70% of the total world demand of hand stitched inflatable balls, which translated into around 40 million balls annually. However Chinese companies have replaced the high-end quality hand-stitched soccer balls supplier with their technology, and they are now catering the demand of many international buyers who were previously sourcing it from Pakistan and India.

Chinese soccer ball industry has grown tremendously in the last few decades, it has dominated the global market, accounting for almost half of the total world supplies. Therefore, it can be asserted that China has replaced other competitors by becoming an alternative for GVCs through upgradation, mechanization and automation of their sports goods industry. Pakistan's sports goods industry couldn't sustain this hence lost its market share.

China is also leading the world in using its e-commerce platform for its exports. More than 40 percent of the world's e-commerce transactions is currently taking place in China, up from only 1 per cent about a decade ago. The same has become an important factor for its growth in the Sports Goods industry.

HS code	World exports ($ Million)	Pak Exports ($ Million)	Pak share in world export	Top Markets	Pak's Rank
'9506	27,663	224	1%	USA, Japan, Germany	20th
'4203	7,845	589	8%	USA, Germany, France	5th
'6116	5,274	205	4%	USA, Japan, Germany	5th
	40,784	1,018	2%		

In the international market, China, Vietnam and India are the main competitors of Pakistan, with China being the largest competitor.

Figure: Exporting Countries Share in Gym Equipment

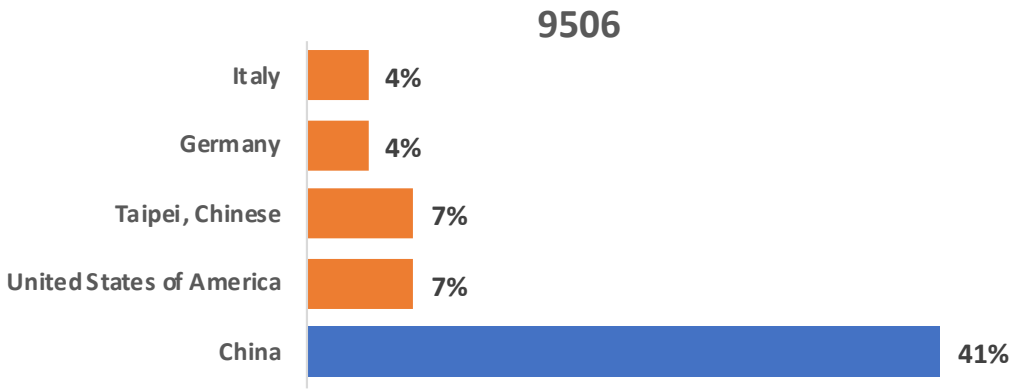


Figure: Exporting Countries Share in Leather Sport Accessories

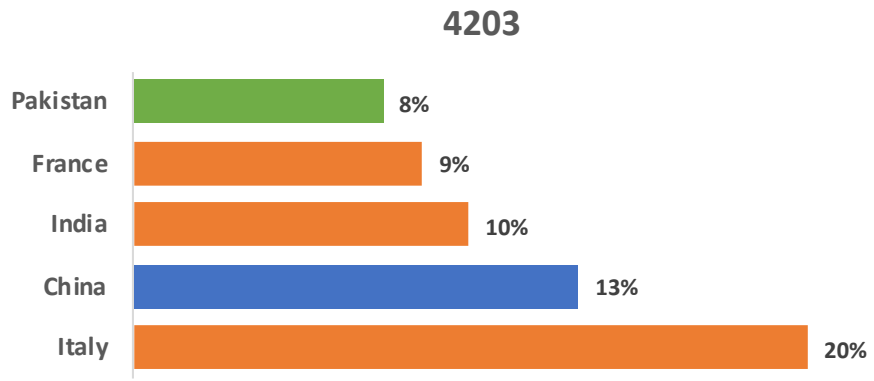
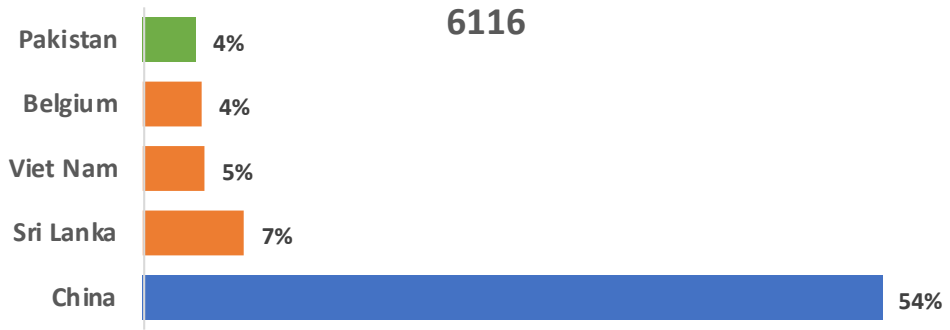


Figure: Exporting Countries Share in Gloves



China has the largest and the most significant share of exports in all 3 categories, Pakistan has an almost negligible share, through CPEC there is a significant potential of technology transfer from China to increase Pakistan's share of world exports.

China has the advantage of supplying its products at lower prices, while India has the advantage of cheap labor and raw material. China & Vietnam, both have semi automotive and mechanized units and are always engaged in R&D and introducing cheaper sports goods.

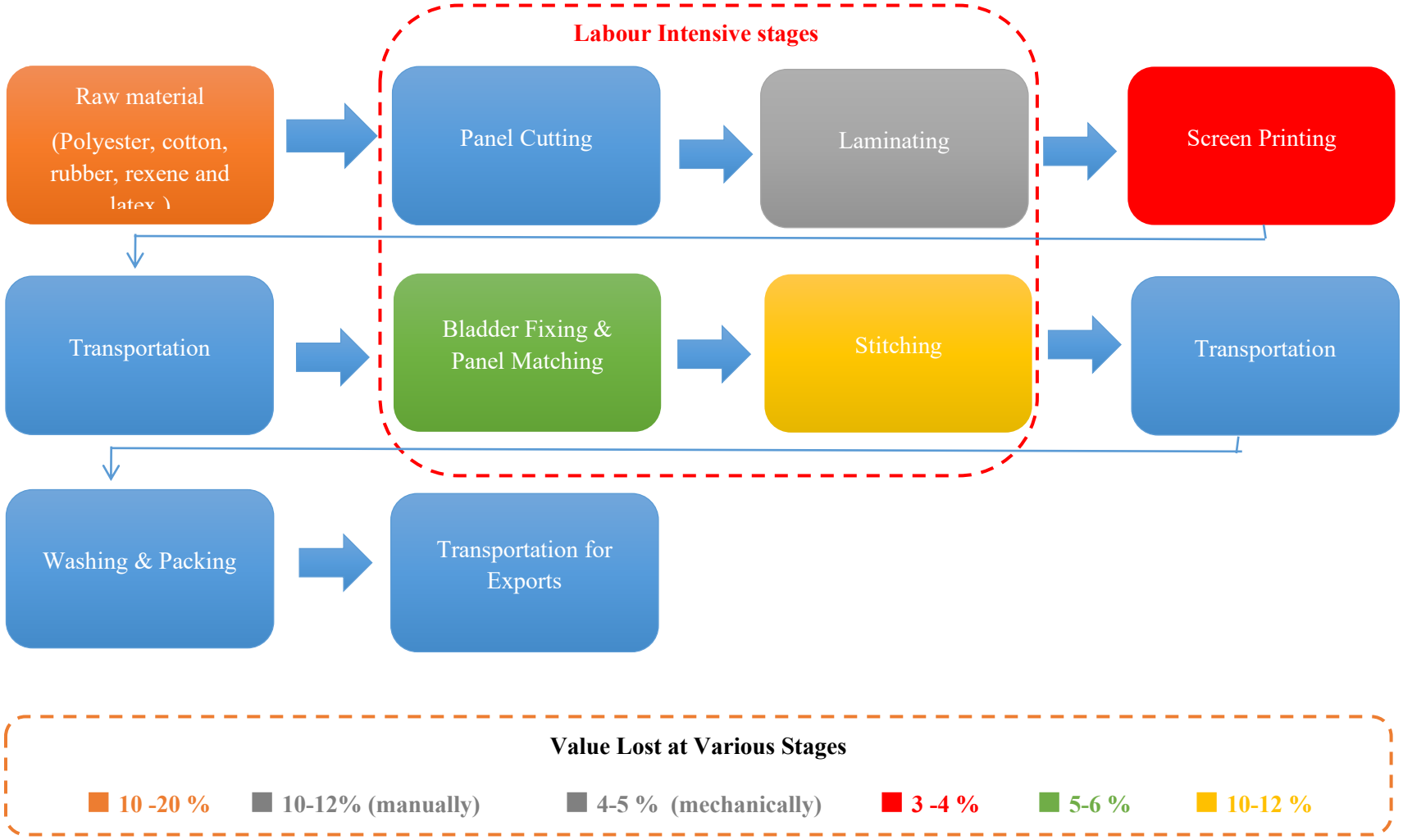
Due to obsolete technology and machinery used by the industry, there is a considerable amount of value lost at each stage of the supply chain. The main raw materials used for the sports goods industry are leather, mulberry wood, glue, nylon guts, rubber and chemical etc, which are 80% imported mainly from Taiwan, China and Korea.

Most of the labour in this industry is on contractual/ daily wages and are paid per piece, hence the industry does not require skilled labour except at a few key stages like designing etc.

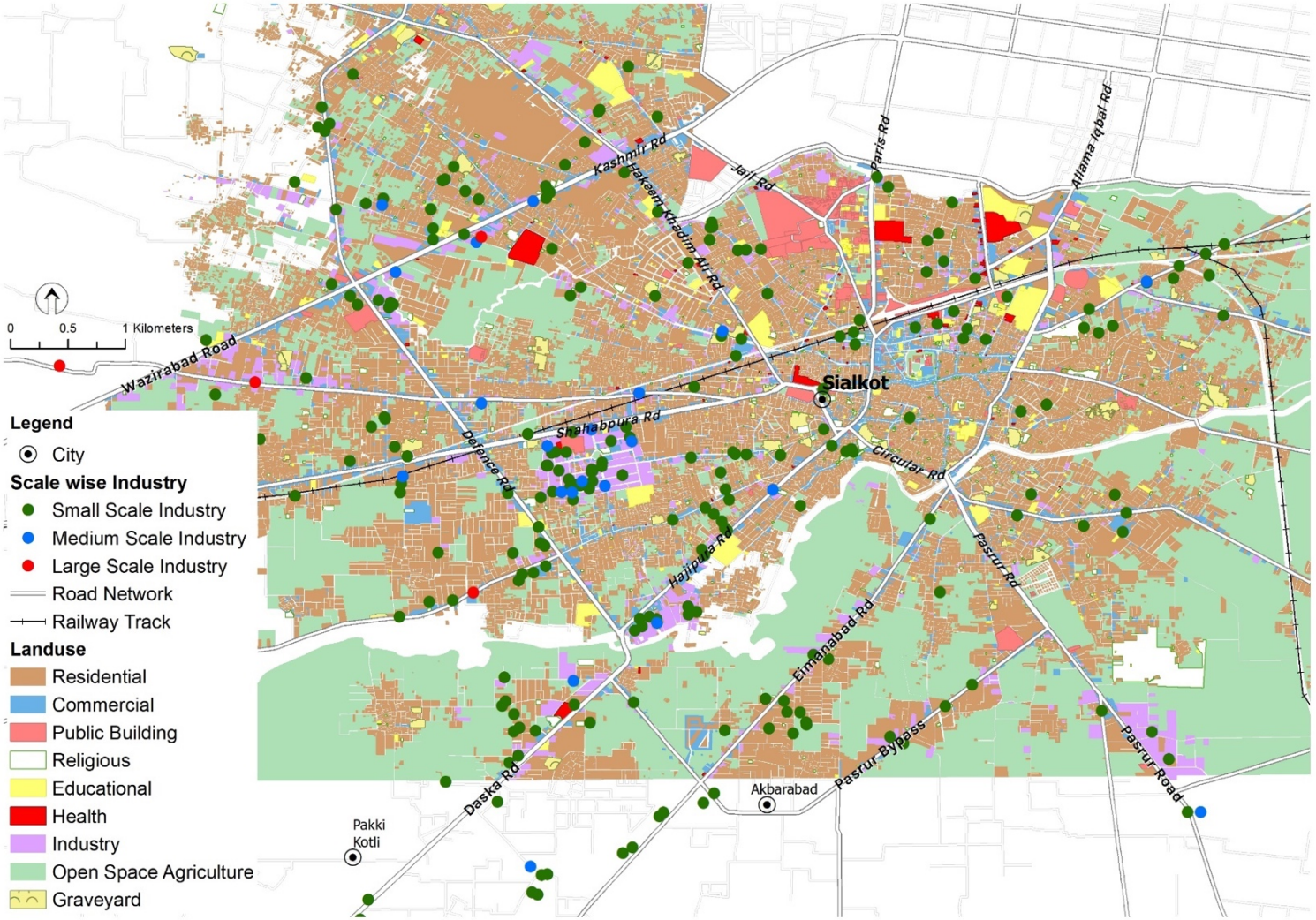
The industries in Sialkot have limited access to the international markets, only 3% are doing direct exports while all the others are exporting indirectly which has led to lack of branding of Pakistani products in the international Market.

The final products exported in the international market are at approximately 5 – 15% profit margin, while international buyer again sells this product with around 150% to 200% profit margin, signifying a huge potentiol for Pakistani products to be branded in the world.

Value & Supply Chain



Cluster Map


0 0.5 1 Kilometers
Legend
City
Scale wise Industry
Small Scale Industry
Medium Scale Industry
Large Scale Industry
Road Network
Railway Track
Landuse
Residential
Commercial
Public Building
Religious
Educational
Health
Industry
Open Space Agriculture
Graveyard
Sialkot
Akbarabad
Pakki Kotli
Wazirabad Road
Kashmir Rd
Hakeem Khadim Ali Rd
Jail Rd
Paris Rd
Allama Iqbal Rd
Shahabpura Rd
Daska Rd
Circular Rd
Pasrur Rd
Hajipura Rd
Eimanabad Rd
Pasrur Bypass
Pasrur Road

Challenges & Issues

Inputs	Technology	Skills	Financial	Market
• High price of good quality raw material • No lab available for testing of composite raw material • Inadequate supply & high energy costs • Lack of awareness about latest material trends and their usage in international market. • Labor turnover and accessibility is a major problem. • High taxes on import of machinery and raw material • Weak supply chain of raw material, which is highly dependent on imports of raw material	• Majority of the industry still uses conventional machinery • Use of obsolete printing, lamination and cutting technology. • No technology acquisition mechanism • Poor production practices leading to lower productivity • Lack of availability of support services • Absence of testing and accreditation facilities • Weak R&D infrastructure • Lack of in-house product and material testing facilities	• Lack of availability of skilled labor trained in modern production techniques. • Lack of innovation and designing skills in the industry.	• Credit constraint in terms of high markup is also a constraint for small and medium firms. • Complexity of documentation for exporting and importing • No tax rebates	• Lack of local brands and its competitiveness internationally. • Lacking product and market diversification • Poor Marketing strategies for international marketing • Limited direct selling to end consumers • No preparation to tap new markets through CPEC • Losing market share due to lack of adoption in latest technology • High freight & transportation costs

Recommendations

Inputs	Technology	Skills	Financial	Market
• Control prices of imported raw material • Development of composite raw material labs to ensure quality and availability of imported raw material • Reduce duties on machinery and equipment • Recognition of composite material-based sports industry as special status by giving it subsidized/duty free imported raw materials. • Less complex paperwork for import of raw material.	• Development of specialized institutes in line with the international standards • Training program to control the process of making composite material based sports goods to overcome deficiency of skilled labor in this field • Latest technology like WPC, EDM spark erosion and CNC wire cut and laser cutting machines to be encouraged to compete with international products • Development of hi-tech labs for quality testing and awareness sessions about quality standards.	• Development of design house to train designers who can assist in innovative ideas & product diversification for the industry. • Joint collaborations with academia, international universities, industries and chambers for R&D, technology transfer and training of employees	• Introduction of loan schemes with low markup rated and flexible payment schedules • Establishment of "Exim banks" for promoting international business.	• Arranging Made in Pakistan expos to promote local brands • Invite international delegations to promote the industry and tap into potential markets • Promote B2B platforms • Improvement of physical and financial structure including shipment, clearance, cargo system, handling at the ports and airports for smooth & efficient flow of export • Identify opportunities for a JVs for OEM production.

Way Forward

Development of Composite Raw material Lab: Establishment of a hi-tech material lab in Sialkot to maintain quality control and conduct awareness seminars to disseminate information regarding best possible alternative sources of raw material. The objective is to ensure quality and availability of raw material at controlled prices. Availability of raw material at competitive price, increase in output, quality standards and reduction in the cost & time for material testing.

Development of Design House: Development of design house with foreign qualified experts and exchange of experts with international designing institutions for product and market diversification in Sialkot cluster. The objective is to develop a conducive environment for the designing and innovation. Development of new designs and product diversification and increased demand and share of Pakistani products in the international market.

Product Diversification: Provide incentives and ease of doing business for industries to make it easier for them to diversify into new products like motorcycle helmets. The objective is to tap into new markets and value-added products. Development of new products, tapping into new potential new markets, increased demand and share of Pakistani products in the international market.

Business Support Center: Establishment of business support centers in the cluster that provides knowledge and support in key areas related to international sales through e-commerce platforms. Product platforms like Amazon FBA, Alibaba, Shopify, and other platforms where local producers can sell in international markets through utilization of already established e-commerce platform at low costs. Local representatives are trained that spread in the area to provide knowledge of marketing and alternate ways to make sales. Representatives to be footloose and supported by central mechanism that provides insights & market intelligence on opportunities. On ground advice on standardization of products, international market requirements, export procedures, packaging requirements (with materials) and support in compliance with international requirements. Center will also house IT center, packaging center, meeting rooms and other key elements to support local micro and small enterprises.

Cutlery

1.5. Cutlery & Hand Tools

Overview

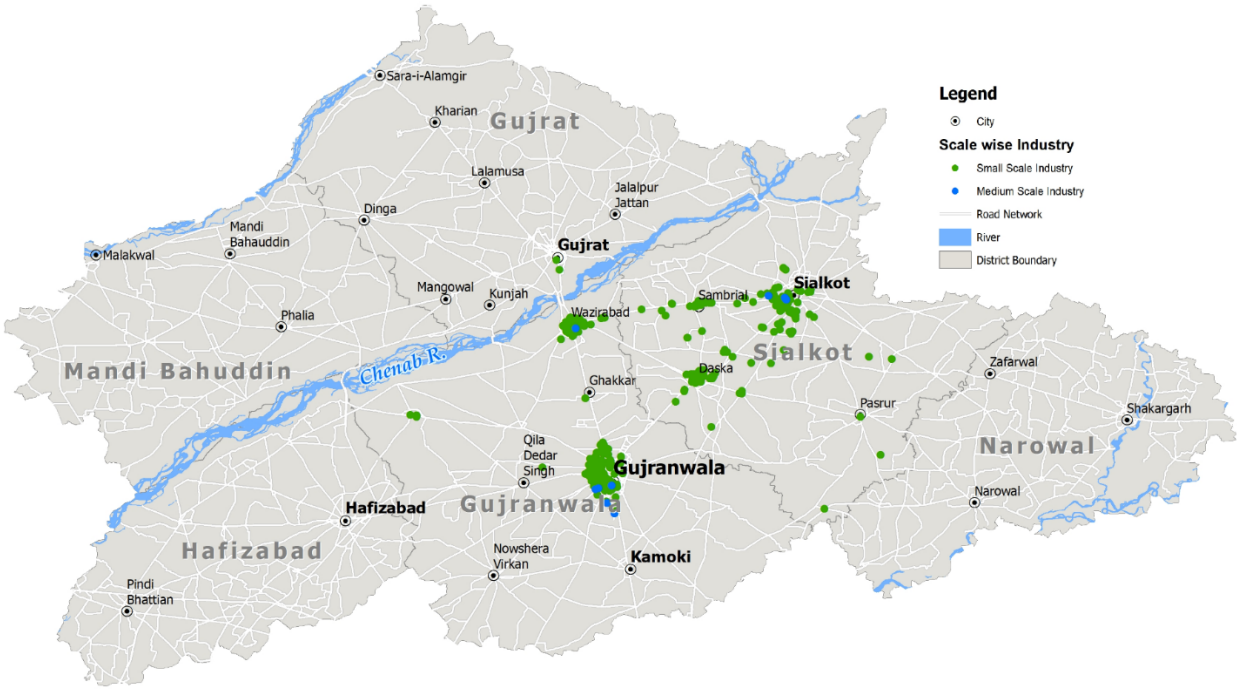
As per the HS coding system, HS code 82 makes up the Cutlery and Hand tools sector. As of 2019, cutlery and hand tools sector commanded exports accumulating to $66.2 billion. The sector makes up 0.4% of the global trade. Globally, exports of the sector are growing at a rate of 2.8% annually since 2010 and only 2.1% since 2015.

42.0% of the cutlery and hand tool firms in the division are in Wazirabad, 25.6% in Gujranwala city, 13.0% in Sialkot city and 11.1% in Daska. No other major cluster for cutlery and hand tools exists in Punjab. 99% of the firms operating in the cluster are small firms, with more focus on craft level work.

809 Total Firms in Punjab

11,011 Total Employment in Punjab

92%	**79%**
Firms in Gujranwala	Employment in Gujranwala



Export Market

The export market under HS Code 81 is large but the products of concern to Pakistan are smaller categories which are given below:

Table: Top 5 Exported Products

HS Code	Product Description	World Exports	Pakistan Exports
8205	Hand tools, incl. glaziers' diamonds, of base metal, n.e.s.; blowlamps and the like; vices, clamps and the like (other than accessories for and parts of, machine tools); anvils; portable forges; hand-operated or pedal-operated grinding wheels with frameworks	8,049	11
8207	Tools, interchangeable, for hand tools, whether or not power-operated, or for machine tools "e.g. for pressing, stamping, punching, tapping, threading, drilling, boring, broaching, milling, turning or screw driving", incl. dies for drawing or extruding metal, and rock-drilling or earth-boring tools	23,099	82
8211	Knives with cutting blades, serrated or not, incl. pruning knives, and blades therefor, of base metal (excluding straw knives, machetes, knives and cutting blades for machines or mechanical appliances, fish knives, butter knives, razors and razor blades and knives of heading 8214)	2,699	13
8212	Non-electric razors and razor blades of base metal, incl. razor blade blanks in strips	4,385	19
8213	Scissors, tailors' shears and similar shears, and blades therefor, of base metal (excluding hedge shears, two-handed pruning shears and similar two-handed shears, secateurs and similar one-handed pruners and shears and hoof nippers for farriers)	845	8

8214	Articles of cutlery, n.e.s., e.g. hair clippers, butchers' or kitchen cleavers, choppers and mincing knives and paperknives of base metal; manicure or pedicure sets and instruments, incl. nail files, of base metal	1,036	52
8215	Spoons, forks, ladles, skimmers, cake-servers, fish-knives, butter-knives, sugar tongs and similar kitchen or tableware of base metal (excluding lobster cutters and poultry shears of heading 8201 and 8213)	2,764	2.2

China, Germany and Italy are major exporting markets as well as importing markets. China and Germany are the biggest competitors to Pakistan in the global Cutlery and Hand tools Market. China, with its indigenously developed composite materials is able to produce and sell at a very low price which Pakistan cannot yet compete with.

On the other hand, products from Germany have a high price point and cater mainly to the luxury kitchen products. Pakistan has a price point somewhere in the middle of the two major competitors, however, the quality, branding, and packaging in inferior.

Figure: Top Exporting Countries, 2019

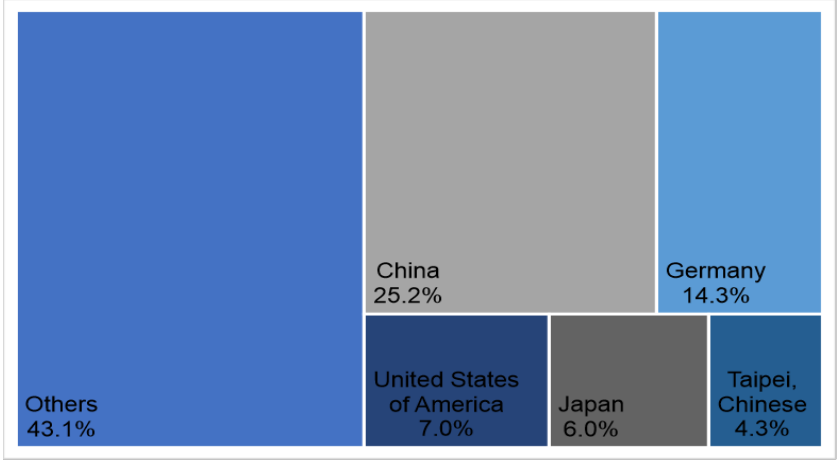
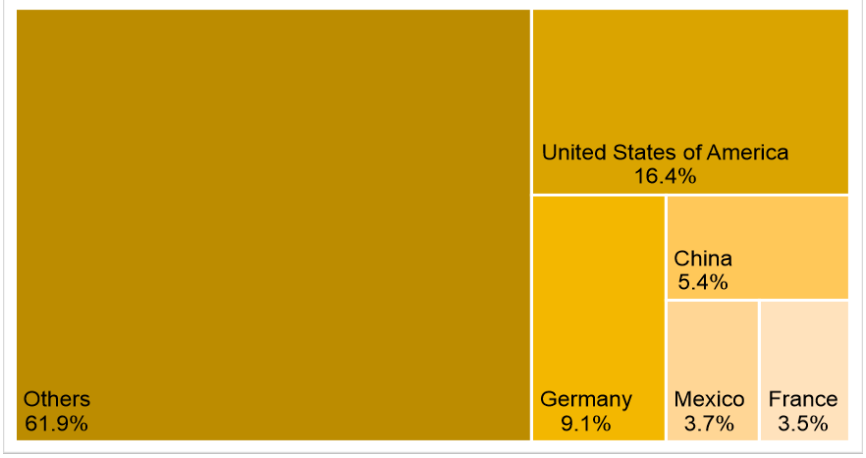


Figure: Top Importing Countries, 2019



Pakistan's Position in the Global Markets

Pakistan's cutlery and hand tools exports for the year 2019 were $113.9 M which is only around 0.17% of the global apparel export making it the 40th largest exporter globally. Cutlery and hand tools export make up 0.5% of the total exports of Pakistan.

Figure: Top 5 Export Destinations for Pakistan, 2019

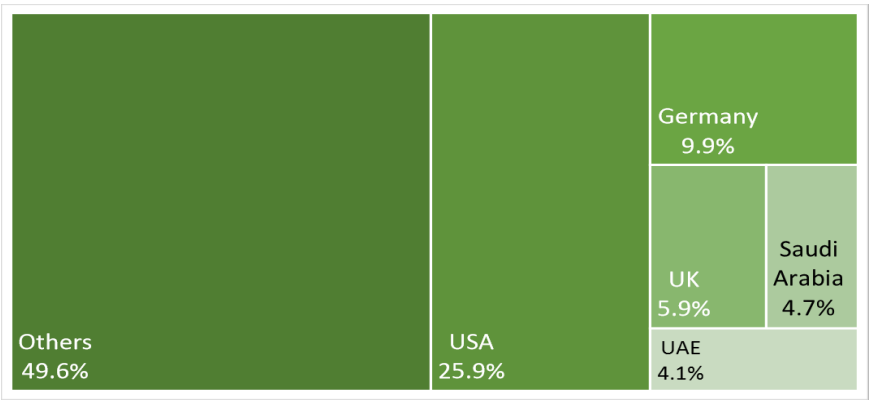
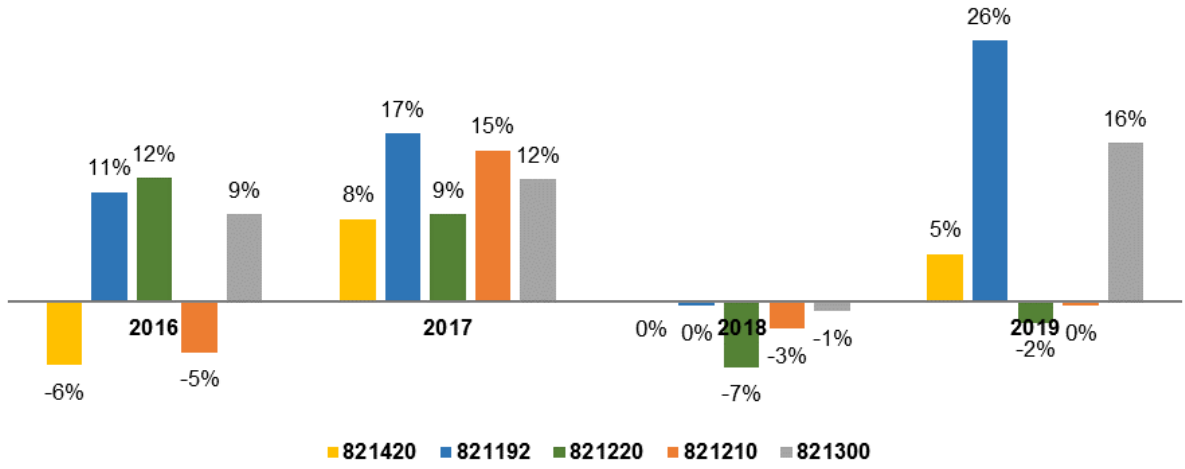


Table: Top 5 Exported Products of Pakistan

Product	Top Markets	Competitors	World Share
821420	USA, Germany, Mexico	China, Germany, South Korea	10.0%
821192	USA, Germany, Netherlands	China, Germany, Japan	0.5%
821220	Poland, USA, Mexico	Poland, Germany, Czech Republic	0.5%
821210	USA, Japan, UK	Poland, Mexico, China	0.4%

821300	USA, Germany, Japan	China, Germany, Taipei	1.0%

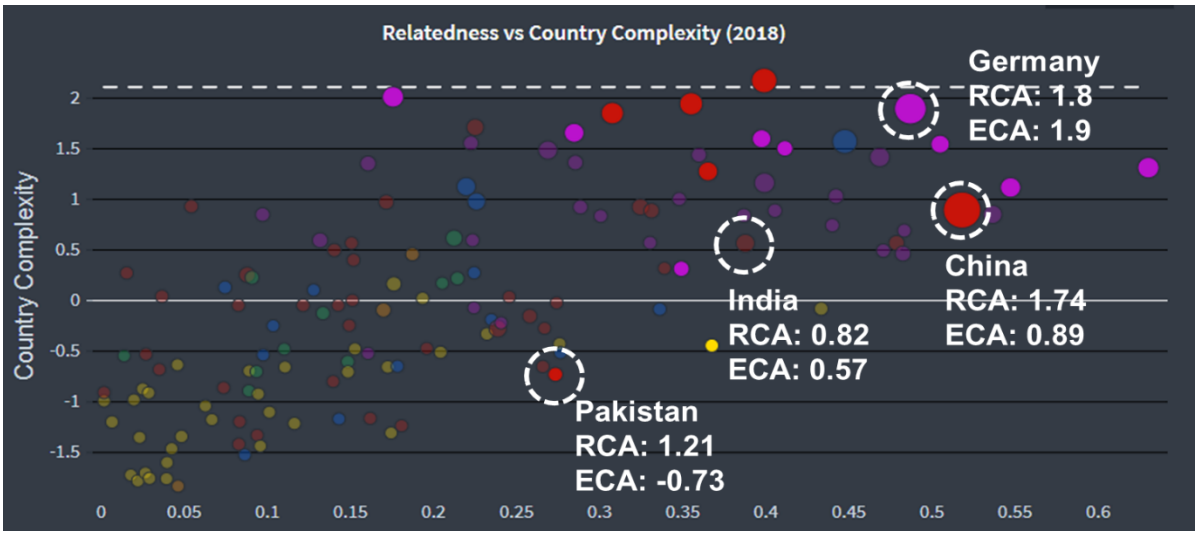
Figure: Year-on-Year growth rates for Top 5 Exported products of Pakistan



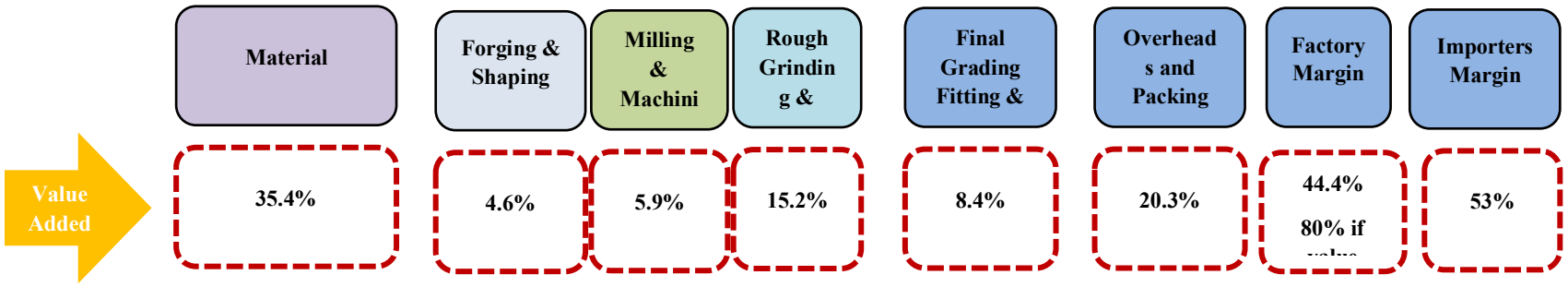
In 2018 the average tariff for cutlery and hand tools was 9.21%. The countries with the highest import tariffs are Iran (26.1%), Bermuda (25%), Bahamas (22.6%), Ethiopia (22.5%), and Sudan (21.7%). The countries with the lowest tariffs are Mauritius (0%), Hong Kong (0%), Singapore (0%), Switzerland (0%), and Norway (0%).

The Complexity-Relatedness diagram compares the risk and the strategic value of a product's potential export opportunities. Relatedness is predictive of the probability that a country increases its exports in a product. Complexity, depicted by the ECA, is associated with higher levels of income, economic growth potential, lower income inequality, and lower emissions. RCA indicates whether a country is in the process of extending the products in which it has a trade potential. Pakistan has a relatively good RCA however; the product complexity is very low which impedes the value of the product.

Figure 5: Product complexity of Pakistan in comparison to other countries

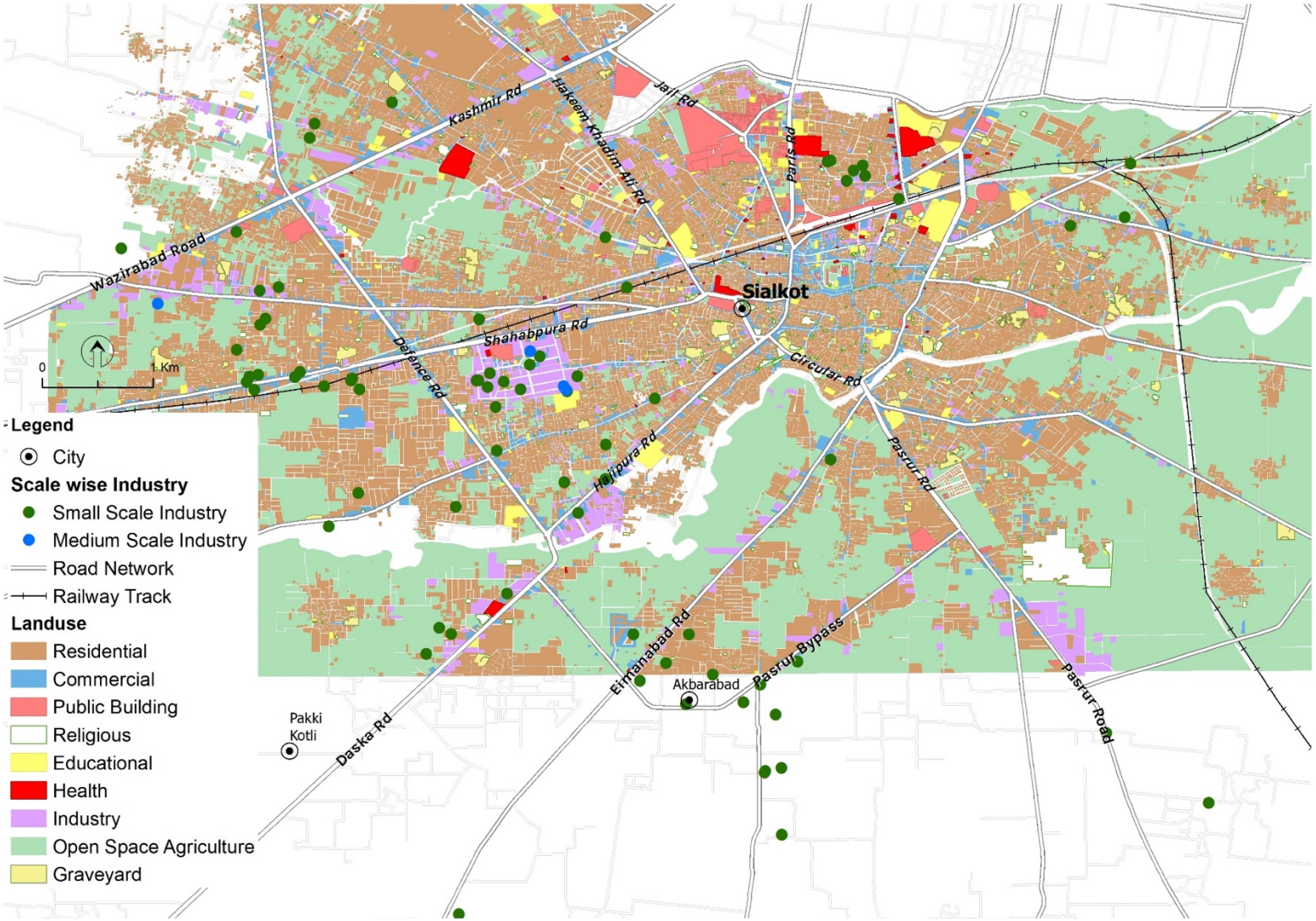

Relatedness vs Country Complexity (2018)
Country Complexity
2
1.5
1
0.5
0
-0.5
-1
-1.5
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
0.55
0.6
Germany
RCA: 1.8
ECA: 1.9
China
RCA: 1.74
ECA: 0.89
India
RCA: 0.82
ECA: 0.57
Pakistan
RCA: 1.21
ECA: -0.73

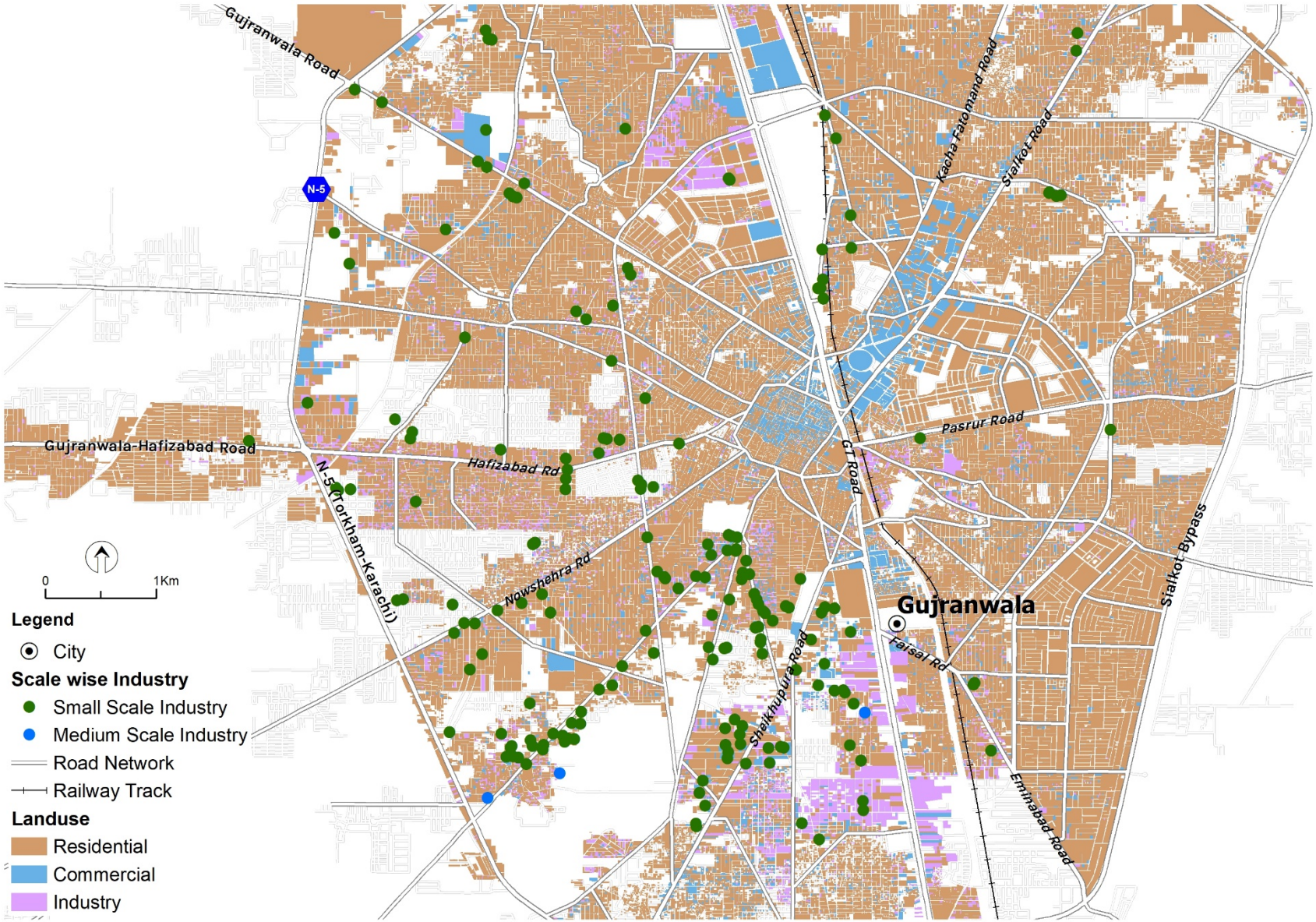
Value & Supply Chain



The availability of material and consistency in the quality of the material is a big issue. The prices are also extremely volatile. Most of the material for disposable instruments is purchased from Gujranwala. For more sophisticated equipment the material is normally imported Larger firms imports material themselves, whereas the medium to small ones rely mostly on vendors. Another issue here is that titanium import is banned and hence there is a shortage of good quality titanium. The titanium normally used is what is taken from ship break and is not of good quality. The issue of air bubbles in material also often crop up resulting in the wastage of the instrument.	Forging & Shaping: Forging is normally performed by hand Presses operated by workers. As the skill of the worker is extremely important it is common to find inconsistent forging. The average fault rate in Pakistan is 30% as compared to 1% in Germany. The overall wastage at this process is 5%. Furthermore, if forging is of good quality trimming costs can be saved. Milling and Machining: The technology is old and takes too much time to change parts and cutters etc. If better techniques are applied 3-4% time can be saved resulting in higher productivity. Rough Grinding: This is totally hand skill of the workers. Cannot easily automate as then only few products can be made. Labour is short in this area and wastage is anywhere between 5-7%.	Fitting & Setting of instruments is completely dependent on the skill of the worker. Extreme shortage of good workers. Polishing: Currently the industry use chemical based polishing techniques. This technique provides fast processing, however, is extremely hazardous for worker health.	Overhead costs mostly comprise of electricity. The high usage of generators has badly affected the costs of industry. 1KWh on generator costs Rs. 24, as compared to an average unit price from WAPDA of Rs. 12-13. Packaging is usually of low quality, hence products fetch low prices.	Value addition can significantly increase by improving worker skills, having better packaging product development, new designs and ore importantly shifting OEM designs to own designs and branding. Marketing is somewhat adequate for the sector.	Most of this value addition is due to retail presence and strong international branding.

Clusters Maps




Gujranwala-Road
N-5
Kacha Fatomand Road
Sialkot Road
Pasrur Road
GT Road
Sialkot Bypass
Gujranwala-Hafizabad Road
Hafizabad Rd
N-5 (Torkham-Karachi)
Nowshehra Rd
Gujranwala
Faisal Rd
Shaikhupura Road
Emminabad Road
0
1Km
Legend
City
Scale wise Industry
Small Scale Industry
Medium Scale Industry
Road Network
Railway Track
Landuse
Residential
Commercial
Industry

Issues & Challenges

Inputs	Innovation & R&D	Skills	Marketing	Finance & Taxation
⇒ Low quality of local composite steel. Imported steel used for products meant for exports is subject to 5% duty. ⇒ Food graded steel not being used for local products ⇒ Low investment capacity leads to outdated technology which results in lower production efficiency. Automated Chinese machinery is available in market but is expensive. ⇒ Polishing, cleaning, and packaging being done manually ⇒ State-of-the-art machinery available at GTDMC, which is nonoperational. ⇒ Expensive electricity and non-availability of gas	⇒ No product diversification. Manufacturing of only limited categories. ⇒ Outdated designs being replicated. Limited capacity for original design manufacturing. ⇒ Development of local raw materials remains a challenge due low to capacity for R&D. China has developed cheaper alloys of steel. ⇒ Lack of market research for product demand hence limited import substitution. ⇒ Specifically, for cutlery the materials available do not comply with stricter food grade material.	⇒ Poor pay & working conditions is moving labor to other sectors ⇒ High labour turnover rate. Labour keeps shifting firms. ⇒ Limited linkage of Cutlery & Small Tools Industry Service center in Wazirabad with industry. Capacity of institute insufficient to cater to industry needs for skilled labour. ⇒ Limited trades offered by TEVTA. Training only for CNC machines. Need on-site training for latest machinery. ⇒ Cutlery Institute of Pakistan in Wazirabad nonoperational. Has specialized machinery available for training labour.	⇒ Manufacturers unaware of export procedures and export potential. ⇒ Stiff competition from China in international market ⇒ Primitive marketing strategies employed. Limited online presence. ⇒ Only few major manufacturers have their own brands. ⇒ Majority of Manufacturers not aware of international seminars and trade fairs or consider participation costs unfeasible. ⇒ Low frequency of local trade expos and fairs. ⇒ Low focus on attractive packaging design.	⇒ Majority of firms operating informally to evade complicated taxation procedures and high cost of compliance. ⇒ 2% duty drawback rate needs to be increased. ⇒ Import duty of 20% has been insufficient to reduce inflow of imported products. ⇒ Project and short-term material financing not available to SMEs from commercial banks.

Recommendations

Inputs	Innovation & R&D	Skills	Marketing	Finance & Taxation
⇒ Lower duty on imported raw material to make products more competitive. ⇒ Develop a cheap local variety of food grade steel with support from academia. ⇒ Take measures to encourage firms to collectively acquire latest machinery to improve capacity. ⇒ Project based loans on low markup specific for upgradation of technology ⇒ Establishment of more common facilities with latest machinery	⇒ Permanent collaboration between academia and PCSUMEA for research on new materials and alloys ⇒ Identify in collaboration with PCSUMEA a list of 10 high-value products that can be replicated in local industry and support relevant firms to manufacture those products. ⇒ Operationalize and capacitate Cutlery Institute of Pakistan and provide AutoCAD design services to manufacturers at low cost to promote ODM.	⇒ Capacitate TEVTA and CSTISC, in particular, to provide onsite training to labour on specialized machinery through MOUs with firms. ⇒ Conduct training and awareness sessions for managerial staff for improving working conditions and reducing turnover. ⇒ Strength linkage between TEVTA and cluster through seminars and awareness sessions. ⇒ Introduce trades in CSTISC for supply chain operators to improve efficiency and implement latest techniques. Obligate	⇒ Facilitate establishment of local buying houses that will establish a brand to capture global market. Buying house to have latest packaging and branding techniques and machinery and should also facilitate firms in quality assurance and sourcing of raw materials. Strong marketing strategies to be employed. ⇒ Conduct awareness sessions to inform manufacturers regarding potential markets, marketing techniques, export requirements and product positioning.	⇒ Extend State Bank Rozgar scheme at 3% markup for Cutlery sector. ⇒ Introduce long-term financing scheme at low markup for technology and process. ⇒ Collaborate with commercial banks for provision of low markup for purchase of raw material. ⇒ Introduce one-window operations for tax procedures. ⇒ Increase import duty possible to 50% to curtail import of products. ⇒ Duty drawback rate should be increased to 20%.

Inputs	Innovation & R&D	Skills	Marketing	Finance & Taxation
⇒ Arrange seminars in collaboration with PCSUME Association to raise awareness regarding latest technologies and strategy to acquire them. ⇒ Arrange funded delegation visits to China for import of latest machinery.	⇒ Government should facilitate PCSUMEA in conducting market research on imported products and discuss findings to promote import substitution.	firms to nominate staff to partake training. ⇒ Introduce trades in AutoCad, polishing and cleaning, operation of belt grinders and die press. ⇒ Introduce certifications for skills leaned.	⇒ Facilitate better participation at international trade fairs by subsidizing participation costs. ⇒ Facilitate manufacturers to sell products through Amazon	⇒ Rebate on exports of cutlery and kitchenware should be increased to 9%.

Way Forward

Development of Composite Materials Lab: Establishment of a material lab in Wazirabad to maintain quality control and conduct awareness seminars to disseminate information regarding best possible alternative sources of raw material. Objective is to ensure quality and availability of raw material at controlled prices. Availability of raw material at competitive price, increase in output, quality standards and reduction in the cost & time for material testing.

Technology Upgradation: Operationalization of Gujranwala Tools, Dies and Moulds Centre (GTDMC) by allocating funds. Raise awareness among firm owners regarding level of technology available at the center and how it can enhance productivity and exportability of products. This would provide enhanced facilities to firms to increase productivity and exportability. Smaller firms will be able to compete with international brands.

Enhancing Marketing Opportunities: Establishment of expo center in vicinity of cluster where annual expos and trade shows can be held to promote the local products and brands. This would provide a platform for the small & medium firms to market their products and in return increase share of export.

Business Support Center: Establishment of business support centers in the cluster that provides knowledge and support in key areas related to international sales through e-commerce platforms. Product platforms like Amazon FBA, Ali Baba, OLX and other sourcing platform where local producers can sell in international markets through utilization of already established e-commerce platform at low costs. Local representatives are trained that spread in the area to provide knowledge of marketing and alternate ways to make sales. Representatives to be footloose and supported by central mechanism that provides insights & market intelligence on opportunities. On ground advice on standardization of products, international market requirements, export procedures, packaging requirements (with materials) and support in compliance with international requirements. Center will also house IT center, packaging center, meeting rooms and other key elements to support local micro and small enterprises.

Wearing Apparel

1.6. Wearing Apparel

Overview

As per the HS coding system, HS code 61 and 62 make up the wearing apparel sector. As of 2019, wearing apparel commanded 57.5% of the global textile exports accumulating to $ 470.7 billion. The sector makes up 2.5% of the global trade. Globally, exports of the wearing apparel sector are growing at a rate of 4.7% annually since 2010 and only 1.9% since 2015.

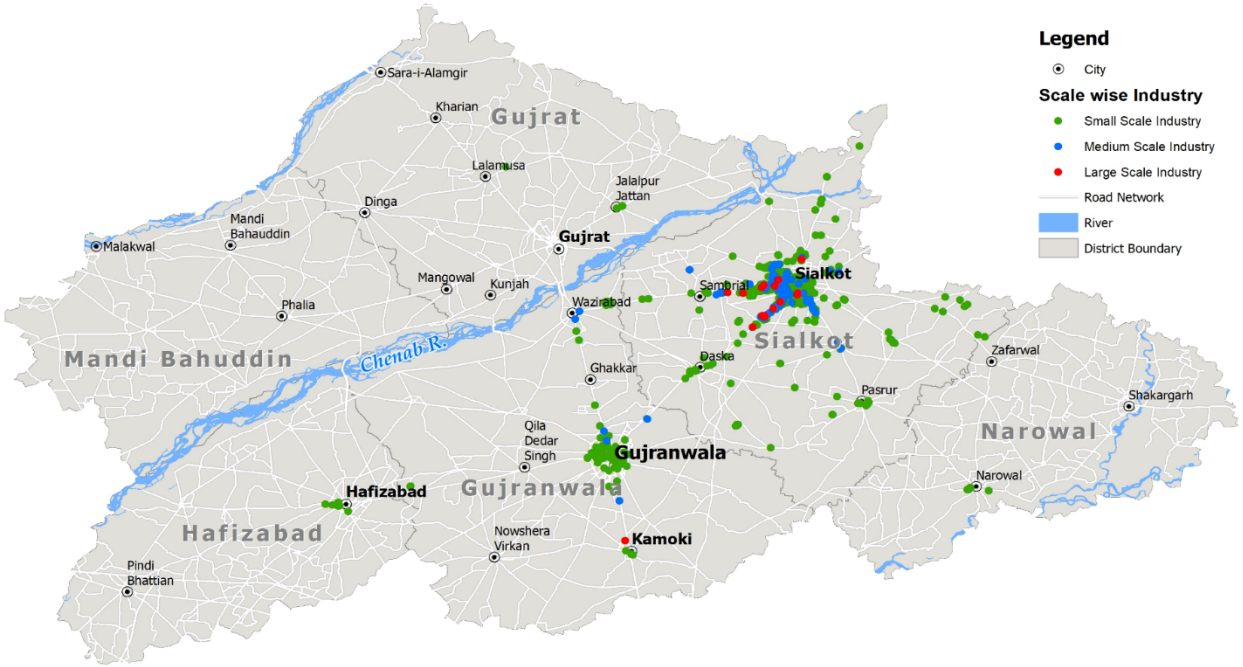
73.5% of the wearing apparel firms in the division are in Sialkot city, 10.8% in Gujranwala city and 5.2% in Daska. Sialkot is considered to be the hub of wearing apparel manufacturing in Punjab and much of the produce is exported. More than 65% of the wearing apparel firms in Sialkot district are export reporting firms. Other major wearing apparel clusters in Punjab exist in Faisalabad with 555 firms, Lahore with 387 firms and Multan with 357 firms.

In Gujranwala, 89% of firms are small and 9% are medium scale. 1% of firms are large scale i.e., employing more than 250 employees.

2,500 Total Firms in Punjab

0.13 M Total Employment in Punjab

46%	27%
Firms in Gujranwala	Employment in Gujranwala



Export Market

Sports goods industry of Pakistan plays a vital role in international trade of sports goods, the sports goods industry comprises of 4% of the total exports of Pakistan. Pakistan is exporting a large portion of its sports goods from Sialkot to international famous brands like Adidas, Nike, Puma, Lotto, Umbro, Mitre, Micassa, Diador, Wilson and Decathlon

Figure: Top Importing Countries, 2019

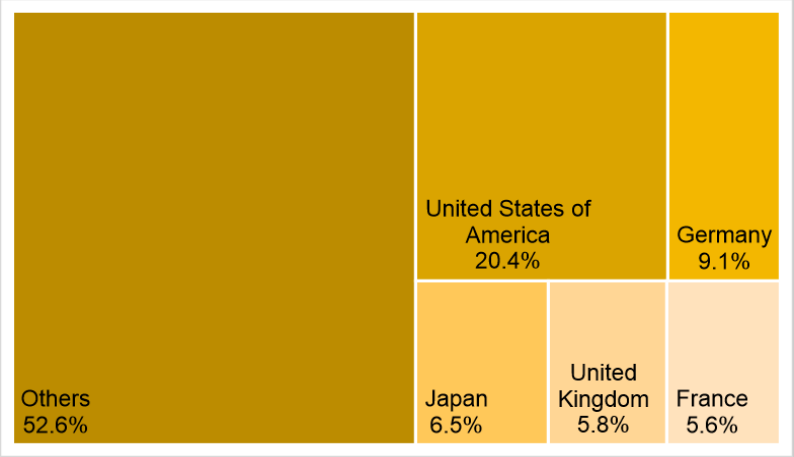
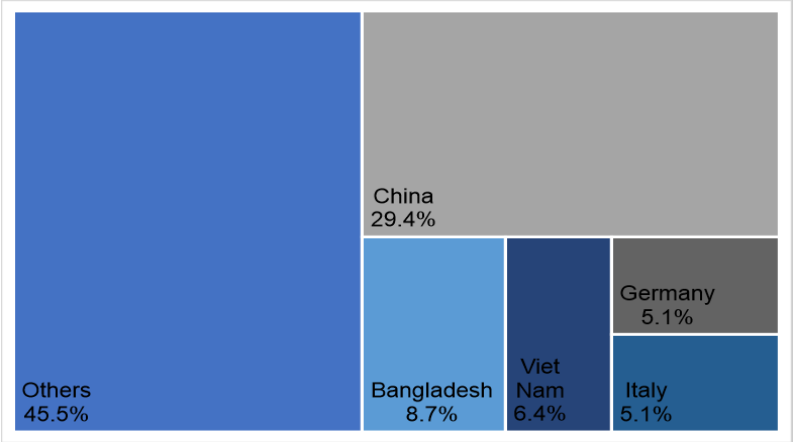


Figure: Top Exporting Countries, 2019



In 2018 the average tariff for apparel was 23.6%. The countries with the highest import tariffs for Apparel and clothing accessories; knitted or crocheted are Iran (100%), Syria (72.9%), Bolivia (38.4%), South Africa (37.3%), and Sudan (35%). The countries with the lowest tariffs are Mauritius (0%), Hong Kong (0%), Sri Lanka (0%), Maldives (0%), and Singapore (0%).

Pakistan's Position in the Global Markets

Pakistan's Apparel exports for the year 2019 were $5.8 B which is only around 1.2% of the global apparel export making it the 17th largest exporter globally. Wearing apparel export make up 40% of the total textile exports of Pakistan. Pakistan's exports of wearing apparel is growing at a rate of 6.8% annually in the past five years.

Figure: Top 5 Export Destinations for Pakistan, 201

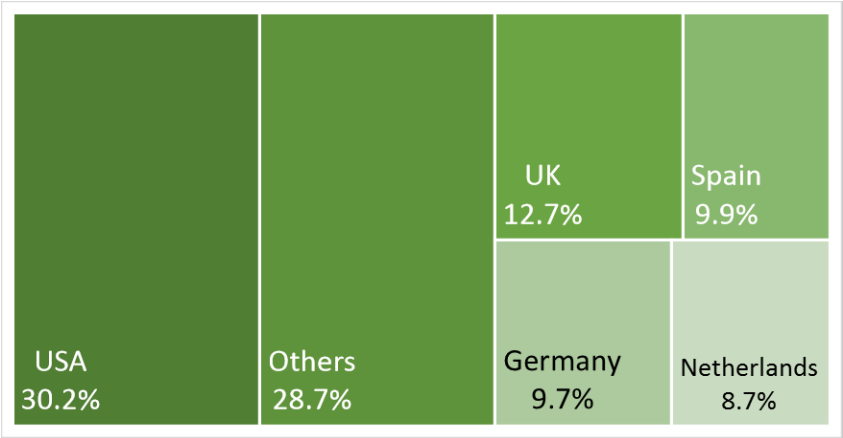


Table: Top 5 Exported Products as %age of

HS Code	Product	%age	2018-19 Growth Rate
620322	Men's or boys' ensembles of cotton	27.7%	5%
620342	Men's or boys' trousers, bib and brace overalls, breeches and shorts, of cotton	6.9%	14%
610590	Men's or boys' shirts of textile materials, knitted or crocheted	5.6%	-2%
611090	Jerseys, pullovers, cardigans, waistcoats and similar articles, of textile materials, knitted or crocheted	5.5%	20%
610910	T-shirts, singlets and other vests of cotton, knitted or crocheted	5.4%	29%

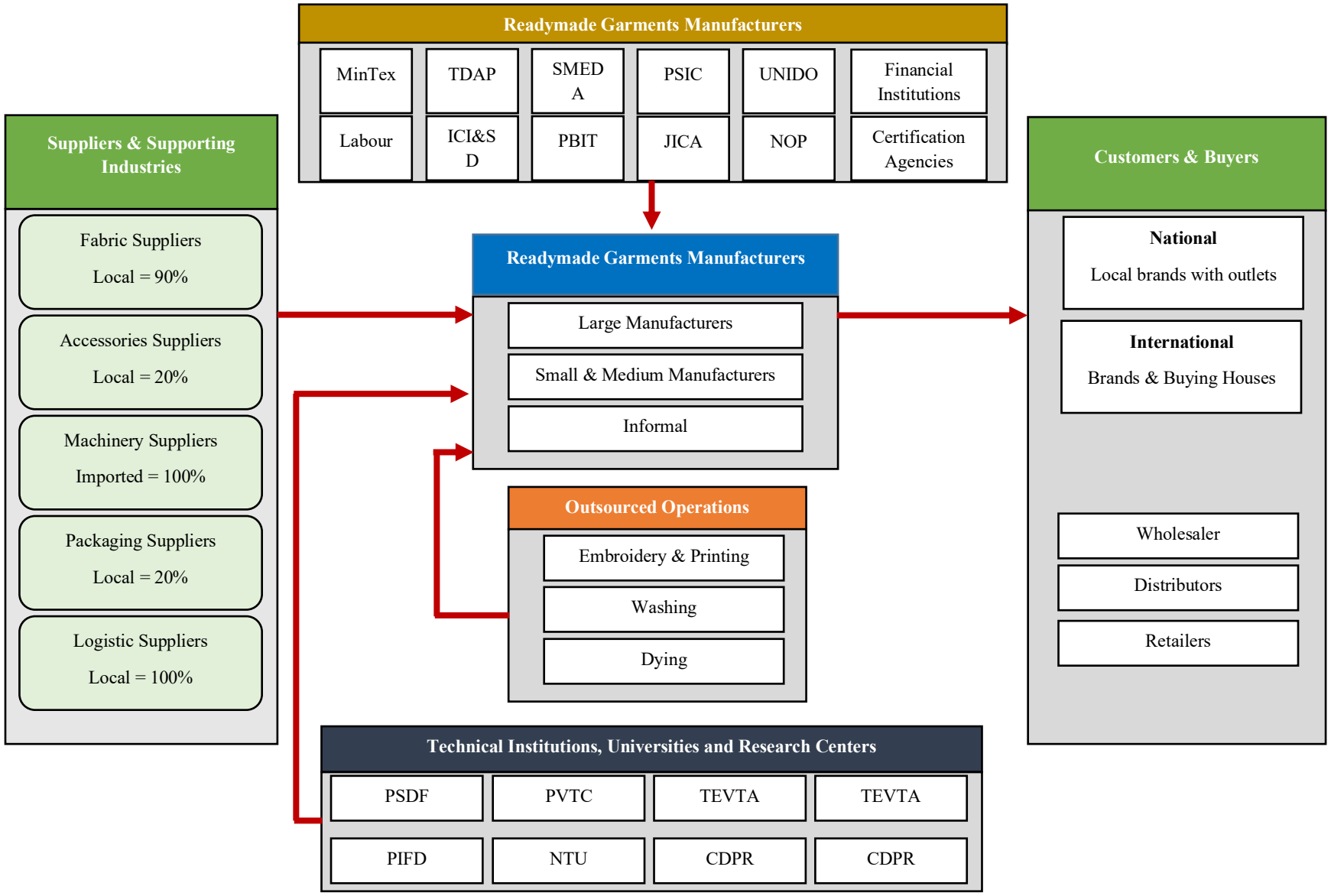
Pakistan's apparel sector stands to benefit from the CPEC as well as FTA-II. 91 of the 313 products given zero duty export status are from the apparel sector including some of Pakistan's top apparel product exports to China. Considering the trade war between the US and China, many firms are also considering outsourcing production from China to South Asia. Lower wages and a relatively complete cotton supply chain affords Pakistan the opportunity to enter into joint ventures (JVs) with Chinese partners. This would allow local

producers to accumulate expertise and generate greater value addition, as the final product would be exported from Pakistan.

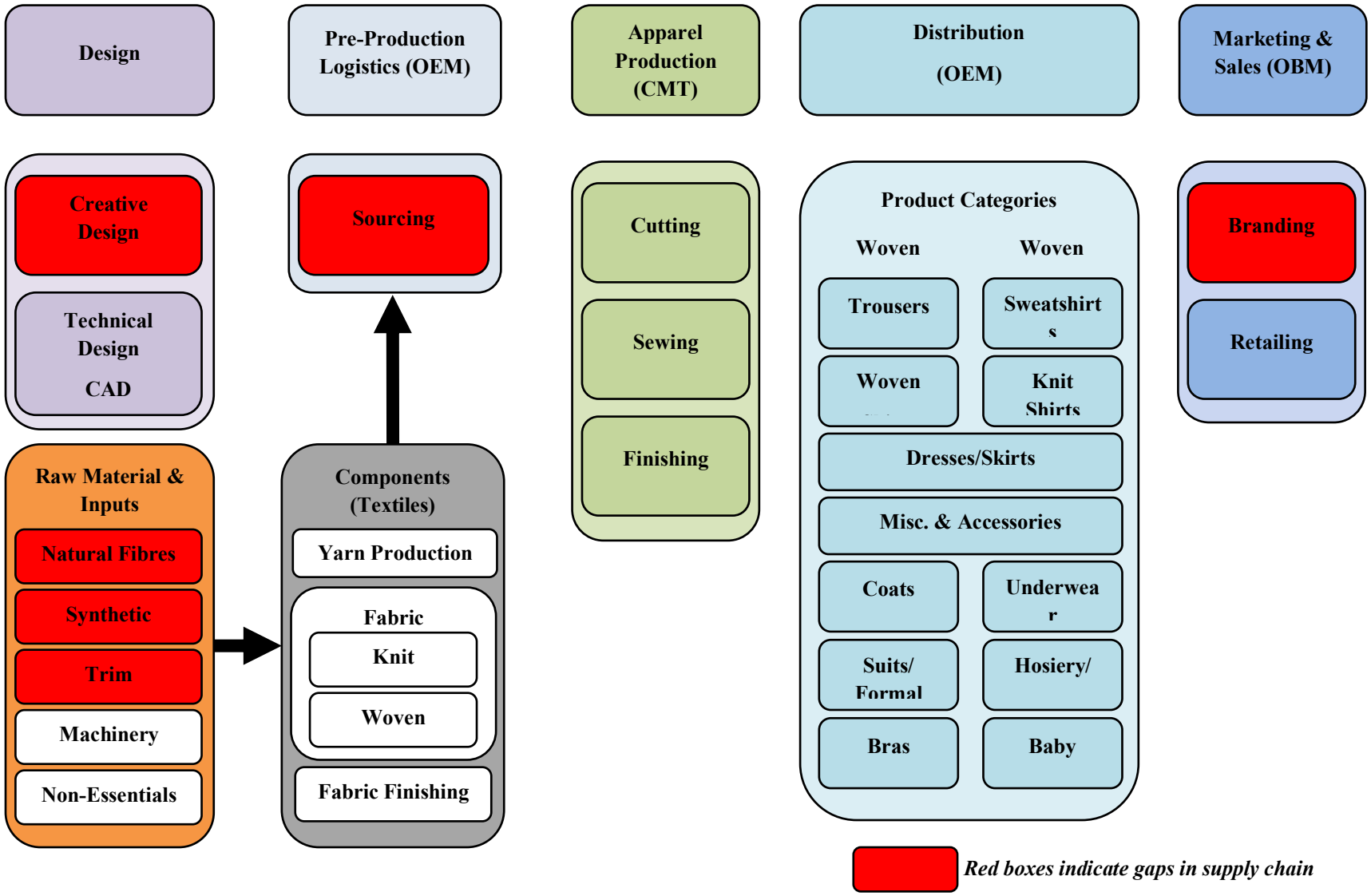
Pakistan also offers the advantage of better access to European markets through its Generalized System Preferences (GSP+) status. It is possible that international or even Chinese brands can make cotton-based garments in Pakistan and export to China.

The US-China tariff issues have made Pakistan a good option, as China can bypass tariffs on Chinese manufactured apparel via Pakistan. The CPEC multi-modal (rail, road, sea) transport infrastructure can facilitate this.

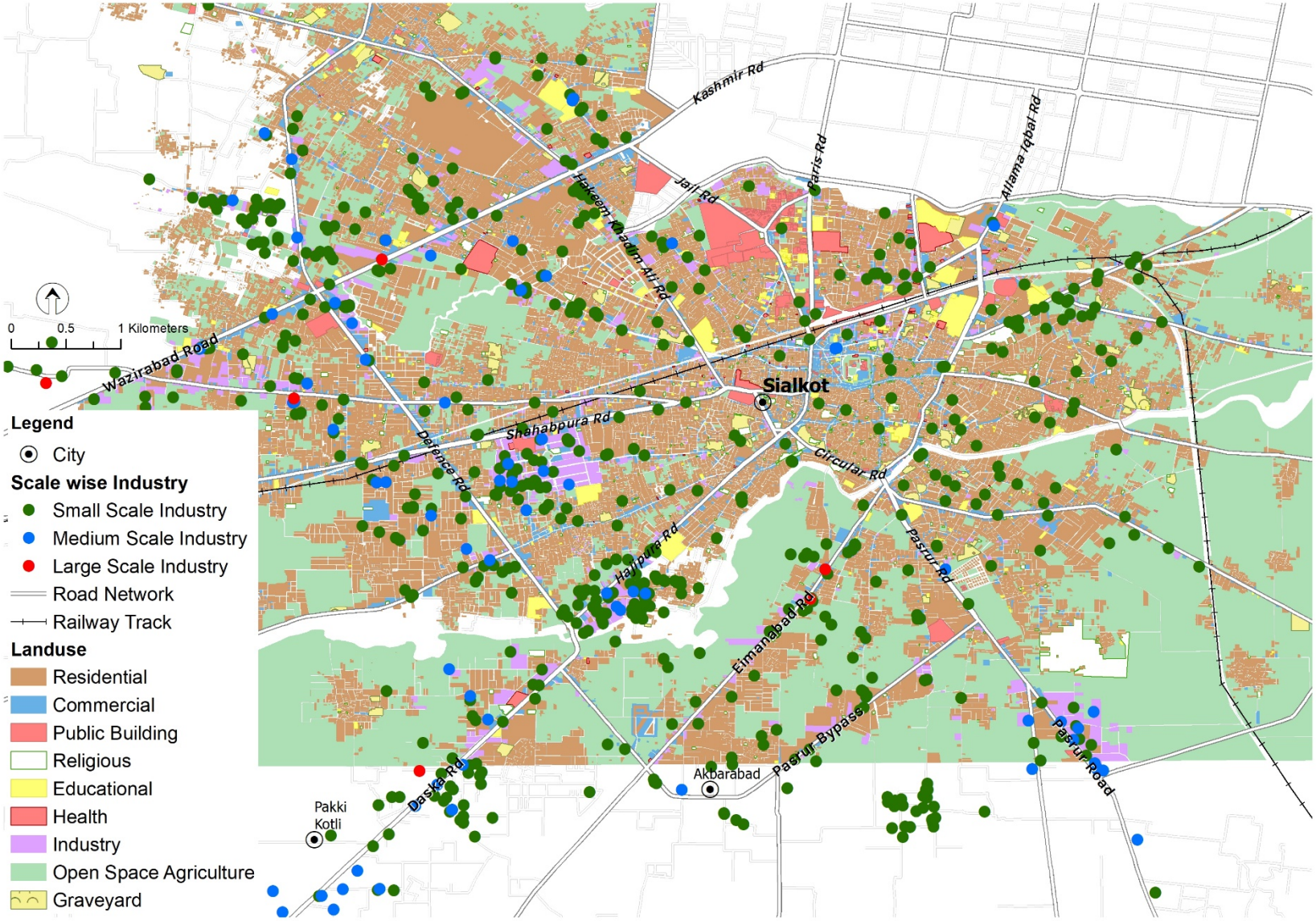
Supply Chain

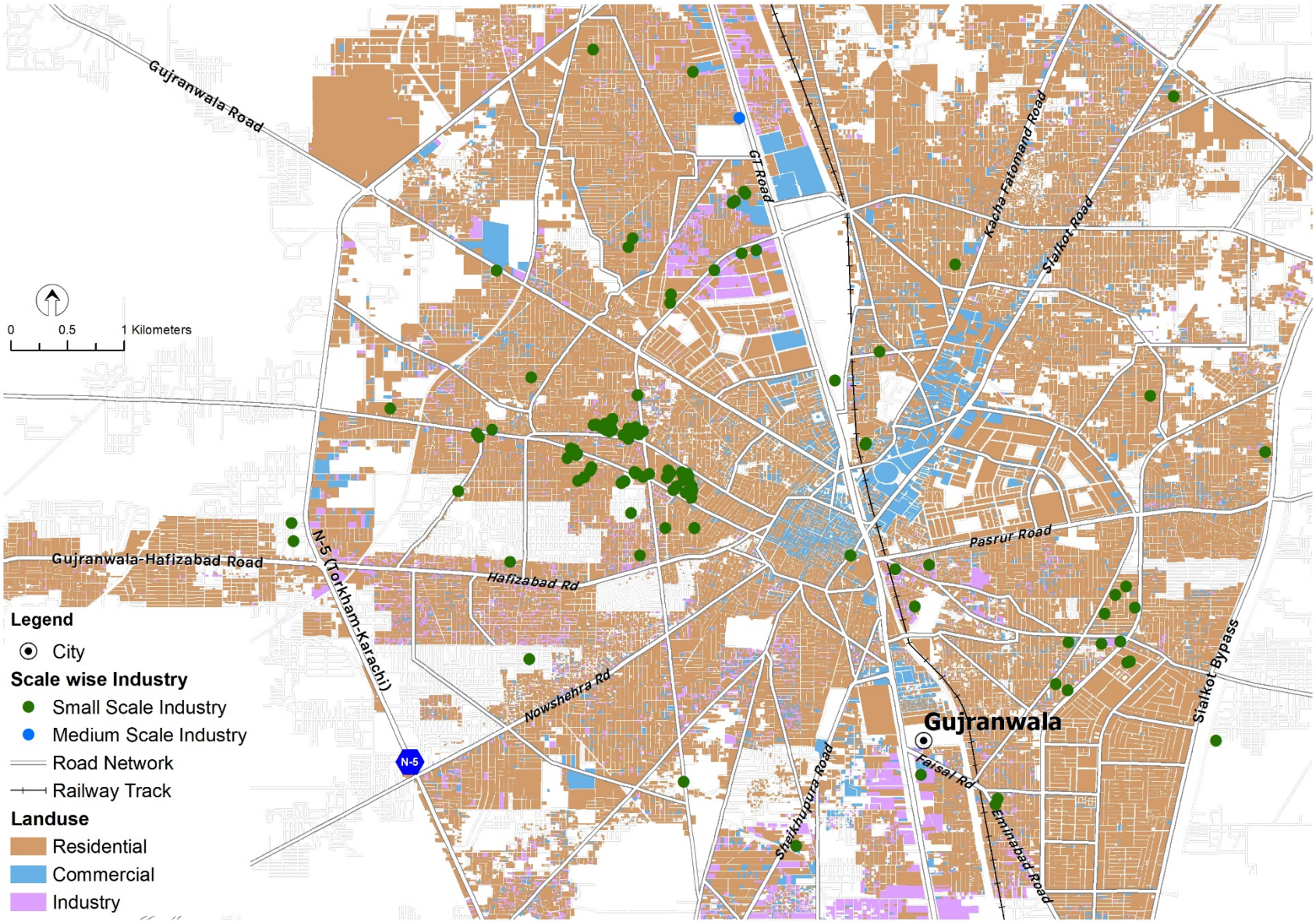


Value Chain


Design
Pre-Production Logistics (OEM)
Apparel Production (CMT)
Distribution (OEM)
Marketing & Sales (OBM)
Creative Design
Technical Design
CAD
Sourcing
Cutting
Sewing
Finishing
Product Categories
Woven
Woven
Trousers
Sweatshirts
Woven
Knit Shirts
Dresses/Skirts
Misc. & Accessories
Coats
Underwear
Suits/ Formal
Hosiery/
Bras
Baby
Branding
Retailing
Raw Material & Inputs
Natural Fibres
Synthetic
Trim
Machinery
Non-Essentials
Components (Textiles)
Yarn Production
Fabric
Knit
Woven
Fabric Finishing
Red boxes indicate gaps in supply chain

Clusters Maps




Gujranwala Road
G T Road
Kacha Fatomand Road
Sialkot Road
0
0.5
1 Kilometers
Gujranwala-Hafizabad Road
N-5 (Torkham-Karachi)
Hafizabad Rd
Pasrur Road
Nowshehra Rd
N-5
Gujranwala
Faisal Rd
Sialkot Bypass
Sheikhupura Road
Emirabad Road
Legend
City
Scale wise Industry
Small Scale Industry
Medium Scale Industry
Road Network
Railway Track
Landuse
Residential
Commercial
Industry

Challenges and Issues

Inputs	Innovation & R&D	Skills	Branding
⇒ Low quality yarn and fabric produced, and production is decreasing. Raw materials have to be imported. ⇒ Increasing cost of cotton ⇒ MMFs have to be imported ⇒ Export of quality fabric without value addition ⇒ Poor support industry for zippers, buttons and other accessories ⇒ Cumbersome importing mechanism of accessories and artificial fibers ⇒ Dated production techniques lead to high defect rates and low efficiency	⇒ Weak R&D infrastructure means integration into new product categories limited – Low diversification ⇒ Weak industry academia linkage ⇒ Companies not investing in R&D due to lack of resources ⇒ Lack of creativity and capacity to match international designs	⇒ Shortage of skilled workforce ⇒ Owners, managers and supervisors lack technical training ⇒ Lack of skills in design and marketing ⇒ Weak linkages between technical training institutes ⇒ Existing training institutes are not well equipped with teachers, training courses and material.	⇒ Absence of Brands at the international level ⇒ Very less direct selling for SMEs ⇒ Buying houses/ middlemen take major share of the profit for large firms ⇒ Lack of trained marketing professionals ⇒ Lacking production and market diversification ⇒ Strong price competition among firms both globally and locally ⇒ Poor Marketing strategies

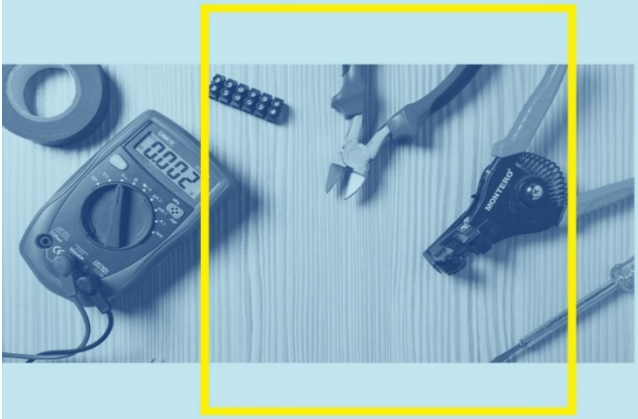
Way Forward

Development of Composite Materials Lab: Establishment of a hi-tech material lab to develop man-made fiber varieties.to ensure availability and reduce cost of raw materials for wearing apparel sector. The project will benefit industry by ensuring availability of raw material at competitive price, increase in output, import substitution and enhanced exportability of products.

Development of Design District: Development of a common design house for small and medium firms having design professionals providing minimum charge facilities to these firms. The objective is to develop a conducive environment for the designing and innovation. The design district will house designers, innovators, and prototyping centers with modern equipment. It would help graduate firms from CMT to ODM and ODM categories. It would facilitate in development of innovative designs to cater to the international market for specific product categories not demanded in Pakistan. The most suitable location would be Lahore because its spillover effect will be for whole northern Punjab. Sialkot city can have a linked center with that district, as sub-campus/office.

Skill Upgradation: Enhance industrial linkages to TVET institutes in Sialkot city and conduct market survey for assessment for skills demand. Demand based trainings will improve the employability of TVET graduates and overall productivity of sector. The skill gap persistent in the sector will be reduced and skilled labour will enhance the ability to diversify products. Alternate models for subsidizing the training component by private sector firms may also be leveraged. Skill recognition and standards framework need to be upgraded as per requirements of the private sector.

International Business Center: Establishment of international business centers in the cluster with state of the art business and commerce facilities. Easy model of leasing and off shore office management would attract international businesses to have their field offices in the cluster. Business center will have modern hotel and lodging facilities as well.



Electrical Equipments

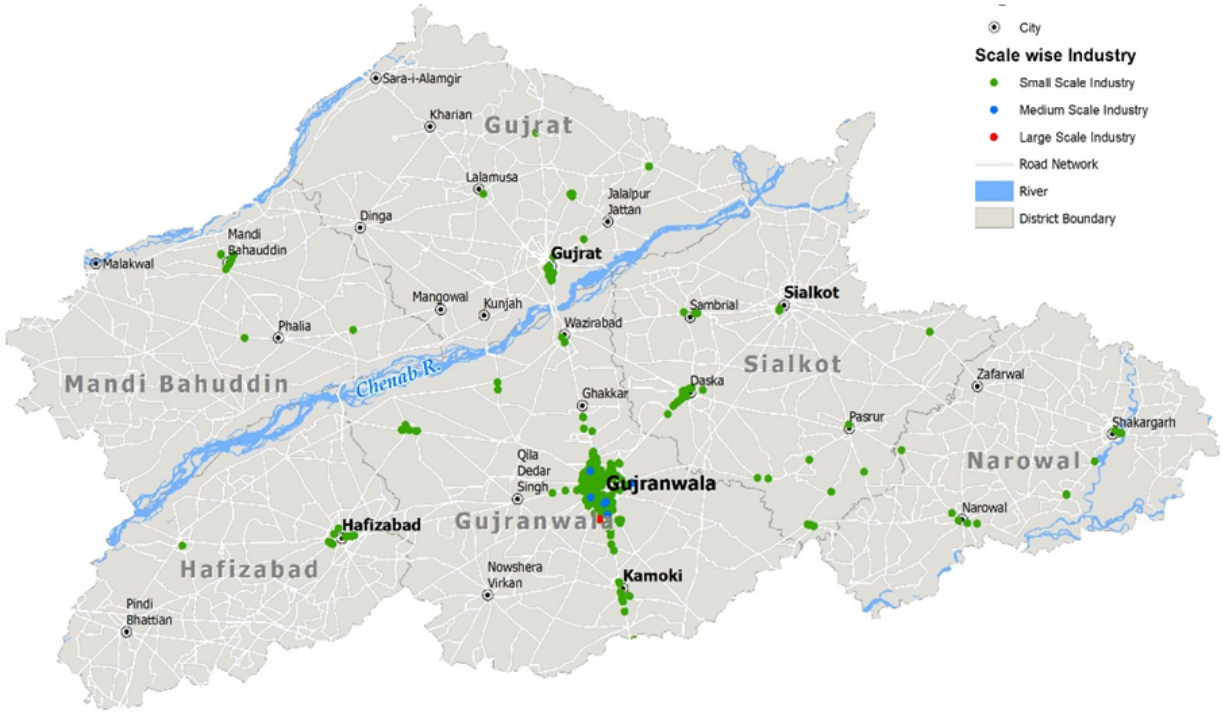
1.7. Electrical Appliance & Equipment

Overview

Gujranwala is famous for producing Domestic electrical appliances. Electrical appliances industry originated from fan and metal industries. Metal and steel products were being produced in Gujranwala since early times and Gujrat was famous for producing fans, with the passage of time skills transferred from Gujrat to Gujranwala and industry evolved into Domestic electrical appliances industry. Industry got real momentum in 70s.

Main markets for metal in Pakistan are Gujranwala, Lahore and Karachi. Materials like evaporator, condenser, compressor, ball bearing etc. are majorly import from china The Gujranwala domestic electrical appliances industry purchases local & imported raw material from local market on cash or credit The number of machine manufacturers and suppliers are present in Gujranwala.

Almost 81% of the units are using locally manufactured machine, whereas remaining units are using second-hand imported machine which are imported through local suppliers. Importers of these machines are mainly based in Lahore. 45% firms of this sector are in this this division. Considering the low technology and labor-intensive aspects of this sector; its one of the key economic driver in semi-skilled labour sectors of the industry.



	Total	Small	Medium	Large
Punjab Firms	1073	1009	49	15
Employment	24472	12133	5388	6951
Gujranwala Firms	485	476	8	1
Employment	6025	4814	711	500

1.1.3.

Product Categories

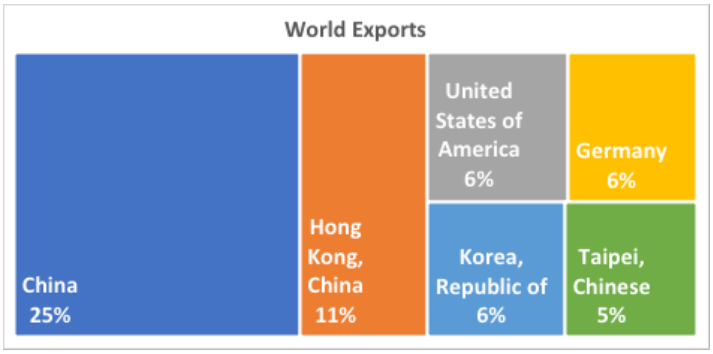
Industry of Gujranwala is engaged in producing fans, washing machine, spin dryer, room air cooler, stabilizers, tube lights fittings, electric heaters, electric geysers, ovens, furnaces, stepping press or cutting press, winding machines, varnishing baking, cylindrical grinding machine, lathe machine, drilling machines, welding machines, and air compressors.

Export Market

As per the HS coding system is 85. In 2018, Electrical machinery and equipment and parts thereof; such articles were the world's 1st most traded product, with a total trade of $2.55T. Between 2017 and 2018 the exports of Electrical machinery and equipment, parts and accessories of such articles grew by 3.1%, from $2.47T to $2.55T. Trade in Electrical machinery and equipment and parts thereof; sound recorders and reproducers; television image and sound recorders and reproducers, parts and accessories of such articles represent 13.9% of total world trade.

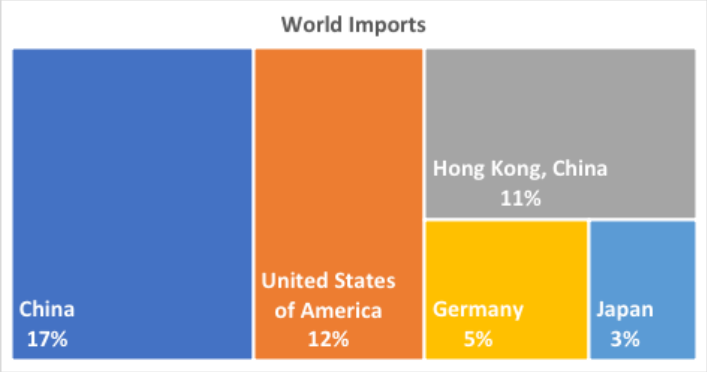
In 2019 the top exporters of Electrical machinery and equipment; television image and sound recorders and reproducers, parts and accessories of such articles were China ($740B), South Korea ($186B), Germany ($162B), Chinese Taipei ($162B), and United States ($142B).

Figure: Top Exporting Countries, 2019



In 2019 the top importers of Electrical machinery and equipment; television image and sound recorders and reproducers, parts and accessories of such articles were United States ($338B), Hong Kong ($319B), China ($264B), Germany ($153B), and Japan ($89.3B).

Figure: Top Importing Countries, 2019

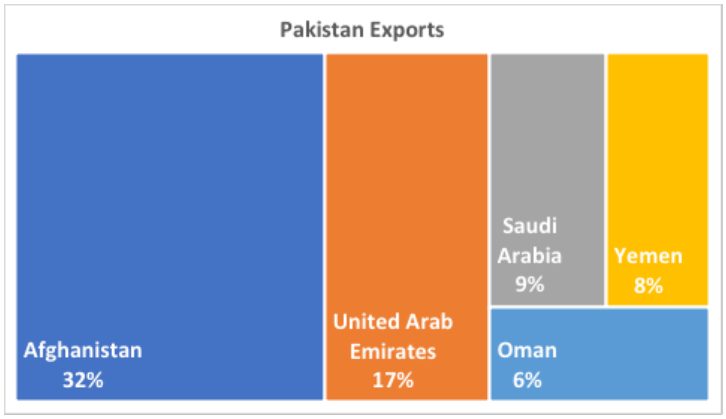


Pakistan's Position in the Global Markets

Pakistan's products are not competitive in the international markets for exports, however Pakistan has growing economy with large population. This offers immense potential for import replacements and also to start out as regional players. OEM based production can offer significant gains to Pakistan as supplier in the region.

MENA is key market of Pakistan products as shown in chart below:

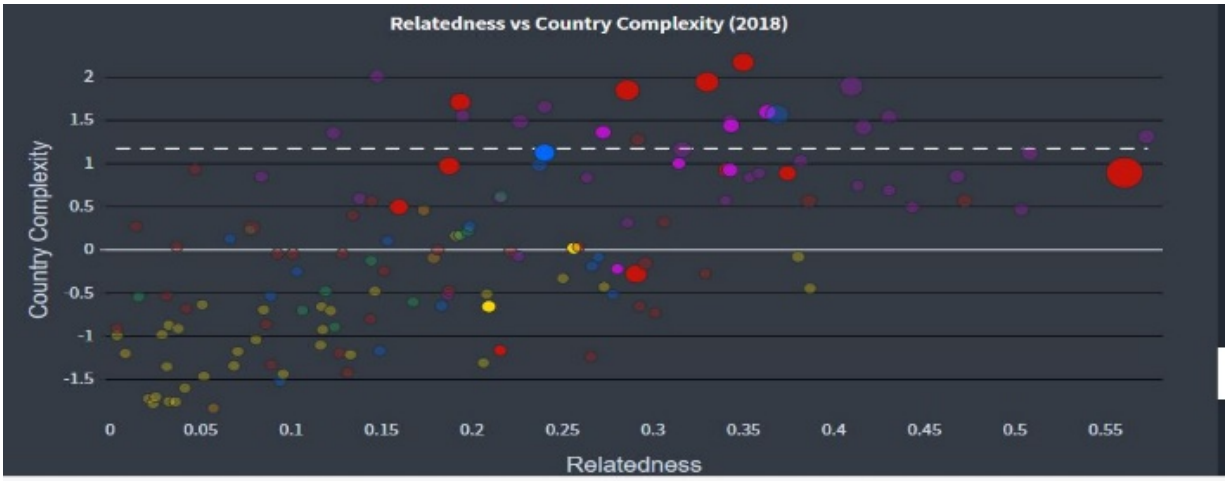
Figure: Top 5 Export Destinations for Pakistan, 2019



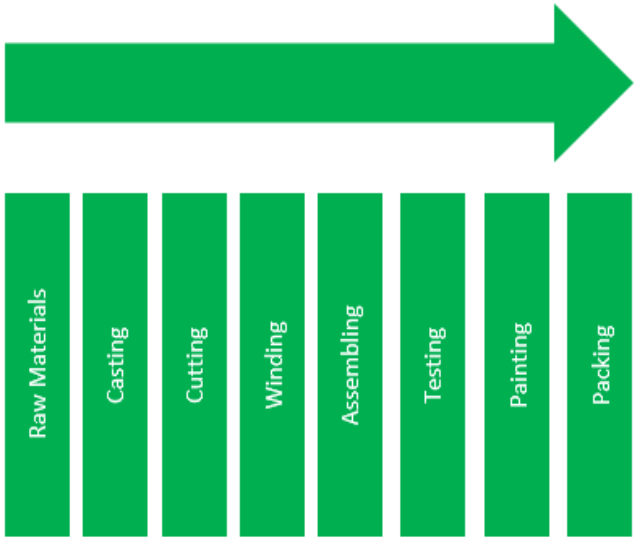
China is kind of sole supplier to Pakistan for finished products. As the Chinese firms are moving up the value chain, it offers potential opportunity for Pakistan and especially Gujranwala cluster to enter into JVs with Chinese counterparts. A local production hub for international products that is supplying to regional markets.

Figure: Top 5 import Destinations for Pakistan, 2019.

The Complexity-Relatedness diagram compares the risk and the strategic value of a product's potential export opportunities. Relatedness is predictive of the probability that a country increases its exports in a product. Complexity is associated with higher levels of income, economic growth potential, lower income inequality, and lower emissions.

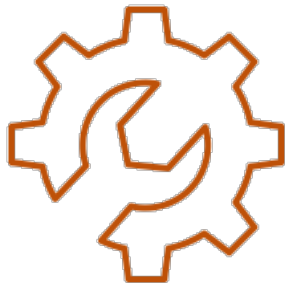
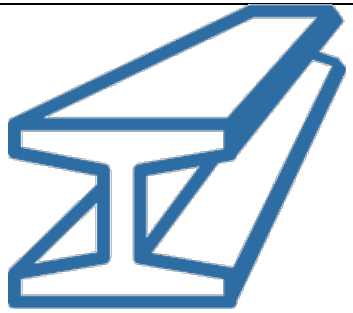


Value Chain

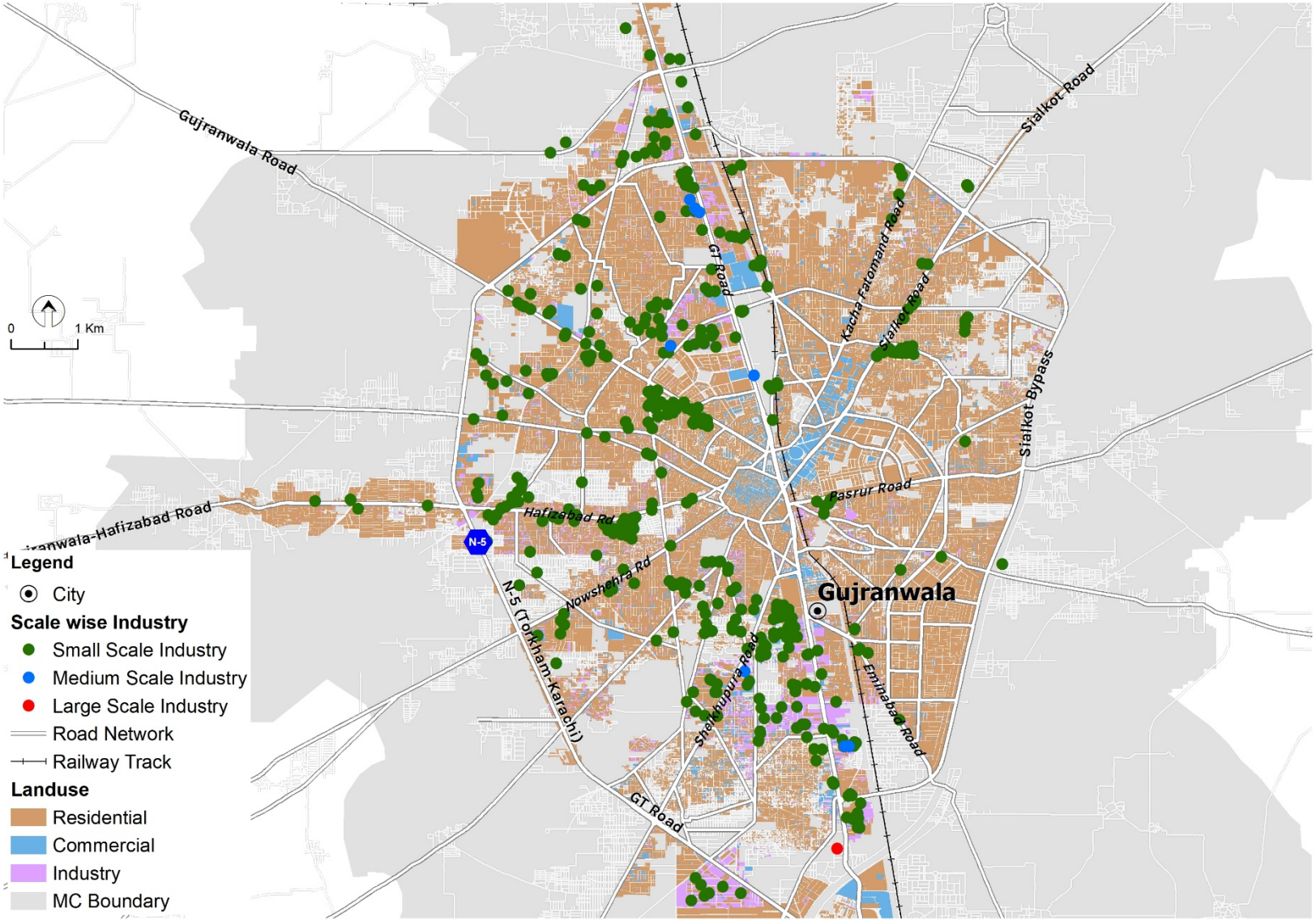


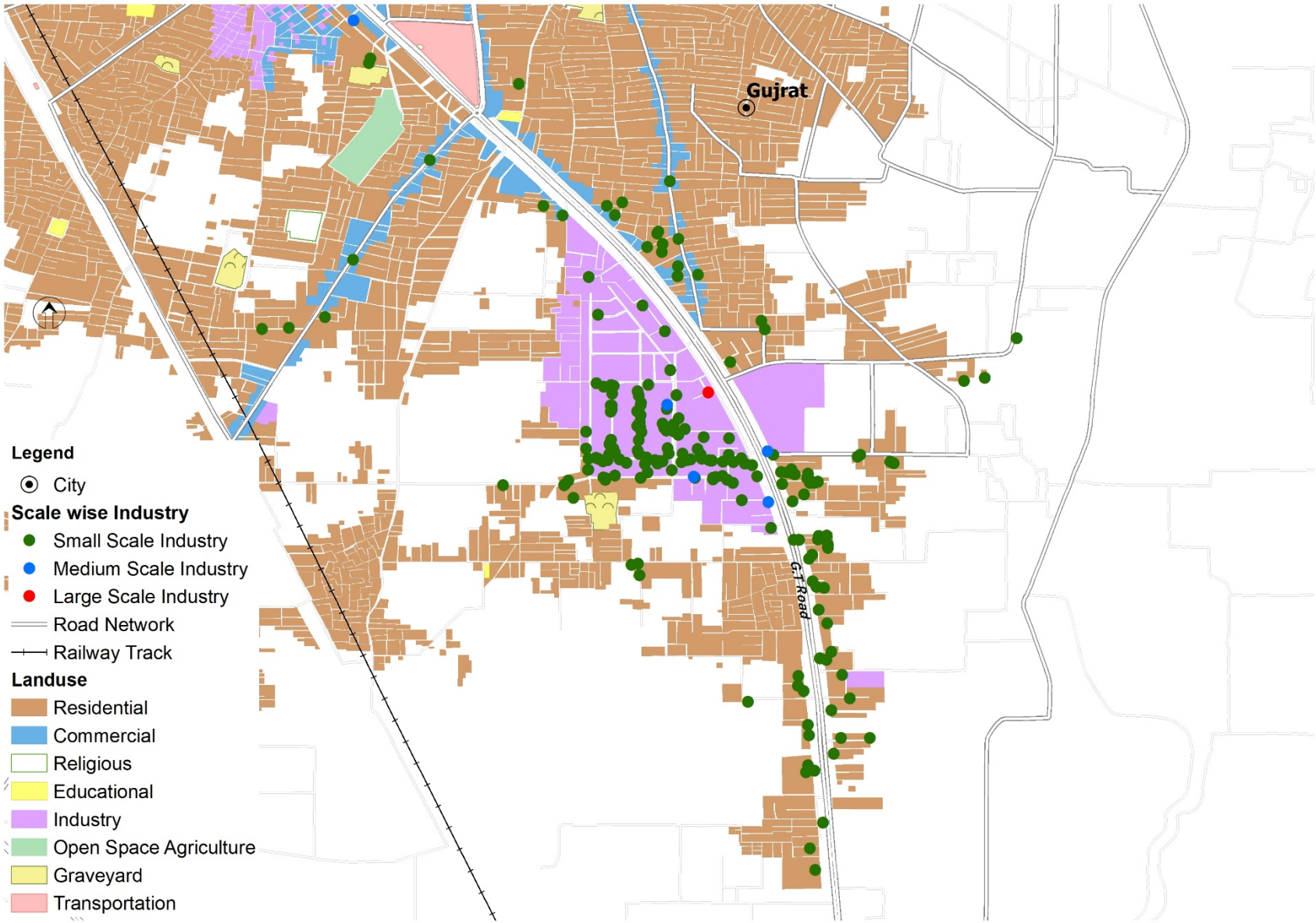
- ✓ Casting is the shaping of metal by melting and pouring the molten metal into a mold.
- ✓ Domestic electrical appliances made by metal sheets require sizing and shaping of sheets through power cutting and stepping press.
- ✓ Winding is the process of coiling the enameled copper wire in the slots of core of electric fields.
- ✓ Winded copper is then varnished and baked in the oven for drying to avoid for short circuits.
- ✓ For assembling it requires customization of parts.
- ✓ Grinding, drilling machines, welding etc. are used to finish the products Finished products are tested.
- ✓ Products are painted to form a final shape of finished product using powder coating and enamel techniques. Finally, products are packed and dispatched to customer

Supply Chain

	Machines like winding machines are imported as new machines. Other machines are second-hand imports which are repaired for local use. The machine manufacturers also provide the other services like technical consultancy and machine repairing.
	The raw material for these items includes metal sheets, aluminum, winding papers, wires, router stator, plastic, different chemicals and spare parts etc. Large number of suppliers are present in Gujranwala supplying local and imported raw material to the industry. Gujranwala, Lahore, and Karachi are main metal markets.
	Materials like evaporator, condenser, compressor, ball bearings are also imported from different countries especially from china. Raw material for these items include metal sheets, aluminum, winding papers, wires, rotor stator, plastic, different chemicals and spare parts

Clusters Maps




Gujrat
G.T Road
Legend
City
Scale wise Industry
Small Scale Industry
Medium Scale Industry
Large Scale Industry
Road Network
Railway Track
Landuse
Residential
Commercial
Religious
Educational
Industry
Open Space Agriculture
Graveyard
Transportation

Challenges and Issues

Inputs	Technology	Skills	Market
• High price of good quality raw material • Huge fluctuations in material prices • Inadequate supply & high energy costs • Lack of awareness about latest material trends and their usage in international market. • Labor turnover and accessibility is a major problem due to inconsistent nature of demand. • High taxes on import of machinery	• Majority of the industry still uses conventional machinery • Use of obsolete printing, lamination and cutting technology. • No technology acquisition mechanism • Poor production practices leading to lower productivity • Lack of availability of support services • Absence of testing and accreditation facilities • Weak R&D infrastructure • Lack of in-house product and material testing facilities	• Lack of availability of skilled labor trained in modern production techniques. • Lack of training facilities in labor class in production field.	• Lack of local brands and its competitiveness internationally. • Lacking production and market diversification • Poor Marketing strategies for international marketing • Limited direct selling to end consumers • No preparation to tap new markets through CPEC • Loosing market share due to lack of adoption in latest technology

Recommendations

Financial	Technology	Skills	Raw Material	Logistics	Infrastructure	R&D
Project financing facilitation and low markup for industrial unit expansion and industrial units for new product lines. Reduce deposit rates against bank guaranties.	FDI in new SEZs should be encouraged for Joint ventures and collaborations. This will promote technology transfer and product development. Govt should also encourage the import of used plant & machinery as many SMEs prefer to buy used equipment.	TEVTA should introduce new sector specific courses in collaboration with industry. Establish a technical research university in the region. Promote on job training and apprenticeship culture.	More than 60% of raw material is imported. Incentivize the intermediate goods production and raw material industry for import substitution.	Link Sialkot dry port with ML1. Increase Freight trains.	Need for small industrial estate and SEZ with share of industrial plots for SMEs. Common facilities such as material and product testing labs. Labs for certification and accreditation. One window centers for import and exports.	Common facilities for designs, certifications, accreditation, and product diversification. Establishment of a technical university in golden triangle with industrial linkages.

Way Forward

Materials and Technology Center: Establishment of a hi-tech material lab to develop and test the composition of samples. This lab will also help to establish intermediate industry for electrical components, import substitutions. Along with testing and quality assurance this center this center will also help to upgrade technology. This center will also help to identify and explore new options to replace capital machinery. The established center can work as Wearhouse for international standard approved material they can supply this to SMEs who cannot afford testing and certification cost.

Product Design and Graduation: Industry should be provided awareness sessions about the facilities of the product design and development and the benefits that can be obtained from these services. Apart from designing, this center can also help to adopt new designs as the designing requires a lot of R&D and certification, so this will also help to adopt improved and international acceptable designs. Introduction of new designs will result in expansion of market of light engineering products produced by this industry. Ministry of Science and Technology should come up with projects that contribute to economic growth, in terms of innovation in the products of various industries all over the country.

Skill Upgradation and Labor: Training institutes in the cluster should play active part and introduce courses with consultation of the industry. Both industry and the institutes should work in collaboration with each other. Internship programs and job placements in collaboration with industry should be ensured to attract new workforce towards light engineering industry. This region badly needs a engineering university who worked closely with formal and informal sector SMEs to meet the demand of regional industry and provide split programs (half duration in firm and half in college). Firms should also be incentivized to provide as better safety environment.

Center for Standardization and Certification: This center will help in standardization of raw materials and certification of standarads for finished product. This will specifically guide and help SMEs to improve local standards in line with international export standards. It would provide a platform for the small & medium firms to raise the standards of products at subsidized cost. It would benefit in reducing import burden through upgrades to local products and local producers being able to produce OEM products for international market.

Light Engineering

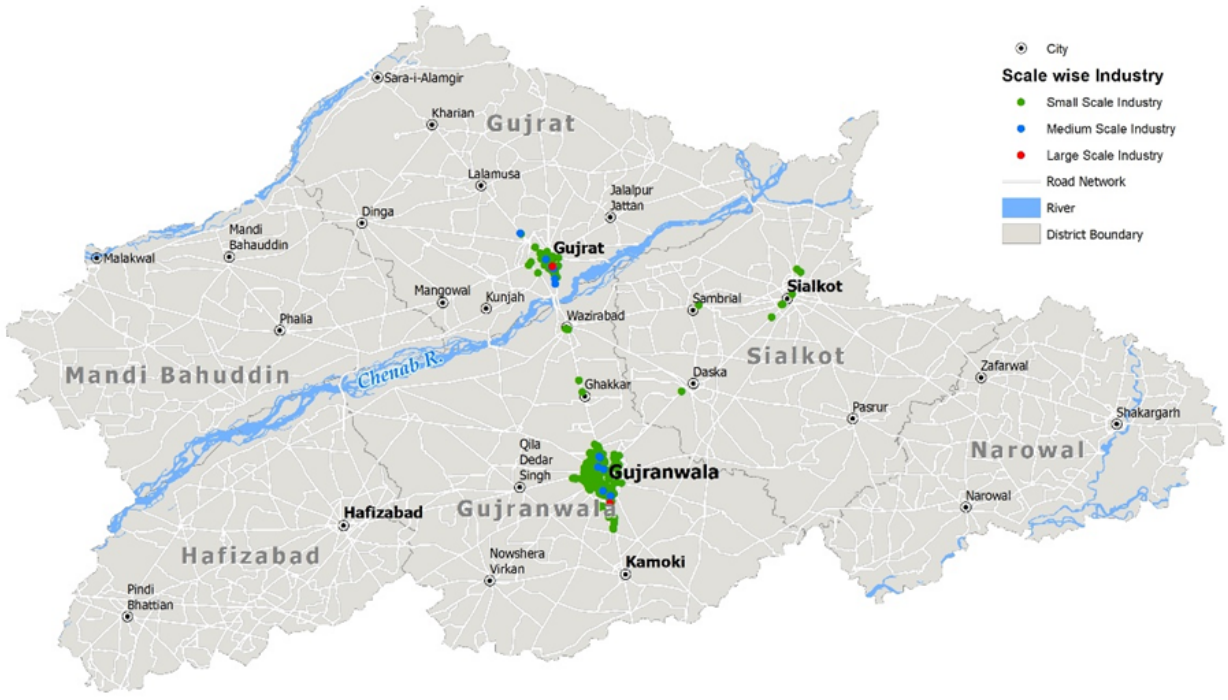
1.8. Light Engineering

Overview

Light engineering includes machinery and mechanical appliances. It is the world's 3rd most traded product, with a total trade of $2.22T. Between 2017 and 2018 the exports of nuclear reactors, boilers, machinery and mechanical appliances; parts thereof grew by 13.6%, from $1.95T to $2.22T. Trade in Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof represent 12.1% of total world trade.

Light engineering cluster is mainly concentrated in Gujranwala division with high intensity production in Gujranwala, Daska and Gujrat cities.

Punjab Firms	6,040
Punjab Employment	67,482
Gujranwala Firms	3,140
Gujranwala Employment	34,227



Major issues faced by the cluster are outdated technology, old techniques & procedures being used in manufacturing of light engineering products. Few large players in the cluster have facility of modern technology who are using CNC machine however most of players of the cluster are using simple machines and hand tools for most of their production related work.

Due to outdated techniques and technologies used in casting and fabrication processes, energy losses and material wastages are very high in cluster. Survey results shows that 59% of the units in the cluster are using only locally manufactured machinery and manual techniques for die manufacturing which are more time consuming and less efficient in terms of quality whereas internationally production units are using CNC and laser machines for manufacturing. Generally manual and semi-automated drilling, grinding and lathe machines are being used which are inefficient in terms of time consumption and quality further material wastage is quiet high which results in higher costs whereas Computerized Numerical Control machines produces quality product in less time and material wastage is low as well.

For cutting purposes, SME are using locally manufactured power cutting presses which produce force of 10 to 25 tons for cutting instead of stepping presses with the force of more than 70 tons. Power cutting presses are inefficient in production and more time consuming. Outdated electroplating and chroming machines are being used by most of the industry which are unable to produce quality finishing of the products

1.1.4.

Product Categories

Light engineering industry has developed through generation to generation. This industrial city has refined its skills and development over the course of the time. Those hands of metal workers have learnt to crafts wonders now. With time skills of this area have diversified enormously. Moving from the pure metal based engineering to plastic and then composite shows their art in crafting for the need of the industry.

A large number of industrial units are operating in Gujranwala. Light engineering cluster covers a wide range of domestic machineries and their spare parts, industrial and medical valves, fasteners, auto and motorcycle parts, kitchen sinks and fittings, telecommunication equipment etc. Gujranwala Light Engineering cluster is currently fulfilling the requirements of machinery spare parts of almost all kind of industries.

Table: Top 5 Exported Products

Product	Share in value in world's exports, % in 2019
Automatic data-processing machines and units thereof; magnetic or optical readers, machines ...	1.9
Turbojets, turbopropellers and other gas turbines	0.8
Parts and accessories (other than covers, carrying cases and the like) suitable for use solely ...	0.7
Taps, cocks, valves and similar appliances for pipes, boiler shells, tanks, vats or the like, ...	0.5

Product	Share in value in world's exports, % in 2019
Printing machinery used for printing by means of plates, cylinders and other printing components ...	0.5
Machines and mechanical appliances having individual functions, not specified or included elsewhere ...	0.5

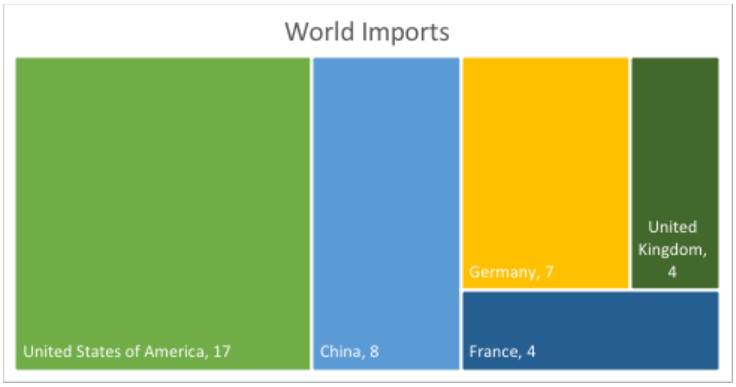
Export Market

Top exporters of nuclear reactors, boilers, machinery and mechanical appliances; parts thereof were China ($473B), Germany ($269B), United States ($191B), Japan ($144B), and Italy ($106B)

Figure: Top Exporting Countries, 2019

In 2018 the top importers of nuclear reactors, boilers, machinery and mechanical appliances; parts thereof were United States ($382B), Germany ($156B), China ($148B), Hong Kong ($78.3B), and Mexico ($78.2B).

Figure: Top Importing Countries, 2019



Pakistan's Position in the Global Markets

Pakistan's products are not competitive in the international markets for exports, however Pakistan has growing economy with large population. This offers immense potential for import replacements and also to start out as regional players. OEM based production can offer significant gains to Pakistan as supplier in the region.

Figure: Destinations for Pakistan, 2019

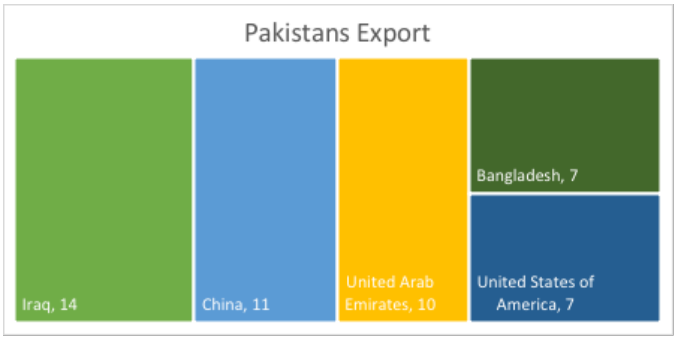
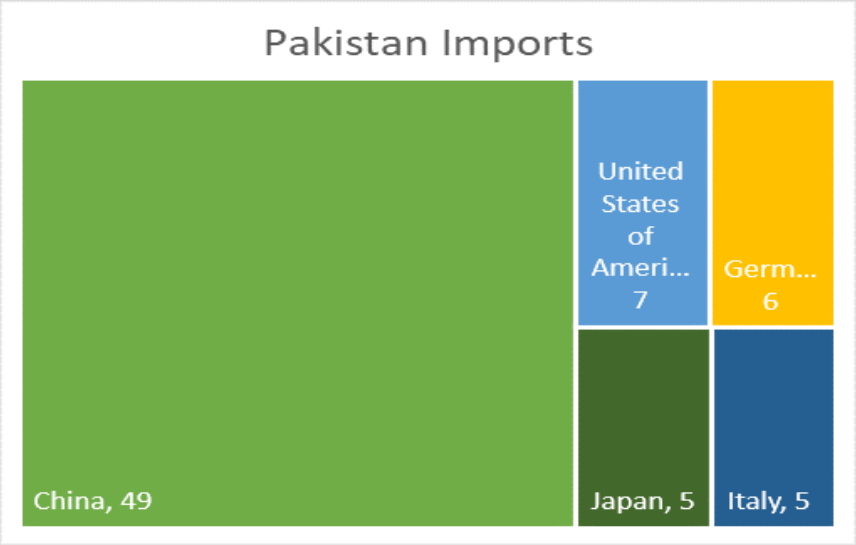
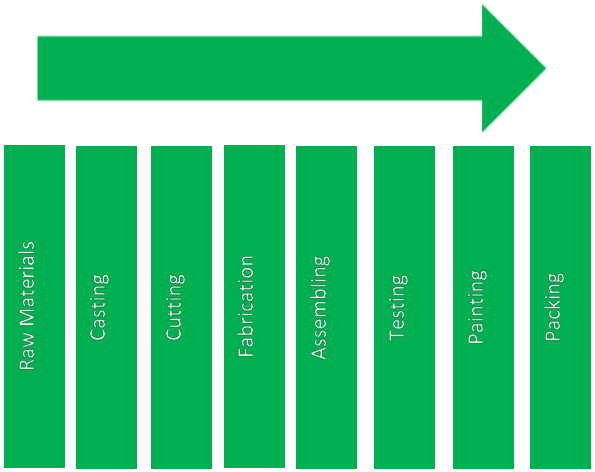


Figure: Imports Destinations for Pakistan, 2019

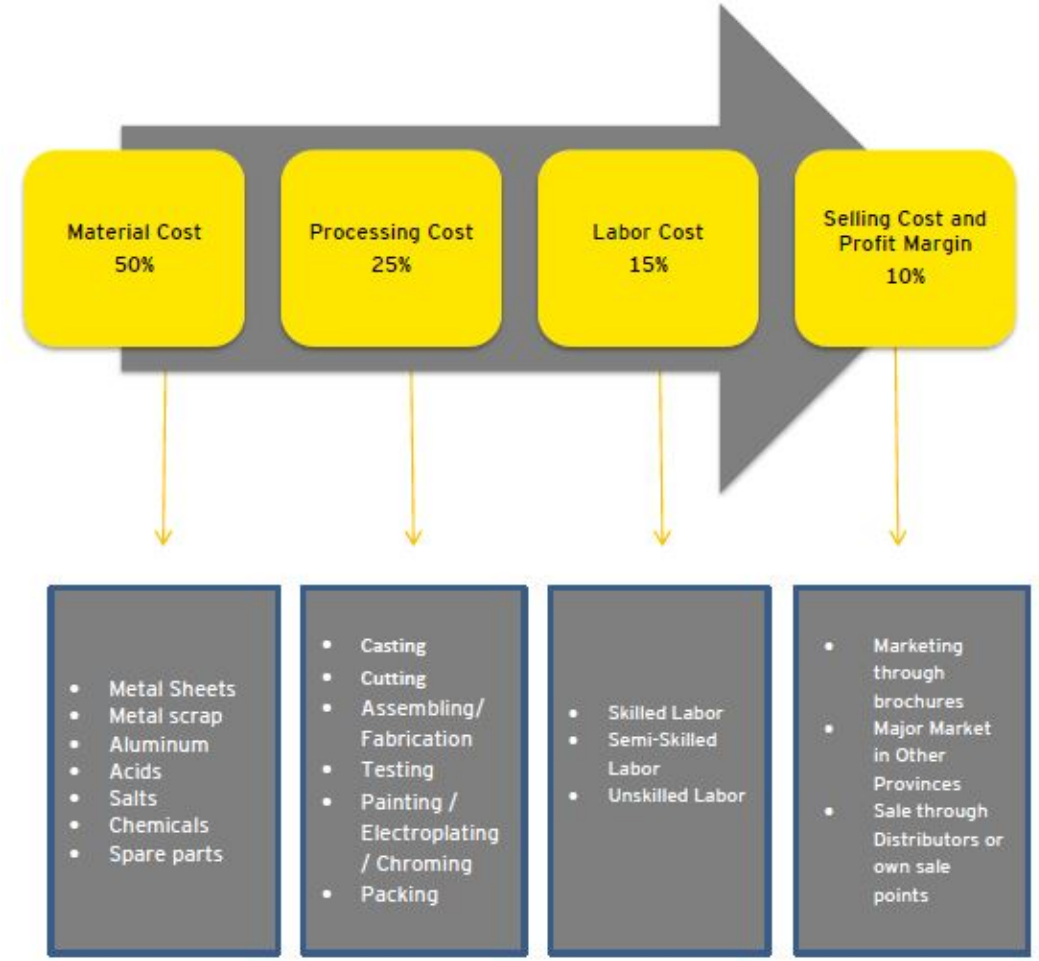


In 2018 the average tariff for Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof was 4.97%, been the 80 lowest tariff using the HS2 product classification. The countries with the highest import tariffs for nuclear reactors, boilers, machinery and mechanical appliances; parts thereof are Bahamas (33.7%), Bermuda (24.2%), Maldives (21.1%), Iran (13.6%), and Cambodia (12.5%). The countries with the lowest tariffs are Mauritius (0%), Hong Kong (0%), Japan (0%), Singapore (0%), and Switzerland (0%).

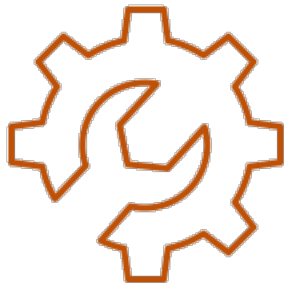
Value Chain



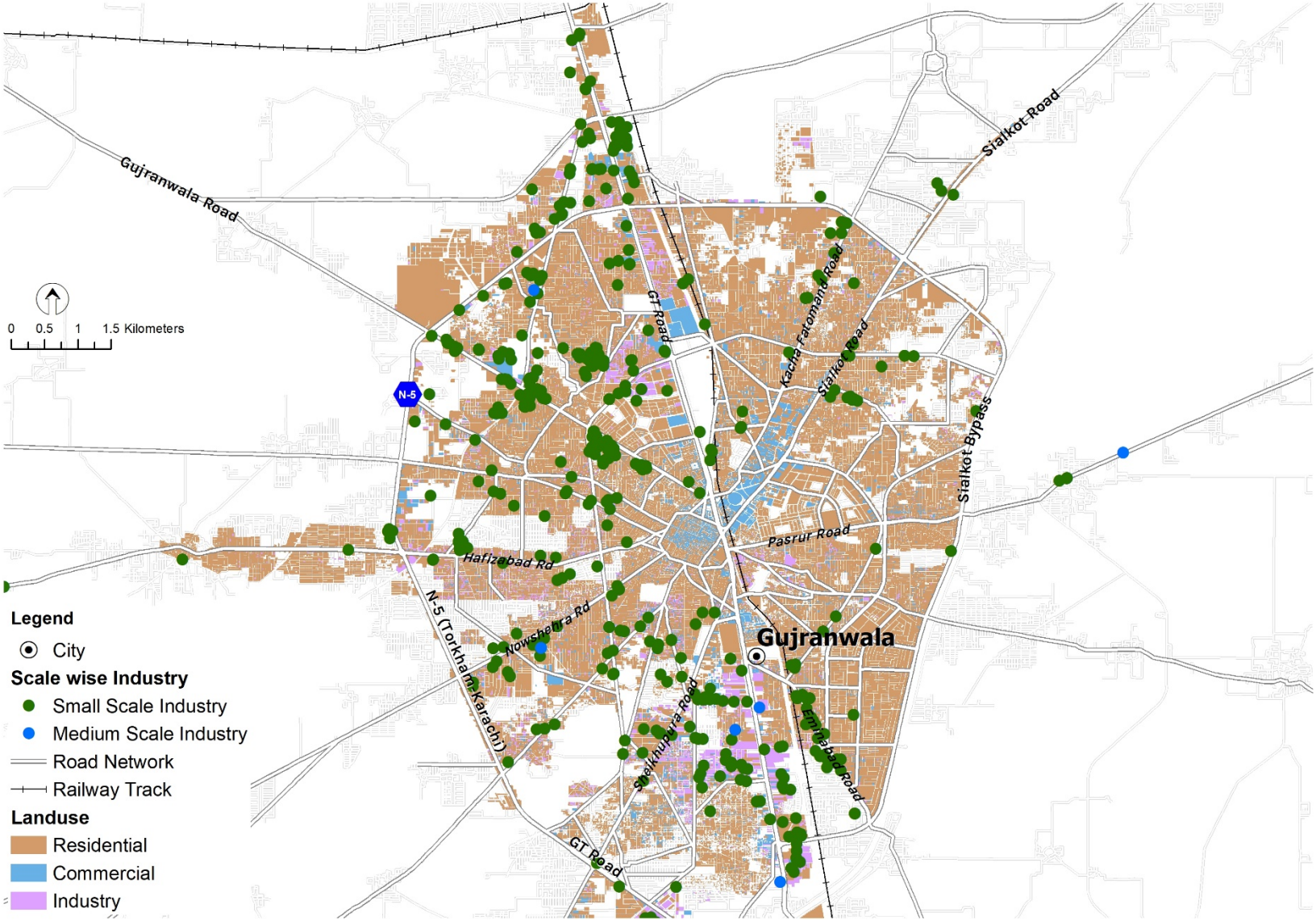
Furnace, lathe, drilling, grinding, winding machines, stepping press, welding machines, powder coating plants and air compressors are generally used in manufacturing light engineering products.

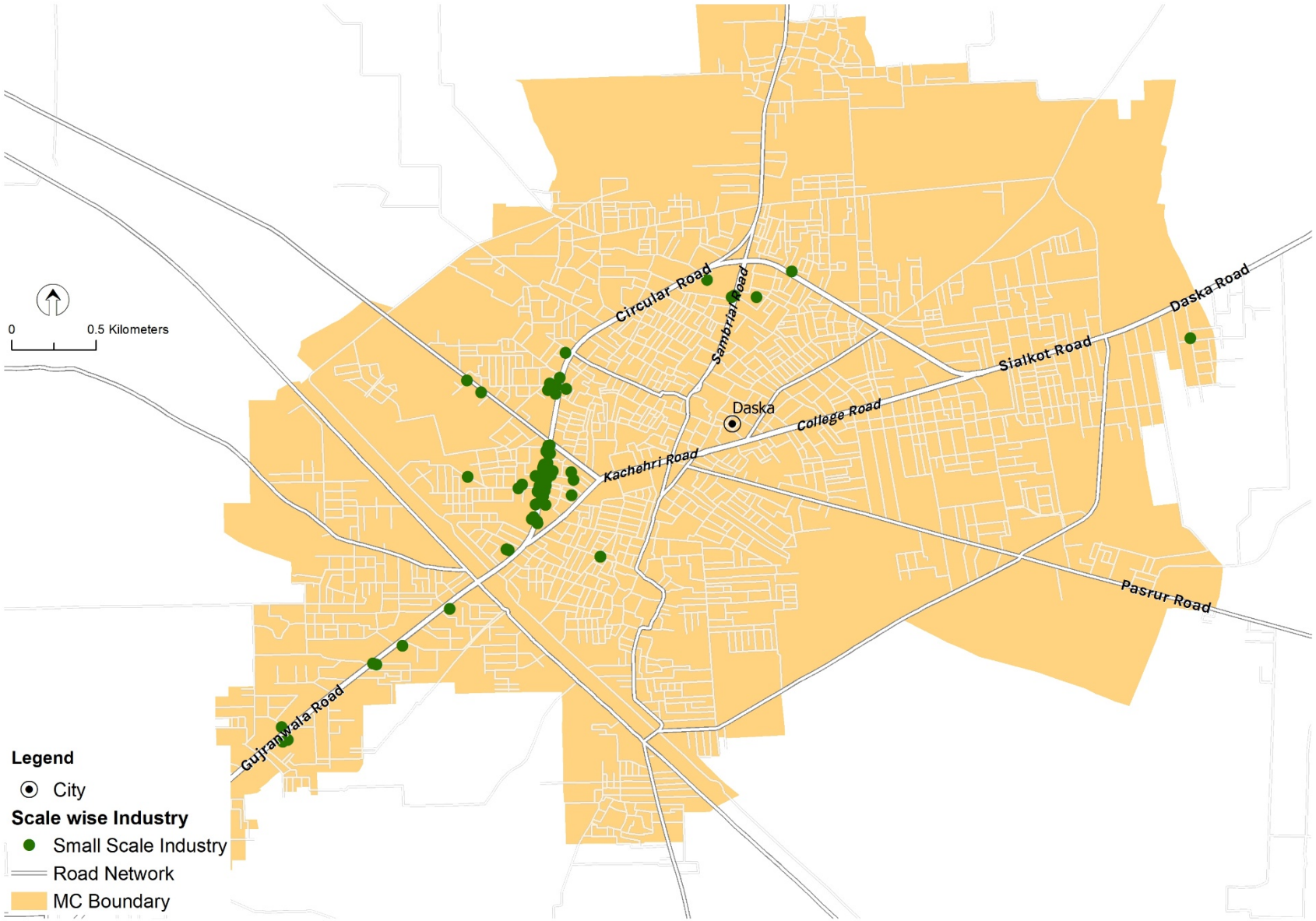


Supply Chain

	Suppliers for machineries are available in abundance in Gujranwala. Some of the suppliers are manufacturing the machineries locally while some are engaged in importing second-hand machineries from foreign countries. Majority of the importers for machineries and equipment are available in Lahore.
	Raw materials used in the cluster are metal scrap, metal sheets, aluminum, spare parts, chemicals, salts and acids. Metal is one of the major raw material which is imported in form of Metal waste from different countries. Locally manufactured and imported Metal Sheets are available in the cluster. Major markets of metal in Pakistan are Gujranwala, Lahore and Karachi. Different gauges of metal sheets are available in the Market. Steel is one of the major raw material required in Light Engineering products which is being imported from different countries in the form of metal waste. Metal sheets are also required particularly for some products, the suppliers of metal sheets are available in the district. Different types of chemicals, salts and acids are also required for electroplating and polishing purposes.

Cluster Map


Gujranwala Road
Sialkot Road
GT Road
Kacha Faromana Road
Sialkot Road
Sialkot Bypass
N-5
Pasrur Road
Hafizabad Rd
N-5 (Torkham-Karachi)
Nowshehra Rd
Gujranwala
Sheikhupura Road
Emirabad Road
GT Road
0 0.5 1 1.5 Kilometers
Legend
City
Scale wise Industry
Small Scale Industry
Medium Scale Industry
Road Network
Railway Track
Landuse
Residential
Commercial
Industry


0
0.5 Kilometers
Circular Road
Sambrial Road
Daska Road
Sialkot Road
Daska
College Road
Kachehri Road
Pasrur Road
Gujranwala Road
Legend
City
Scale wise Industry
Small Scale Industry
Road Network
MC Boundary

Issues and Challenges

Inputs	Technology	Skills	Market
Huge fluctuations in material prices and composition of metal Lack of awareness about EU and USA Standards for metal to export. Labor turnover and accessibility is a major problem due to inconsistent nature of demand and seasonal industry. High taxes on import of machinery	Majority of the industry still uses conventional machinery No technology acquisition mechanism or culture of Joint ventures Poor production practices leading to lower productivity Lack of availability of support services Absence of testing and accreditation facilities Weak R&D infrastructure Lack of in-house product and material testing facilities	Lack of availability of skilled labor trained in modern production techniques. Lack of training facilities in labor class in production field. Missing links with academia and training institutes.	Lack of local brands and its competitiveness internationally. Lacking production and market diversification Poor Marketing strategies for international marketing Limited direct selling to end consumers No preparation to tap new markets through CPEC Losing market share due to lack of adoption in latest technology Low presence in international trade shows

Recommendations

Financial	Technology	Skills	Raw Material	Logistics	Infrastructure	R&D
Project financing facilitation and low markup for industrial unit expansion and industrial units for new product lines. Reduce deposit rates against bank guaranties.	FDI in new SEZs should be encouraged for Joint ventures and collaborations. This will promote technology transfer and product development. Govt should also encourage the import of used plant & machinery as many SMEs prefer to buy used equipment.	TEVTA should introduce new sector specific courses in collaboration with industry. Establish a technical research university in the region. Promote on job training and apprenticeship culture.	More than 60% of raw material is imported. Incentivize the intermediate goods production and raw material industry for import substitution.	Link Sialkot dry port with ML1. Increase Freight trains.	Need for small industrial estate and SEZ with share of industrial plots for SMEs. Common facilities such as material and product testing labs. Labs for certification and accreditation. One window centers for import and exports.	Common facilities for designs, certifications, accreditation, and product diversification. Establishment of a technical university in golden triangle with industrial linkages.

Way Forward

Materials and Technology Lab: Establishment of a hi tech material lab to conduct research and analysis into new materials and scaling up their use by MSMEs. It would also issues guidelines, maintain quality control and conduct awareness seminars to disseminate information regarding suitable raw materials and their alternates. It would conduct research into modern materials under JV with other leading institutes. Objective is to ensure quality and availability of raw material locally and their integration into existing and potential product chains.. It would benefit through availability of better raw material at competitive price, increase in quality of products, quality standards and reduction in the cost & time for material testing.

Upgradation of Gujranwala Tools, Dies and Molds Centre: GTDMC is a modern; State-of-the-Art Common Facility Centre (CFC) under Ministry of Industries and Production in public-private partnership. GTDMC provides Gujranwala division the access to most modern machines available today. In addition, dies and moulds design and technical assistance is also available while training on modern technologies / machines would be provided in future.

Product Design and Graduation: Development of design house with foreign qualified experts and exchange of experts with international designing institutions for product and market diversification to develop a conducive environment for the designing and innovation. Development of new designs and product diversification and increased demand and share of Pakistani products in the international market.

Skill Upgradation and Labor: Training institutes in the cluster should play active part and introduce courses with consultation of the industry. Both industry and the institutes should work in collaboration with each other. Internship programs and job placements in collaboration with industry should be ensured to attract new workforce towards light engineering industry. This cluster needs a engineering university who worked closely with formal and informal sector SMEs to meet the demand of regional industry and provide split programs (half duration in firm and half in college). Firms should also be incentivized to provide as better safety environment

Center for Standardization and Certification: This center will help in standardization of raw materials and certification of standards for finished product. This will specifically guide and help SMEs to improve local standards in line with international export standards. It would provide a platform for the small & medium firms to raise the standards of products at subsidized cost. It would benefit in reducing import burden through upgrades to local products and local producers being able to produce OEM products for international market.

Institute for Industrial Technology: Industrial technology will focus on manufacturing-based technologies for light engineering cluster to improve production system with focus on cleaner

manufacturing systems in the region. It would support low cost, high quality, energy efficient, eco-friendly, and best available techniques to localize the knowledge into SMEs of Gujranwala region. It would ensure development and expansion of industry convergence technologies to scale up innovation in existing industries and tap new innovative systems and machinery designs.

Light Engineering Service Center: Operationalization and upgrading of this LESC is needed, which was established in Gujranwala in 1965. It was transferred under the umbrella of TEVTA in 1999. Light engineering service center is providing support to the emerging needs of the industry. LESC was established o provide advisory services related to plant layout & operations, mechanized production, selection of raw material, quality control, product design, safety & environment etc. It also acts as common facility center to provide services related to machining of dies & molds, Forging etc.