PROSPECTS FOR INDUSTRIAL DEVELOPMENT ALONG EASTERN DEDICATED FREIGHT CORRIDOR- DISTRICT CHANDAULI, UTTAR PRADESH

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Of

MASTER OF URBAN AND RURAL PLANNING

By

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JUNE, 2014

CERTIFICATE

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ABSTRACT

Industrial Corridor is a rail or road corridor primarily to be used for freight movement. It supports the existing connectivity and increases mobility. Movement of goods can be done more efficiently and in lesser time. Industrial corridor is primarily to utilize the potential of a region to develop by insuring integration of Industries and Infrastructure. This induces economic activities to grow which boosts the economic and social development. On the other hand it also develops sound infrastructure and to meet world-class competitive infrastructure. Developing such corridors also acts as a magnet for investments in industrial and infrastructure sector also ensures potential exports in manufacturing. Overall it results in better economic condition, employment opportunities and a better livelihood.

The strategy of an industrial corridor is thus intended to develop a sound industrial base, served by world-class competitive infrastructure as a prerequisite for attracting investments into export oriented industries and manufacturing. The main objective of this dissertation is to formulate strategies for industrial development along the upcoming freight corridor in Uttar Pradesh, which will also include a study of various concepts for industrial development along a dedicated freight corridor. The study area taken is along the Eastern dedicated freight corridor (EDFC), the second dedicated freight corridor in India, running from Ludhiana in Punjab to Dumkuni near Kolkata in West Bengal.

Analyzing the demographics, infrastructure, resources, and policies related to Land and industries, to find the potentials and drawbacks of the district to come up with new industries. The land and industrial investment policy of Uttar Pradesh will be analyzed to check the implications of these policies in the district and recommend strategies for new industrial set ups and types of industries which would be appropriate for the district. Also reforms in the land and industrial policy if required will be suggested, to ensure development without hindrance due to policy flaws in the policy frame work.

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Shobhit Verma

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List of Abbreviations:

DMIC: Delhi Mumbai Industrial Corridor

EDFC: Eastern Dedicated Freight Corridor

UPSIDC: Uttar Pradesh State Industrial Development Corporation

WDFC: Western Dedicated Freight Corridor

DMICDC: Delhi Mumbai Industrial Corridor Development Corporation

ADKIC: Amritsar Delhi Kolkata Industrial Corridor

IIDC: Integrated Industrial Development Centers

CHAPTER-1 INTRODUCTION

The objective of this chapter is to set the need of the study and to define the aim, objectives, scope, limitations and Methodology for the study.

1.1 Concept: Industrial Corridor

Industrial Corridor is a rail or road corridor primarily to be used for freight movement. It supports the existing connectivity and increases mobility. Movement of goods can be done more efficiently and in lesser time. The primary objective of Industrial corridor is to utilize the potential of a region to develop by ensuring integration of Industries and Infrastructure. This induces economic activities to grow which boosts the economic and social development. On the other hand it also develops sound infrastructure and to meet world-class competitive infrastructure. Developing such corridors also acts as a magnet for investments in industrial and infrastructure sector also ensures potential exports in manufacturing. Overall it results in better economic condition, employment opportunities and a better livelihood.

Industrial corridors lead to the overall social and economic development by recognizing the inter-dependence of economic sectors and by integrating infrastructure and industry. The industrial corridors comprise of commendable infrastructural facilities like special economic regions, ports, and an effective transportation network for raw materials and finished goods. Industrial corridor helps in upliftment of underutilized potentials of regions in the influence zone of the corridor. It also helps in creating world beating infrastructure which helps in reducing communication and transportation costs. It attracts investments; majorly in the manufacturing sector according to potentials of the areas in the influence zone of the industrial corridor.

- Economic integration
- Improved transit and transport facilities.
- Decreases regional disparity i.e. balances regional development.
- Cheaper and faster mode to move raw materials and goods
- Promotes regional trade and investments
- Creates opportunities for economic development
- Improved GDP and per capita income

- Improves quality of life.

1.1.1 Components for enabling Industrial corridor

A strong and sustainable system provides efficient supply chain and supply system.

1. Manufacturing base
2. Procurement/sourcing
3. Multi-modal
4. Logistic support
5. Distribution network

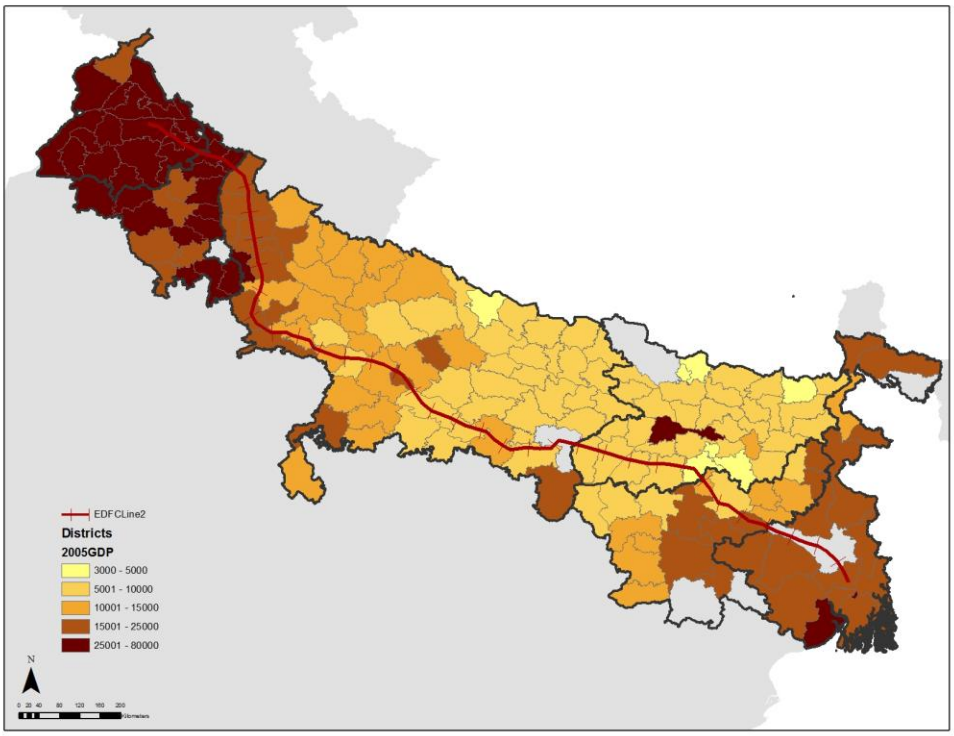
The industrial corridors need to be of manufacturing nature, to increase exports and intra state movement of industrial goods. Sourcing or procurement needed for enabling the better financial and service needs of the industries. Also, a high capacity multimodal transportation to link the areas is needed. Interlinks between highways and railways is the most important, to make the distribution network for the industries functioning. High capacity logistic centers need to be proposed to support the industries for better distribution network.

1.2 Need for Study

Uttar Pradesh was formed on 1st April 1937 as United Provinces. It is located in Northern India. It is one of the largest states of India in terms of population. A new state, Uttarakhand was divided from the Mountainous region of U.P on 9-11-2000.

The state is divided in 71 districts and Agriculture is the main economic activity carried out in Uttar Pradesh. Industries have also contributed a significant part of the state's economy in recent times. Uttar Pradesh is one of the most populous states of India, which has a population of 199 million i.e. about 16% of the total population of the Country. Also Uttar Pradesh has the largest road and railway network in the country, ranks first in total Agriculture production in the country. Still, the Economic circumstance of the state is far behind many other states of north India.

The map 1 shows the district wise DDP (2005) of the states from which the Eastern Dedicated Freight corridor is passing; it clearly indicates the deprived economic condition of the state, despite of being the Largest in Agriculture production and many other factors, which contributes to the economy. To strengthen the Industrial sector of the state, development of industries in the influence zone of the EDFC is one of the major motives of the development of corridor. District Chandauli of Eastern Region of Uttar Pradesh falls in the influence zone of the Eastern dedicated Freight corridor has been taken as study area and the district's Existing industrial area will be analyzed in light of DFC and its benefits to the existing industries.



Map 1 District Domestic Product of EDFC States. Source: www.mospi.gov.in, Compiled by author

1.3 Aim

To formulate strategies for industrial development along the upcoming freight corridor in Uttar Pradesh.

1.4 Objectives

1. To study various concepts for industrial development along a dedicated freight corridor.
2. To study demography, economy, physical infrastructure and resources required for industrial development in the district Chandauli.
3. To analyze the industrial and land acquisition policy of the state
4. To identify the potential for industrial development in the district.

5. To formulate planning strategies for the Industrial development of the district.

1.5 Scope and Limitations

1. The study will specifically deal with district Chandauli of eastern Uttar Pradesh.
2. The existing policies for industrial development will be analyzed, to support the new developments in the EDFC influence zone.
3. Planning strategies formulated will be specific to the Chandauli district and may not be applicable to other districts.

1.6 Methodology

The study was done in four Major stages:

1. Literature Study: Concept of industrial corridor, case study of Tokyo- Osaka Industrial Corridor and detailed study of Delhi Mumbai industrial corridor
2. Detailed study of the Chandauli District, covering Demographic, economic, Socio-economic, physical Infrastructure and resources.
3. Findings from the Data analysis of the case study area.
4. Reviewing the existing land and industrial policy.
5. Formulation of Strategies for development of Industries in the district.

The figure 1 below show the methodology followed for the study.

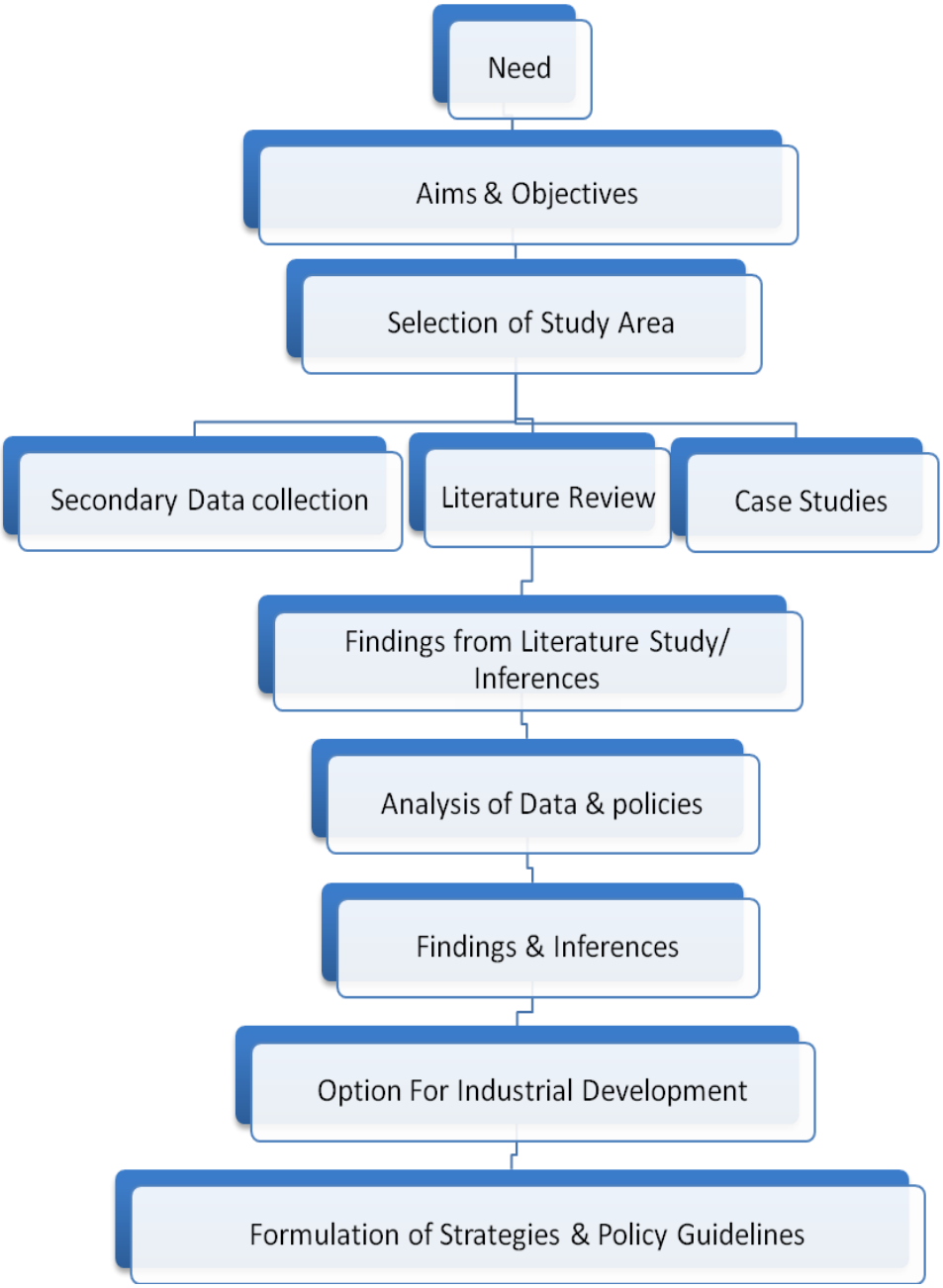


Figure 1 Methodology

CHAPTER-2 LITERATURE STUDY

In this chapter the concept of industrial corridor is briefed. The case study of the first industrial corridor in Japan i.e. Tokyo-Osaka Industrial corridor, case study of the Delhi Mumbai industrial corridor has been outlined and major infrastructure and industrial zones proposed in the corridor has been dealt with.

2.1 Industrial corridor in global context: Tokyo-Osaka Industrial corridor, Japan

The first industrial corridor was built in Japan with high-speed railways connectivity Tokyo and Osaka. Initially, in 1964 it had a length of 515km between Tokyo and Osaka, further the corridor was extended to about 2000 km extending till Kagoshima in the west and to Hachinohe Morioka in the north east part of Japan, also connected a prominent tourist destination of Kyoto and Nagoya.

2.1.1 Benefits of Tokyo Osaka Industrial corridor

The corridor reduces travel time between Osaka & Tokyo to a great extent. i.e. 2 hours and 30 minutes only. Presently the corridor contributes to about 80% of the GDP of Japan, with Tokyo contributing 17.74 % followed by Osaka with 7.45% of the total of Japan's GDP. The map 2 shows the 17 major stations of the Shinkansen (high speed rail) with contribution of GDP. By the Cluster analysis done by Murakami & Cervero (2012), derived 8 sectors of markets offering job types along the Tokyo-Osaka corridor were as follows:

- Global Business centers
- Waterfront information centers
- Regional business centers
- Large leisure cities
- Large business cities
- Manufacturing Industries
- Small intermediate cities

The table-1 shows Major Industrial Categories, which came up in Japan along the corridor:

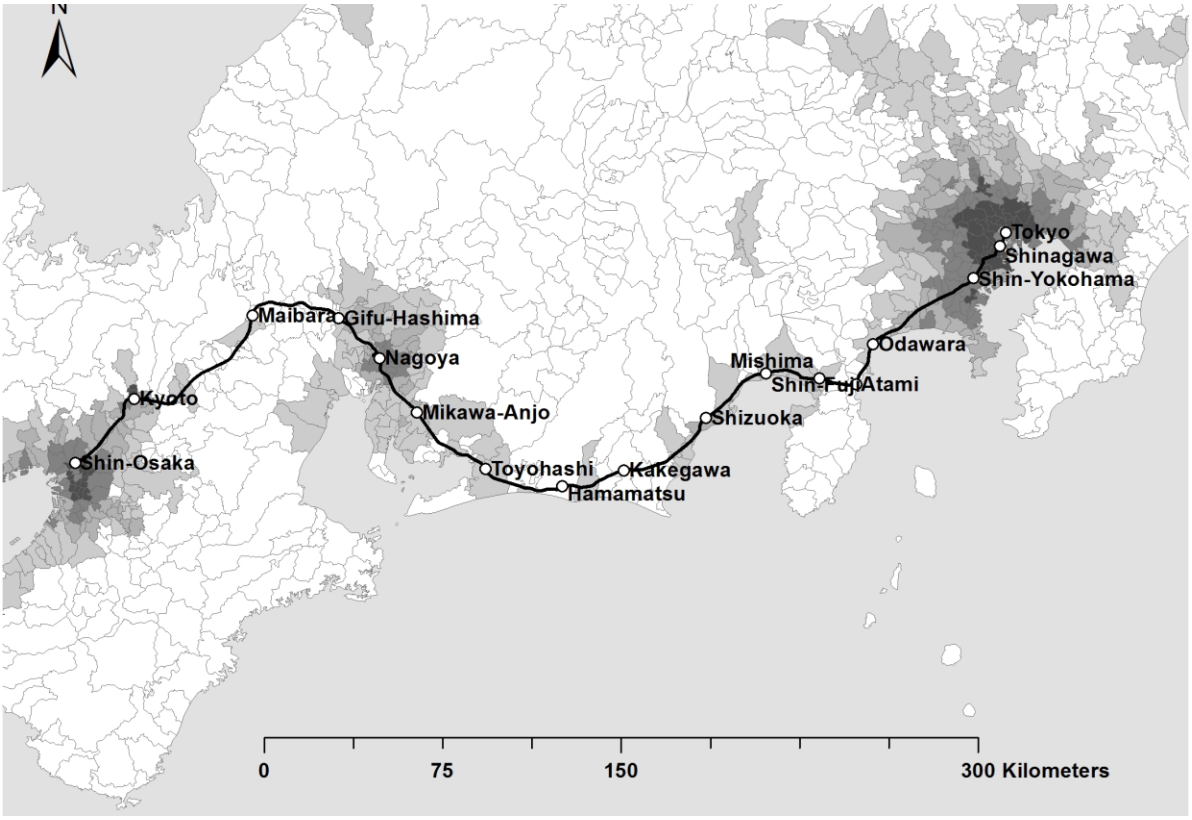
Table 1 Business Categories across the Tokyo- Osaka HSR corridor source: High Speed Rail and economic development, Murakami & cervero (2012), University of California

Japan: Major industrial Categories (2006)	**Business sector**
- Steel - Utility - Construction	Heavy Industry
- Manufacturing	Manufacturing
- Wholesale and Retail - Construction	Logistics
- Information - Finance and Insurance - Real estate - Multiple service	Knowledge Business and skill development
- Educational - Medical	Social Infrastructure and service
- Restaurant and Hotel - Other Services	Leisure service, tourism and other small secto services

Major sectors of industries, which flourished after the implication of the High-speed rail corridor, were Heavy Industries, which Included Steel and other manufacturing units. High capacity Logistic hubs supported these industries. Information technology centers, Insurance and financial business also increased huge amount of capital flow started, real estate, other

service sectors and social Infrastructure such as Medical and Educational facilities augmented and also contributed to economic and social growth of Japan. The corridor also lifted tourism related service sectors such as Hotels, restaurants and other related sectors.

Map 2 Alignment of Tokyo-Osaka Industrial corridor. Source: high speed rail and economic development business agglomeration and policy implications, by Jin Murakami and Robert Cervero, May 2012



2.1.2 Conclusion

The corridor attracted world-class information business and boosted economic growth along the High-speed rail. It is one of the most successful examples of high-speed rail connectivity and development model after its success. The Tokyo-Osaka corridor became an inspiration around the globe and similarly, many other high-speed rail corridors are still being developed around the world such as the Northeast corridor in United States and the California High speed Rail. The first Industrial Corridor in India i.e. Delhi Mumbai Industrial Corridor is Also Inspired by the

Tokyo-Osaka Industrial corridor and the major components of development along the DMIC are similar to Japan's Shinkasen corridor.

2.2.1 Introduction: Delhi Mumbai Industrial Corridor

The Delhi Mumbai Industrial Corridor is the first Dedicated Freight only corridor project in India, Inspired from the Tokyo-Osaka High-speed Rail corridor in Japan. DMIC has a coverage to six states in the western India i.e. Maharashtra, Gujarat, Haryana, Delhi-NCR, Uttar Pradesh and Rajasthan. It's a GoI's Initiative to join the existing 'Golden Quadrilateral' connecting the first four Metropolitan cities i.e. Delhi, Mumbai, Chennai And Kolkata with a high capacity Freight only corridor to release congestion on the existing railway network and the highways connecting to the same. The total length covered by the corridor is about 1439 Km. The length distribution of the Freight among these states is shown in the table 2 and the alignment of the DMIC with its Influence Zone has been shown in the map 3. Gujarat and Rajasthan has the major share of the length with 547 km and 561 km respectively. Followed by Maharashtra and

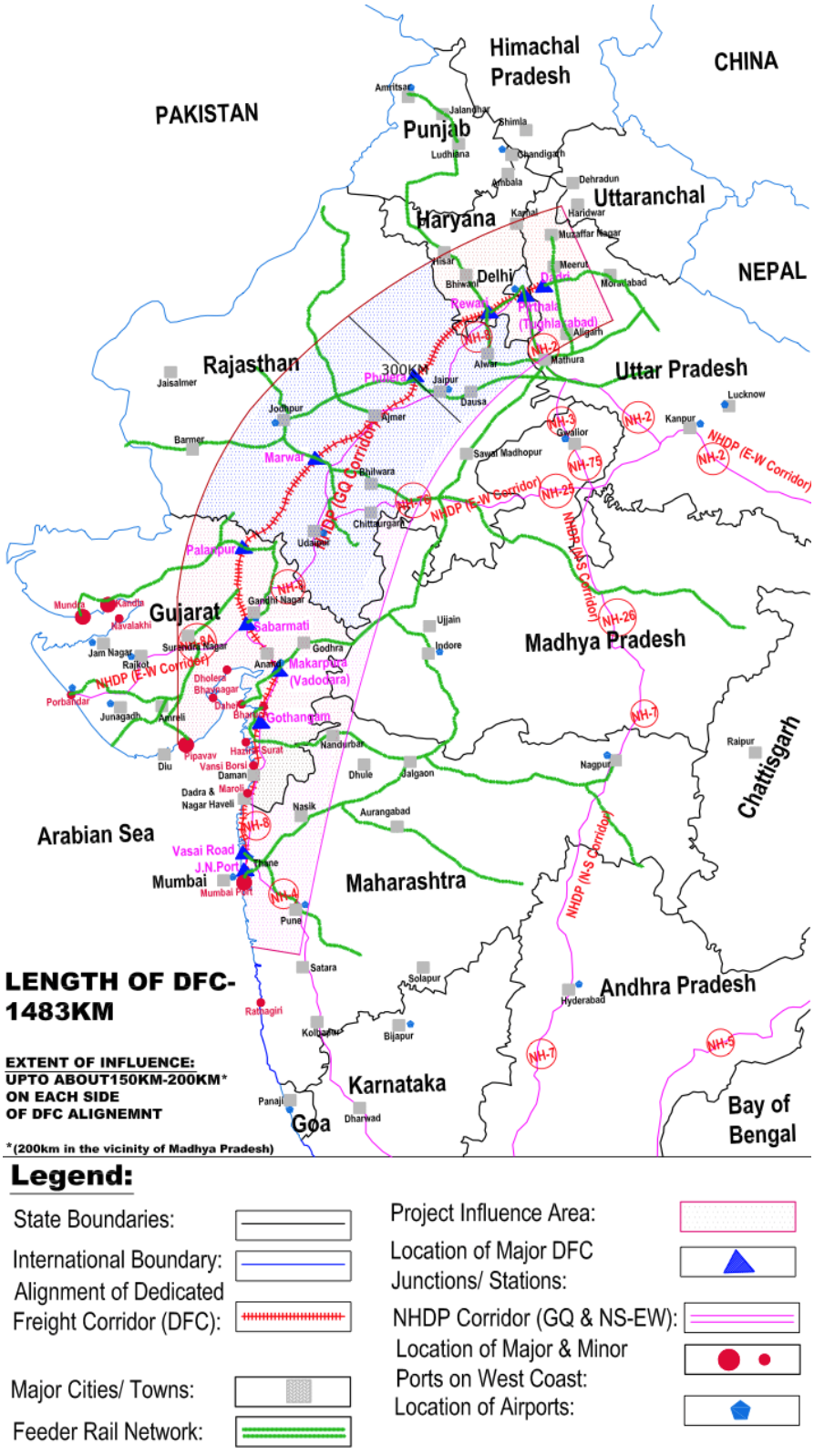
Table 2 Distribution of Western DFC among six States

States	Length of DFC (kilometers)
Gujarat	547 km
Rajasthan	561 km
Maharashtra	144 km
Haryana	145 km
Delhi- NCR	16 km
Uttar Pradesh	15 Km

Haryana, covering about 145 km in each state and the end terminals in Dadri, Uttar Pradesh near National Capital Region and the other at Jawaharlal Nehru Port in Maharashtra.

Along the DFC various integrated Investment Regions and Industrial areas has been identified for attracting investment in Industrial sector and to build world-class infrastructure and

manufacturing zones. Roads, air connectivity, feeder rails, ports, power, logistic hubs and other supporting infrastructure to be provided in the influence zone of the DFC to support industrial development and the make the cities economically strong and sustainable. The primary objective is to provide the investment regions and industrial area with world-class infrastructure and create globally competitive markets in sector of manufacturing and service.



Map 3 Alignment of the DMIC with Industrial zones and major cities in the influence zone. source: concept paper DMIC, 2007

2.2.2 Vision and Goals of DMIC

VISION

"To create a strong economic base with globally competitive environment and state-of-art-infrastructure to activate local commerce, enhance foreign investments and attain sustainable development."

"Delhi-Mumbai Industrial Corridor is to be conceived as a Model Industrial Corridor of international standards with emphasis on expanding the manufacturing and services base and develop DMIC as the 'Global Manufacturing and Trading Hub'."

GOALS

The developmental planning for Delhi Mumbai Industrial corridor aims to attain certain end results with application that would ensure realization of envisaged vision for the project and lead to economic development. Accordingly the project goals for DMIC are:

- Employment potential to be doubled in 5 yrs. (14.87% CAGR)
- Industrial output to be tripled in 5 yrs. (24.57% CAGR)
- Export to be increased by 4 times from the regions In 5 yrs. (31.95% CAGR)

The vision of the DMIC clearly states that the industrial corridor will have such infrastructure and facilities that will attract foreign investment in industrial sector with manufacturing industries as a priority. Also, making the Delhi Mumbai industrial corridor as "Global manufacturing and trading hub" which will insure high economic growth in the region. Further, the goals of DMIC states that the employment generation to be doubled, industrial

output/production should became three times and the export s form the industrial output to be four times in a period of five years to make the cities in the influence zone economically sustainable and socially sound for the population residing in the influence zone of the DMIC.

2.2.3 Sectoral Objectives of Delhi Mumbai Industrial corridor

The objectives of the DMIC corridor are classified in two parts i.e. **industrial infrastructure** and **Physical & Social infrastructure**. The industrial infrastructure focuses on rejuvenation of existing industries, which are 'sick' or declining by providing supportive infrastructure and facilities to them. Addition of new industrial towns, investment regions/clusters, which are of manufacturing nature and has potential to produce export oriented products. Skill development and special training institute, technical institutes, agricultural institutes to provide skilled knowledge, these institutions should have residential facilities combined with other social infrastructure such as health facilities etc.

The physical and social infrastructure objectives focus on provision of better accessibility to the DMIC by providing logistic hubs, feeder rail services, development of markets and road connectivity. Upgradation of existing airports, ports to provide better connectivity to domestic and international areas to promote business and exports. Captive power generation plants and power transmission facilities by provision of new power grids to provide adequate and uninterrupted power supply to the industrial towns. Provision of residential areas, commercial facilities and educational institutions, etc. to attract investors, without hindering to move in the investment regions is also one of the primary motives of DMIC.

2.2.4 Investment Regions & Industrial Area

The Delhi Mumbai Industrial development corporation has defined that an Industrial Investment zone must have an area of 200 Sq.km and an industrial area should have an area not less than 100 Sq.km. DMIDC has recognized 24 such nodes including Investment regions and industrial area in the influence zone of the DFC. Out of these 6 IRs and 6 IAs were taken for realization as a part of first phase of the project starting from January 2008 to December 2012. The table 3 below shows the Investment regions and Industrial areas identified for realization of the first phase.

Table 3 Investment Regions of DMIC for First phase realization Source: concept paper, Delhi Mumbai Industrial corridor

Industrial Area (Location)	Types of Industries
Meerut Muzaffarnagar, Uttar Pradesh	Engineering and General manufacturing
Faridabad-Palwal, Zone in Haryana	Engineering and Manufacturing
Jaipur- Dausa, Rajasthan	Marble, Leather, Textile
Vadodara- Ankaleshwar, Gujarat	General manufacturing
Industrial area at Dighi, Maharashtra	Greenfield port
Neemuch- Nayagaon, Madhya Pradesh	Agro-Processing Industrial Area

Table 4 Industrial areas for first phase of realization in DMIC Source: concept Paper, Delhi Mumbai Industrial Corridor

Industrial Area (Location)	Types of Industries
Meerut Muzaffarnagar, Uttar Pradesh	Engineering and General manufacturing
Faridabad-Palwal, Zone in Haryana	Engineering and Manufacturing
Jaipur- Dausa, Rajasthan	Marble, Leather, Textile
Vadodara- Ankaleshwar, Gujarat	General manufacturing
Industrial area at Dighi, Maharashtra	Greenfield port
Neemuch- Nayagaon, Madhya Pradesh	Agro-Processing Industrial Area

2.2.5 Institutional Framework of DMIC

As the DMIC has a large number of projects to be implemented in the Investment regions and Industrial areas, the institutional framework of DMIC was formed to monitor the implementation of the projects from policy making to execution of the projects at ground level. The Delhi Mumbai industrial development corporation (DMIDC) was formed to monitor the projects according to the planned manner in the Influence zone of the DMIC. The comprehensive process of development of industrial town has two major parts i.e. project preparation and development and financing& implementation. The figure below shows the institutional framework of the DMIC.

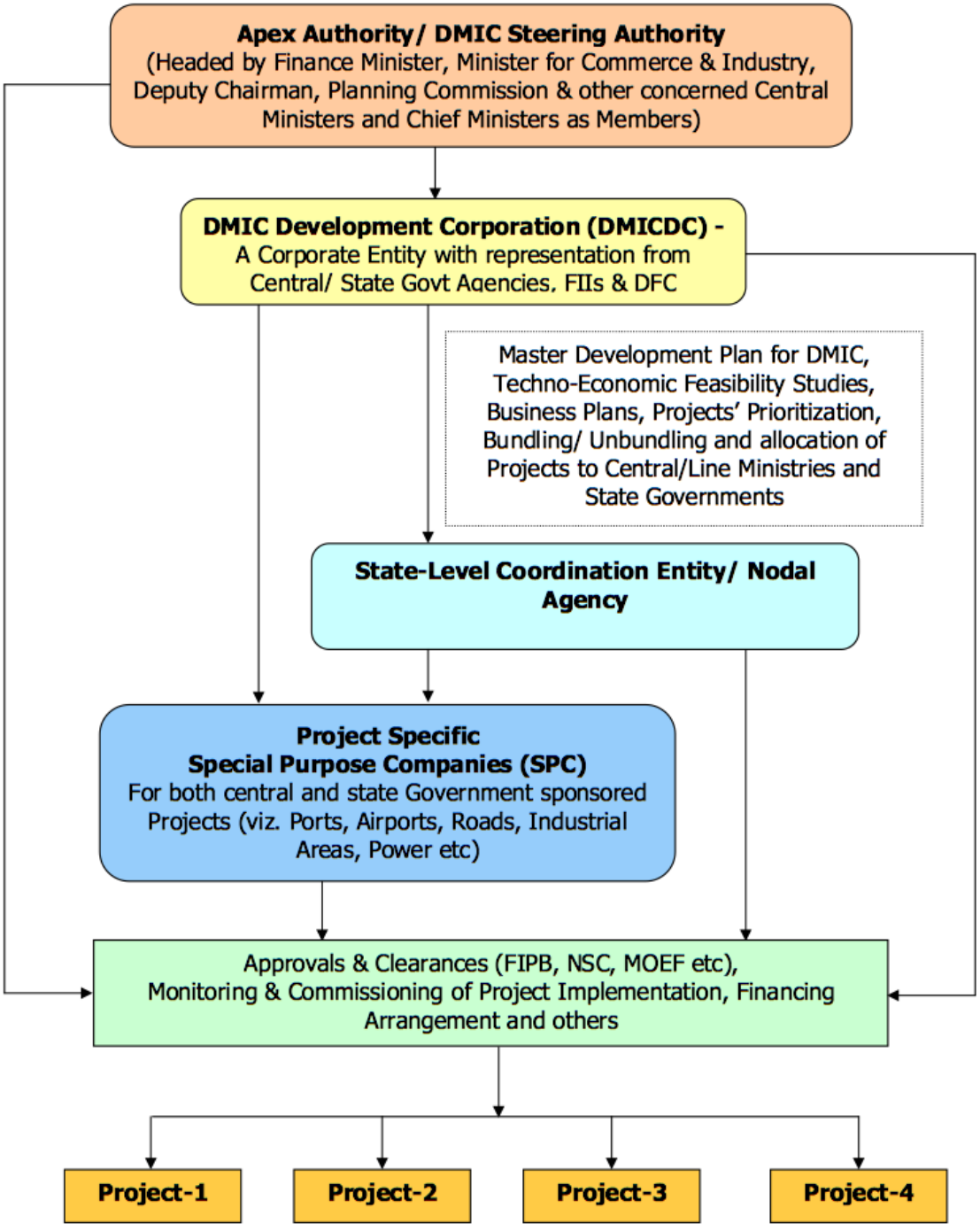


Figure 2 Institutional framework of DMIC, Source: Concept paper, DMIC

The ministry of finance, ministry of commerce and industries, planning commission and other state level heads the DMIC; these members of ministers monitor the policy formulation and overlook the whole development process of DMIC. It is considered as the steering authority of the DMIC that also acts as advisors and monitors the successful implementations of the projects under DMIC. The framework is followed by DMIDC, which is totally focused on the program of projects, acts as a support to the central and state government and has a major function of channelizing the funds in the intended areas for smooth functioning of the implementation process of the projects. This agency also acts as coordinator between different other government bodies such as railways; industrial development agencies state government and central government.

The concern state government for insuring local level development and requirement of the projects forms the nodal agency or the state level coordination agency. This agency is responsible for providing services at regional level such as, road connectivity at state level, water supply, electricity regulations and supply and other utilities such as sewerage network, safety, environment concern etc.

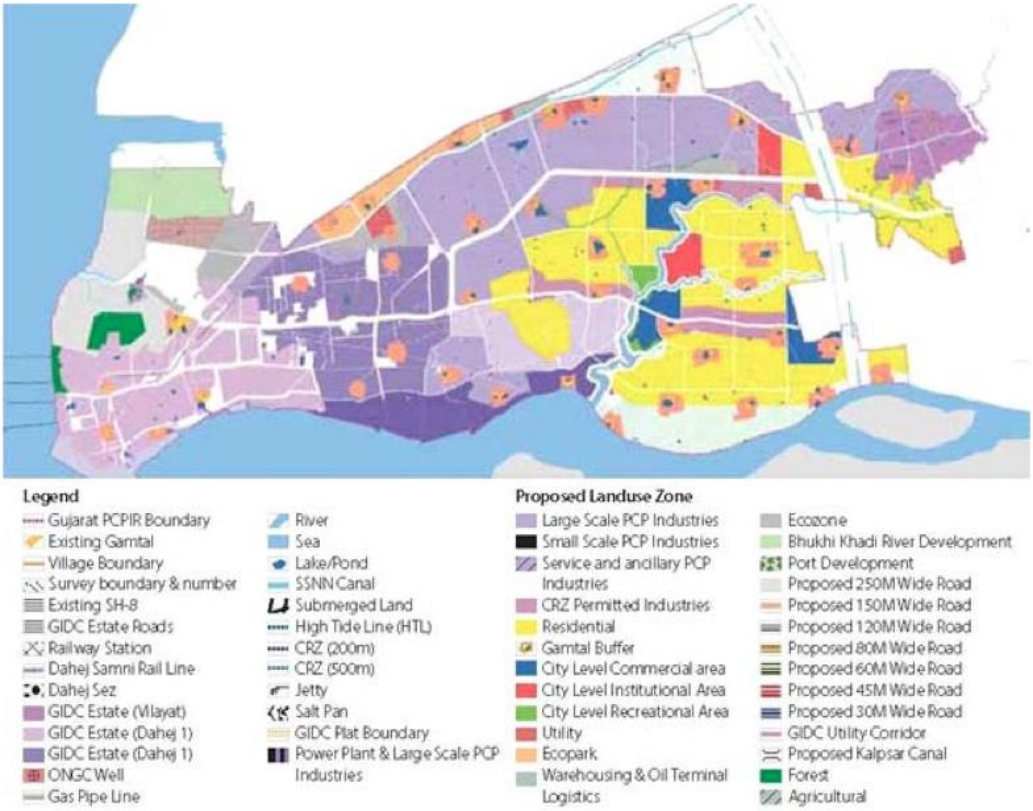
2.2.6 Financing and Funding

The financing of the projects and required infrastructure is partially done by the Government and partially by PPP model where possible. The funding for the functioning of DMIDC is done by the government of India & state governments, 49% and 51% respectively and by the infrastructure agency and foreign Institutional investors (FIIs).

2.3.1 Petroleum, Chemical and petro-chemical Investment Region (PCPIR), Dahej, Gujarat.

Located in Dahej, Bharuch District is the largest special investment region in Gujarat covering an area of 453 sq. km. The focus sector of PCPIR is petrochemical and chemical industry. Being the largest investment region, it promises huge investments. Almost 90000 crore INR has already been invested in the sector.

This huge investment has created direct job opportunities to about 30,000 people in the upcoming units. Also the investment region will create an indirect job opportunities to 90,000 people. Other than employment opportunities, various infrastructural developments have been done in the region such as road and rail connectivity has been upgraded, solar power generation, water supply etc. The region is eyeing huge investment to be made by ONGC (Oil and Natural Gas corporation) with investment of thousand of crores, these huge investments will improve the economic and infrastructural development of the region. The map 4 below shows the description of proposed land use of the PCPIR.



Map 4 Land use of PCPIR, Dahej in Gujarat. Source: Gujarat Industrial Development Corporation. March 2012

The land use distribution of the investment region has about 46% of the total land under industrial use followed by residential and utilities. The figure 3 shows the distribution of the land use in PCPIR.

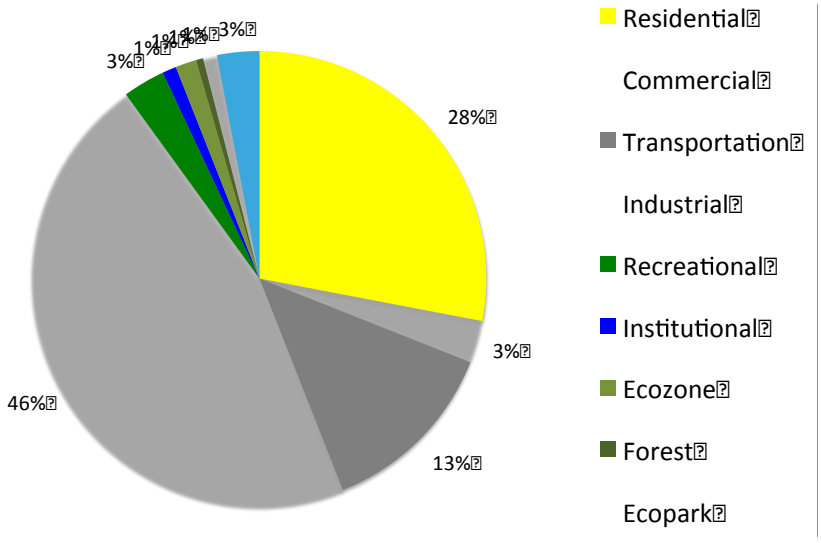


Figure 3 Land use distribution of PCPIR, Source:compiled by author.

The infrastructural development after the execution of the DMIC project in the PCPIR has proposed various improvements in connectivity, logistics and power projects. The table 5 details out the existing and the proposed infrastructure facilities in the Investment Region.

Table 5 Existing and Proposed Infrastructure facilities in the Investment Region,

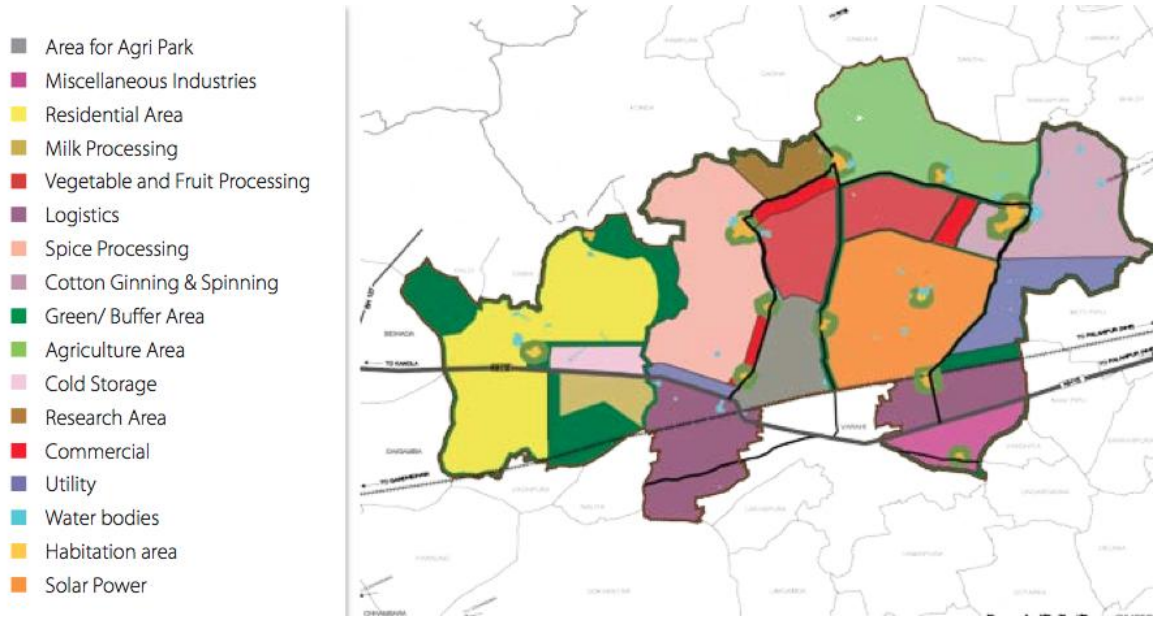
Sector	Existing Infrastructure	Proposed Infrastructure
Roads	A stretch of 50 Km of highway between Bharuch and Dahej, which connects the Delhi- Mumbai national highway.	Widening of the existing Dahej Bharuch highway to ^ lanes. Link road linking the PCPIR to National Highway-8. Up gradation of roads linkages to the ports.
Railways	The Region is connected to the Delhi Mumbai rail link at Bharuch.	The alignment of the DFC will touch the region on the eastern side.
Airports	The PCPIR has three major airports at Ahmedabad, Vadodara and surat, at distance of 250, 90 and 85 Km. respectively from PCPIR	Greenfield airport has been proposed at PCPIR. The existing port at Ankaleshwar will also be provided with airstrips.
Logistics	No existing logistic support present at PCPIR	80 hectare of land marked for logistic support, for chemicals, this will be the only logistic park for chemicals in India. Two other logistic parks to

		be developed by PPP mode by IL&FS.
Water Supply	GIDC supplies 33MGDraw water drawn from the Narmada river. Ground water board supplies drinking water to the PCPIR after filtration; the source of water is from the canals coming through Narmada river.	GIDC will supply 100MGD of additional water to 8 villages Falling in the PCPIR. Proposed distillation and water recycling plant to avoid pollution to Narmada river and Canals.
Power	220 KV substations present in the Region, maintained by GUVNL.	1500 MW of gas based power generated by Torrent power limited. 2640 MW coal based power by Adani power. These projects are already under execution.
Gas	2200 km of gas supply network maintained by GSPL	All the gas suppliers are to extend their supply network area.

2.3.2 Santalpur special investment region

A special investment region has been proposed in Santalpur, in patan district, Gujarat. The major sector of industries proposed in the region is agro based, and food processing plants.

Santalpur has rich agriculture resource and production of crops and vegetables. The total area under the Santalpur investment region is about 141 Sq.Km. The map shows the proposed Special investment region.



Map 5 Land use map of Santalpur SIR, Source: gidc.nic.in

The potential sector of the SIR is food processing, spice vegetable and fruit processing. The investment region has also proposed with solar power generation. The SIR is being proposed with various infrastructures and enhanced connectivity to the DFC line of DMIC. The table shows the Existing and proposed infrastructures to the SIR, Santalpur.

Sector	**Existing Infrastructure**	**Proposed Infrastructure**
Roads	Sir is along the existing NH-15 passing through santalpur. SH-17 also passes on the southern part of the Special investment region	
Railways	The existing rail line at Randhanpur connects the SIR with Kandla port. Palanpur Junction of the Dedicated freight corridor is connected to the SIR	Doubling the track of feeder rail connecting the DFC.
AirportsWater	176 Km from Ahmedabad airport.	
Ports	Kandla port connected by the feeder rail to SIR.	The capacity of the existing Kandla port to be increased.
Water Supply	Water supply managed and operated by Water and sanitation management organisation.	Narmada Canal based water supply project.
Power	Three existing sub stations with capacity of 66 KV,	

	220,KV and 220 KV (present in the SIR)	
Gas	GSPL gas supply network is present at 125 Km from the SIR	The supply network extended in 2011 to Santalpur

Other than these infrastructures, there are various other facilities provided to the SIR such as integrated housing, Agri-research centers, cold storages, logistic hubs, institutional areas etc. has been proposed in the SIR Santapur.

2.3.2 Inferences

The investment region has proposed high-class infrastructure facilities to the region, connectivity, power, water supply, gas networks and logistics has been developed in the region. This has created high employment generation that will become three times the existing employments in the region. The potentials of the investment region are by nearness to the existing ports, which will support exports of the output from the Industries.

The proposed infrastructure in the industrial area and investment regions along DMIC has focus on following infrastructure.

- Connectivity of the industrial areas with DFC through road linkages, feeder rails, Ports and Airports. This indicates that there is a need to link the industrial areas with the DFC to ease the flow of raw material and goods.
- Provisions of infrastructure necessary for smooth functioning of industries, this infrastructure includes water supply, power generation, alternative power sources, logistic and institutions for development of skilled knowledge based manpower.

CHAPTER-3 INTRODUCTION TO EASTERN DEDICATED FREIGHT CORRIDOR

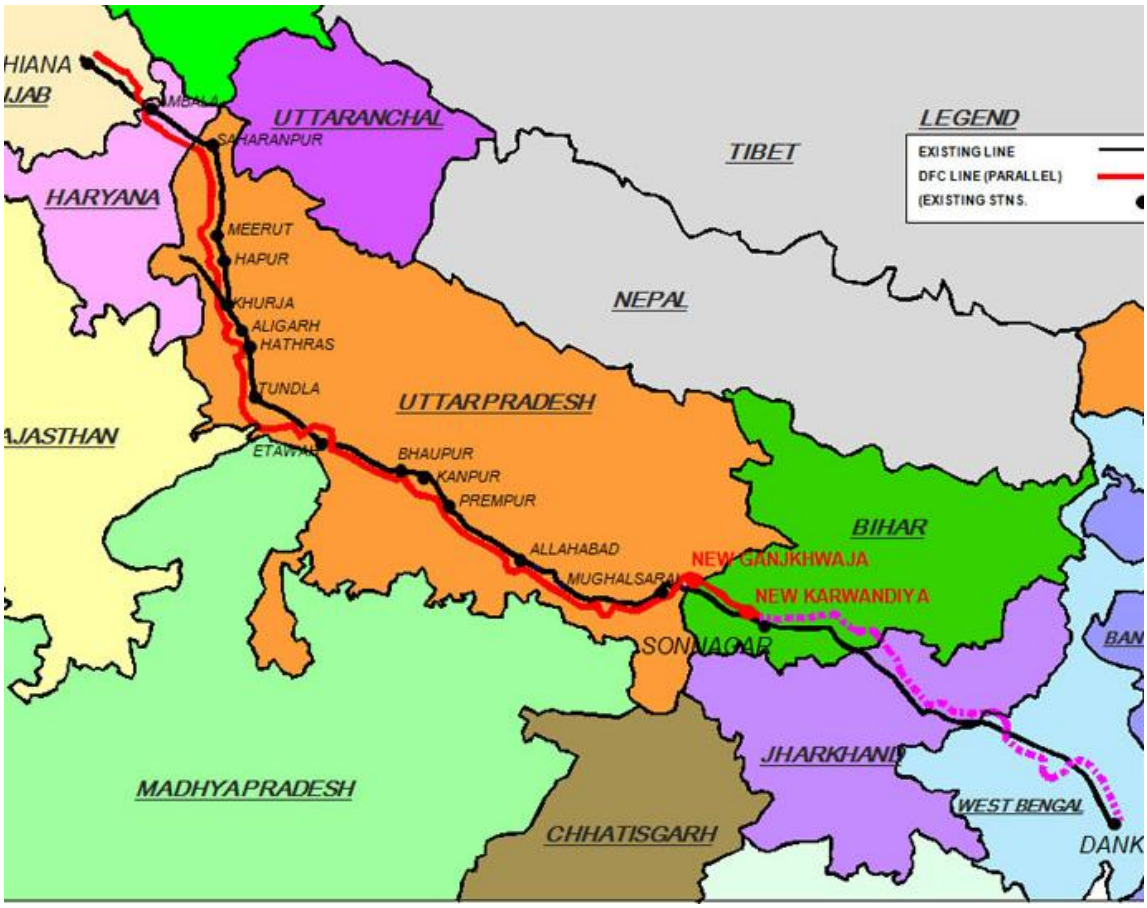
This chapter introduces to the proposed Eastern dedicated freight corridor in India and its significance to the state of Uttar Pradesh has been studied. Also the institutional frame work for development of Industrial corridor has been studied. Further the economic condition of Uttar Pradesh and the situation of the existing industries in Uttar Pradesh has been briefed.

3.1 Introduction

The EDFC has a total route length of 1839km and is divided into two parts: a double track segment which has a length of 1392km between Khurja in U.P. and Dankuni in W.B. & a single tract electrified segment having a length of 447km between Khurja-Dadri in U.P and Ludhiana in Punjab. Many junctions have been planned along the eastern DFC for reducing traffic of the existing railway network between Delhi and Kolkata. The following table depicts the distance traversed through each state.

Eastern DFC	
States	**KMs**
Punjab	88
Haryana	72
Uttar Pradesh	1049
Bihar	93
West Bengal/Jharkhand	538
Total	1839

The Eastern Corridor will pass through six states covering coal power plants in U.P. , Rajasthan, Haryana and Punjab. The traffic in the direction of U.P. is expected to increase as much as 116 million tons by the end of 2022 and vice-versa in the down side,it is expected to increase to 28 million tons. The funding through World Bank is being planned in three phases namely APL1,APL2 & APL3 for Khurja Kanpur, Kanpur Mughalsarai and Khurjaa Ludhiana respectively.The World bank has funded construction of this stretch by providing a APL of 975 millions in the first phase and the project will be executed by Dedicated Freight Corridor Corporation of India Ltd.The map below shows the alignment of the EDFC.



Map 6 Alignment of the Eastern Dedicated Freight corridor. Source: dfccil.org, May 2014

3.2 Institutional setup.

In November 2013, the inter ministerial group has decided to form the institutional set up for development of Industries along EDFC. The ADKIC (Amritsar Delhi Kolkata Industrial corridor) will have an institutional framework very similar to the DMIC. The institutional set up for ADKIC is as follows.

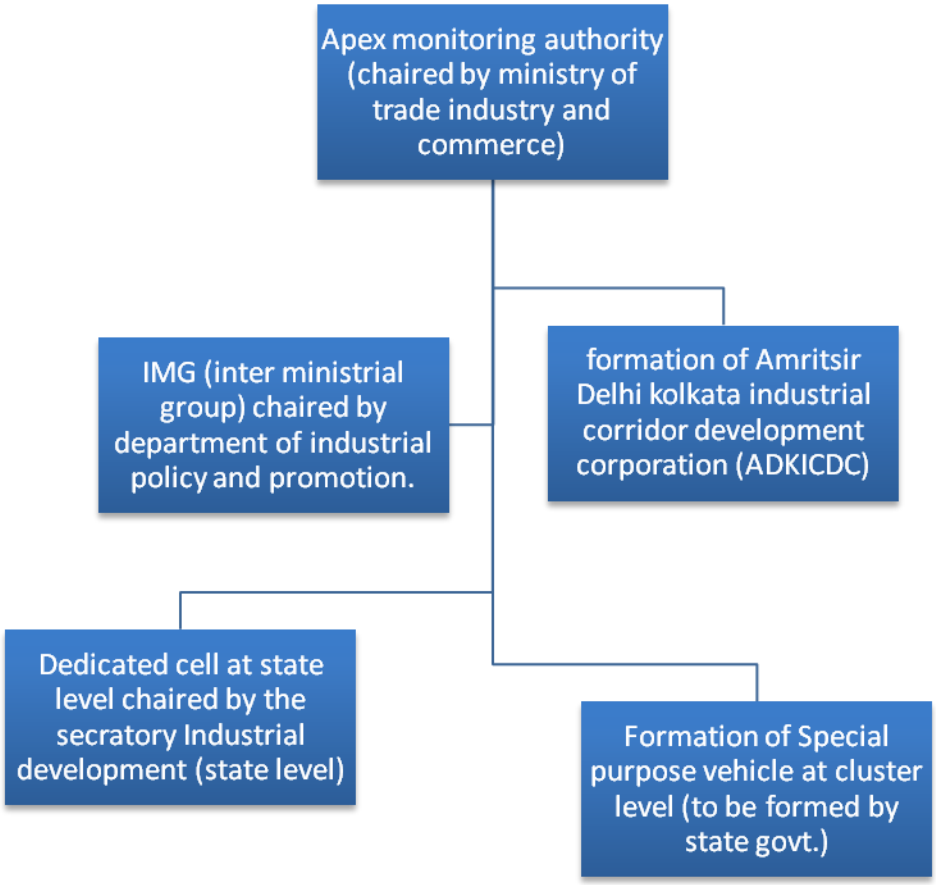
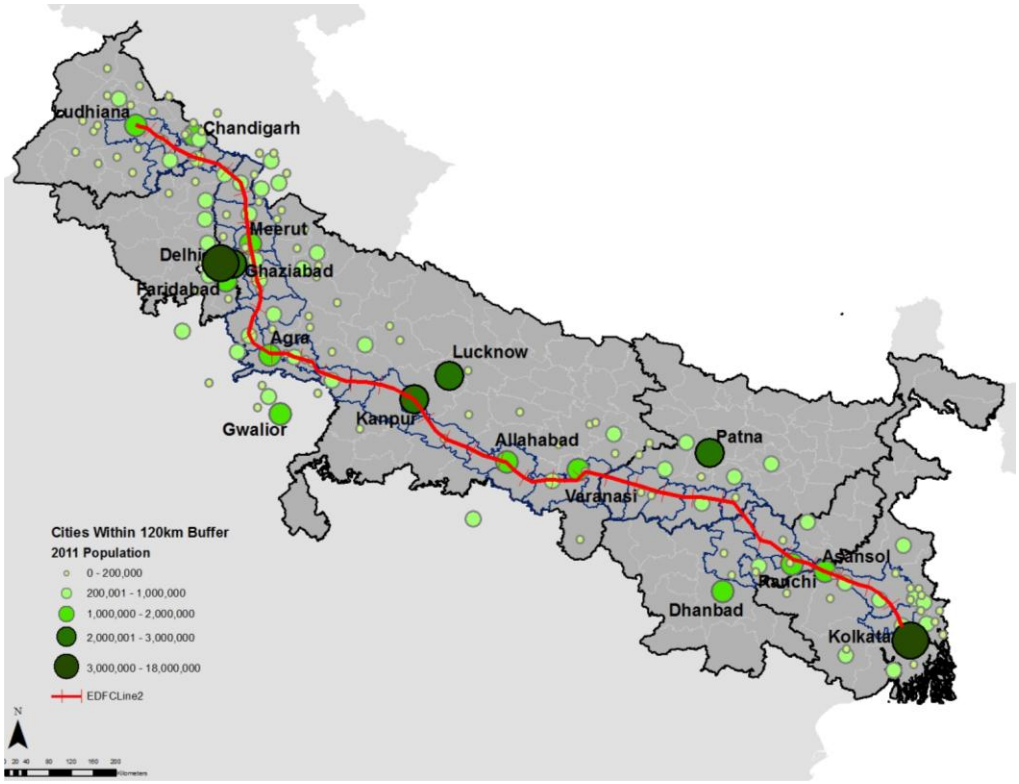


Figure 4 Institutional framework of ADKIC. Source. Press information bureau, Govt. of India. 2013

The apex authority of ADKIC is chaired by the ministry trade commerce and industry with major function to monitor, guide, and approve the projects and set timelines for the same. The ADKICDC acts an entity which represent the central and state government and responsible for implementation of project and provide guidance to state level industrial development agencies. Inter ministerial group (IMG), which is responsible for development and formulation of policies and finalization of clusters for industrial development in different zones.

3.2 EASTERN DEDICATED FREIGHT CORRIDOR: UTTAR PRADESH

Uttar Pradesh has the highest share of the length passing through the state, 1049 Km out of 1839 Km of the EDFC passes through Uttar Pradesh. Uttar Pradesh has a high share of population to the nation that is 19.9 millions, 16% of the population of India are residents of Uttar Pradesh. Being the first largest state of India in terms of population and 5th largest state in terms of area i.e. 241,000 sq.km. The map 6 below shows the alignment of the Proposed Eastern Dedicated Freight corridor with major cities in the influence zone of the proposed DFC.



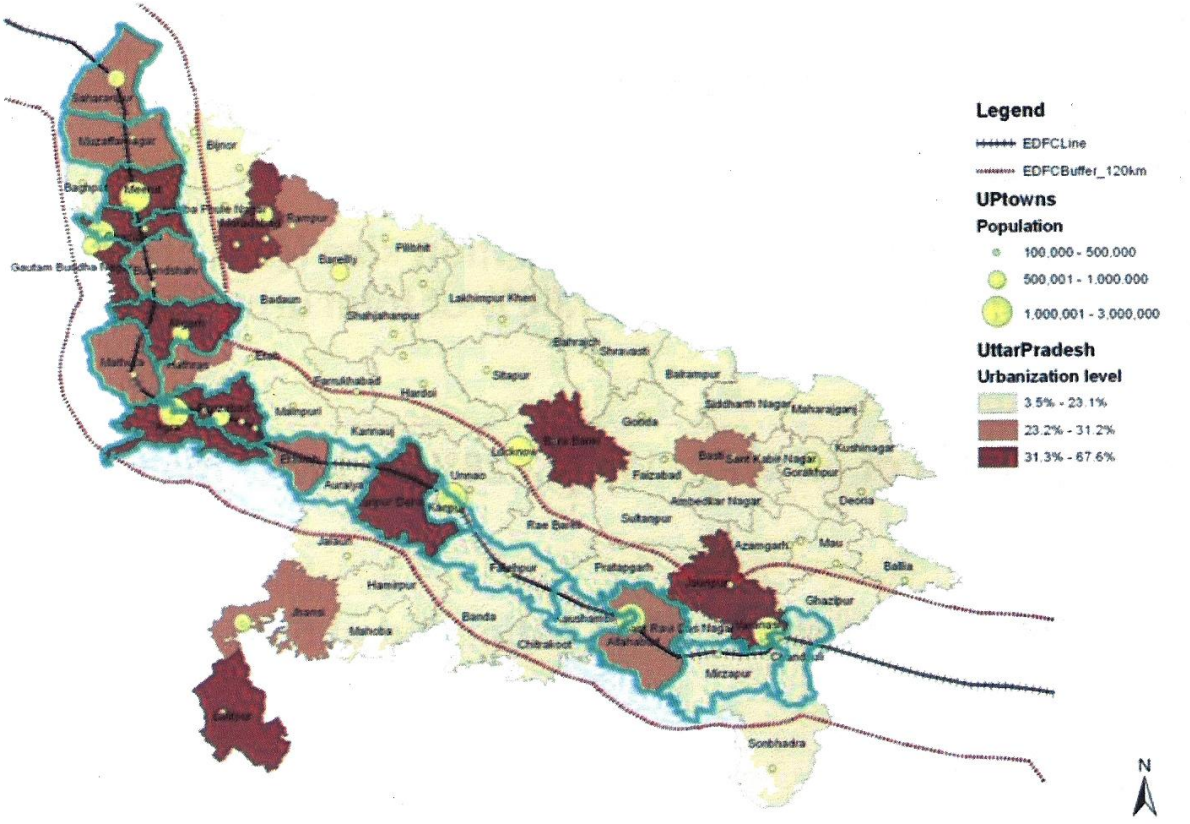
Map 7 Alignment of Eastern Dedicated freight corridor with major cities in the influence zone.

As Uttar Pradesh has the highest share of length of the EDFC, the opportunities and benefits of EDFC will have a higher impact on development of the state. Major cities falling in the influence zone are Varanasi, Allahabad, Lucknow, Kanpur, Agra, Ghaziabad and Meerut.

The next part of the chapter details the demographic, economic, resources and industrial profile of the state, to examine the overall industrial and economic condition of the state, and the districts/regions that has low economy and industrial investment.

3.2.1 Demography

Uttar Pradesh has very a very large number of population as compared to any other states of the country, has a population of 19.9 crores with having only 7 million plus cities in the state. The over all urbanization level of the state is still very low as compared to the national average i.e. only 22% of the population resides in urban areas. The map 6 below shows the level of urbanization with major cities in Uttar Pradesh.



Map 8 Urbanization level of Uttar Pradesh source: Census of India, 2011

The map 6 shows that the western districts such as Gautam Budh Nagar, Ghaziabad, Meerut, Agra, Mathura, which are near to the National Capital Region of Delhi, have a higher level of Urbanization as compared to the other parts of the state. The eastern region of Uttar Pradesh

has low level of Urbanization other than Varanasi, Allahabad, Jaunpur. Most of the districts have urbanization level below 23%, that is the average level of Urbanization in the state.

3.2.2 Economic Profile

The Economic condition of Uttar Pradesh Varies in different regions, the western region has a higher Per Capita Income as compared to the eastern, central and Bundelkhand region. The figure 3 and 4 shows the shift in the primary, secondary and tertiary sector of Gross domestic Product between 2004-2005 and 2011- 2012.

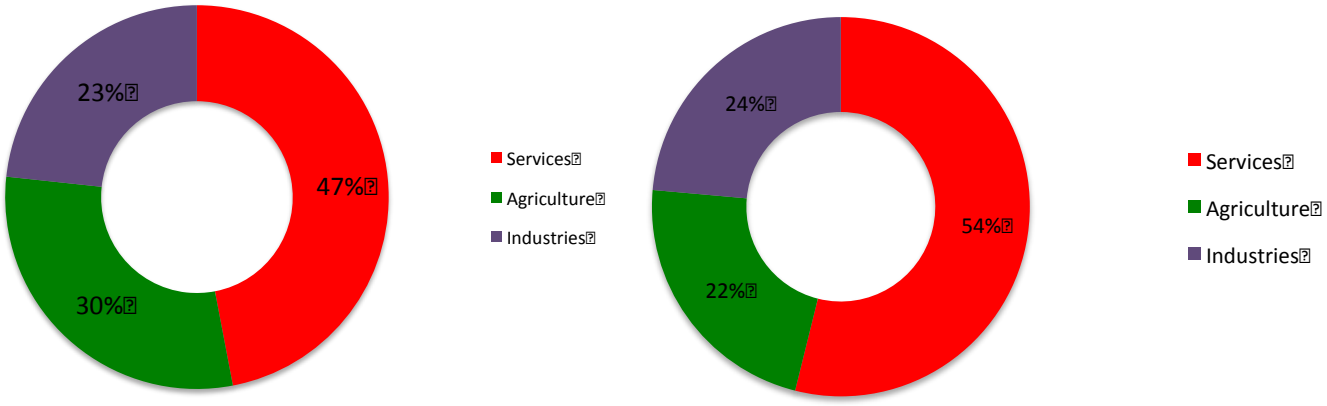


Figure 5 Shift in Primary, Secondary and Tertiary sector, Source: Directorate of Economics and Statistics,Uttar Pradesh,2012

The shift in GDP of Uttar Pradesh has shown change in Agriculture and service sectors, the primary sector falls down from 30% to 22%, whereas service sector has shown increase by 7% between 2004 and 2012. The Industrial sector has shown a constant contribution with only 1% increment. The neutral change in the Industrial sector of economy of state indicates the low rate of growth due to lack of industrial development.

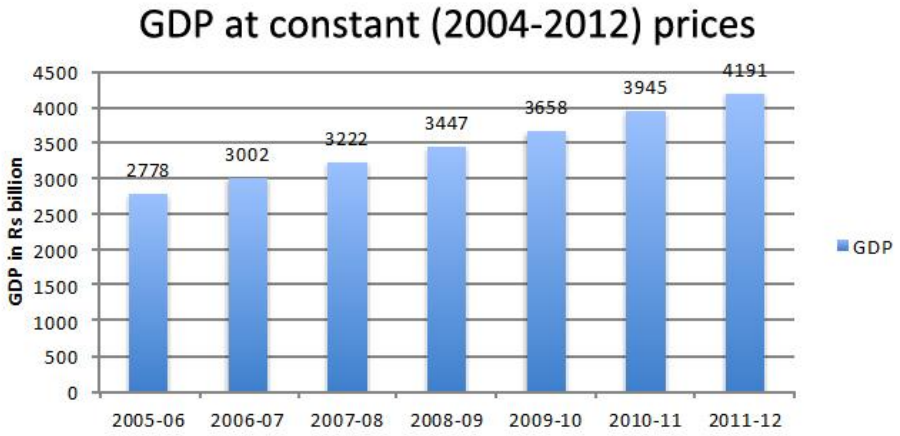


Figure 6 Growth in GDP of Uttar Pradesh

The key economic drivers of the state are the tertiary sector followed by primary and secondary sectors.

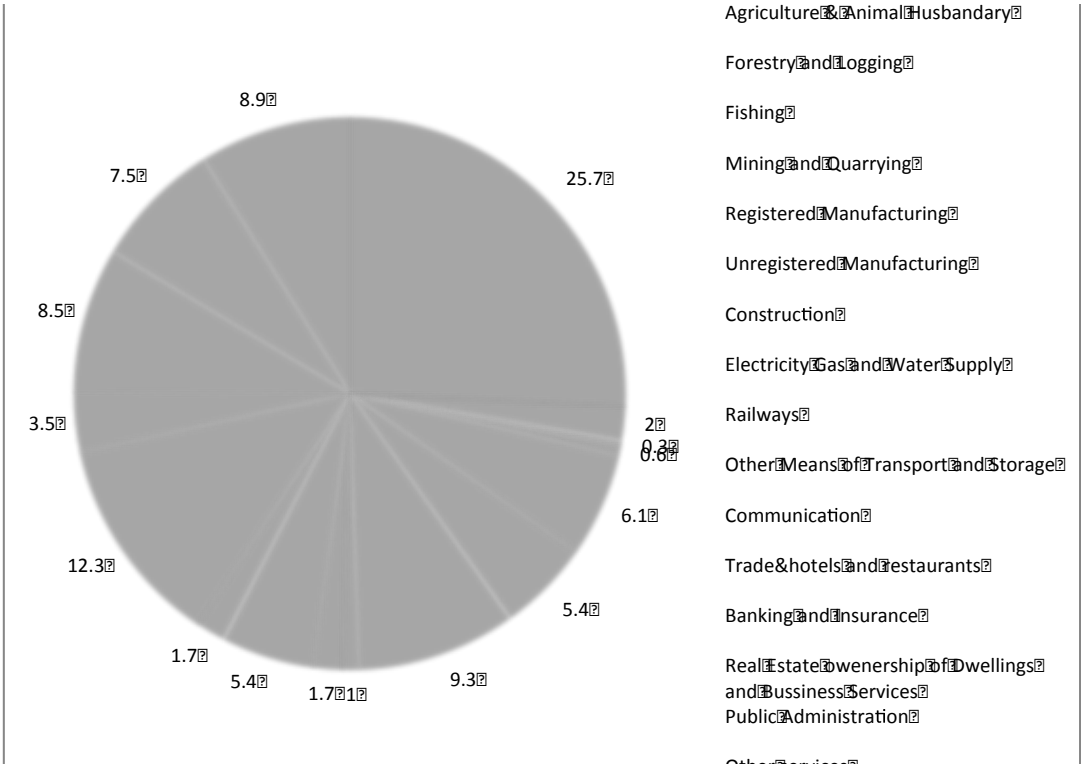


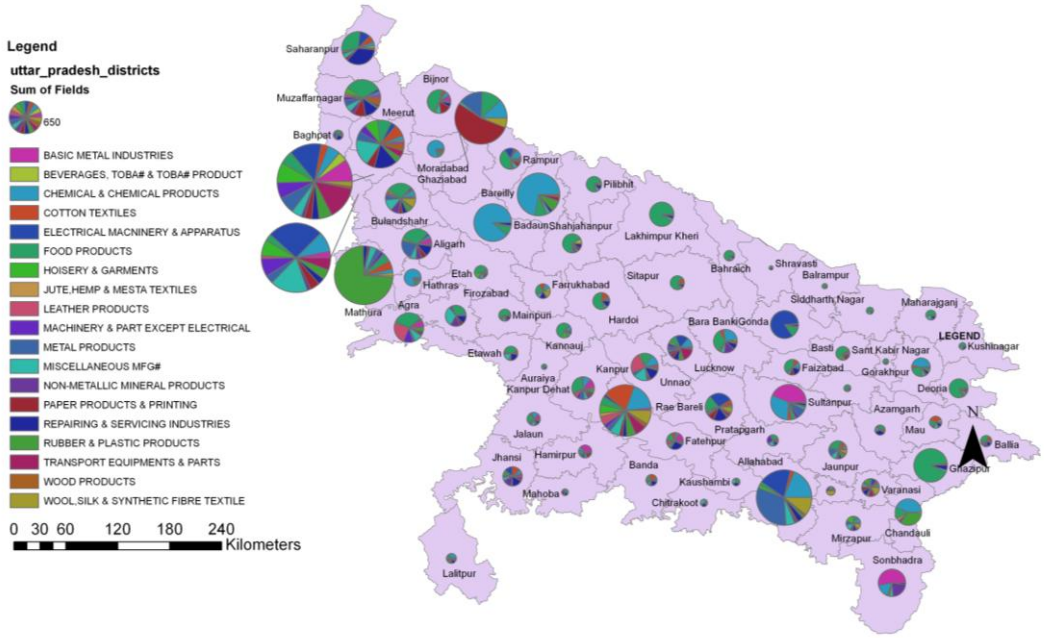
Figure 7 Economic drivers of Uttar Pradesh. Source: Uttar Pradesh directorate of Economics, 2013

The major sectors contributing to economy are agriculture (25.7%), Trade, hotels and restraunts (12.3%) and manufacturing (11.5%). The manufacturing sector has 11.5%

contribution, which is majorly concentrated in the western region to the districts of Gautam Budh Nagar, Ghaziabad and Meerut. The Manufacturing sector in the eastern region has lower contribution. Only the districts Varanasi, Kanpur and Allahabad have higher contribution in the central and eastern region of the State.

3.2.3 Industries in Uttar Pradesh

Investment in Industries have been attracted by the western districts of the State as the region is in the vicinity of the National Capital region of Delhi, which provides the investors with high class infrastructure and connectivity to one of the highest consumption zone i.e. NCT of Delhi. The manufacturing industries have benefit of nearness to the markets for consumption, which cuts he cost of movement of goods to the markets.



Map 9 Investments in Industries, Uttar Pradesh. Source directorate of economic and statistics Uttar Pradesh, 2013

The map 9 shows district wise investment in industries, across Uttar Pradesh in different types of industries. The western region has various types of industries including heavy machinery and other mega industries, which manufactures electronic devices, car assembling, etc. also the

cities like Noida and Ghaziabad has developed Special Economic zones (SEZ) and Investment regions which has provisions for housing, services, facilities of schools, hospitals, and other recreational and infrastructure facilities. This mix of types of industries and infrastructural provisions attracts investors and has created millions of direct as well as indirect employment. Whereas, in the eastern region there are no such SEZ or Investment regions, that entices investors to capitalize into new industrial units. The figure 8 shows the overall distribution of types of industries according to investment in Uttar Pradesh.

Agriculture being the major economic activity in Uttar Pradesh, 17% of the investment is made in the Industries related to manufacture of Food products, followed by chemical and chemical products (8%) and rubber and plastic products (8%).

3.2.4 Industrial Policy of Uttar Pradesh.

The Infrastructure and industrial investment policy of Uttar Pradesh, 2012, following are the provisions for setting up new Industry units in different regions of the state.

Aspect	Policy	Institution	Land	Finance
Industry	National Investment and manufacturing zone Focus sector: All types of manufacturing and integrated industrial township Focus Regions: Locations identified at Jhansi and Auraiya	UPSIDC- state level nodal agency for implementation using PPP model	Area notified under UP state Industrial Development Authority Act 50% land by UPSIDC and 50% Land by the Private Investor	Government equity in form of land.
Industry- Food Processing	UP Food Processing Policy, 2012	UPSIDC	Exemption from stamp duty on land	• Exemption from Mandi fees • Interest Subsidy • Capital investment subsidy • Research and development Grant • Subsidy for Quality certification • Subsidy for exports
Industry- Sugar	Sugar Industry, Co Generation and Distillery Promotion policy, 2013 Attracting private capital in above sector Increase yield of sugarcane by 15% Setting UP on new sugar mills in 24 identified districts Cogeneration of electricity by 750 MW	UPSIDC- state level nodal agency for implementation using PPP model	Stamp Duty concession on purchase /lease land for industries Land Acquisition Act, 2012	• Subsidy on capital interest • Exemption on purchase tax on sugarcane. • Interest free loan equivalent to VAT deposited over five years along with the central Sales taxes or 10% of the annual sales revenue whichever is less will be provided with the moratorium of five years • Exemption from administrative charge on molasses • Re-imbursement of society commission to the extent of 75%.

Aspect	Policy	Institution	Land	Finance
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The existing state Industrial policy of Uttar Pradesh has focused on eastern and Bundelkhand regions, as the policy offers the investors special advantages for setting up industrial units in these regions. Agro parks, food processing units and sugar distilleries has exemptions on taxes, land registrations and exemption on facilities for research and development. Large-scale industries (with investment of Rs.5 crores and 10 Crores or more) in the Eastern regions particularly have special incentive. The policy offers such location specific incentives that it tends to attract new industrial setup in the eastern and Bundelkhand regions. Adding a high capacity Dedicated freight corridor to these regions and the supporting industrial policy increases the potential of the regions to develop industries.

Policy implication in the eastern region of Uttar Pradesh

The infrastructure and industrial investment policy of Uttar Pradesh has its special implication on eastern region of Uttar Pradesh, being a agriculture dominating state it has special

incentives for agro-based and food processing units all over the state. Some of special benefits for the industrial set up in the eastern region of Uttar Pradesh are as follows.

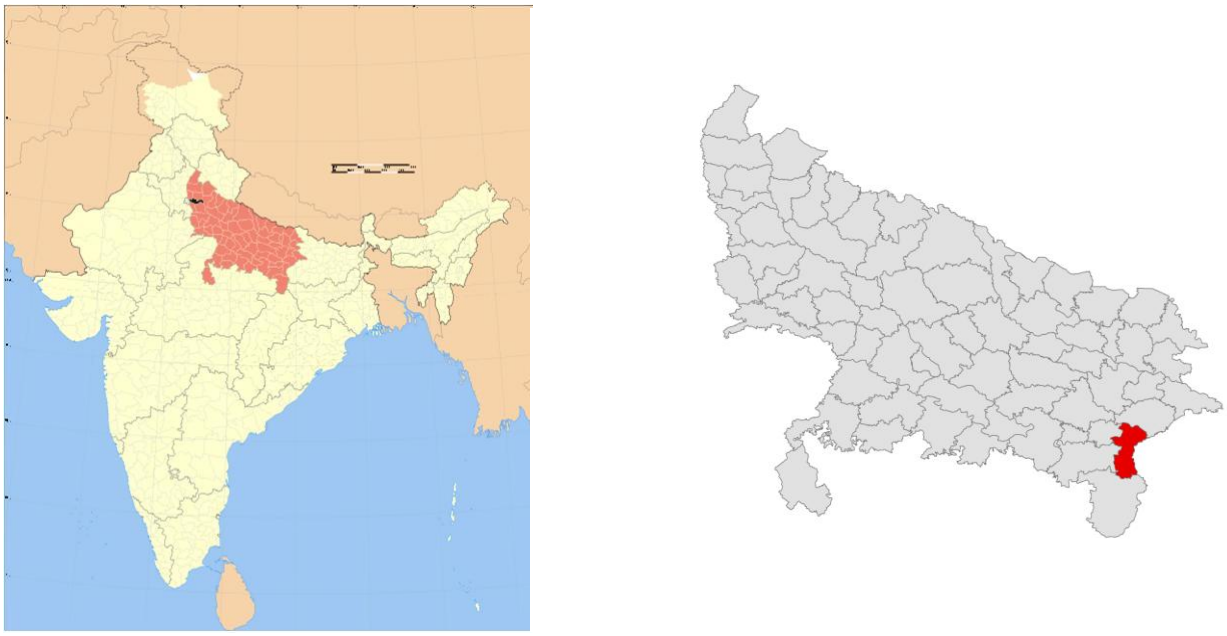
- Food processing units will be benefitted with special incentives in any part of the state.
- Any type of industries with investment of Rs. 10 crores of more in the eastern region has special incentives.
- Setting up new sugar mills in 24 identified locations including Chandauli. The new sugar distilleries will be exempted from stamp duty and purchase of land through approval of UPSIDC.

CHAPTER-4 THE STUDY AREA: CHANDAULI DISTRICT

The objective of this chapter is to identify the potential of the district Chandauli, with reference to Infrastructure, resources, Economy and policy implications in the district Chandauli.

4.1 Introduction: Chandauli District

The district Chandauli was carved out of the Varanasi District in 1997, before it was a part of the Varanasi district. The river Ganga in the west separates Varanasi and Chandauli Districts. The district's headquarter is in Chandauli town which lies in the central part. The map shows the location of Chandauli.



Map 10 Location map of Chandauli district. Source: wikipedia.org/chandauli, May 2014

Mau surrounds the district on the west, Varanasi and Mirzapur in the west and Sonbhadra districts in the south. The eastern part of the district is surrounded by Bhabhua district of Bihar. Mughalsarai is the largest town of the district with a population of 130,091 including the Railway settlement of Mughalsarai. The district is also known for largest yard of Indian Railways built in 18th century. Chandauli was also known as '*Dhan ka Katora'*, which means, "rice bowl" of eastern Uttar Pradesh as it has a high yield of rice. The beginning of Industrial set up in the district started with rice mills and textile units when it was a part of Varanasi district.

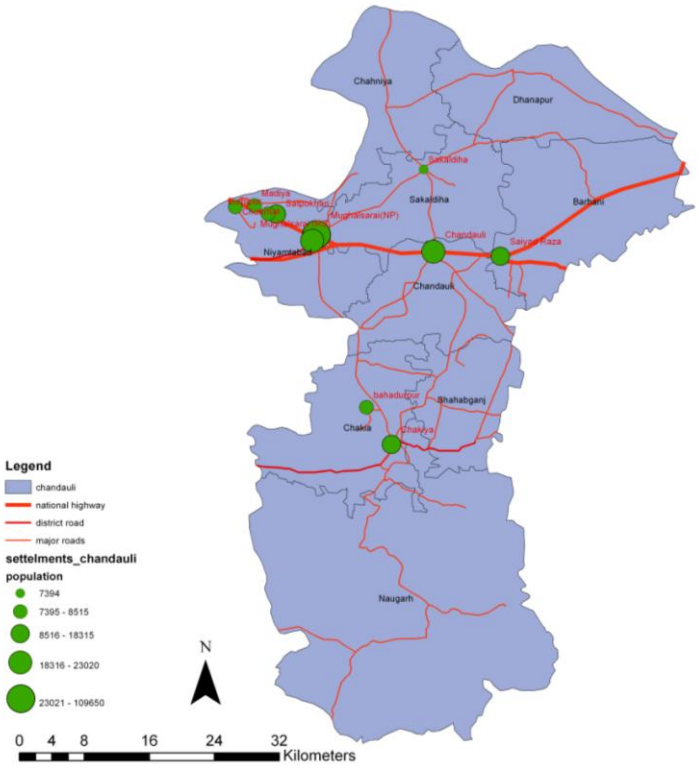
4.2 Demography

The district has a population of 19, 52,756 as per the census of India 2011. Chandauli has 11-census town according to the CoI. The decadal growth rate of population between 2001-2011 is 19% as the population of the district in 2001 was 16,43,251. The table 6 shows the town wise population:

Table 6 Population of towns in Chandauli district. Source: Census of India

Town	Population	No. Of Households
Mughalsarai	109650	16796
Chandauli	23020	3520
Mughalsarai Railway settlement	20441	4111
Saiyad Raza	18315	2651
Chakia	17356	2661
Satpokhari	13757	1968
Bahadurpur	8515	1252
Dulhipur	8243	1300
Chaurhat	7971	1149
Madiya	7891	1230
Sakaldiha	7394	1029

Other than 11 census towns the districts have 1537 villages distributed in 9 blocks. The map 9 shows the block divisions and the towns present in the district. Mughalsarai is the major service center as it has the highest population and acts as service center for the district, provided with railways connectivity, major secondary schools, hospitals and largest retail and wholesale markets.



Map 11 Major towns and distribution of blocks in the district.
Source: compiled by Author

4.2.1 Population density

The total area of the district is 2484.7 sq.km and has a density of 768 persons per sq.km. The population of the district is concentrated in the block containing the major town i.e. Mughalsarai, railway settlement (Mughalsarai) and Chandauli Town. The district has Low population density as compared to that of the Uttar Pradesh, which has a cumulative population density of 829 persons per sq.km.

4.3 Urbanization

Of the total population of the district, only 12 % of the total population of the districts resides in urban area where as 88% of the population lives in rural settlements, urbanization in the district is very low as compared to the average of Uttar Pradesh i.e. 28%. The table shows the distribution of population according to sex and residences in terms of rural and urban areas.

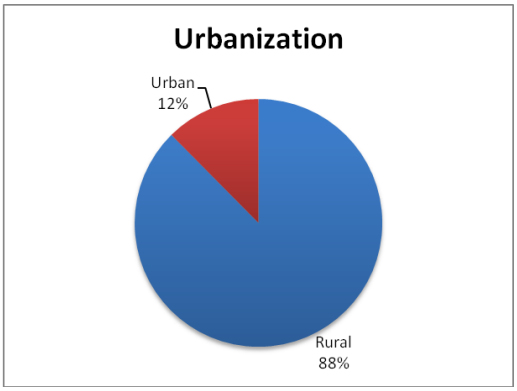


Figure 8 Level of Urbanization, District Chandauli. Source: Census of India, 2011

Table 7 Distribution of population according to sex and place of residence (rural and Urban). Source: census of India, 2011. Compiled by Author.

POPULATION	Total	Rural	Urban
Number of Households	296804	259129	37675
Total Male Population	1017905	890630	127275
Total Female Population	934851	819573	115278
Total population	1952756	1710203	242553

The sex ratio (number of females per 1,000 males) of the district is 918, which is more as compared to the average of sex ratio of the state i.e. 912. Where as the sex ratio in the urban and rural area are 905 and 920 respectively.

4.4 Literacy

The inclusive literacy rate of the district is 60% whereas the male literacy 68% and female literacy is 51%. Comparing to the state average of literacy rate i.e. 67.68% Chandauli has lower literacy rate, the reason low literacy is due to very low literacy rate in case of females as compared to male. The figure 8 shows the statistics and distribution of literates in urban and rural areas.

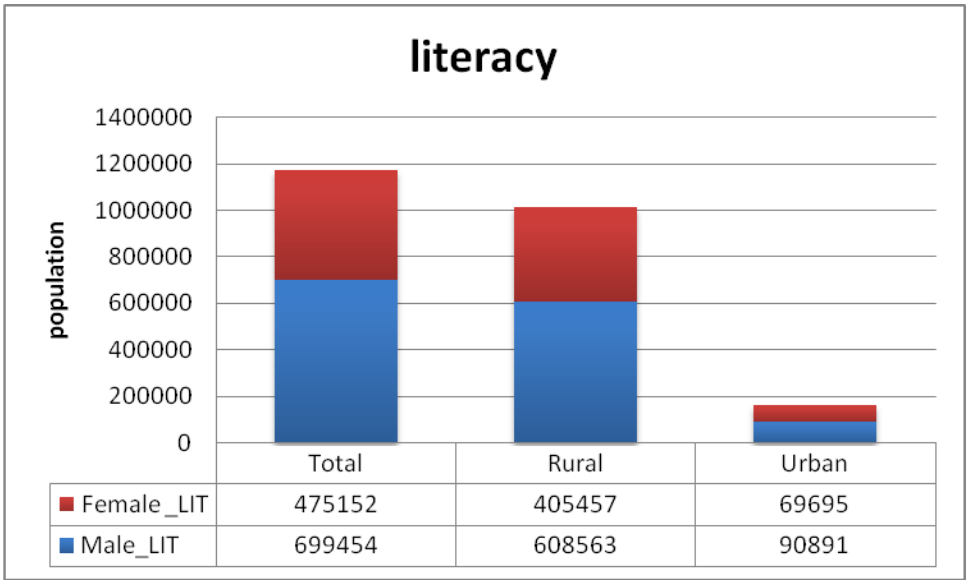
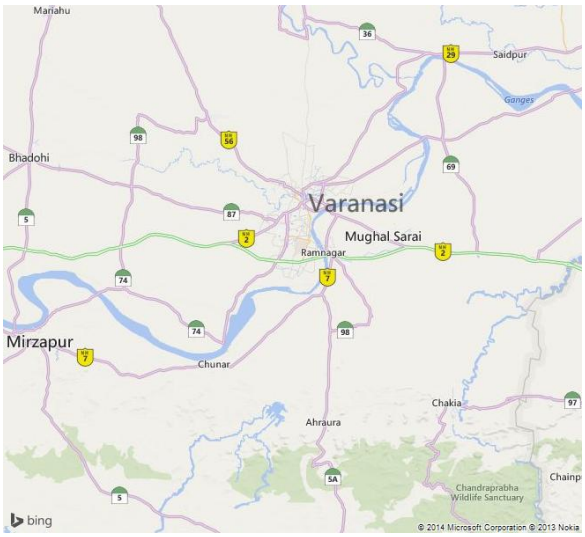


Figure 9 Literacy rate of Chandauli. Source: Census of India, 2011. Compiled by Author

4.6 Connectivity

The district Chandauli has good road connectivity as National Highway-2 passes through which connects Varanasi, Allahabad, and Kanpur and to the NCT of Delhi towards the west.



National Highway7 connects the Mirzapur district and further it connects to the southern states of India. The map 11 shows the road network connectivity of Chandauli district.

Map 12 Road Connectivity of District Chandauli. Source: Bing.com/maps/, May 2014

Table 8 list of Major Roads and connectivity of district Chandauli.Source:Author

S.No.	Roads	Connectivity
1	National Highway – 2	Varanasi, Allahabad, Kanpur and Delhi
2	National Highway – 7	Mirzapur
3	State Highway – 69	Connects NH 29 and Ghazipur District
4	State Highway-98	Ramnagar Industrial area to NH-35
5	National Highway - 97	Ghazipur and Mau District
6	MDR- 65	Chandraprabha national park

The connectivity of the district through national highways and other major road is strong. This is one of the major positive characters of the district to grow as an industrial hub. As in the case

studies done for DMIC connectivity through road was one of the major infrastructure needed to develop an area as industrial hub in the influence zone of industrial corridor.

Railways

The Industrial area and Mughalsarai city has a good connectivity through railway network of Eastern Central Railways network of India. Falls in middle of the one of the mist busiest route of railway connectivity between Delhi and Kolkata, also known as the 'Grand Chord' of the railway network of India. The proposed Eastern dedicated freight corridor passes through the industrial area of the district, connecting link between Mughalsarai junction and Khurja in the western Uttar Pradesh near NCT od Delhi.

Airports

The nearest airport is situated at Varanasi district, which is 27 Km from the district Headquarters. The airport has been recently upgraded to facilitate with International and more frequent domestic services.

4.7 Economic profile

The economic profile of the district, details out the net district domestic product by activity sector of economic activities in the district. The table 8 shows the net district domestic product at current prices and by type of activity in primary, secondary and tertiary sectors.

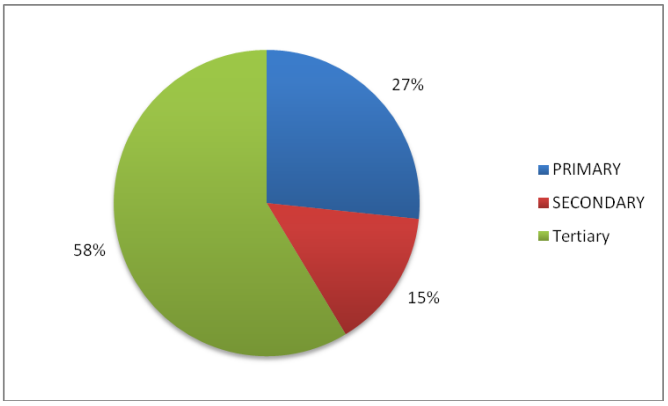


Figure 10 NDDP of Chandauli (Sector wise). Source: Uttar Pradesh economics and statistics department, May 2014

The primary and the secondary economic activities contribute 27% and 15% respectively to the district domestic product of Chandauli in 2011-12. Major share to the DDP is made through service sector. The figure 10 further details out the economic activities involved in the district.

Economic activity	**Sector wise NDDP at Current Prices (Rs. Crores)**
Agriculture & Animal Husbandry	1172.97
Forestry & Logging	81.77
Fishing	51.33
Mining & Quarrying	20.2
PRIMARY	1326.27
Manufacturing	285.2
Registered	116.02
Unregistered	169.19
Construction	431.57
Electricity, Gas & Water Supply	15.29
SECONDARY	732.06
Transport, Storage & Communication	669.68
Railway	218.18
Other means of Transport & Storage	332.09
Communication	119.41
Trade and Hotel & Restaurant	487.87
Transport, Communication & Trade	1157.56
Banking and Insurance	359.6
Real Estate, Ownership of Dwellings and Business Services	417.87
Finance and Real Estate	777.46
Public Administration	465.99
Other Services	515.71
Community and Personal Services	981.69
Tertiary	2916.71
NET DISTRICT DOMESTIC PRODUCT	4975.05

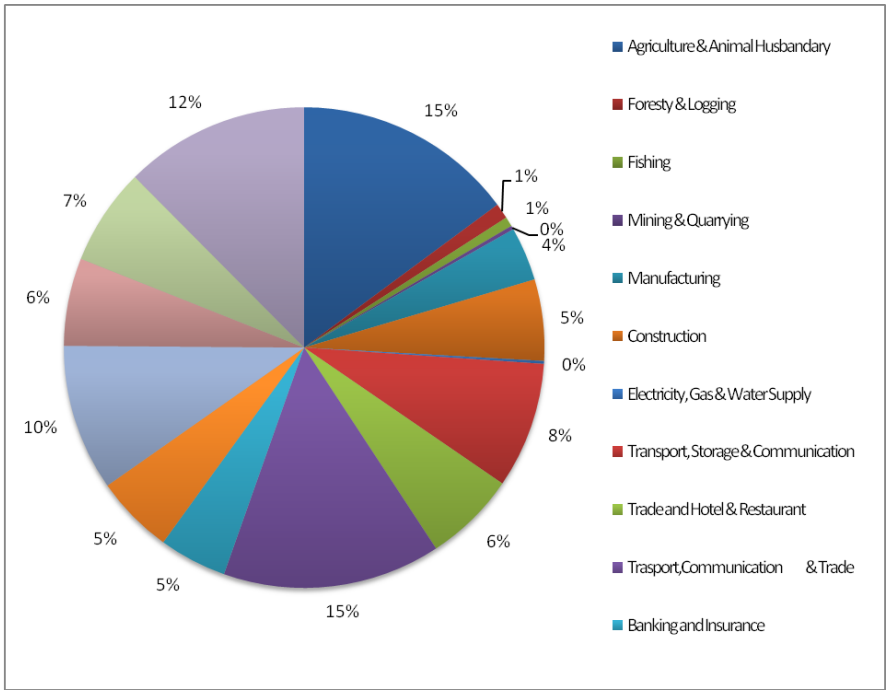


Figure 11 Distribution of DDP in Chandauli district

The major economic activities practiced in the district are Agriculture and transport communication and trade, which has share of 15% each to the DDP. The manufacturing sector has only 4% share to the economic activities.

Considering manufacturing sector the district has potentials to grow its manufacturing sector, as it has high connectivity through road and rail to support a manufacturing base. The per capita income by in the year 2011-12 is 24,314 INR that is very low as compared to the national per capita income that is 54,835 INR. The dependence of the economy of the district on the agriculture and service sector is one of the major reasons for of low per capita income.

4.8 Socio- Economic profile

The unemployment rate of the district is 9.9% and underemployment is 8.8% as per the Census of India, 2011. The table 9 shows the details of working population and the WFPR (work force participation rate) in the district.

Table 9 Employment rate in Chandauli district, 2011, Source: Census of India, 2011

S. No.	Sector	Population
1	Population	1952756
2	Main workers	339953
3	Marginal workers	187680
4		
5	Underemployment rate	8.80%
6	Unemployment rate	9.90%
7	Work force participation rate	32%

The work force participation rate of the district is 32%, indicated that 2/3rd of the population is dependent, this dependent population are those who are seeking or are available for work but due to high rate of underemployment (8.8%) they have no work opportunities in the district. As stated in the demographic profile the literacy rate of the district is about 60%, this aligns the high rate of underemployment and this part of the population lack opportunities. This is an indication of availability of work force in the district that can be beneficial for new industrial units. Setting up new industrial units in the district will create job opportunities not only directly but indirect jobs will boost the economic condition of the district.

Banking facilities

The district Chandauli has various private and government nationalized bank in the urban as well as rural areas. The table 10 shows the details of banking facilities, credit and deposit ratio of the district Chandauli. Loans for agriculture development and related services, facility of loans to the industrial sector has also been provided by banks in the district. The table 11 details out the amount of loan distributed to different sectors in the year 2011 and % realization of the loan distributed by the banks.

Table 10 Number of Banks, Credit and deposits in the district. Source Statistical handbook of uttar pradesh, 2012

Facilities	Facility per lakh of population.
Number of Scheduled commercial Banks	4.03
Deposits	9392.5 (per capita deposits)
Credits	2460.15 (per capita credits)

Table 11 Detail of loans distributed in different sectors in Chandauli. Source: Lead bank Officer, Chandauli, 2012

S.No.	Loan/deposition	Amount (Rs. 000)
1	Amount deposited	2,01,01,000
2	Total loan distributed	61,08,300
3	% Of loan amount deposited	30.38%
4	Amount of Loan distributed to Private sectors.	
4.1	Agricultural activities	11,20,100
4.2	Industries	2,88,364
4.3	Other activities	2,77,279
5	Total private loan distributed (4.1-4.3)	16,85,743

About 20 % of the total loan distributed is for industrial activities, which is about INR 28.8 crores. More than 110 crores loan amount is distributed for agricultural activities. Adequate banking facilities are present in the district and can provide banking facilities to new industrial set-ups in the district.

3.9 Agricultural profile of the District

The major economic activity carried out in the district is agriculture, as it contributes 15% to the District domestic product in 2011-12. The table 12 shows the production, productivity of the major crops produced in the district.

Table 12 Production and productivity of major crops grown in Chandauli District, 2012. Source: Uttar pradesh economic and statistic department, April 2014

Crop	Production (Qt)	Productivity (Q/ha)	Productivity (q/ha) State avg	Area Under major crops (ha)
Rice	3025160	27.5	21.2	109986
Wheat	2439780	25	31.13	95991
Barley	20300	18.49	20.59	1098
Jwar	9660	12.27	10.31	787
Millet	63940	13.8		4889
Maize	1220	17.94	14.77	68
Pulses	130440	7.97	-	16365
Oilseeds	8050	7.39	-	1089
Sugarcane	317600	445.44	-	713
Potato	159400	178.11	-	895
Sanai	50	3.13	-	16

Major crops grown the district are Wheat and Rice with a production of .24 million tons and .302 million tons respectively. Other than wheat and rice Barley, Jwar, millet and maize are grown in some part, which has low production as compared to rice and wheat. Sugarcane is another major crop that is grown in the district; the total production of sugarcane is 31760 tons per year. Wheat and rice comprise about 89 % (by weight) of the total crops produced Comparing the productivity of the major crops in the district with the average of that of Uttar Pradesh, rice has high yield as compared to state average where as wheat has low yield as compared to the state average. The consumption of these crops grown in the district is done locally to the markets and part of it is sold to the rice mills and floor mills units present in the industries present in the district. The figure 11 shows the distribution of major crops grown in the district.

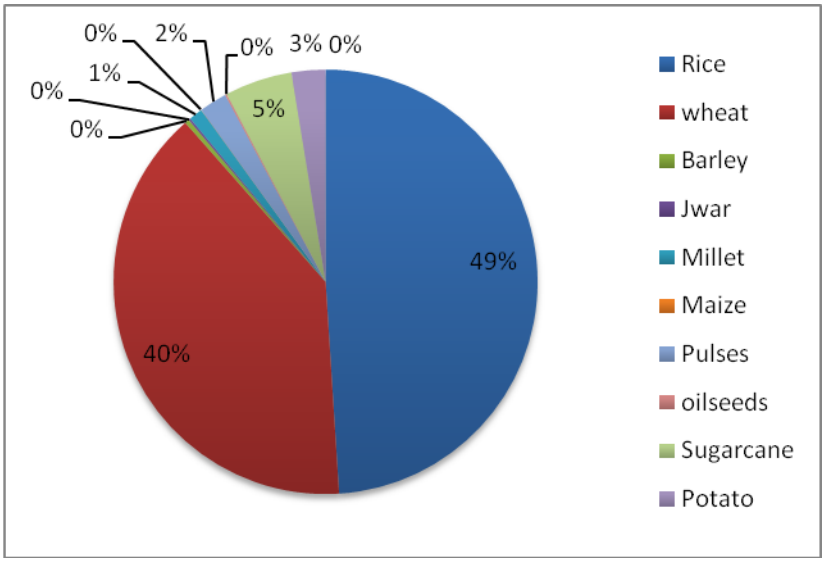


Figure 12 shares of major crops grown in the district. Source: Department of economics and statistics, Uttar Pradesh, May 2014

Horticulture

Other than production of crops the district produces fruits, majorly Guava and Mango. The table 13 shows the production and productivity of fruits in Chandauli.

Table 13 Productions of Fruit Crops in Chandauli. Source: agriculture contingency Plan, Chandauli, 2012

S.No.	Fruit crops	Productivity (Kg/Ha)	Production (,000 tons)
1	Guava	16000	9.20
2	Mango	17500	7.875
3	Amla	14500	1.045
4	Lemon	9500	.725

High production of guava and mango i.e. 9200 and 7857 tons, respectively in the district, can be a potential sector for setting up food processing units that manufactures jam, squash, etc. can be a potential sector of new industrial units in the district. However, the major agriculture resource of the district is wheat and rice, which is the major raw material to agro, based industrial units such as rice mills, sugar distilleries, Biscuits, floor mills etc.

Source of irrigation

Canals are the major source of irrigation in the district. The north-most part of the district is bounded by the river Ganga, through which various canals are distributed in the district and act as a major source of irrigation. The figure 13 shows the distribution of irrigated land by source of water.

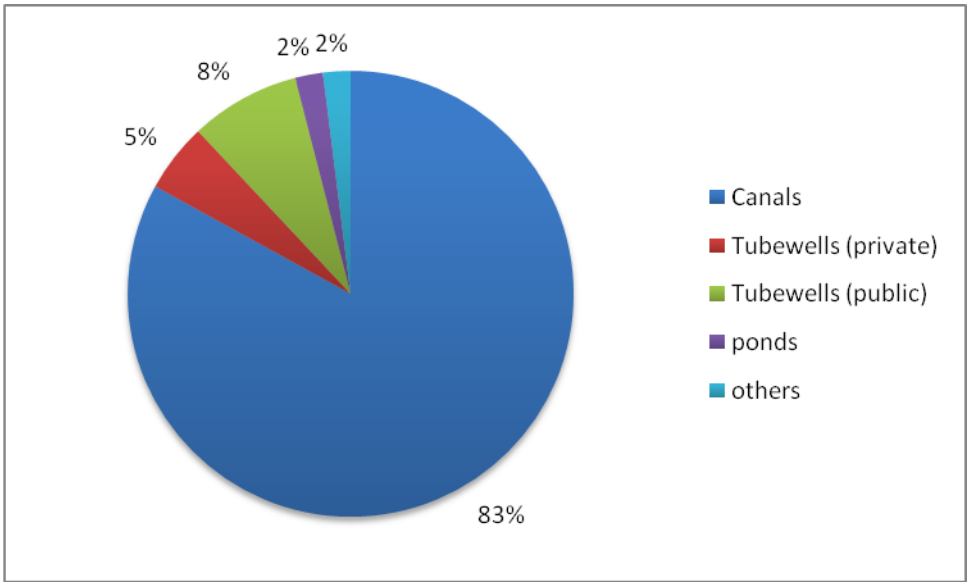


Figure 13 Source of irrigation, 2012 Source: Uttar Pradesh economics and statistic department. May 2014

The district also has a good annual rainfall that maintains the ground water table and also helps some regions for irrigation. Average rainfall in the district is about 1050 mm in the year 2011. The figure 12 shows the monthly average rainfall in the year 2012.

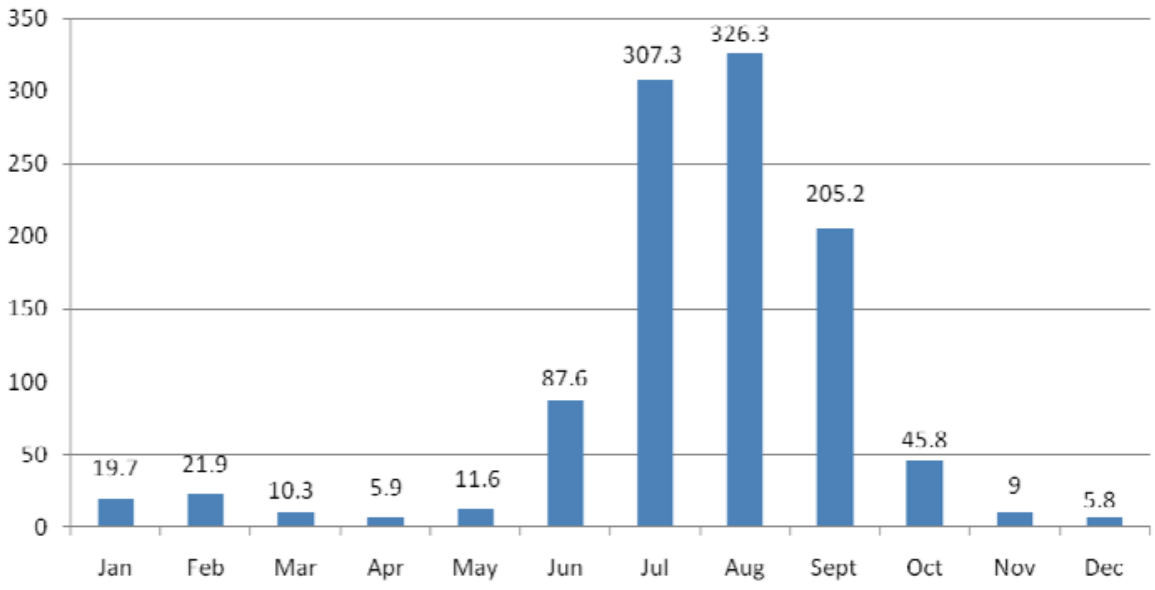


Figure 14 Average monthly rainfalls in Chandauli, 2012. Source: Agriculture contingency plan, District Chandauli, 2014

Agriculture implements in the district

Agriculture being the major activity in the district, it has many advanced agriculture implements used for cultivation of land. The table 14 shows the number of various advanced tools present and used in the district.

Table 14 Advanced cultivation tools in the district. Source: updes.nic.in, May 2014

S.No.	Tools	Numbers
1	Advanced harrow and cultivator	3404
2	Advanced thrasher machine	11594
3	Sprayer	591
4	Advanced sowing Instrument	612
5	Tractors	6078

Food storage

The district has various food storages under Food Corporation of India state government and housing boards. The table 15 shows the number of food storage present under different agencies with capacity of storage.

Table 15 Number of food storage present under different agencies with capacity of storage, Source: updes.nic.in, May 2014

S.No.	**Agency**	**Number of Food Storage.**	**Capacity of Food Storage. (Tons)**
1	Food corporation of India	9	38340
2	Central Housing Corporation	0	0
3	State housing	0	0
4	State Government	0	0
5	Cooperative	16	1000
6	Others	19	4555

The total capacity of the storages present in the district is 43895 tons whereas the total production in the district is twice the capacity of storages. Need for more storages and cold storages in the district to stock more perishable food crops to prevent damage and rotting.

4.10 Land Utilization

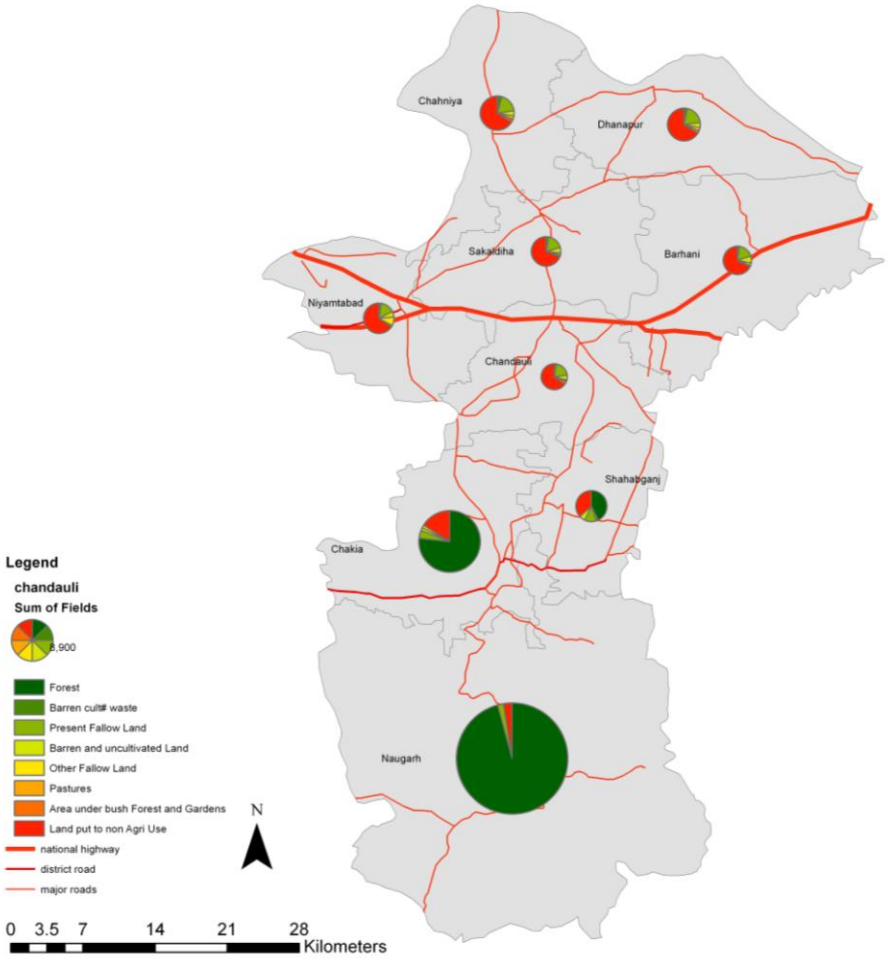
The district's major part of land is covered under forest and land under cultivation, other than cultivation about 1/10th of the total land is under non-agriculture uses, which include the urban area, roads, rails, and other uses. The table below shows the distribution of land utilized in the district.

Table 16 Land Utilization, Chandauli District 2012, Source updes.nic.in, May 2014

S. No.	Land Utilization	Area covered (, 000 ha)
1	Cultivable Area	135.595
2	Forest Area	77.4
3	Land Under Non agriculture Use.	25.389
4	Permanent pastures	0.036
5	Cultivable Waste Land	1.125
6	Land under misc. tree crops and groves	1.236
7	Barren and Uncultivable Land	2.83
8	Current Fallow	7.719
9	Other Fallow	2.029
10	Total area	253.359

The large amount of land covered under forest is in the Naugarh block of the district, situated in the southern most part of the district, Naugarh, the largest block by area in the district has very

low population as Chandraprabha National park covers most of the area in the block. Other than Naugarh block, each block has its majority of land covered under Agriculture Use. The map 12 shows the block-wise distribution of land under different uses. 54% of the total land is under agriculture practice and 31% land falls under forest in the Naugarh and Chakia block. Over all only 10% of the total land is under Non- agrarian activities, this indicated land under urbanized area is very low in the district.



Map 13 Block wise land utilization under different use. Source: Author

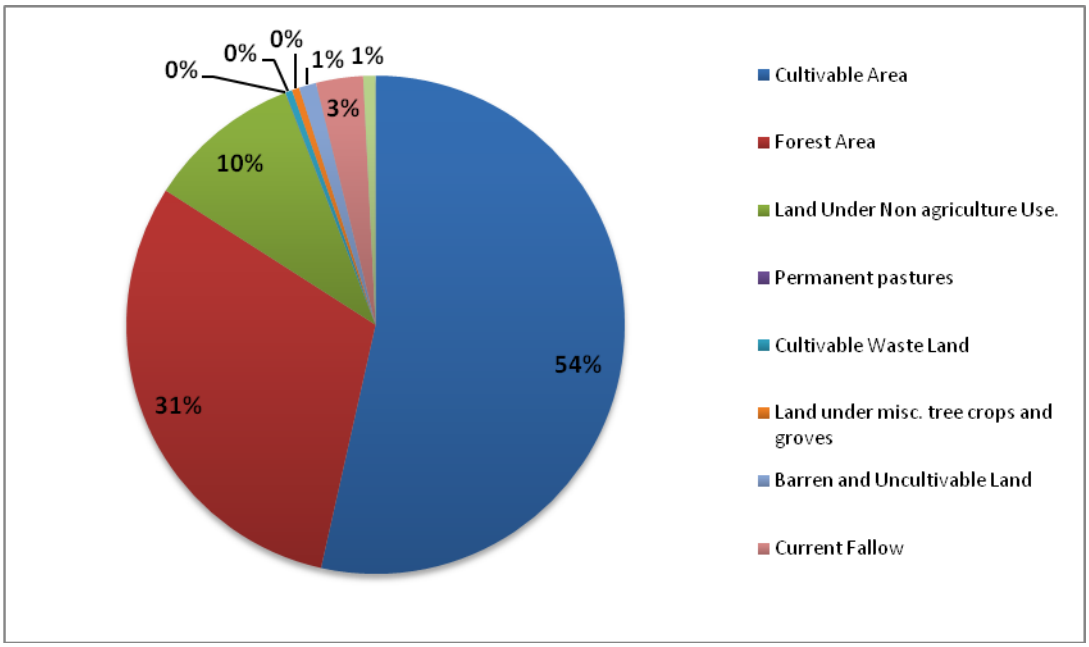


Figure 15 Percentage distribution of land Utilized under different use in Chandauli. Source: Compiled by Author, May 2014

Land Holdings

The table 17 shows the number and area according to different size of land holdings in the district.

Table 17 Land holding size district Chandauli. May 2014,Statistical Handbook of Uttar Pradesh,2011

S. No.	Size of land holdings (Ha)	Number	Area (Ha)
1	Less than .5	128999	44761
2	.5 to 1	39640	31689
3	1 to 2	17376	24861
4	2 to 4	8971	24801
5	4 to 10	3088	16952
6	10 or more	181	2360

The land holdings in the district has majority of land with small size of land holdings as seen in figure 16. 70% of area of land is under holding size of 2 Ha or less. This can be a constraint in land acquisition procedure as the number of owners will be high. Dealing with a larger number of populations in acquisition process sometimes creates issues, as owners are unwilling due to loss of land on which they are presently dependent upon.

Though the land acquisition policy of Uttar Pradesh 2012 clarifies the rehabilitation and resettlement of the land owners whose land is acquired for development in the district, also, compensation with 16 % of land in the same area after development will given to the owners.

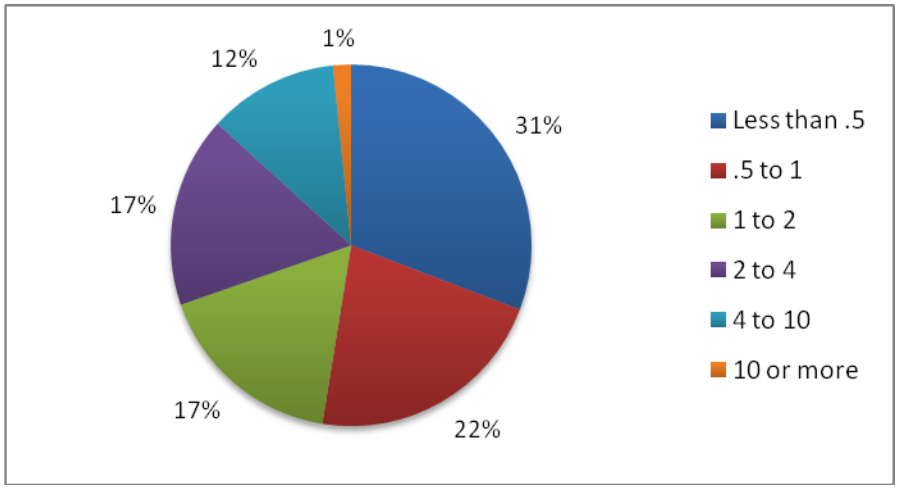


Figure 16 Distribution of land according to size of holdings. Source: Compiled by author, May 2014

4.11 Infrastructure

This part deals with infrastructure pertaining to the industries, which are roads, power and water supply. Only these infrastructures will be analyzed for the district Chandauli for development of new industrial units.

Roads

The major roads linked to the districts are mainly with NH-2 and NH-7. Other Major district roads and state highways connect the district with various parts of state and other districts. The table 18 shows the major road linked to the district.

The connectivity of the district through highways and MDRs is strong as 6 major roads are present in the district. The existing NH-2 has been already proposed and is under execution for doubling the road width from 4 lanes to 8 lanes. This highway passes through the existing district industrial center (DIC). The intra district connectivity to villages and settlements is poor. The table 19 shows the number of villages connected by pitched roads.

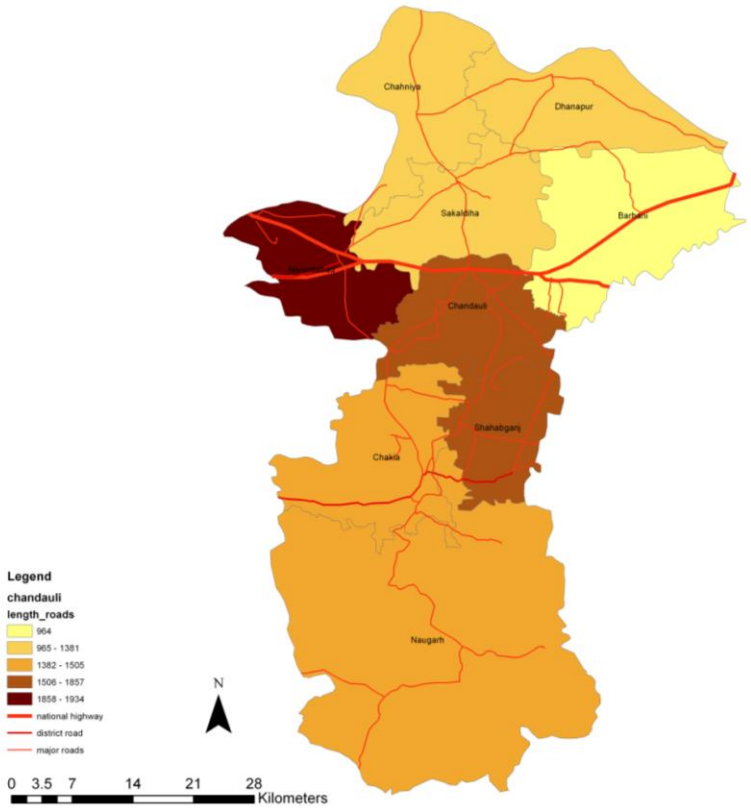
Table 18 Major roads present in Chandauli district. Source: compiled by Author

S.No.	Roads	Connectivity
1	National Highway – 2	Varanasi, Allahabad, Kanpur and Delhi
2	National Highway – 7	Mirzapur
3	State Highway – 69	Connects NH 29 and Ghazipur District
4	State Highway- 98	Ramnagar Industrial area to NH-35
5	National Highway - 97	Ghazipur and Mau District
6	MDR- 65	Chandraprabha national park

Table 19 Total number of villages connected through roads, 2012. Source updes.nic.in

Block	Length of roads (km)	Number of villages connected	Total Number of Villages
Naugarh	1430	78	122
Chahniya	1381	113	163
Dhanapur	1299	123	123
Sakaldiha	1322	134	168
Niyamtabad	1934	105	129
Chandauli	1813	104	167
Barhani	964	98	146
Chakiya	1505	133	251
Sahabganj	1857	122	150

The number villages connected by pitched roads are only 71% still 29 % of habitat villages are not connected through roads. This is a drawback of the district, as the labors that are dependent on industries for their employment or may be employed in new industrial units, are obstructed due to poor connectivity. State and national level schemes to provide road infrastructure should be provided and implemented to hinder problems of connectivity to the villages. The map 13 shows the road density in different blocks of District. The block Niyamtabad has the highest road density, as it is the most densely populated block of the district and the town (Mughalsarai) that acts as the service center to the district falls in the same block.

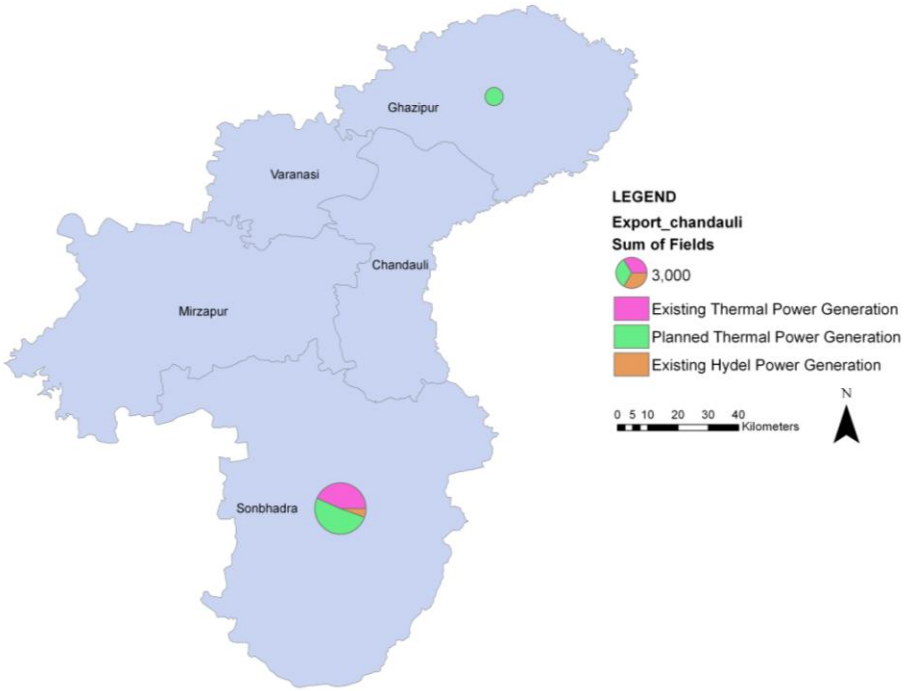


Map 14 Block wise road density in the district. Source:Compiled by author

Power

The existing power supply to the district is provided by the thermal power station at Obra in the Sonebhadra district in the south of Chandauli. The industrial DIC of Chandauli has a 220 kv sub-station present near the industrial area which is the distribution source of electricity to Industries. Map 15 shows the location of nearest hydel and thermal power plants in the districts adjacent to Chandauli.

The district Sonbhadra supplies electricity to major part of eastern region of Uttar Pradesh, other than the existing thermal and hydel power plant, proposals for new units of thermal power is already in the pipeline and will start functioning by 2016-2017. Table 20 details the existing and planned thermal and hydel power plants nearest to Chandauli district.



Map 15 Location of hyel and thermal (existing and proposed) power plants in adjacent districts to Chandauli. Source: Uttar Pradesh Power Corporation limited. Compiled by author

S. No.	Districts	Existing thermal power plant	Planned Thermal Power plants	Total Thermal power
1	Sonbhadra	3180 MW	3740 MW	6920 MW
2	Ghazipur	0	1180 MW	1180 MW

Table 20 Existing and planned thermal power plants. Source UPPCL. May 2014

The thermal power production in the vicinity and at the present source (Sonbhadra) will be doubled by 2018, this will meet the future requirements of the electricity in the Chandauli district and supply to new Industrial units will be uninterrupted. Other than thermal power a

small unit of hydel power plant, which is already functioning Sonbhadra district with a capacity of 400 MW, is also used for supply to domestic units.

The present power consumption in the industrial area of Chandauli is about 1/3rd of the total supply in the district. The table 21 shows the yearly consumption of electricity in the year 2012 in the district. In total the average per capita per year consumption of electricity in Chandauli is about 199 units (KWH). 27% of total electricity is consumed in the district is by industries and for agricultural purposes.

Table 21 Electricity consumption in Chandauli, 2012 Source UPPCL, compiled by Author

Consumption	Industries	Agriculture	Domestic
No of units (KWH per year)	291,736,234	295,655,711	471,926,260
% Share	27.54%	27.91%	44.55%

Industrial Training Institutes (ITI)

Chandauli has 5 Industrial training institutes functioning under Directorate general of employment and training (DGET). These institutes include industrial and vocational training centers, which produce skilled industrial workers and labors. The number of present ITIs is listed in the table 22.

The existing Industrial training institute in the district has very low intake capacity. The total intake capacity of ITIs is 1322. The Chandauli polytechnic situated in Chandauli town has a capacity of 720 students per year. These institutions provide diploma in agriculture and engineering studies. The facility of Industrial training institutes in the district lacks to meet the requirement of trained industrial workers. For setting up new units of Industries, which are

labor intensive and requires skilled knowledge, there is need to increase the capacity and number of such training institutes.

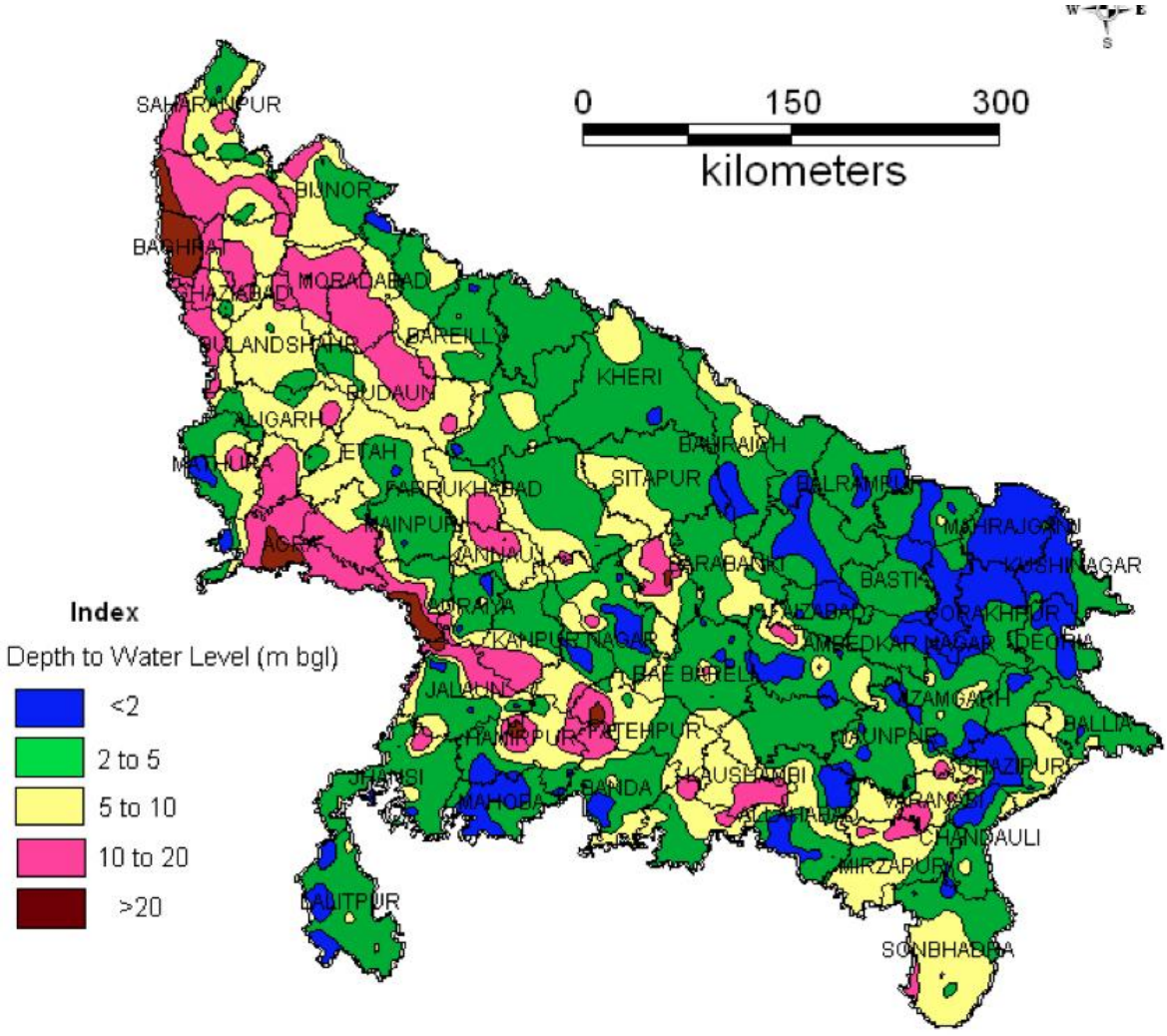
Table 22 List of Industrial Training institutes in Chandauli. Source dget.nic.in

S. No.	ITI/ vocational training institutes	Capacity/(Intake)
1	Government Industrial training institute, Chandauli	112
2	Ideal industrial training center Chandauli.	150
3	BK Industrial training center	140
4	Chandauli polytechnic.	720
5	Gramin Vikas sanstha, Chandauli	200
6	Total	1322

Ground Water

The main source of domestic water supply in the district is dependent on ground water. The eastern region of Uttar Pradesh has high ground water availability and the water table is available at 2-5 m below ground level. As discussed earlier the major source of irrigation is done through canal coming through river Ganga. This has a major positive impact on the ground water table and the depletion of ground water is less than neighboring district such as Varanasi and Mirzapur. The map 16 shows the condition of ground water table according to availability from the ground level.

The ground water availability in Varanasi and Mirzapur District is low due to high population density, which has resulted in depletion of ground water over year. District Chandauli has only 10% land under urban area and source of irrigation is dependent on canals (83%) has restricted the depletion of ground water table. Availability of canals and high level of ground water will support further development on land and water availability can sustain more development in future.



Map 16 Ground water availability in Uttar Pradesh. Source; ground water development board of Uttar Pradesh, November 2013

Social Infrastructure

The district Chandauli has sufficient number of health and education facilities present in the district. Though the economic condition of the district as compared to western and central region of Uttar Pradesh is weak, the district has accessibility to quality health and education facilities.

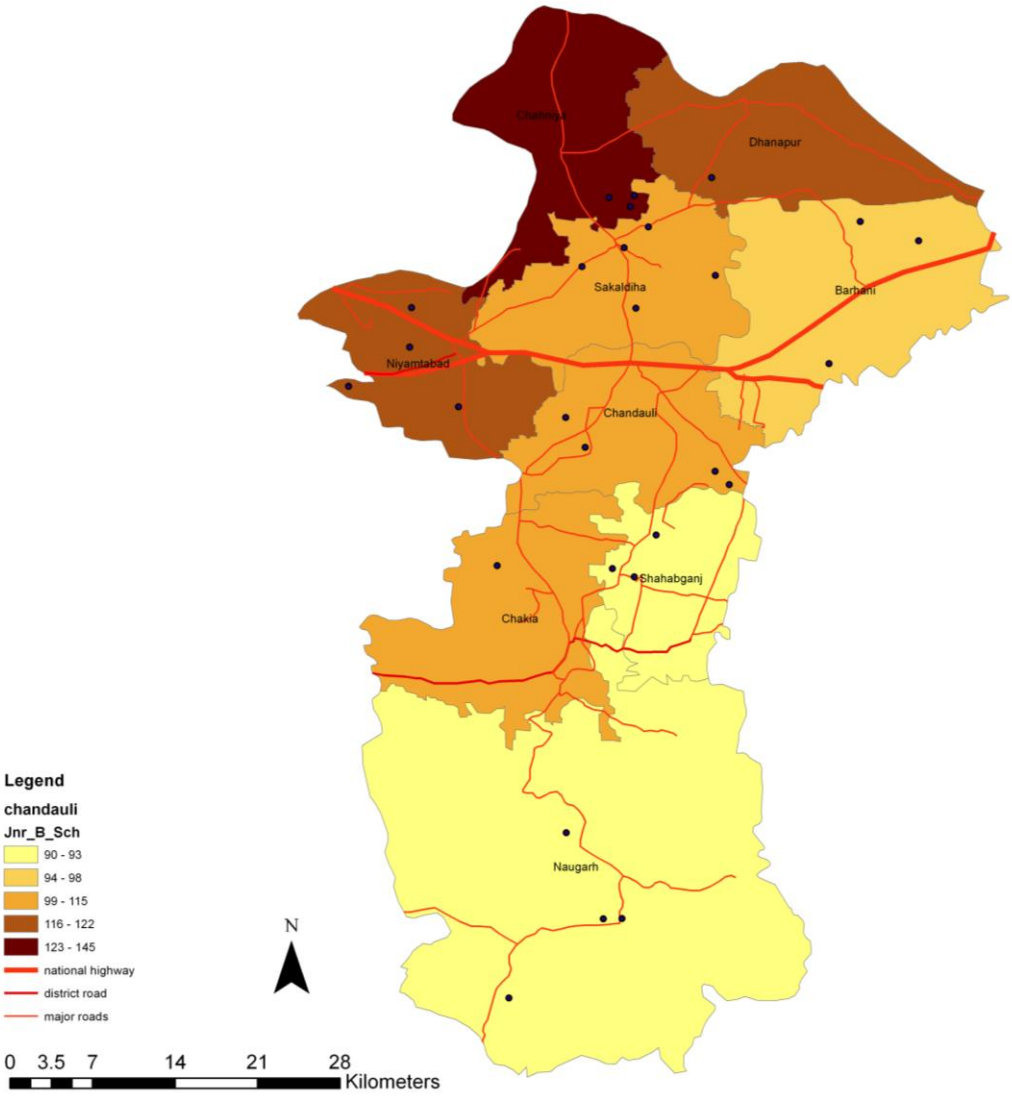
Education facilities

The district Chandauli has facility of primary and secondary schools well distributed in the blocks. Table 23 shows the availability of education facilities present in the district.

Table 23 Education facilities in Chandauli District, Source: District Education Officer, Chandauli

Education facilities	Numbers
• Primary School • Middle school • Secondary and senior sec school • Colleges	1254 628 166 21

Map 17 shows the educational facilities in the district.



Map 17 Education facilities in Chandauli District, Source: Author

Other than these education facilities, the district has accessibility to other higher educational facilities in the adjacent district of Varanasi.

Health Facilities

The lower level health facilities in the district are adequate in number and spatially distributed in the district. The higher-level health facilities in the district lacks in number as there are only three and the population is dependent on the Varanasi city for higher level health facilities like multi specialty hospitals etc. that serves to other adjacent districts as well.

Table 24 shows the number of hospitals and dispensaries both government and privately aided. Presence of health and education facilities in the district and higher-level health facilities in the nearby cities will encourage investors to move in the area without hindering.

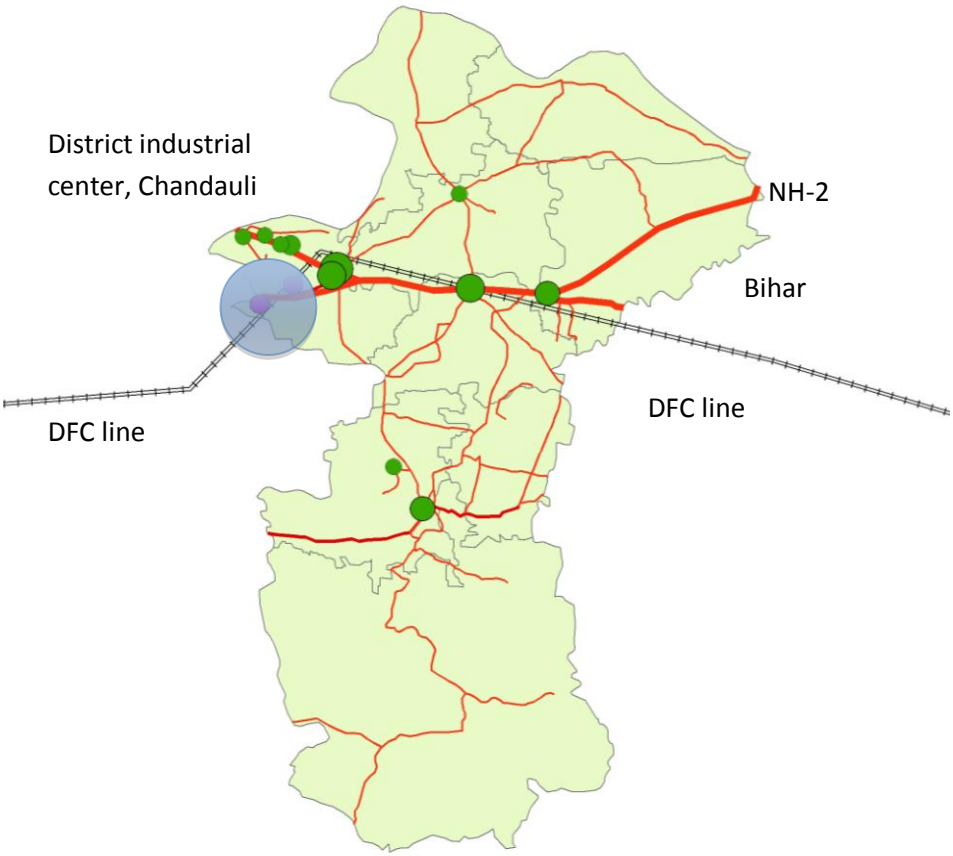
Table 24 Number of Hospitals and Dispensaries,Source: District Health Officer,Chandauli

S. No.	Type of facilities	Number
1	Govt. hospitals and dispensaries	37
2	Tuberculosis (special hospital)	1
3	Private hospitals and dispensaries.	51

4.12 Industries

The district Chandauli has one District industrial center (DIC) present in the District. The DIC, Chandauli falls in the Niyamtabad block. The map 16 shows the location of the existing District Industrial center in Chandauli.

The location of DIC Chandauli is adjacent to the NH-2, which is proposed for doubling the Lane from 4 to 8 lane. Also the proposed DFC passes through the industrial area; the DIC is surrounded majorly by land under agriculture use. The existing District Industrial center (DIC) is developed in two phases. Map 19 shows the existing land utilization of the Industrial area with adjacent land.



Map 18 Location of DIC, Chandauli. Source; Compiled by Author.

Table 25 Land area detail of the district Industrial center, Chandauli Uttar Pradesh, 2013

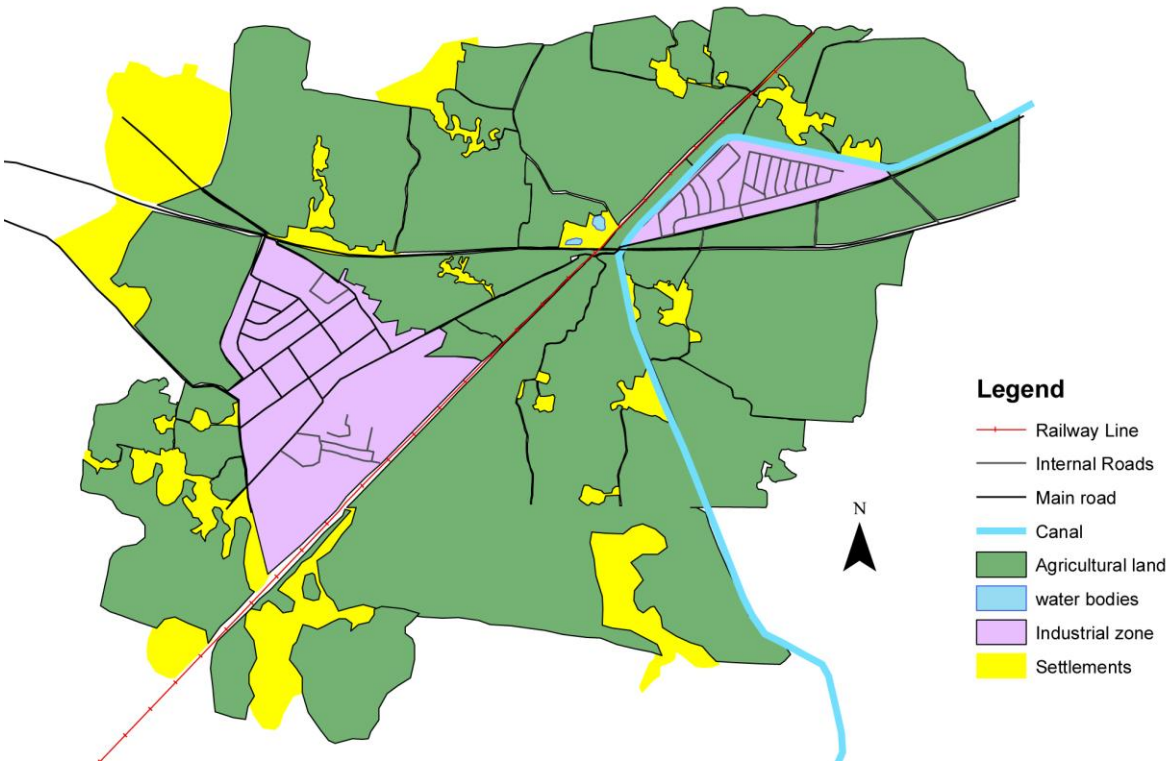
Industrial area	Total Land Acquired (Ha)	Total Land Developed (Ha)	Number of Plots	Land rates (per sq.m)
Phase I	305 Ha	305	229	Rs. 1900
Phase II	150 Ha	150	413	Rs. 2200

The district Industrial center has no heavy industries present. There are six medium scale industries established in the DIC, which are listed in table 26, and products manufactured by those units.

Table 26 list of Medium scale industries and products manufactured In DIC Chandauli.

S. No.	Name of Industries	Products manufactured
1	Gharana Foods Private limited	Flour mill and packaging of Flour (a unit of Aashirwad Atta)
2	M.P biscuits Pvt. Ltd	Biscuits and confectionaries (a unit of Parle agro)
3	Alaknanda cement	Cement manufacturing
4	Govt. printing press	Printing
5	S.A. Iron and allied Pvt. Ltd	Iron pipes and Aluminum utensils
6	Ganga Pulp and Paper Pvt. ltd	Paper

These industries are the major contributors to production and revenue generation of the District Industrial center Chandauli. The DIC Chandauli has highest revenue generation by and DIC in the eastern zone of Uttar Pradesh with an average revenue generation of 500 crores per year in last 5 years. The DIC has potential to develop as one of the investment region along the proposed DFC.

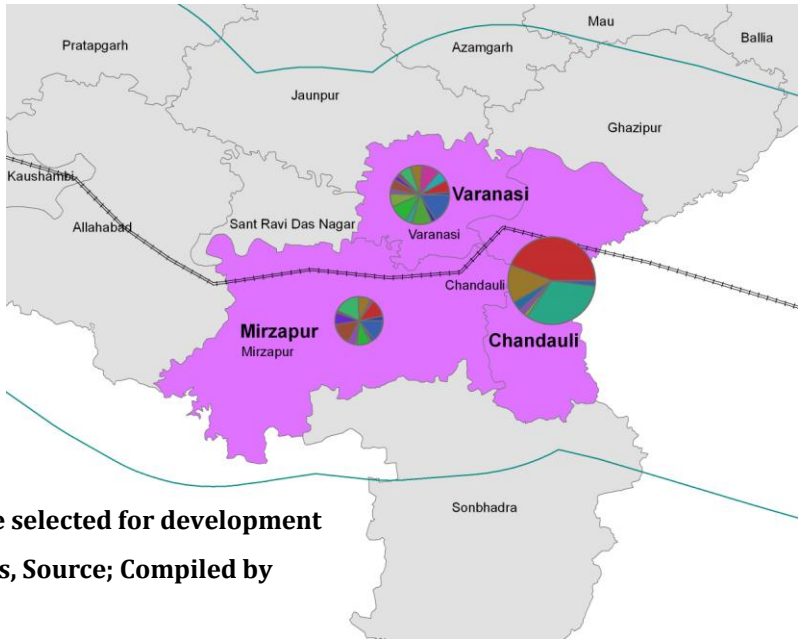


Map 19 Land use of existing industrial area (DIC), Chandauli. Source compiled by author, May 2014

Investment in Industries

The industrial area of Chandauli majorly has investments in industries relater to agro and food processing, chemical, and textile industries. Whereas, the neighboring district Varanasi and Mirzapur has a more types of industries present. Comparing the investment, employment generation and growth of industries does the further analysis of industries in the selected zone, which include Chandauli Varanasi and Mirzapur district. The map 18 shows the investments made in various types of industries in the districts selected. Highest investment in the selected

zone is done in Chandauli District, followed by Varanasi and Mirzapur. The table 27 shows the investment made in different types of industries in Chandauli, Varanasi and Mirzapur.



Map 20 Zone selected for development of Industries, Source; Compiled by

Table 27 Investment in Industries in Chandauli, Varanasi and Mirzapur (in Rs. crores), Source Uttar Pradesh directorate of Industries, 2012

District	CHANDAULI	MIRZAPUR	VARANASI
Basic metal industries	1.83	3.94	2.73
Beverages, toba. & toba. Product	0.03	0.29	0.25
Chemical & chemical products	183.38	15.46	12.6
Cotton textiles	0.03	0.01	11.67
Electrical macninery & apparatus	0.23	2.65	19.75
Food products	57.85	10.98	12.08
Hoisery & garments	0.24	22.66	13.09
Jute, hemp & mesta textiles	15.01	0.12	1.52
Leather products	0.01	0.1	0.4
Machinery & part except electrical	0.19	1.59	3.22
Metal products	3	11.02	5.18
Miscellaneous mfg.	3.7	18.85	10.98

Non-metallic mineral products	9.28	6.43	4.77
Paper products & printing	5.27	1.61	13.69
Repairing & servicing industries	2.82	11.46	20.12
Rubber & plastic products	135.02	1.89	7.14
Silk and synthetic fiber textile and wool	8.54	18.2	31.21
Total (Rs crores)	**435.16**	**147.92**	**226.3**

A total of 435 crores has been invested in DIC Chandauli which is highest in the eastern region of Uttar Pradesh. The figure 17 and 18 shows the distribution of investment in industries made in Chandauli and Varanasi district. The DIC Chandauli have primarily agro based, chemical and plastic products. Whereas, Varanasi have industries manufacturing silk products including silk garments, saares, etc. these products have high export values but the growth of silk industries is constant due to lack of skilled labor, machinery and export opportunities. One of the reasons for saturation of growth of such industries is due to unavailability of resources manpower and slow rate of production. Also high competitive markets of silk saris have been occupied by China as machined generated design and high rate of production in cheaper rates has broke down the market of silk industries of Varanasi.

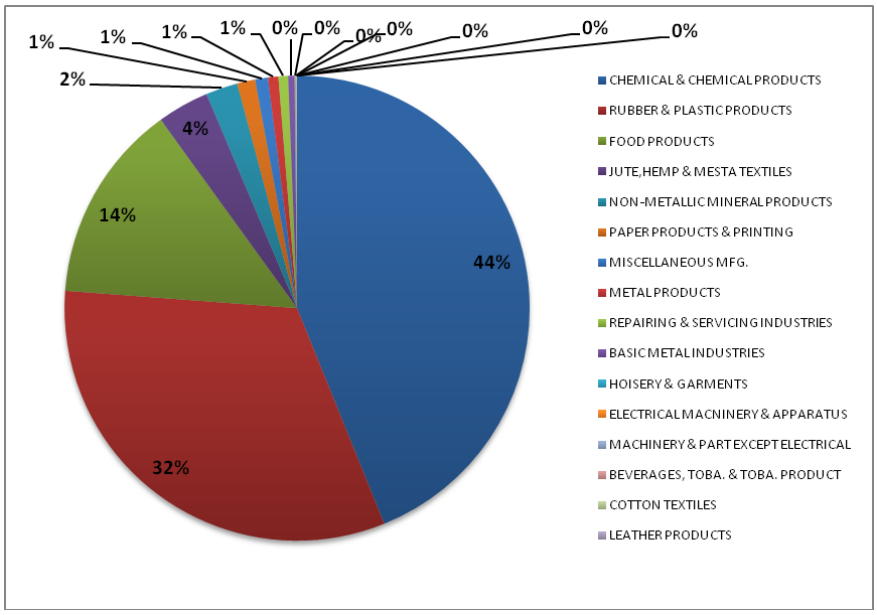


Figure 17 Share of Investment made in industries in Chandauli District.
Source: UP directorate of Industries, 2012. Compiled by author.

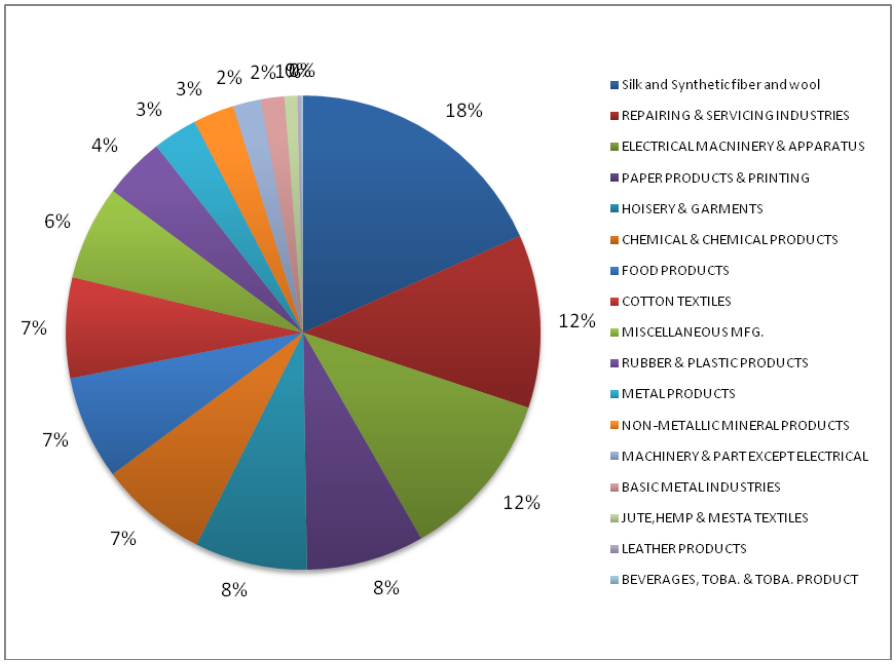


Figure 18 Share of Investment made in industries in Varanasi District.
Source: UP directorate of Industries, 2012. Compiled by author.

The positives of the industrial area of Chandauli over Varanasi is that the textile industries in Varanasi has shown decline in growth due to high competitive market, the type of industries in the Varanasi is more vivid. Whereas Chandauli has benefits as the major investment is made in agro-based and chemical industries. The overall nature of the eastern zone of Uttar Pradesh as supported by the Industrial policy is to develop it as a hub for agro-based industries. Chandauli has a better potential to develop its industrial sector in agro based and food processing industries.

Employment in industries

The DIC Chandauli has generated employment of 12.3 thousand direct employments. The table 28 shows the number of units of different industries and employment generated. High employment is generated by wool and silk industries, agro based industries and repairing and servicing sector. These industries are highly labor intensive and generates employment to opportunities for more population. To increase employment opportunities more labor-intensive industries that are already present in the district can be increased. As the agro-based resource of the district has high production and output, exports of products can be increased. This will also support the functioning of the DFC, as it is one of the major components for enabling the freight corridor.

Table 28 Employment and Number of units of different industries in Chandauli. Source: UP directorate of Industries.

Type of Industry	Number of Units	Employment	Employment per unit
BASIC METAL INDUSTRIES	2	191	95.5
BEVERAGES, TOBA. & TOBA. PRODUCT	3	16	5.33
CHEMICAL & CHEMICAL PRODUCTS	71	831	11.7
COTTON TEXTILES	116	164	1.41
ELECTRICAL MACNINERY & APPARATUS	6	38	6.33
FOOD PRODUCTS	361	2589	7.17
HOISERY & GARMENTS	83	264	3.18
JUTE, HEMP & MESTA TEXTILES	2	50	25
LEATHER PRODUCTS	6	17	2.83
MACHINERY & PART EXCEPT ELECTRICAL	15	83	5.53
METAL PRODUCTS	59	107	1.81
MISCELLANEOUS MFG.	99	544	5.49
NON-METALLIC MINERAL PRODUCTS	162	848	5.23
PAPER PRODUCTS & PRINTING	39	371	9.51
REPAIRING & SERVICING INDUSTRIES	566	1117	1.97
RUBBER & PLASTIC PRODUCTS	54	641	11.87
TRANSPORT EQUIPMENTS & PARTS	0	0	0
WOOD PRODUCTS	133	441	3.32
WOOL, SILK & SYNTHETIC FIBRE TEXTILE	1408	4041	2.87
TOTAL	3185	12353	

Growth rate of Industries

The growth rate in industrial sector in Chandauli has shown a constant addition to number of units and employment generation. The table 29 shows the number of units and employment generated by the DIC Chandauli till 2012.

Table 29 Growth of industrial units and employment generation in DIC Chandauli. Source UP directorate of Industries may 2014

Till Year	Number of Registered Units	Employment
1988-99	66	513
1999-2000	338	1550
2000-01	603	2173
2001-02	792	2696
2002-03	906	3075
2003-04	1140	3792
2004-05	1400	4748
2005-06	1660	5734
2006-07	1938	6757
2007-08	2216	7891
2008-09	2494	8921
2009-10	2772	10101
2010-11	3057	11331
2011-12	3185	12353

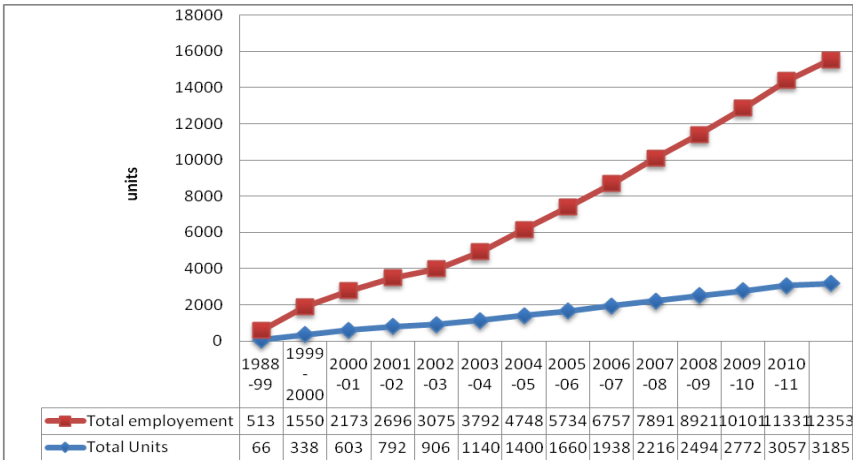


Figure 19 growth of number of industries and employment generation. Source UP directorate of Industries May 2014 Source Compiled by Author.

The number of units and employment in the industrial sector has shown a constant growth from 1999 to 2012. This clearly indicates that the investment made in the industrial sector in the district over a time period of 13 years has been and the employment generation has been ten times in a decade. Also the number of industrial units has been increased at similar rates. This indicates continuous investment is made in Industries in District Industrial center.

Proposed industrial development in Chandauli

For the development of small and medium scale industries, the state government has identified Chandauli district along with 6 other districts, to develop integrated industrial development centers (IIDC) to promote small and medium scale industries with infrastructure facilities required for industries. These centers should have a minimum area of 50 acres and provided with road infrastructure, electricity supply, drainage facilities and other infrastructure. Creating such integrated development centers will attract investors to capitalize in the industrial centers increasing investment in the small and medium industries.

The District Chandauli has strong potential to develop its industrial sector. The district has high agriculture produce, connectivity and availability of land resources. Infrastructure that enables sound industrial development such as power, connectivity via road, rail and airports, water resources, work force etc. is present in the district. With the presence of these infrastructure and resources, introduction of DFC acts as a facilitator to develop its industrial sector. The existing industries fail to provide service to process high agriculture production of the district. Indicating need of more agro based industries in the district that will increase the value of agriculture produce after it is processed. The DFC opens the entry for mega industrial units which needs high, logistics and transport infrastructure to run smoothly, provides fast and reduced cost of delivering goods to markets and increase exports from the region. The Adjacent districts Varanasi and Mirzapur, also falling in the influence zone of the district have

different potential sectors to grow its industrial region. The district Chandauli has the nearest proximity to the DFC, providing the locational advantage to cut other transportation costs.

4.13 Institutions

The key institution for industrial development in Uttar Pradesh is Uttar Pradesh state industrial development corporation (UPSIDC). It is responsible for development of infrastructure and setting up new industrial areas in the State. Other than UPSIDC there are other institutions with different functions. The table 30 details the function of different institutions present in the state.

Table 30 Function of different institutions responsible for industrial development in Uttar Pradesh. Source compiled by author.

S. No.	Institution	Functions
1	Uttar Pradesh state Industrial development corporation.	• Responsible for development of infrastructure related to development of industries such as, road construction, water supply, electricity supply, civil works, construction of drains etc. • UPSIDC is also responsible for acquiring land for industrial development wherever needed. • Development of integrated housing with industrial area if required. • Development of new industrial areas. • Formulation of policy
2	Udyog Bandhu	• Acts as a facilitator between the investor and

		government and industrial development body i.e. UPSIDC • Conduct meetings between UPSIDC, and other departments such as labor, banks, housing development board, civil work departments, line works departments etc. • Provides the investor with single window clearance for approval of setting new industries. • Facilitates investment, operation and establishment of industries in the state. • Formulation of policy.
3	Directorate of Industries, Uttar Pradesh	
4	Pradeshiya Industrial and Investment corporation of Uttar Pradesh.	• Providing Broad based financial services for industrial development in Uttar Pradesh.

Uttar Pradesh has major 4 institutions at state level, responsible for development of infrastructure, facilitate as single window clearance to make it easier for the investors to setup new industrial units. Overall Uttar Pradesh has a well-organized system of institutions for promotion of industries in the state.

4.14 land Acquisition policy, Uttar Pradesh, 2011.

The land Acquisition Policy of Uttar Pradesh was formed in 2011. Following are the features for acquisition of land for Industrial development in the state.

- Land notified for Industrial development shall be done acquired following the process of land Acquisition act, 1894, by mutual agreement of the acquiring agency and landowners.
- The compensation made by the acquiring authority to the landowners has two options for compensation. The first option for compensation states the following.

    a. Compensation made will be decided by mutual deal between the owner and the agency acquiring land
    b. The rates of compensation are to be fixed by the government body.
    c. The affected farmers/land owners will also get all the aids mentioned in the resettlement and rehabilitation policy.

In the process of land acquisition and compensation made is decided by the acquiring agency. This may create a conflict between the acquiring agency and the landowners, as the compensation rates decided by acquiring agency is shortfalls to compensate at present rates and owners may show reluctant nature to dispose their land for development.

The land acquisition act 1894, has same problems as the rate of compensation made to the population displaced was done by the government agencies, in this process the compensation made was not stated clearly. In January 2014 the new act for land acquisition came into force as ‘ the right to fair compensation and transparency in land acquisition, rehabilitation and resettlement act, 2013’. The new land acquisition act has a clearer and estimable rate of compensation on the basis of present land rates in the area where the land is being acquired. The land acquisition policy of Uttar Pradesh, 2011 states that the compensation made will be

decided by the acquiring government body. This may create disagreement by the side of owner, as they may not get the compensation as per land rates in present time.

The second option of compensation made according to the land acquisition policy of Uttar Pradesh states the following.

- The landowner will get 16% of the total land acquired after development of land.
- Out of which the owner can use 50% of land for residential use and 50% of land for other use such as commercial, industrial, etc. if it is permissible in the zone.
- In addition, the landowner will get an endowment of 23,000 per acre per year for 33 years. This compensation will be increased by Rs. 800 per year per acre. Or, the owner can claim this endowment by Rs. 276000 per acre as a total amount, paid once.

The land acquisition policy of Uttar Pradesh has negatives as discussed above. Industrial development is a state matter and land for the same purpose will be acquired by the state act. Few amendments in the existing land acquisition policy need to be done for a superior way of compensation to the owners.

Inferences

Table 31 Inferences from case studies District Chandauli, Source: Author

Sector	Indicator	Existing condition/ status	potential/ drawbacks
Demography	literacy rate	Low literacy rate (60%)	Low WFPR and high unemployment in the district indicates the need for more employment generation in secondary and tertiary sector
	Urbanization	Low level of Urbanization (10%)	
	Working force participation	low WFPR in the district i.e. 32%	
	Employment	Employment in Manufacturing sector is very low.	

Socio- Economic profile	Per capita Income	Low per capita Income as the major economic activity is agrarian activities	Need for more investment and generate opportunity of employment.
	Unemployment and Underemployment	High rate of unemployment and Underemployment.	
Connectivity	Roads	The Intra-connectivity of roads into the villages is poor. Whereas, the connectivity of the district and the Industrial area is strong, as it is connected with NH-2 and National highway 7	Strong connectivity through National highways, need for improvement of rural roads which can provide access to labor class to commute to work place.
	Rail	Nearest railways station is at Mughalsarai, providing rail connectivity all across the Country. DFC station proposed in the district.	Strong connectivity through passenger and dedicated Freight Rail line.
	Airports	Nearest Airport at Babatpur with international and domestic facilities.	Access to domestic and international air services can also attract foreign trade.
Economic profile	District domestic product	Share of manufacturing sector in economy is very less as compared to the primary and tertiary sector.	The district has potential to make shift of economy to secondary sector.

	Existing Industries	Existing Industries majorly includes agro based, chemical and rubber and plastic products. Only 7 medium scale industries including Food products, metal and textile industries.	The district has high production of agriculture produce, and the share of produced crops consumed by the existing industries is low. The District has high potential to come up with number of agro based and food processing units.
Agricultural resources	crops	High production of Wheat, rice and sugarcane, low productivity of rice compared to state average.	high production of agriculture and horticulture crops can support agro based industries in the district
	horticulture	High production Mango and Guava in the district.	Potential to support processing industries
	minerals	No minerals resources present in the district	Nil
Land	land Availability	Maximum land is utilized under agricultural activities. Marginal land holding according to size is high.	Agriculture land can be converted to industrial use. Land acquisition can

			be complex as the marginal land holding according to size is more.
	Land values	The land rates fixed by UPSIDC are optimum, concession on registry of land purchased or leased.	Land rates for industrial use fixed by UPSIDC, other locational concessions will attract investors.
Industrial Infrastructure/facilities	Electricity	Proposed production of electricity at the source (Obra, Sonbhadra) will double the production.	Increased power generation capacity at source can fulfill demands of new industrial setups
	Water	Water for Irrigation is available through Ganga canals. Ground water level is high, which can sustain further development.	Potential of the land is high, can sustain more industrial and infrastructural development
	Banks	Availability of Nationalized and commercial banks	Transaction and loan facilities can be provided to investors

Policy	Industrial policy	Industrial and investment policy of Uttar Pradesh supports, agro-based, and food processing industries. Locational advantage to Chandauli district for special Incentives.	Attractive industrial policy for food processing and agro based industries.
	land policy	Compensation policy to the land owners is contradictory, can result in conflicts for acquiring huge amount of land.	May create conflicts as compensation is to be fixed by the government agencies.
Institutional Framework	Institutions involved for industrial development	UPSIDC, Udyog Bandhu, and directorate of Industries functions at different levels for development and promotion of industries in UP	Presence of institutions at different levels makes the process of development smooth and easier for the investors.

CHAPTER-5 POTENTIALS, DRAWBACKS AND RECOMMENDATIONS

This chapter highlights the potentials and the drawbacks of the district and an attempt has been made to formulate some plausible strategies to develop industries in the district Chandauli.

5.1 Potentials and drawbacks of the district

The districts have various potentials to develop the industrial sector. The following are the major potentials of Chandauli to develop industries.

- Locational advantage to the district as the proposed DFC passes through the district and it totally falls in the influence zone of the DFC, which is to be developed as an Industrial corridor.
- The existing NH-2, which has already been under execution for doubling its width to 8 lanes, passes right through the district and also adjacent to the existing Industrial area.
- The location of the existing Industrial area has proximity to one major city i.e. Varanasi, which is only 8 Km from the Industrial area. Also the town with the prevalent population in the district i.e. Mughalsarai is 6 Km from the existing industrial area.
- Proximity to Railway network through Mughalsarai Junction, which aids connectivity to almost all the parts of the Country.
- Proximity to International Air services through Lal Bahadur Shashtri, International airport in Varanasi district, it 32 Km. from the district headquarters of Chandauli.

Resources

- The district has high agriculture produce, with Wheat, Rice and Sugarcane as major output with high productivity.
- Fruit crops such as Guava and Mango are also major out put of the District.

- Ground Water resource of the district also in decent condition as the ground water table is high and available at 2-4 m below the surface level, this condition of ground water runs almost in all the part of the district.
- Presence of Ganga canal in the district, which also can be source of water supply for domestic use.
- Availability of Land along the NH-2 that can be converted for industrial use, also the Land rates are fixed by the UPSIDC for development of DIC.

Infrastructure

- Power supply to the Industrial area is uninterrupted through presence of 220 KV. Sub-station in the industrial area. The generation of power at the source in Obra, Sonbhadra district, is to be doubled by 2015.
- Adequate Medical Facilities are present in the district; also the district has proximity to Institute of Medical Sciences, Present in Varanasi.
- Education facilities in the district are present in adequate number and location, which serves to the population of the district.
- The Major road network of the district is strong and has a good road density especially in the block Niyamtabad, which has the highest road density.
- Availability of Nationalized and commercial banks in the district in adequate number.

Institutions for Industrial Development

- The Uttar Pradesh state industrial development corporation, is the major operative body that is responsible for development of Infrastructure in the industrial centers has a active response to the needs of industrial infrastructure in the existing District industrial centers.

- Udyog Bandhu, the agency responsible for inviting investment and facilitator between the investor and the Government bodies provides single window clearance for licensing to new industrial units.
- After the Execution of the DFC has been started, the govt. of Uttar Pradesh has shown active initiative to meet investors and stakeholders to ensure huge investment in industries in the state, ensuring that the govt. will provide a sound environment and infrastructure promote growth of industries in Uttar Pradesh.

Industrial policy of Uttar Pradesh

- The Infrastructure and investment policy of Uttar Pradesh, 2012, provides special incentives to investors especially for Eastern and Bundelkhand, region of UP.
- The district Chandauli has special incentives and tax exemption on Mega industries and Agro-based industries.

5.2 Drawbacks

The following are the negatives of the district Chandauli that may hinder sound industrial development.

- Productivity of rice has shown fall down, as compared to the average of the state, reason being, lack of advanced implements used for production of paddy.
- No research center for agriculture present in the district.
- The connectivity of all the villages through Pitched road is very poor, about 30% of the villages need road infrastructure.
- Inadequate number and capacity of storage facilities for food grains in the district.

- Number of Industrial training institutes and vocational training centers in the district shortfalls to provide skilled and trained workers, also less number of industries in the district has hindered these institutes to grow further.
- Marginal Land holding size in the district is very high, this may create problems while land acquisition process, as the govt. agencies need to deal with a large number of owners to acquire land.

Land Acquisition policy

- The present land acquisition policy of Uttar Pradesh has a major problem with the rate of compensation made to the landowners.
- This may create clash in the process of land banking for growth of industries.

5.3 Strategies and Recommendations

According to the above analysis and observations following strategies and recommendations is suggested for better industrial development in the district.

- As the unemployment and under employment in the district is high, the new industries should be of nature to employ more number of people.

- Need to establish an agriculture research institute to provide existing farmers with better methods of farming to increase the productivity.
- Need for more industrial training institutes, to provide skilled knowledge to the workers in industrial units.
- Provision of pitched roads to the villages which are not connected to Pucca roads, as it will provide accessibility to the farmers and labors to commute to work place. This can also be done under national schemes such as PMGSY.
- Provisions of infrastructure such as food storages, cold storage etc. needs to be enhanced to increase the capacity.
- Provision of Agriculture research Institute in the district, to maintain and increase the production and quality of crops, also research on diversification of crops can be carried to increase the types of crops produced.

Land Policy

- The land policy of Uttar Pradesh needs to be restructured, and the rate of compensation made to the landowners to be decided by the current market rates of urban and rural land.

Industries

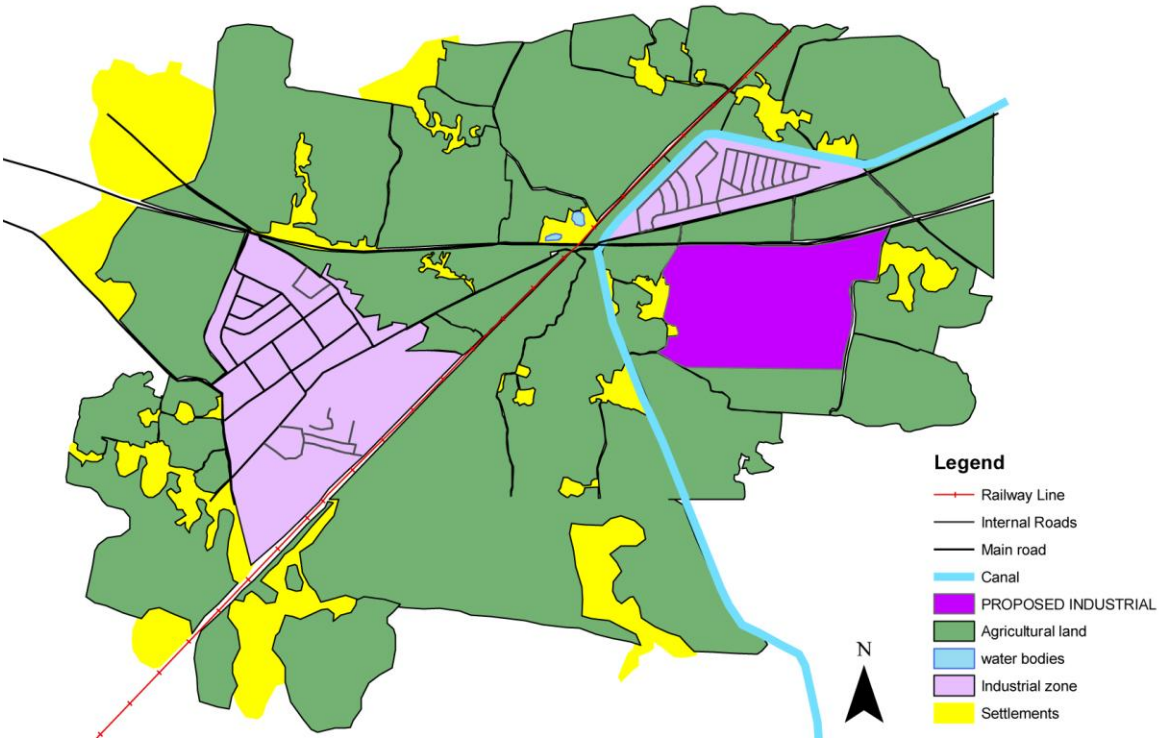
- The district Chandauli has potential to come up with agro based Industries such as food processing and packaging, beverages production, fruit processing units such as Squash, jams etc.
- Agro Research Park can be developed in the district, which will help in increase in productivity, retain the agriculture use of the fertile land in the district and will also help in diversification of crop production in the district.

- The close proximity to DFC also enables the potential of the district to come up with a large-scale industry that demands logistic and transport facility to move raw material and finished goods.
- Non-polluting, medium scale industries such as assembling of equipment's, textile industries, assembling and binding of motors, etc. can be established in the district.

Table 32 Proposed industries in district Chandauli. Source: Compiled by author

Phase	**Type of Industry**	**Area Required and capital investment**	**Employment Generated**
I (within five years, after the execution of DFC)	Agro Processing park (5 units including grain mill product and animal feed, manufacture of sugar, dairy products, fruit processing, cold storage etc.). Promotion of MSME to generate more employment opportunities.	18-20 crores including fixed cost, capital cost and running cost (initial year). Area required for setting these units will be (200 acres) approximately.	7000 (approximately), including employees for office work, workers, skilled and unskilled labor and other workers
II (between 5- 10 years after the functioning of DFC)	Industries producing/assembling machinery, textile industries, and other light manufacturing industries. Goods with high export values.		
III (after 10 years)	Large scale industries with high Transport demands such as cement factories, vehicle assembling, Etc.		

The estimation of Cost and employment generated in the first phase has been derived according to study done by Planning Commission on Agro based Industries in Uttar Pradesh, 2011. The location and investment done in the industries proposed in table 32 and later phase to



Map 21 Proposed location of Agro Park in the district. Source: compiled by author.

be done in such a way that land taken under acquisition for those industries should influence the existing villages/settlements and cultivable land. Preferable to be located near by the existing NH-2, which will provide better connectivity to the nearest city/town as well as to the DFC station near Mughalsarai junction. The location of the proposed agro park is shown in map 21.

Some of the salient features of the proposed agro park are as follows.

- The surrounding cultivable land adjacent to the proposed agro parks can be integrated with the industrial area to use these lands for research and production for quality food grains.

- Provision of green buffer to the village settlements falling in the land used for research and production of crops for Agro Park.
- This will also provide unskilled labor to the units and population of adjacent villages will be benefitted with work opportunity.
- Provision of Cold storages and grain storage facilities in the Agro Park.

5.4 Conclusions

The study identifies the potential of the District Chandauli in Eastern Uttar Pradesh, which falls in the Influence Zone of the Eastern dedicated freight corridor. The district has high potentials and resource of agriculture produce; even the economy of the district is weak in terms of per capita income and district domestic product, due to agriculture being the major occupation carried in the district, it has high potential to develop its industrial sector in agro based and related industries. The Eastern DFC will also support other industries that have high transport demand. There are some issues at policy level in land acquisition process and compensation; such problems are to be resolved by the state government to strengthen the industrial sector in the state and the district in a smoother way with integration to Freight corridor.

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