IMPACT OF INDUSTRIAL GROWTH ON URBAN DEVELOPMENT AND ENVIRONMENT (CASE STUDY-SAHARANPUR)

A DISSERTATION

Submitted in partial fulfilment of the requirements for the award of the degree of

MASTER OF URBAN AND RURAL PLANNING

By

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JANUARY, 2000

CANDIDATE'S DECLARATION

I hereby certify that the work which is being presented in the dissertation entitled, **'IMPACT OF INDUSTRIAL GROWTH ON URBAN DEVELOPMENT AND ENVIRONMENT (CASE STUDY SAHARANPUR)'** is the partial fulfillment of the requirements for the award of the degree of **Master Of Urban And Rural Planning** submitted in the **Department Of Architecture And Planning, University Of Roorkee, Roorkee** is an authentic record of my own work carried out during the period from July 1998 to January 2000 under the supervision of **Dr. Najamuddin**, Professor, Department of Architecture and Planning, University of Roorkee, Roorkee.

The matter embodied in this dissertation has not been submitted by me for the award of any other degree or diploma.

Date : 29/01/2000

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This is to certify that the above statements made by the candidate are correct to the best of my knowledge.

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ACKNOWLEDGEMENT

I wish to express my sincere thanks and gratitude to **Prof. Dr. NAJAMUDDIN**, Department of Architecture and Planning for his keen interest, valuable guidance, encouragement and wholehearted cooperation in the preparation of this dissertation.

I am indebted to **Mr. R.K. Jain,** Head, Department of Architecture and Planning, **Mr. Rajesh Chandra**, Coordinator MURP, and other members of the faculty who have helped me at every stage of the course.

Thanks are also due to **Mr. V.K. Gupta**, Joint Director, Town and Country Planning Department, Meerut, **Smt. & Shri. R.G. Garg** and above all to **Shri. B.B.Garg**, for his cooperation, in providing information's and valuable guidance for carrying out the present work, from time to time.

I am also thankful to the following offices and organizations, which had supplied valuable data and information for my dissertation:

- Chairman, Saharanpur Municipal Corporation, Saharanpur.
- Saharanpur Development Authority, Saharanpur.
- District Statistics office, Saharanpur.
- District Industry Centre, Saharanpur.
- U.P. Jal Nigam, Saharanpur.
- U.P. State Electricity Board, Saharanpur.

Above all, I wish to say that the credit of completing this dissertation also goes to my friends **Vivek Gupta, Rajesh Shah, Gaurav Gupta, Atul Tyagi, Mr. S.K. Negi, Kapil Gupta, Uday Bhan Singh** and all others for their constant inspiration, numerous and valuable suggestions.

SAURABH GARG

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उद्योग प्रभावित

CIVIC AMENITIES IN UTTER NEGLECT

RATISH NANDA

HEAPS of garbage accumulating all over the town, encroachments on public land, and city parks in a state of utter neglect in Saharanpur expose the lapses on the part of the district administration and the Municipal Council.

According to the residents, the 'safai karamcharis' of the Municipal Council do not sweep the roads or lift the trash. Drains are choked as the karamcharis never clean them. Pigs in large numbers can be seen amidst stinking garbage in thickly populated residential areas. Heaps of garbage and pigs can also be seen on the ill-maintained roads of the town.

Nakud taxi stand on Ambala Road, Ganga taxi stand, Ram Tirath Chowk, Khalasi Lane, Nehru Nagar crossing, Old Mandi and areas around Buddi Mai temple are some of the places in the town where one can notice utter civic neglect despite tall claims by the officials. According to residents of the areas, there is a serious threat of the epidemic breaking out due to poor maintenance by the Municipal Council.

Powerful and the influential people consider it their right to encroach on government land. The residents alleged that prime government land was grabbed by the shopkeepers to build shutters in front of their shops in the heart of the business centres. They also alleged that a number of shopkeepers in Nehru Market, Muro-ganj, Naya Bazar and Shaheed Ganj, the most crowded business places in the town, have grabbed government land to run their business. The matter was reported to the Municipal Council as well as the police repeatedly by the affected citizens but no action has been taken so far.

The shopkeepers and vendors selling eatables and fruits have encroached the entry and exit of the bus stand. It has become quite difficult for the buses to move in or move out.

As a result, most of the buses are being parked outside the bus stand causing serious traffic jam on Railway Road. There is maximum encroachment on Ambala Road and Bhagat Singh Chowk, the meeting point of five roads which lead to Ambala, Dehradun, Railway station, city courts and old city. "There is no need for such a big crossing which is prone to accidents. Known as 'Ghanta Ghar Chowk', this place has become a shelter for beggars and anti-social elements", said the aggrieved residents.

Most of the residents near Dholi Khal area expressed resentment over the illegal sale and purchase of live animals. There is a separate market for slaughter and sale of mutton products outside the town.

"Many of the traders sell mutton and beef here and the area is stinking so badly that it is difficult to pass through there", they pointed out.

The district administration, too, is silent over the matter, lamented residents of the locality. Dhamola drain usually called as 'ganda nalla' flowing through the town is responsible for the outbreak of epidemics like cholera, malaria and tuberculosis especially with the onset of monsoons when it starts overflowing and 'lal ganga' holy water which has become dirty enters the adjoining residential areas where plenty of mosquitoes and flies germinate.

Many schemes to clean and cover the drain have been made but they could not be implemented due to lack of interest among bureaucrats and local political leaders.

Despite adequate budget for the upkeep of the famous Jubilee Park in Nehru Market, civic negligence has reduced the park to a mere ground. The sweepers and gardeners there do not consider it their job to remove litter from the lawns or maintain the plants. Officers allegedly use these personnel for personal work in their houses. They hardly get time to maintain the park, alleged some prominent people of the town.

'Kali Nadi' dying due to pollution

By D S Kunwar
The Times of India News Service

MEERUT: The state government's failure to take measures to clean-up the 200-km long polluted "Kali Nadi", a tributary of Ganga, flowing between Saharanpur and Bulandshahr districts has caused widespread resentment among the experts, environmentalists, social activists and the people of the region.

This tributary, which was one-time a great source of water to the villagers located along its bank, passes through more than 25 villages [illegible]

Nadi has virtually died, due to pollution that has become a health hazard for a couple of years.

According to them industrial waste was the main source of pollution to the tributary.

Although regional officer, U.P. Pollution Control Board, V.D. Ratun was not available for comment, a senior scientist, Ram Gopal, admitted that apart from the industrial wastes, wastes of more than 10 bone factories and butcheries including the bodies of slaughtered animals hurled into the mini river, had contributed to its pollution.

[illegible] a research conducted by a scholar under [illegible] barely three years ago, had revealed that the industrial wastes had not only blocked the [illegible] water but also helped in bringing down the water level in most villages located nearby the Nadi.

"This had also resulted in the drying up of [illegible] Krishna river, another tributary of Ganga [illegible] 1985 and then in 1992," Mr Ali said.

Chief Medical Officer (Meerut) [illegible] who also visited the Jalalpur, [illegible]

सफाई पर लाखों खर्च, गंदगी ज्यों की त्यों

अमर उजाला ब्यूरो

पालिका में भ्रष्टाचार [illegible] गंदगी का साम्राज्य

प्रदूषण रोकने को जरूरी हैं वृक्ष :जिलाधिकारी

अमर उजाला ब्यूरो

Pollution is a very general term and is defined in many ways. In its broadest sense as conceived by the layman it is the befaulting of the environment by man's activities, particularly by the disposal of solids, gaseous, and liquid waste products. The word pollution has been adopted from the Latin word 'pollution' meaning defines the oxford dictionary as derived its meaning from the verb pollute meaning physical contamination of terrestrial or aquatic environment. Different sections of the society have been giving different meaning to pollution depending on their own interest of investigation or use of the water. The common person thinks pollution as the introduction into water of anything dirty or foreign regardless of the amount as effects of material introduced and whenever the society finds a useless for their use, they call it polluted.

Saharanpur is an important town of Uttar Pardesh. The geographical location of the town plays an important role in its economics development. It is situated near the foothills of the Shivalik Ranges and enjoying facilities of plains as well hills. Because of the proximity to the hills, it has got very healthy climate

The area around the city is rich in different types of resources, such as human, forest, minerals, water, power and agricultural products.

Due to its potentialities for industrial growth, it has developed as an industrial town. Upto **1921,** there were only a few industries, but actual industrial development started since **1921**, with the establishment of the two large scale units:

1) Sugar Mill, and
2) Sugar Mill Machinery.

After **1930**, three more very large-scale units were started:

1) Paper Mill,
2) Cloth Mill,
3) Cigarettes factory.

Giving the employment to more than **1500** workers each.

After the partition of India, the trend of industrial development changed from large-scale to the small-scale industries because only small amount of initial investment is needed for the latter, and because it can give more employment.

In the third five-year plan, planning commission has proposed several large-scale industries based on forest-products and agricultural-products, because the area is rich in both types of raw materials and they are abundantly and cheaply available there.

From the very old time, Saharanpur has been famous for its woodcarving industries. Mostly these units are running on small scale. These industries help the government in earning the foreign exchange.

1.2 IMPACT OF INDUSTRIES ON URBAN DEVELOPMENT:

As the main causes of industrialization are the availability of resources, market facilities, infrastructure, financial help, and Govt. policy and transport linkages. As a result immigration and vast population concentration which leads to increase in demand for housing, space for industries, shopping, education, health facilities, infrastructure. Due to this entire factor following are the main impact of industries on the urban structure.

- Development of slums and scattered settlements.
- Shortage of industrial township.
- Industrial growth beyond proposed location in the master plan.
- Increase in railways and roadways linkages.
- Congestion in commercial areas.
- Demand for skilled and technical people.
- Extra burden on infrastructure facilities.

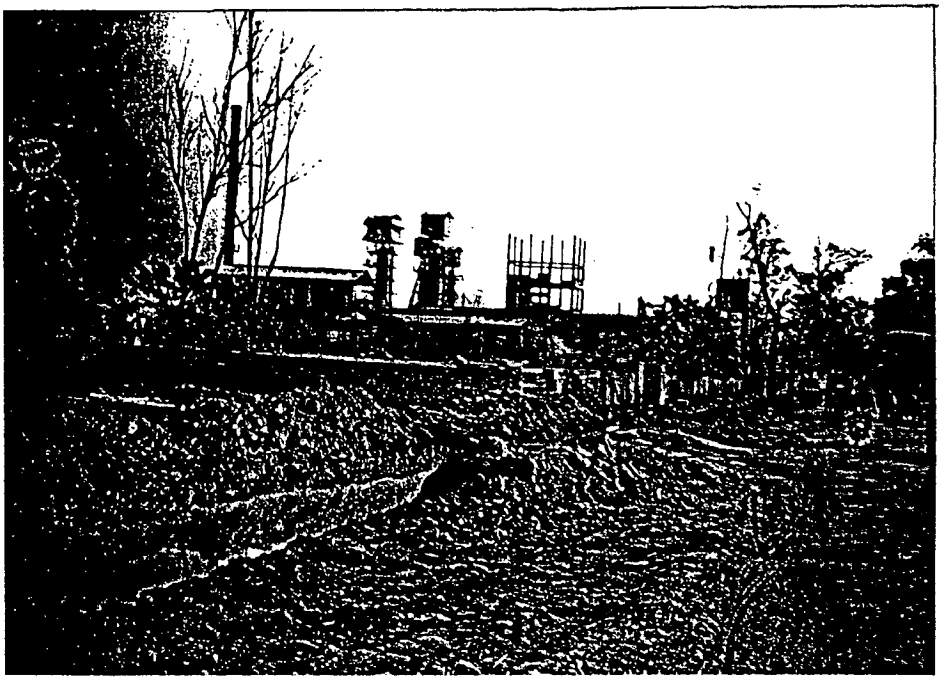
1.3 IDENTIFICATION OF PROBLEM

1.3.1 GENERAL PROBLEMS: -

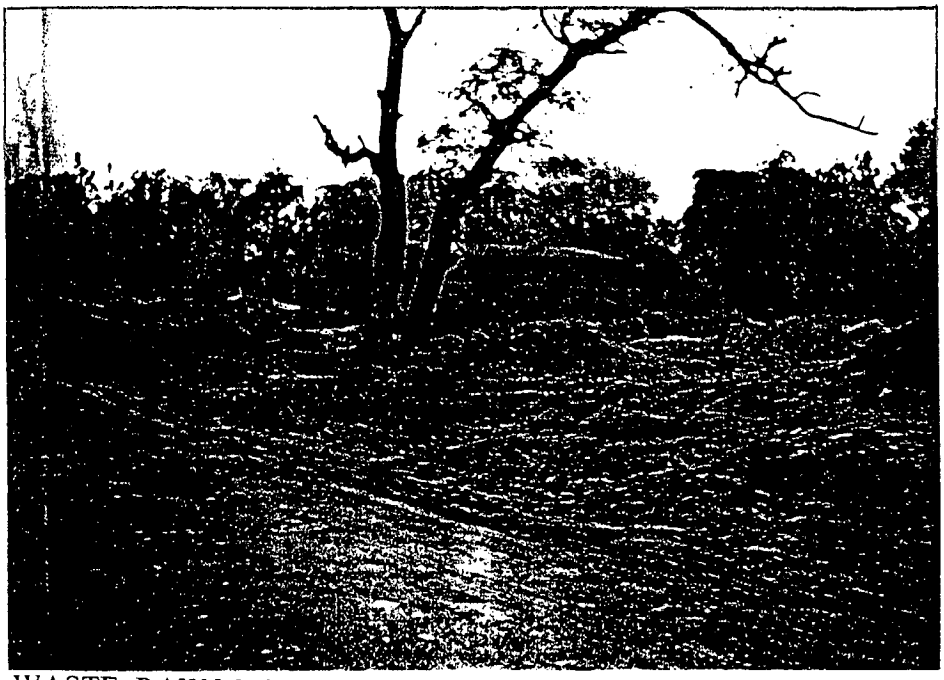
- Problem of mixed landuse, e.g. industrial-residential, commercial-residential & commercial-industrial.
- Large numbers of government offices are located in residential buildings.
- Narrow streets inside the town.
- No parking facility near shopping area, and semi-public building etc. Vehicles are parked on the road, which creates problem of traffic congestion.
- Number of shops is too much the area under commercial use is very less. Resulting in very small shop frontage.
- Traffic congestion on crossings.
- Encroachment by informal shopping activities.
- Acute shortage of houses.
- In old city area there is no under drainage system.
- Linear development along the highways thus resulting in encroachment on the highways.
- Informal sector is found every where in the city.
- Public Facilities and amenities are not up to the mark.

1.3.2 INDUSTRIAL PROBLEM: -

- Industries are located in a haphazard and unplanned manner.
- Acute shortage of housing for industrial workers. Only 7% of the total workers are having houses provided by the mill owners.
- Hazardous industrial effluents are discharged in surface run off without any treatment thus creating environmental problems.



ONE OF THE CHEMICAL INDUSTRY DISCHARGE
WASTE WATER WITHOUT TREATMENT.



WASTE RAW MATERIAL (CHEMICAL) DISPOSED
ON THE LAND WHICH CONVERT FERTILE LAND
INTO UNFERTILE LAND.

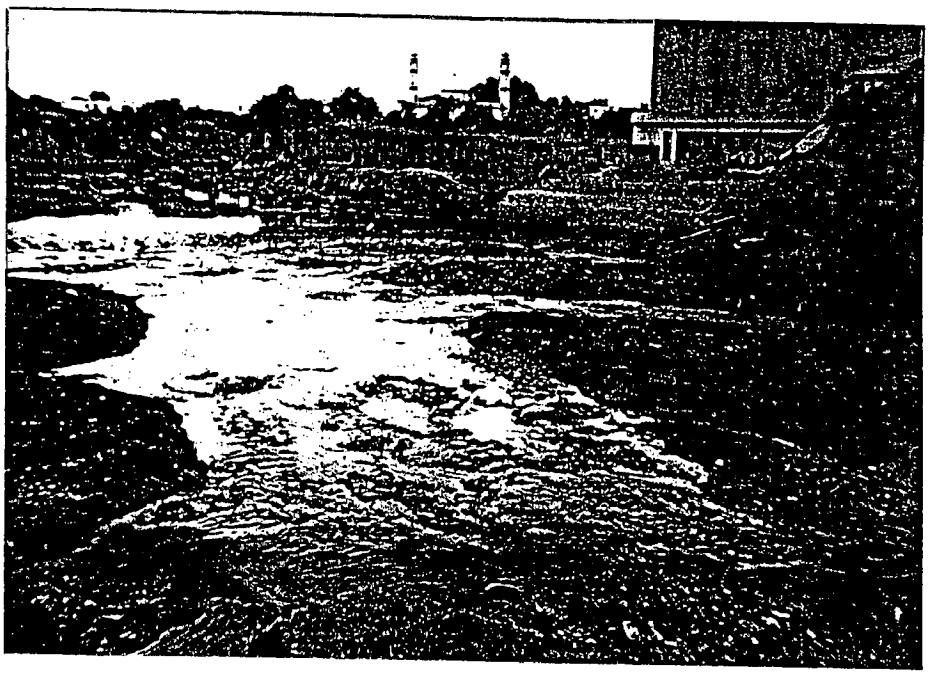
GARBAGE IS DISPOSED BY THE SIDE OF JANTA ROAD.

CHANGE IN THE LANDUSE PATTERN MEANS RESIDENTIAL AREA CONVERTED INTO COMMERCIAL AREA AND THE DRAINS ARE OPEN THE WIDTH OF THE ROAD IS UNSUFFICIENT.

THERE ARE TWO ROADS FOR THE FREE FLOW OF TRAFFIC BUT ONE SIDE OF THE ROAD IS OCCUPIED BY THE OWNER OF WOOD CARVING INDUSTRY FO-R KEEPING THEIR RAW AS WELL AS FOR THE FINIS-HED GOODS. INFORMAL SECTOR & VEHICLES ARE PARKED IN THE CENTRE OF ROOD.

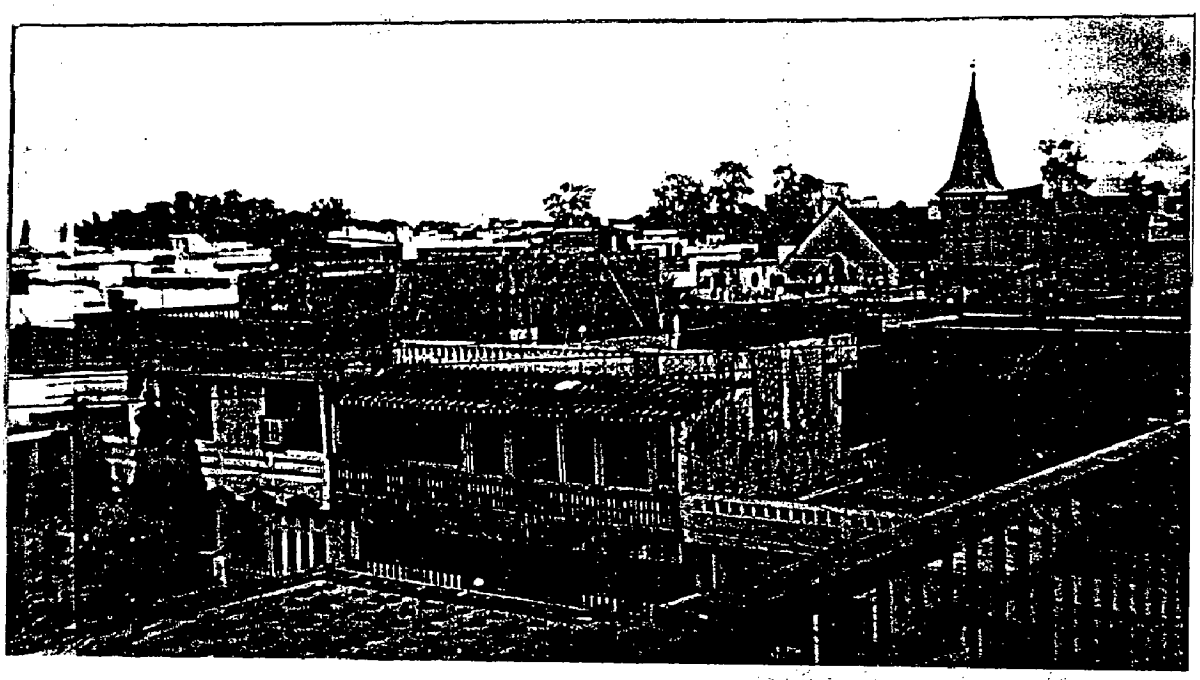
FIRE BRIGADE OFFICE IS LOCATED ON THE SATE HIGHWAY IN THE MOST CONJUSTED AREA.

INFORMAL SECTOR IS FOUND IN EVERY PART OF THE CITY.

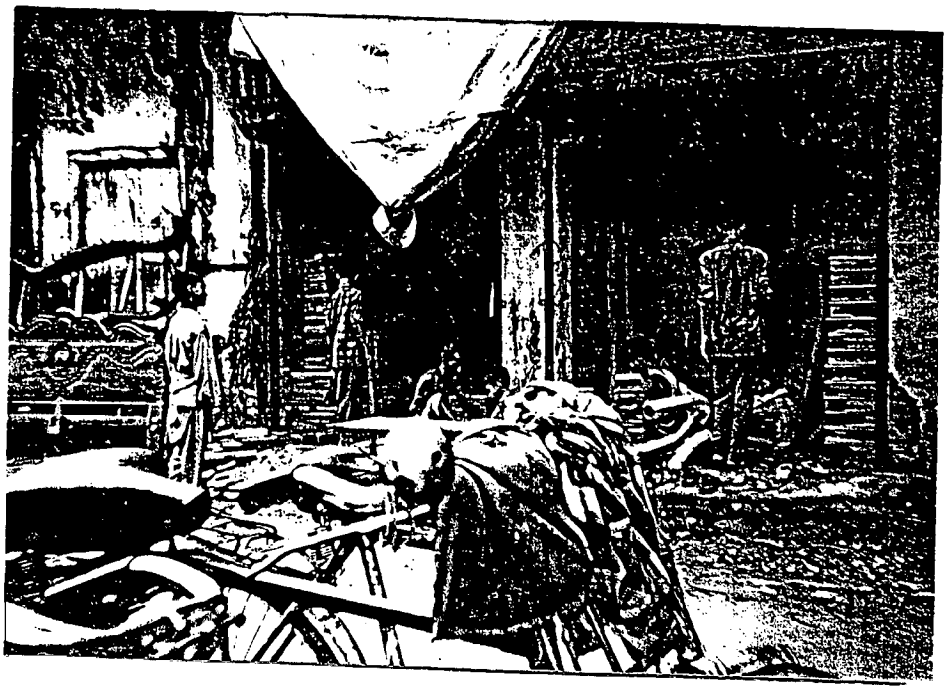


VIEW OF POLLUTED PAV DHOI RIVER AT THE TWO POINTS.

UNOFFICIAL DUMPING ON THE DEHRADUN STATE HIGHWAY SUCH AS TYPE OFDUMPING PLACE ARE ALSO FOUND IN THE OTHER PART OF THE CITY.



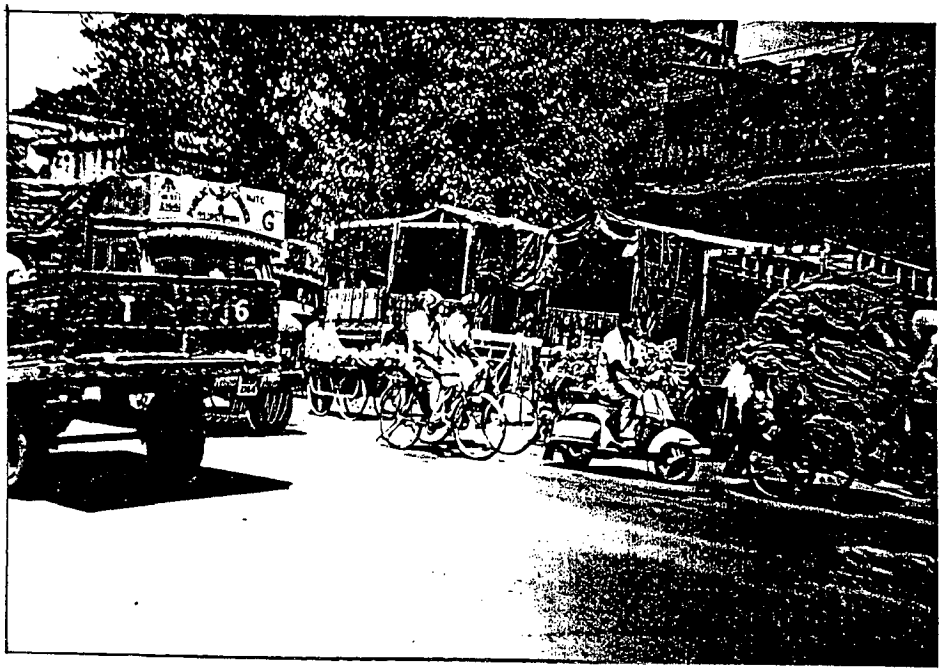
CITY TAKES THE SHAPE OF CONCRETE JUNGLE



CHILDREN BELOW THE AGE OF 14 ARE WORKING AND THE SPACE FOR THEIR WORK IS ALSO INSUFFICIENT.

RESIDENCE ON THE FIRST FLOOR & ON THE GROUND FLOOR WOOD CARVING INDUSTRY.

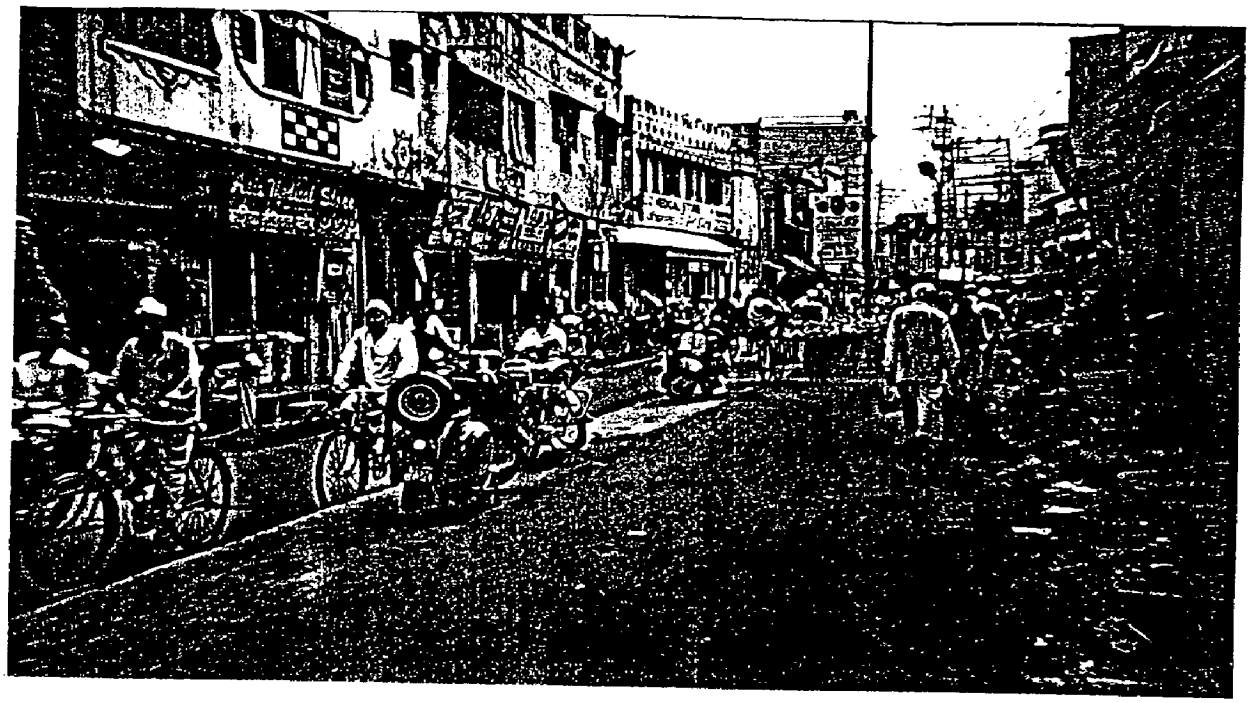
GANDHI PARK IS KNOW BEING CONVERTED INTO TRUCK PARKING DUE TO MORE EXPORT & IMPORT.



PARKING OF TRUCKS ON THE ROAD'S WHICH CRE-AT PROBLE TO THE MOVEMENT OF TRAFFIC AS WELL AS TO THE SHOP KEEPERS.

TRAFFIC JAM ON ALL THE ROAD'S MAXIMUNM IN THE PEAK HOURS OF THE DAY WHEN THERE IS MIXING OF CITY & HIGHWAY TRAFFIC.

TYPE RETHRADING INDUSTRY IN ONE OF THE MOST CONJUSTED AREA WHERE THE WIDTH OF THE ROAD IS ONLY 6 FEET.



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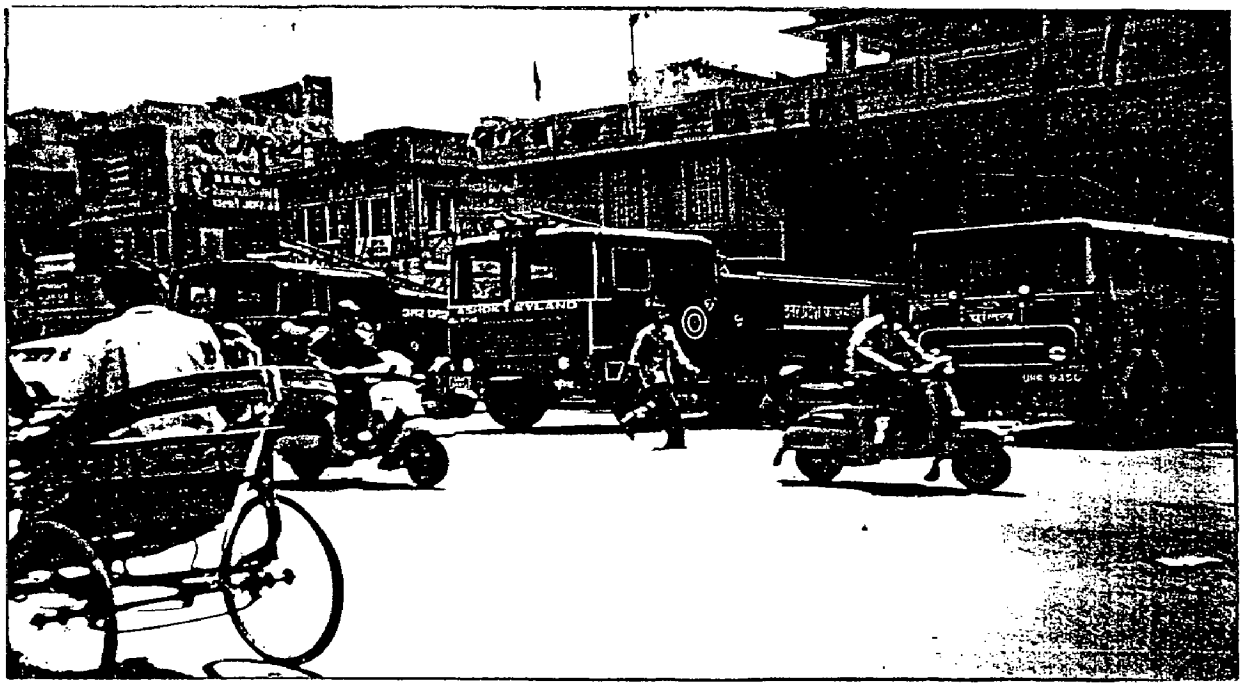


FIRE BRIGADE OFFICE IS LOCATED ON THE SATE HIGHWAY IN THE MOST CONJUSTED AREA.

- The majority of buildings are in bad conditions where the wood carving units are located.
- Development of residential colonies by the side of industries is unhygienic and unsafe.
- No facilities like shopping, open spaces etc. for the workers are available near the industrial area.
- Small-scale industries are coming in the residential areas.
- Transport agencies are located quit away from the major industrial centers.
- Most of the labour employed in the wood carving industry is of age below 14 years.
- Presence of particulate matter in the air due to smoke emitted by the large units without any treatment.

1.4 OBJECTIVES: -

- TO STUDY INDUSTRIAL GROWTH IN SAHARANPUR CITY & ITS IMPACTS.
- IDENTIFICATION OF URBAN PROBLEMS RESULTING FROM INDUSTRIAL DEVELOPMENT & TECHNOLOGICAL CHANGES IN INDUSTRIES.
- TO ANALYSE THE MASTER PLAN OF SAHARANPUR CITY WITH RESPECT TO INDUSTRIAL LOCATION.
- TO IDENTIFY INADEQUACY OF INFRASTRUCTURE AT PRESENT.
- FRAMING OF POLICY FOR FUTURE DEVELOPMENT & GROWTH.

1.5 SCOPE AND LIMITATION: -

- Analysis of chronological growth and of industrial activities will be done in terms of number of units, capital investment, raw material, finished products and extent to major market in India.
- Analysis of urban problems will be based on the impacts due to industrial growth.

- To assess the existing natural resources and find out the potential for industrial development.
- To assess secondary resources, physical infrastructure, manpower, railways and road network and transportation nodes for forward and backward linkages.
- To find optimal location for different industries.
- Aspects like social implications, economic implication and technical details shall not be dealt with.
- Recommendations shall be given for integrated industrial growth & urban development based on the outcome of the study.
- Study relating to the environment will be based on the available data.

1.6 METHODOLOGY: -

In order to achieve the above objective, the following methodological sequence has been identified:

- Study of the existing city with its historical growth, phase and causes of industrialization to understand the present status of the city with reference to industrial growth.
- Appraisal of various dimensions of industrial development.
- Primary survey of industries.
- Assessment of resources.
- To assess the impact of industrialization on residential and commercial development of city.
- Study of policies and programs related to industrial growth and urban development of city prepared by public agencies and assesses their impact.
- Preparation of the policy guidelines for the future industrial growth and urban development of Saharanpur city.

1.7 SELECTION OF STUDY AREA:

The Saharanpur City Master Plan is under revision & is likely to introduce certain new inputs & dimensions for future development activities; the time is ripe to study the relationship between industries, urban development &environment.

Saharanpur City is also selected as study area for the dissertation because.

- *It is one of the important towns in U.P. State and earned not only nation wide but also international reputation for its woodcarving industry.*
- *Due to the rapid industrial growth, growth rate of population has also increased creating many problems.*

CHAPTER 2

LITERATURE SURVEY

2.1 Definitions of Urban Structure:

- Urban structure signifies the spatial organization human activities and interrelationship – Winglo-L.
- The urban structure covers all physical accommodation houses, offices, roads, schools etc., which make up areas – David Lewis.
- Urban structure refers to the spatial organization key functional areas and essential services, facility of city in response to certain fundamental link needs and activities of human society.

Components of urban structure are:

Main components of urban structure are:

- Physical structure of city, which contents all the land, uses.
- Social structure of city, which contains age sex structure, cast religion, education, health, living habits and conditions etc.
- Economic structure of city which contains employment, workers etc.

2.2 CLASSIFICATION OF INDUSTRIES ON THE BASIS OF TCPO GUIDELINES: -

TCPO has classified industries in five classes as described below:

a) Service industries:

The service industries are those are mainly concerned with repair, maintenance, servicing or job work. They can also be accommodated in residential area where they can operate on a mini scale.

b) **Light industries** :

These are defined as those, which do not employ more than 100 workers and do not use power more than 100 H.P. except in the case of foundries and smithies which do not generally consumes any solid fuel. The total area requirement per unit does not normally exceed 4.9 hectares.

c) **Extensive industries** :

Extensive industries are those, which are, employ more than 100 workers and may use any kind of motive power or fuel subject, of course to their noxious features. These industries usually require more than 4.9 hectare of area per unit.

d) **Heavy industries :**

Such industries are highly capital intensive and also land extensive in character. They generally function as self contained and independent unit.

e) **Obnoxious industries :**

These are industries which are associated with such features as excessive smoke, noise, vibration, stench, unpleasant or injurious fumes, effluent, explosive, inflammable material etc. and other hazards to above classification,

2.3 CLASSIFICATION OF INDUSTRIES ON THE BASICS OF POLLUTION: -

According to the pollution created by the industries, the industries are categories into color coding that is Red category, Orange category, and Green category.

- Red industries are maximum pollution prone and they are allowed to setup only in the industrial areas only. These industries mostly fall in the category of Obnoxious and heavy industries.

- Orange industries are also taken into the category of pollution creating industries but they are not creating much pollution so in some cases they are allow to setup in the city areas.
- Green industries are creating least pollution. So they are allow setup in the residential areas. These industries are mostly falling in the category of Service & light industry.

2.4 THEORIES OF INDUSTRIAL LOCATIONS: -

The choice of a place where an industrial establishment comes to be started has a very great influence on productivity, efficiency and profitability of the particular industrial units. Broadly, it was only after the coming of the factory age and spread of factory system in a number of countries forcing competition among products of different countries that the problem of industrial location began assuming increasing importance.

2.4.1 Alfred Webber's Theory of Industrial Location: -

Alfred Webber, a German economist, propounded for the first time an analytical approach to the problem of industrial location in 1909. Webber's theory has adopted a purely deductive approach and it is based on the critical analysis of general factors, which pull an industry towards different geographical locations and ultimately determine the broad and basic framework of location of different industries.

According to Alfred Webber's theory of industrial location 'certain technical coefficients play a decisive role in determining location of an industry' Thus, according to Webber's theory, there are only two basic factors for determining location of an industry' transport and labor cost. The fundamental factors which determine transport costs are weight of the goods to be transported and the distance to be covered. Raw materials are divided into two categories:

Pure Materials:

Like cotton, wood, raw jute etc., which do not lose weight in the process of production.

Gross Materials:

Gross Material is weight losing in the case of the power steel. Or we can say, Localized materials which are generally available every where, e.g., water, clay etc.

Deducting from the above consideration, the industries will be localized at a plane where transports costs are minimum .

In respect of labor location and its power to attract industries, according to Webber, two factors are important:

The labor cost index, (i.e., the ratio between cost of 1 labor per ton of product)

The location weight (which is the total weight to be transported during the whole process of production) .

From this Webber deduce another rule, when labour costs are varied, an industry deviates from its transport locations in proportion to the size of its labour coefficient.

Thus, a plane in the vicinity of a plane where there is a concentration of industry offers a many advantage to a new entrepreneur if he state an industrial unit in the same industrial unit in the same industry area there.

2.4.2 Sergeant Florence's Theory of Industrial Location: -

According to Seargent Florence's theory, the relation of an industry area is not so important as the relation of the industry to the distribution of occupied population as a whole. He made use of two concepts, i.e., 'location factor quotients' and 'co-efficient of localization'. By location factor quotient, is meant an index of the degree of concentration of industry in a particular region. The co-efficient of localization gives a picture of the degree of local concentration of a particular industry compared with the distribution of the working population as a whole. If the location factor quotient were less than unit it would mean that the region dose not have a sufficient share of industry. Location factor quotient on is generally calculated for a region based on the political division in a country. The main purpose of co-efficient of localization is to classify the different industries according to their qualities of concentration or dispersion. Industries with a high coefficient of localization show very little tendency towards decentralization; on the other hand industries with low co-efficient show higher tendency of dispersal.

Location factor or quotient is calculated by two ratios:

The percentage of workers of the industry in question found in the region under consideration and the percentage of all industrial workers found in that particular region to the total industrial workers in the country. The first when divided by the second one gives the location factor or the quotients if the quotient is above unit the region have a higher share of industry. If the quotient is less than unity the region have a less share of industry.

The coefficient of localization is calculated in the following ways:

1. Percentage of all workers that found in each region is to be calculated.
2. Percentage of all the workers of the industry in question, in each region to be found out.

3. The positive deviations of (2) from (1) are to be added up.
4. The sum thus derived is to be divided by 100, to obtain coefficient of localization.

On the basis of these can be divided in high medicament low coefficient industries.

2.5 FACTORS AFFECTING INDUSTRIAL LOCATION: -

2.5.1 Raw Materials:

The total cost of all the raw materials delivered at the works of the industry has to be taken.

Supply of raw materials:

- Material are home produced or imported.
- Financial linkages with raw materials suppliers so that the raw materials may be obtained below market prices.
- Nature of raw materials: Localized or ubiquitous.
- Reliability and continuity of the sources of supply.
- The security of the means of transport.

2.5.2 LABOUR:

- Quantity: depends upon competition for labor.
- Quality: covers special skill, training and acceptability of labour.

Unskilled a labour is largely fluid and hence non-locative.

But for industries that employ large number of skilled artisans, i.e., where waves of skill constitute a large item in the total cost of production labour becomes the locative factor.

2.5.3 SITE AND SERVICES:

- Physical condition of site, e.g., bearing capacity of soil, facility for dumping solid waste or disposal of liquid effluent.
- Infrastructure : Electricity
  Drainage
  Low wages
  Other industries position

2.5.4 Climatic conditions:

Affect mental and physical efficiency, e.g., damp climate for textile industry while dry for flour industry.

2.5.5 Government Incentives:

E.g. loans, tax exemption, subsidy etc.

2.6 GUTTENBERG'S THEORY ON URBAN STRUCTURE AND URBAN GROWTH: -

Guttenberg's theory on Urban Structure and Urban Growth is directed towards accessibility concept as a part of the physical organization of space and flow systems within the city space. Guttenberg also views human interaction as basic determinant of urban spatial structure. But he points out that in this process for achieving an interaction, community organizes itself so as to minimize the distance of interaction, or what he calls 'community effort to overcome distance'. There are only two means available to do so. Either people can be transported to facilities or facilities can be distributed to people.

An interesting conclusion that Guttenberg makes is that "transportation systems hold the key to the way in which growth proceeds " and that if transportation is poor, the work places, trade centers and community services will tend to assume a pattern of distributed facilities, if it is good, these activities will assume more concentrated patterns in the form of undistributed facilities". In this sense distributed facilities and transportation systems become the basis for the organization of human activities.

2.7 CONCEPT OF INDUSTRIAL ESTATES: -

(A) Physical Planning for Industrial Estates

Industrial development policies have used the industrial estate to accelerate industrialisation and generate employment opportunities and to relieve hardships in depressed areas by expanding and diversifying the industrial base. The industrial estate has been utilised to guide the locations and development of industry.

In India, where Industrial Estates have been a major feature of the industrialisation programme for the small-scale industry, the physical and social relationship of Industrial Estate with the town or city in its proximity was given little attentions in the early period of development. It is only since the 'Third Five Year Plan' that location and development of Industrial Estate was viewed as an integral part of the total city's development plan and development within and around the estate gets regulated by the landuse control and zoning regulations embodied in the development plan. Industrial estates also trigger spontaneous and unplanned growth around them due to convergence of the servicing industries, workshops, ware housing and storage facility and personal service establishments. The planner attempts to create socially cohesive urban communities by applying the neighbourhood concept through measures which enhance local face to face contact, facilities, local loyalties and attachments, offset detachments caused by residential and social mobility, stimulate personal feeling of identify, security and stability and offer opportunities for training the young in their future roles .

(B) Industrial Estates Vs Industrial Areas

Industrial estates and industrial areas are bit confusing, as in practice; they are used interchangeably, but of both of them differ as described below:

1. Industrial Area is a developed land for industrial purpose with infrastructure facilities with internal roads, streets, light and power and other utilities. No factory sheds/buildings provided by the government whereas Industrial Estates are a planned cluster of industrial building with the sound network of utilities and facilities like water, transport, electricity, steam, post office, banks, watch and ward etc. Specialised services like raw material depots show room and common facility centres are also provided in Industrial Estates.

2. In Industrial Estates, there is a comprehensive network of policies on admission, additions or modifications in buildings and terms and conditions, whereas in Industrial Areas the government keeps a general overall control regarding such matters.

As the problem and prospects are almost of similar magnitude in Industrial Areas and Estates, they have been therefore used in an interchangeable term and function simultaneously.

(C) Location aspects Of Industrial Estates

Location aspects are the crux of success of an Industrial Estate. Various factors such as water, power, availability of labour, nearness to big cities, easy availability of land on reasonable rates, good demand for the surrounding area for products, access to the railway and highway, expansion, potentiality and suitable communication system etc. All the above factors are sincerely followed while selecting the site for the Industrial Estates.

2.8 INDUSTRIAL POLICY OF INDIA: -

India was famous for her industrial products and her handicrafts right from the pre British times till about the middle of 19th century. When the responsibility of India administration was transferred from the East India Company to the British crown and parliament in England in 1860 after the failure of the Indian mutiny in 1857, British government under the influence of the English classical school of political Economy adopted the policy of 'laissey faire' (i.e., policy of non-inter-ference by the state in the economic affairs of the people) which brought the rapid decline of handicrafts after the middle of 19th century because of Indian handicrafts inability to successfully withstand competition with less expensive mass produced factory made goods. After first world war, the Montage Chelmsford Reforms' introduced in 1919 'Industries' become 'Provincial Transferred Subject' and provinces established their respective departments of industries.

After independence, the Government thought of a definite industrial policy to clear the prevailing foggy atmosphere in the industrial sphere and to provide a clear direction for future industrial development in India and thus in 1948, the Indian Parliament adopted the 'Industrial Policy Regulation 1948', the industrial policy resolution of 1948 which was the first definite statement of the Government of India's Industrial Policy contemplated a mixed Economy for the country in which both the public sector and the private sector would play an important and effective role in the industrial sphere

2.8.1 INDUSTRIAL POLICY RESOLUTION OF 1948: -

The industrial policy regulation of 1948 divided various industries in the following four categories, viz.,

The manufacture of defence equipment's, atomic energy, railways and transport were to be the exclusive monopoly of the union government.

The second category of industries included iron and steel, coal, shipbuilding, Telephone and Telegraph and wireless and mineral oils and all new undertakings in this category would be established only by state, however, existing private industrial establishment would be allowed to continue in private sector.

Third category includes those industries, which were of such importance that the government felt it necessary to plan and regulate them. This category included salt, tractors, automobiles, electricity, engineering, heavy machinery, machine tools, heavy chemicals, fertilizers, power and industrial alcohol, cotton and woolen textiles, cement, sugar, paper, news print, air and sea transport etc.

The fourth category consisting of industries not mentioned in the third categories referred to above was left open to private enterprises, individual as well as co-operatives.

The industrial policy resolution of 1948 also laid down guidelines for small scale and cottage industries, industrial labour and foreign capital.

2.8.2 INDUSTRIAL POLICY RESOLUTION OF 1956: -

In 1956, the Indian Parliament by adopting the 'Industrial Policy Resolution of 1956' replaced the industrial resolution of 1948. The main provisions of 1956 resolution were:

The industries were divided into three categories by a new classification of industries. The three categories were viz.

Schedule 'A':

This schedule included the 17 industries, which were the exclusive responsibility of state.

These industries are:

Defense equipment, atomic energy, iron and steel, heavy castings and forging of iron and steel, heavy electrical plant, including steam turbines, coal and lignite gypsum, gold and diamond, mining and processing of copper, leads, zinc, tin, molybdenum, air craft, air transport, railway transport, ship building, telephones, telegraph and wireless generation and distribution of electricity.

Schedule 'B':

It includes those industries, which were to be gradually aimed and managed by states. In this category, only state will set up new units and private sector was assigned a role that was only supplementary to the role of state.

Schedule 'C':

Included all the remaining industries left to private sector, but their development was to be in accordance with the social and economic policies and objectives of state policies.

The 1956, industrial resolution also emphasized to encourage small scale and cottage industries by reserving some products exclusively for small sector and by giving subsidies. This resolution also stressed the importance of labour and for improving the working and living conditions of industrial labour.

2.8.3 INDUSTRIAL POLICY IN 1977: -

In 1977, when Janta Party Government replaced congress. Party Government in the center, wanting to make radical changes the Janta Party announced a new **Industrial policy in 1977.** The main points of this policy were:

Development of small scale industrial sector:

To stimulate the development of small scale and cottage industries measures were to be taken increased the items reserved for small scale sector from 180 to 807, setting up of a District industries centre in each district to provide one window service. Revamping of Khadi and village industries and wide spread application of appropriate technology with a view to improve productivity, income of people engaged in this sector.

Role of large scale industries would be related to the meeting of basic needs of the masses of people and to provide infra structure and items like steel, non ferrous metals, cement, oil, etc. to expand the roles of public sector by producing not only basis goods but also essential consumer goods .

1977 policy resolution also allowed the import of technology in the sophisticated areas and in case of foreign collaborations it stated that areas where foreign technological know how is not needed, existing collaboration will not be renewed and foreign companies operating in such fields will have to modify their character and activities in conformity with national principles within the frame work of the Foreign Exchange Regulation Act (FERA Act) .

2.8.4 INDUSTRIAL POLICY OF 1980: -

In 1980 Congress Government again come to power at center and it announced new industrial policy. The main objectives of 1980 Industrial Policy are:

1. To secure optimum utilization of the installed industrial capacity.
2. To make efforts to maximize industrial production and achieve high productivity.
3. To generate high employment opportunities.
4. To reduce regional industrial imbalance by giving higher priority and preferential treatment to industrial development of backward regions in the country.

5. To give high priority and preferential treatment to agro based industries and promoting optimum inter sectorial relationship.
6. To promote economic federation by properly spreading investment in small scale industries, both in urban and rural areas, and
7. To provide protection to consumers as regards the quality of products and their prices.

2.8.5 NEW INDUSTRIAL POLICY OF 1991: -

On 23rd July 1991, the congress government at center announced an Industrial policy, the main features of the new policy are:

1. Industrial lincensing policy abolished for all projects except for a short list of industries of security and strategic importance.
2. Direct foreign investment raised from 40 to 51 percent.
3. Automatic permission for foreign technology agreements in high priority industries.
4. Dis-investment of government holding in public sector to raise resources.
5. In locations other than cities of more than one million populations, there will be no requirement of industrial approvals from the central Govt., except for industries subject to compulsory licensing.

2.9 U.P. GOVERNMENT INDUSTRIAL POLICY: -

Industrial policy of Uttar Pardesh has given special emphasis to the creation of more employment opportunities; to increase the production of essential items consumed by general public and availability of services. The policy also provides for special encouragement to the agro-based industries and on industries based on females & rural artisans. It also aims to give employment and encouragement for the indigenous development of new technologies by the industries based on local technology.

Objectives of U.P. Govt. Policy:

The main objectives of policy are viz.,

- Creation of more employment opportunities by giving special encouragement to the small-scale handloom industries.
- To achieve speedy development of rural areas and backward districts by special incentives for the industrial development in these areas and thus to achieve to reduce regional imbalances.
- To give encouragement to small-scale industries for the production of essential consumer goods and to make available required raw materials at reasonable prices to weavers and to establish a viable infrastructure for the distribution of produced goods.
- Not to encourage large-scale industries for the production of daily use commodities, which small scale and household industry can produce.
- To achieve the maximum utilization of installed capacity the policy aims to make sick units viable and to give special assistance to the industries, which are on the verge of the becoming sick. It also provides for the modernization of traditional rural and small-scale industries to achieve the aim of creation of more employment opportunities.
- Policy also provides for the development of industrial estates/area as per requirements.
- It also envisages to give special incentives to the industries based on food processing, and agriculture, electronics, drugs and pharmaceuticals, plastics, engineering, leather, petro-chemicals, textiles, sports, glass and ceramic, Foundries and industries based on locally available raw materials.

2.10 ROLE OF DISTRICT INDUSTRY CENTER, SAHARANPUR: -

2.10.1 REGISTRATION OF INDUSTRIAL UNITS: -

To avail the assistance offered by the D.I.C. by any small-scale unit, it is compulsory that the unit is being registered with D.I.C. there are two types of registration:

1. Registered as proposed unit:

Any industrialists who want to start a small scale unit/industry will require certain assistance on financial assistance, building material, imported machines etc. and to avail assistance on these matter industrialists are required to register their unit with Industry Department as proposed units.

2. Permanent Registration of Industrial units:

After setting up the unit assistance is needed on matters regarding supply of controlled raw materials, loan for working capital, construction material for expansion of unit from industry department and to avail the assistance on these matters, it is compulsory that the unit is registered permanently with the department.

2.10.2 SUPPLY OF RAW MATERIAL: -

1 Building Materials:

Building materials required for the construction of factory workshops etc. are made available to the unit at controlled rates.

2 Allocation of raw materials for production purposes:

Applications are forwarded to the other various departments by D.I.C. to make available various controlled and imported raw materials for production purpose to those units, which have permanent registration with industry department.

2.10.3 FINANCIAL ASSISTANCE (LOANS): -

1 FINANCIAL ASSISTANCE BY U.P.F.C.:

1) Small scale units will be given loans for purchase of land, machines and buildings at easy terms and conditions by U.P.F.C. the maximum amount

which can be sanctioned is 60 lacks and it depends upon the scheme of proposed units.

2) U.P.F.C. sanctions loans to industrial units for a maximum duration of 10 years depending upon the loan amount, the repayment period of loan is from 7 to 10 years.

3) Individual contribution of industrialist is 15 to 30% of the total cost of the project.

4) U.P.F.C. charges 3% more interest than the prevailing rate of interest charged by the banks.

5) U.P.F.C. also provides for working capital along with term's loans under 'single window' scheme.

6) U.P.F.C. generally gives 1 to 2 years exemption to industrialists for the re-payment of loans.

7) To encourage female industrialists, there is the rate of interest to be less than 1% from normal rate of interest on term upto Rs.10 lacks.

2 *LOANS GIVEN BY DISTRICT INDUSTRIES CENTRE, SAHARANPUR:*

1) Consolidated Margin Money Loan: Under this scheme, margin loan equivalent to 10% of the total cost of the project will be given to industrial units but maximum limit is 3.0 lacks. The rate of interest on loan is 13%. Re-payment of loan can be done after 2 years in 12 equal half-yearly installments.

2) D.I.C. Margin Money Loan: Under this scheme, margin money loan is given to any industry which are set up in half urban and rural areas and the amount of loan to be given is 20% of the total cost of project and maximum limit of loan is Rs.40, 000/-. The rate of interest charged on loan is 13.76%.

3) Exemption from Sale Tax: under new industrial policy exemption from sales tax will be given to those industries which are set up during the period of 1.4.1990 to 31.3.1999. In this scheme, exemption in sales tax

will be given on the basis of the amount of capital investment and not for a fixed period. Detailed scheme is under consideration of the Govt.

4) Availability of Machines Under Hire Purchase Scheme: Machines are made available to various industrial units on hire purchase basis from U.P. small scale industries corporation limited and National small scale industries corporation limited. Initially the industrialists deposit 10% of cost of machines and remaining amount can be paid within 3-7 years under easy installments.

2.11 ENVIRONMENT: -

The environment is a combination of air, water, land, plants; animals, their interrelationships, natural and man modified surroundings and processes as well as socio-economic and cultural aspects of people inhabiting it.

Everything that surrounds us that to you as an individual is your world, that makes you and your world unique that beings to be the environment. It is private environment, the acceptance of which by any individual would vary according to how that individual allows the environment to affect him.

Pollution is a very general term and is defined in many ways. In its broadest sense as conceived by the layman it is the befaulting of the environment by man's activities, particularly by the disposal of solids, gaseous, and liquid waste products. The word pollution has been adopted from the Latin word 'pollution' meaning defines the oxford dictionary as derived its meaning from the verb pollute meaning physical contamination of terrestrial or aquatic environment. Different sections of the society have been giving different meaning to pollution depending on their own interest of investigation or use of the water. The common person thinks pollution as the introduction into water of anything dirty or foreign regardless of the amount as effects of material introduced and whenever the society finds a useless for their use, they call it polluted.

2.12 DEFINITIONS OF POLLUTION: -

USPH Services (1962) has defined pollution as the presence of any foreign substance (organic, inorganic, radiological or biological) in water, which tends to degrade its quality so as to constitute hazard as impair the usefulness of water.

Warren (1971) defines pollution as any improvement of the suitability of water for any of its beneficial uses actual or potential, by man caused changes in the quality of water and if such an impairment is by nature then it is termed 'natural pollution'.

Baumann (1963) has stated that pollution may be due to solids, liquids or gases whose presence may be non-permissible, undesirable or objectionable.

Nemerow (1974) called a pollutant to mean too much of any given contaminant such that it renders the receiving water unusable in its exiting state for its desired best uses.

According to Cains & Lanza (1972) pollution is the appearance of some – environmental quality for which the exposed community has inadequate information and is thus incapable of an appropriate response.

Bhargava, D.S. defines pollution as 'entry of foreign matter in water so as to make it unsuitable for a use'. Some biologists considered pollution as a change in the aquatic environment without due regard to the water use.

2.13 ENVIRONMENT AND DEVELOPMENT: -

The earth's finite natural resources have been exploited for centuries. Only over the past two decades, however, has public attention been caught by serious phenomena of resource depletion and scarcity. Widespread concern about environmental digression has also been expressed in conjunction with conspicuous

pollution incidents in the 1960s. Zero growth of the economy and the population was then postulated in industrialized countries to avoid the disastrous transgression of the physical "outer limits" of the planes. Developing countries remained only peripherally interested considering environmental concerns to be marginal products of high level economic growth. Today environmental problems are generally seen to stem both from economic growth and from activities induced by an actual lack of development.

The degradation of environment started when the human settlements felt the vagaries of nature unbearable. The droughts, famines & other climatic disasters, though, they persists earlier too and tolled heavy lives, gave masses a new direction to think for self-protection. This started the industrial revolution all over the globe and a large-scale migration took place. Industrial slums were formed and so grew up the concept of towns and cities. Intensive industrialization gave birth to the word pollution and there was than no end of the latter as the greed of the entrepreneurs multiplied. The filth and wastes got accumulated on roads. The quality of life became very much degraded.

The root causes of the environmental degradation was explosion of population as large-scale industrialization and commercialization took place, which thereby spoiled all natural features of the cities. The sea, river, lakes became the large sites for the dumping of wastes which created severe water pollution. The vehicular traffic created major air pollution. The flora and fauna gradually started disappearing. Heavy deforestation started which adversely effected the climatic conditions.

Environmental quality is, in a very real sense, all things to all men, for the quality of an environment is judged by the attitudes of individual men to it, and such judgements are likely to vary with age, culture, education, experience, income & sex-in short, with life style, and with personality. The American Public Health Association has suggested four levels of concern in assessing environmental health viz.

- Ensuring survival.
- Prevention of diseases and accidents.

- Maintenance of an environment suited to man's efficient performance.
- Preservation of comfort and the enjoyment of living and these might well form the basis for an assessment of environmental quality.

Whether conceived in medical, economic or psychological terms, these criteria are all assessed on a human scale, through they are progressively more difficult to measure.

In man's history this is an area of exploding environmental and urban problems. To a large extent the demands, functions, and expansion of cities cause our environmental ills. Conversely healthy urban life requires understanding of and wise accommodation to the complex physical environment in and near cities.

In its broadest sense environmental planning is an attempt to balance and harmonize the various enterprises, which man for his own benefit has superimpose on natural environments.

All human activities impact upon the environment of their setting. These impact are most conspicuous, tangible, and measurable in respect of human settlements in general and urban centres which are nodes of intense, concentrated and diverse human actions in particular. The degree of impacts could be directly related to the intensity of development as an initial proposition. However, it would soon assume more complex dimensions consequent to the growth dynamics of the settlement particularly a growing urban centre, which would set into motion a chain of inter related impacts consequent to spatial structure and functional changes in the settlements during it process of growth.

Environment & settlement have a multi layered interface ranging from macro and meso levels to the micro level interactions of the immediate natural environment attributes primarily land, water, air and vegetation with the settlement perse. This interface has implications on several aspects of planning for settlements notably in regard to the location and siting, size & growth, physical form and development pattern,

landuse, socio economic structure functional disposition etc. environment provides the basic life support system to settlements individually as well as collectively. For healthy growth of towns & cities, it is essential that life support system is not impaired, either through over-taxing system ingredients like, land, water, air, & vegetation or by causing their digression through dumping and discharge of organic and inorganic wastes, rejects and effluents, consequent to high intensity urban function of production, consumption & distribution .

Large cities and agglomeration have played havoc with their environment, as the life support system and processes has only got depleted and degraded, but in most cases have suffered irreversible damages. Effects on these on the natural as well as the man made built environment are too apparent to elaborate. Chronic water and power shortages, gross inadequate sewerage and solid wastes management systems, adversely affected micro climatic conditions owing to depletion and denudation of ecological cover, high degree of air and water pollution's, and various forms of land digression are some of the common problems witnessed today. All of these have inter related causes and impacts on the quality of life.

In the contemporary situation of a developing economy towns and cities are considered on synonymous with growth. They are identified as vehicles of socio economic development. And hence conceived or dynamic entities, triggering growth not only within their own confines, but also in their hinter land regions. All developing countries are planning for higher growth, and consequently increased urbanization and industrialization. In this process more and more strain of natural environment of resources would be inevitable unless interventions are made to devise an urban pattern comprising town & cities, that is environmentally compatible sustainable and manageable.

There is obviously an urgent need to establish in any given setting a healthy nexus between environment attributes and resources on one hand and urban development programs on the other. This calls for a fine grain synthesis of environmental parameters with urban planning and development parameters. An urban pattern supported by such

types of individual city structure which while drawing upon environmental resources, also enable their regeneration & recycling as an integral process of city growth & substance, would be conclusive to establishing such a harmonious relationship between environment and the settlements as well as achieve overall planned development .

2.14 SIMILAR CASE STUDY - KOTA

2.14.1 GEO-CLIMATIC CHARACTERISTICS: -

Kota is one of the most important city situated in the south eastern region of Rajasthan, lying at the intersection of 25° 11′ North latitude and 75° 51′ East longitude on the right bank of river Chambal or Charmanyawati at an altitude of 253.3 m above the mean sea level. It is a district town. General slope of the city is towards north and city area close to the river drain towards the river and other areas drains in the near by tanks, nallahs and the other rivulets. The slope from extreme south to the main canal, being a part of Malva Plateau rocks is steep with an elevation difference of around 160 ft., while rest of the area slopes towards North from the canal having elevation difference of around 20 ft. within almost equal distances. This area has dry and hot climate.

- Avg. temperate in summer = 42.9°C
- Avg. temperature in winter = 10.6° C
- Avg. annual rainfall = 63.8 cm.

The predominant wind direction is from West to East both in the forenoon and in the afternoon. Other directions are from Northeast to Southwest and from southwest to northeast. The wind directions from southwest to northeast are predominant during rainy season. In winter the morning wind direction is from northeast to southwest. The speedier wind blow is experienced in the month of April, May and June. For the rest of the year winds blow from West to Northwest are predominant. Wind speed generally does not exceed 5 miles per hours (ref. Fig. 2.1 &2.2).

2.14.2 DEMOGRAPHIC CHARACTERISTICS: -

Kota City has increasing growth rate in especially last three decades. Details of population since 1901 are given in the table no. 2.1 below: -

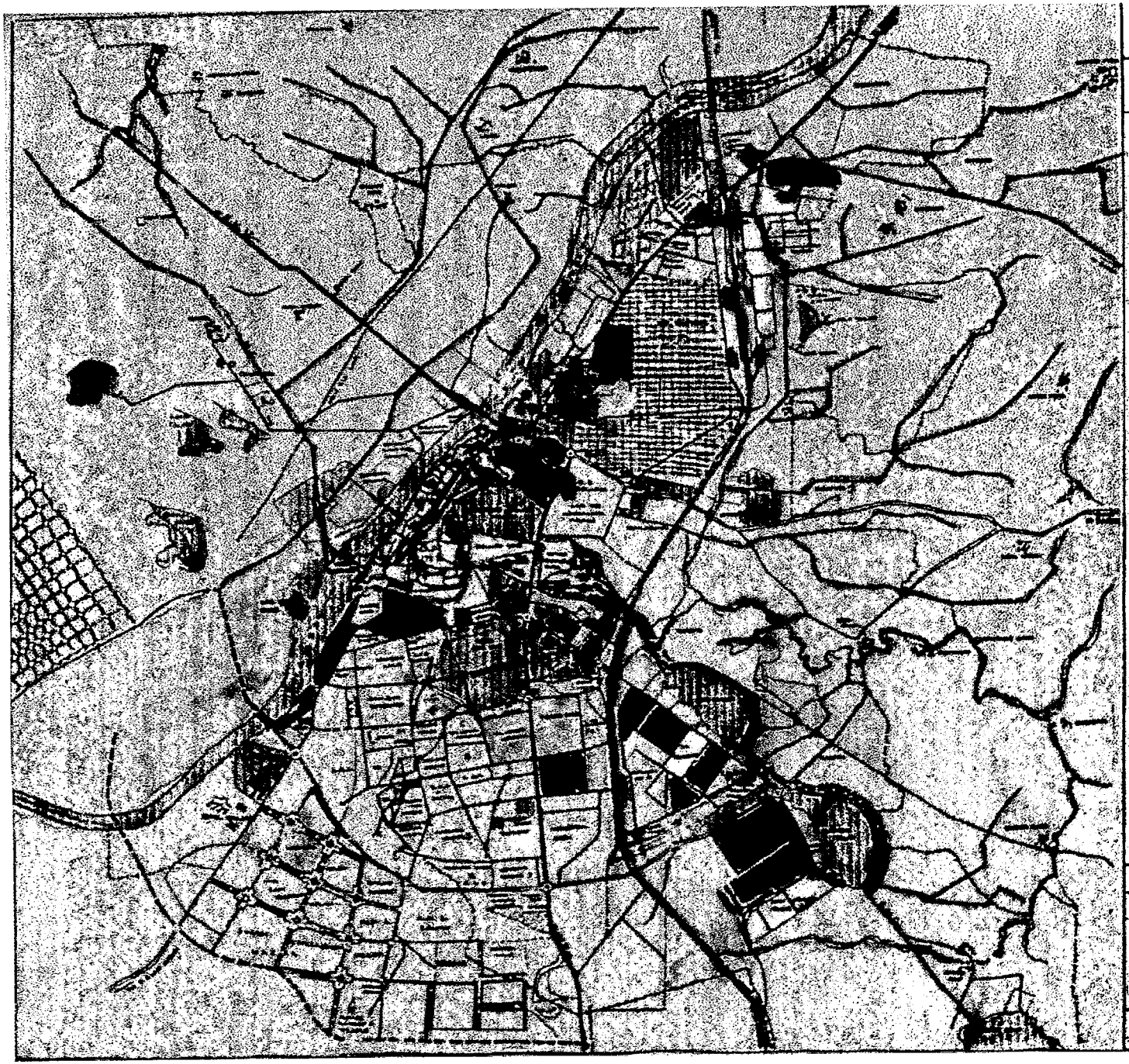
Years	Total population	Decadial variation	%age decadial variation
1901	33657	-	-
1911	32753	-904	-2.70
1921	31707	-1046	-3.40
1931	37876	+6169	+19.50
1941	47339	9463	+25.00
1951	65107	17768	+37.80
1961	120345	55236	+84.80
1971	212991	92646	+76.99
1981	366000	143250	+68.20
1991	550000	179130	+50.00

Further, sex ratio in the city is 865 females per 1000 males while literacy rate is about 60.15%.

2.14.3 CRITERIA FOR SELECTING KOTA AS SIMILAR CASE STUDY:

Kota was selected for the purpose of getting an idea of the problems due to industrialization growth and various steps taken by local authority of the different state in order to solve these problems.

- Both the cities are old and the industrial development stated at the same time.
- As Saharanpur is the district Head quarter in the similar way Kota is also a district Head quarter.
- Both the towns are located on the main railway routes that is Kota lies on the Delhi-Bombay main line and it is the main junction of the railway in the similar way Saharanpur lies on the main route of Jummu-Howada and it is also the main junction of the railways in the north.



KOTA

TOWN MAP

LEGEND

- MUNICIPAL LIMIT
- NATIONAL HIGHWAY NO. 12
- RAILWAY LINE
- FORTIFICATION WALL
- RESIDENTIAL
- COMMERCIAL
- INDUSTRIAL
- GOVT. & INSTITUTIONAL
- WATER BODIES
- AGRICULTURAL LAND
- DEFENCE AREA
- PUBLIC PARKS & OPEN
- GOVT. RESERVED AREA
- PUBLIC UTILITY
- ROCKEY & BARREN LAND

SOURCE: 'MASTER PLAN' FOR KOTA (1971-91)

FIG. NO. 2.2

EXISTING LAND USE 1971

SAURABH GARG M.U.R.P. 2nd YR.

IMPACT OF INDUSTRIAL GROWTH ON URBAN DEVELOPMENT AND ENVIRONMENT (CASESTUDY SAHARANPUR)

DEPTT. OF ARCH. & PLNG., U.O.R.

TABLE NO. 2.2 SHOWS THE WORKER'S DISTRIBUTION IN KOTA: -

S.No.	Description	1961	1971	1981	1991
1	Total population	1,20,345	212,991	358241	537371
2	Total main workers	40014 [33.25]	63701 [29.91]	102582 [28.63]	149976 [27.90]
3	Cultivation	-	-	2106 (2.05)	3384 (2.26)
4	Agricultural laborers	1739 (4.3)	2784 (4.37)	1572 (1.53)	3561 (2.37)
5	Mfrg.,repair processing in H.H. Industry	1128 (2.82)	1936 (3.04)	4002 (3.90)	879 (0.59)
6	Mfrg.,repair, processing other than H.H. Industry	4749 (11.87)	16014 (25.14)		35194 (23.47)
7	Mining & Quarrying	-	296 (0.46)		1302 (0.87)
8	Live stock, Forestry fishing	894 (2.23)	465 (0.73)	94903 (94.57)	2996 (2.00)
9	Construction	4265 (10.66)	3511 (5.51)		12886 (8.59)
10	Trade & Commerce	5861 (14.65)	10197 (16.00)		29769 (19.85)
11	Other services	15232 (38.07)	18464 (28.98)		45023 (30.02)
12	Marginal workers	-	-	752 [0.21]	2850 [0.53]
13	Non workers	80331 [66.75]	149290 [70.09]	254907 [71.16]	384645 [71.58]

[ ] %age of total population
( ) %age of main workers

Source: Report

POPULATION GROWTH OF KOTA CITY.

Beside Industries these are the two major factors which affect the growth of urban structure in the towns i.e., Kota &Saharanpur. These two factors being similar, fulfil my objective of analyzing the impact of industrial growth on urban development & environment. This makes Kota suitable to be taken as similar case study.

Further a comparable study has been done by Piyush Kumar Goyal title **as "Analysis of Industrial Growth and Urban Structure with Emphasis on Cause-Effect Relationships. (Case study : Kota)"** (M.U.R.P. 2nd yr., Thesis Project, Dept. Of Arch & Plng, U.O.R., Roorkee) in 1996. This thesis report helped me in guiding my line of action.

Review of M.U.R.P. Thesis "Analysis of Industrial Growth and Urban Structure with Emphasis on Cause-Effect Relationships. (Case study-Kota)" by Piyush Kumar Goyal.

The study had an aim to give a set of recommendation for the future growth and some proposals for modifications.

2.14.4 THE OBJECTIVES OF THE STUDY MAINLY INCLUDE -.

- To analysis the impact of industrial growth on various aspects of urban structure.
- To identify inadequacy of infrastructure at present.
- Identifying the problems and framing a policy for future development.

To achieve these objectives the methodology adopted involves study of causes of industrialization in the town, literature survey, data collection from secondary sources and visual surveys, framing of policy and set of recommendations based on data collection and problems identified and finally to make proposals for future development.

Study of Kota town and industrial growth in it was studied in terms of, Geo-Climatic Characteristics, historical evolution, demographic characteristics, economic structure of the town (i.e., industries, trade & commerce), occupational structure, landuse and infrastructure and amenities, nature of industries, etc. Further , the analysis work included the impact of industrial growth on occupational pattern, residential & commercial development, transportation, land uses etc.

Finally the problems were identified under the following heads:

- Location of industries beyond the limits of industrial estates and industrial areas.
- Non-restoration of powers by municipality for the enforcement of the law.
- Segregation of intercity traffic on NH 12 from intracity traffic.
- Problem of small scale & house hold industries in the old area of the city.
- Problem of efficient sewerage and drainage system in the town.
- Problem of the growth of town in the haphazard way.

Based on these problems and keeping the legal tools and legal constraints together in mind some proposals and set of recommendations are derived.

2.14.5 IMPACTS OF INDUSTRY ON KOTA CITY: -

As the main causes of industrialization are the availability of resources, market facilities, infrastructure, financial help, and Govt.policy and transport linkages. As a result IM-migration and vast population concentration which leads to increase in demand for housing, space for industries, shopping, education, health facilities, infrastructure. Due to this entire factor the following component of urban structure affected.

Industrial growth beyond proposed location in the master plan.

Shortage of industrial township.

Development of slums and scattered settlements.

Increase in railways and roadways linkages.

Congestion in commercial areas.

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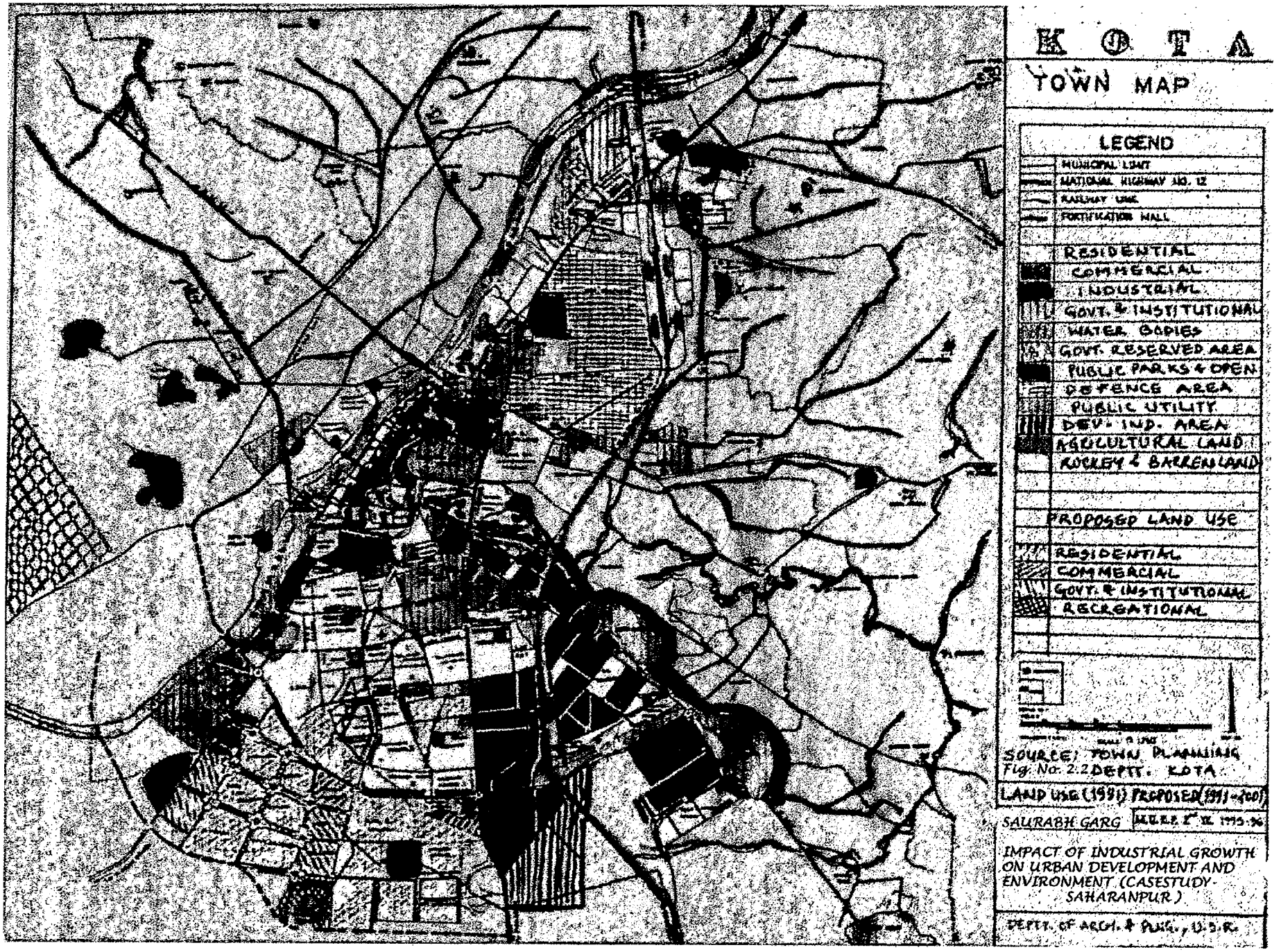
Increase in railways and roadways linkages.

Congestion in commercial areas.


K O T A
TOWN MAP
LEGEND
MUNICIPAL LIMIT
NATIONAL HIGHWAY NO. 12
RAILWAY LINE
FORTIFICATION WALL
RESIDENTIAL
COMMERCIAL
INDUSTRIAL
GOVT. & INSTITUTIONAL
WATER BODIES
GOVT. RESERVED AREA
PUBLIC PARKS & OPEN
DEFENCE AREA
PUBLIC UTILITY
DEV. IND. AREA
AGRICULTURAL LAND
ROCKEY & BARRENLAND
PROPOSED LAND USE
RESIDENTIAL
COMMERCIAL
GOVT. & INSTITUTIONAL
RECREATIONAL
SOURCE: TOWN PLANNING
Fig. No. 2.2 DEPTT. KOTA
LAND USE (1991) PROPOSED (1991-2001)
SAURABH GARG
IMPACT OF INDUSTRIAL GROWTH ON URBAN DEVELOPMENT AND ENVIRONMENT (CASESTUDY- SAHARANPUR)
DEPTT. OF ARCH. & PLAN., U.O.R.

Demand for skilled and technical people

Extra burden on infrastructure facilities.

In the similar way as there are all the facilities, so all the above problem also started in Kota which effect its entire area in one way or in other.

2.14.6 DISCUSSION ON POLICY ADOPTED FOR PROPOSALS AND RECOMMENDATION:

For deriving out proposals and recommendation the policy adopted by Piyush Kumar Goyal includes following points.

- Proper location of industries presently and in the future.
- Development of efficient transport network.
- Improvement of exiting drainage system.
- Improvement of slum area.
- Commercial areas from the walled city should be shifted.
- The growth direction of the town should be shifted from south.
- Checking the pollution.
- Vacant patches within the town should be developed.

2.14.7 POLICY ADOPTED BY THE LOCAL AUTHORITY

- For the future development of the industries zones are demarked in the master plan. As a result industries are coming up in an organized way.
- In the old part of the city they are improving the infrastructure facilities.
- They are not giving permanent registration to those industries, which are not coming in the industrial areas.
- In the old part of the city they are banning the high vehicles during the pick hours.

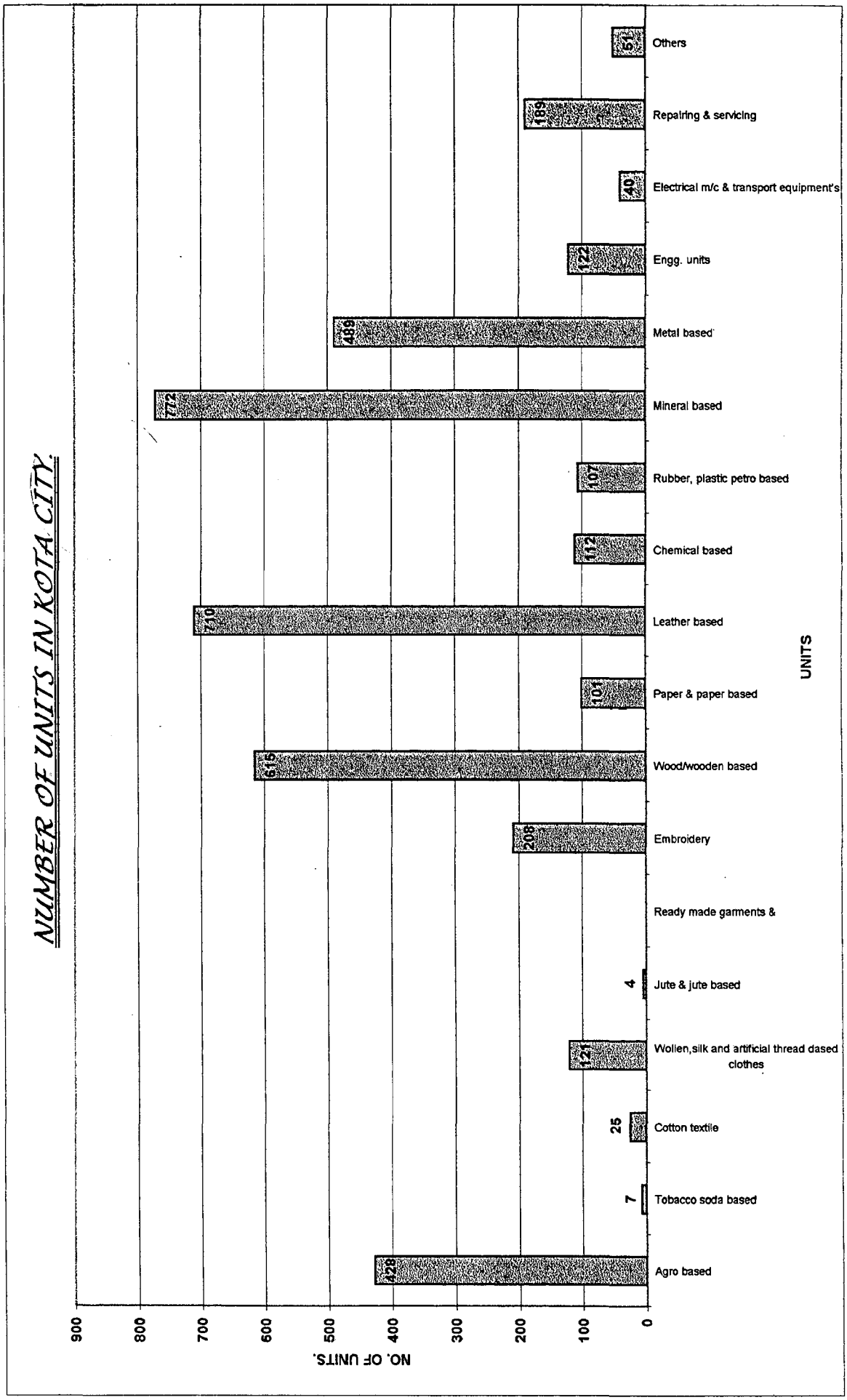
INDUSTRIAL AREAS IN KOTA (TABLE NO. 2.3)

S.No.	Name of industrial estates	Land Acquired (in acres)	Land Developed (in acres)
1	Indraprastha	938.00	7189.42
2	Multi Metal	96.06	94.89
3	Railway Crossing	9.12	7.03
4	Old industrial estate	28.50	28.50
5	Small scale Ind. Area	47.55	47.55
6	Furniture Ind. Area	4.60	4.60
7	Large Ind.	930.00	930.00
8	Electronic Ind. Area	37.00	37.00
9	Bhimpura	83.29	-
10	Nanta	29.88	-

Among these industrial areas many large, medium and small-scale units are set up. At present there are 20 large and medium scale, 4101 small scale and 2312 tiny industries are located at Kota. Details of these are given below:

INDUSTRIES AND THEIR CLASSIFICATION (TABLE NO. 2.4)

Category	Classification criteria (Investment on M/c) in Rs.	No. of units	No. of persons employed
Large scale	Above 5 crore	13	16121
Tiny industries	Below 5 lakhs	2312	4368
Medium scale	Above 60 lakhs below 5 crore	7	
Small scale and ancillary	Above 5 lakhs below 60 lakhs for SSI below 75 lakhs for ancillary units	4101	14603

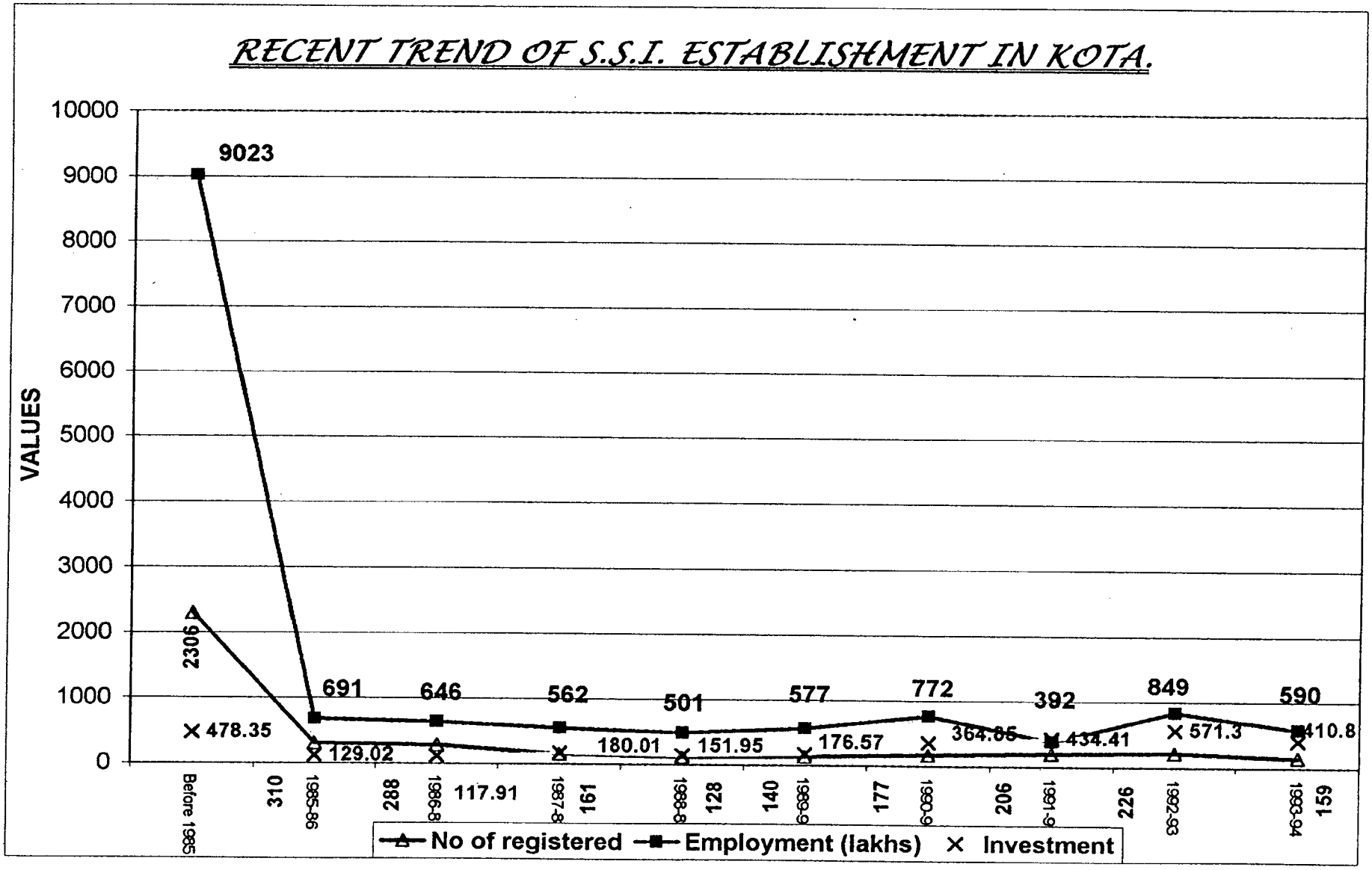

NUMBER OF UNITS IN KOTA CITY.
NO. OF UNITS.
900
800
700
600
500
400
300
200
100
0
UNITS
51
Others
189
Repairing & servicing
40
Electrical m/c & transport equipment's
122
Engg. units
489
Metal based
772
Mineral based
107
Rubber, plastic petro based
112
Chemical based
710
Leather based
101
Paper & paper based
615
Wood/wooden based
208
Embroidery
Ready made garments &
4
Jute & jute based
121
Wollen,silk and artificial thread dased clothes
25
Cotton textile
7
Tobacco soda based
428
Agro based

RECENT TREND OF S.S.I. ESTABLISHMENTS (TABLE NO. 2.6)

S.No.	Year	No of registered	Employment (lakhs)	Investment
1	Before 1985	2306	9023	478.35
2	1985-86	310	691	129.02
3	1986-87	288	646	117.91
4	1987-88	161	562	180.01
5	1988-89	128	501	151.95
6	1989-90	140	577	176.57
7	1990-91	177	772	364.85
8	1991-92	206	392	434.41
9	1992-93	226	849	571.30
10	1993-94	159	590	410.80
11	**Total**	**4101**	**14603**	**3114.97**

2.14.8 POLLUTION IN KOTA: -

Environmental pollution is not a serious problem for the city of the Kota. But due to thermal power station the pollution potential of flyash and coal dust is growing day by day. The flyash pollution is causing nuisance because of the prevailing wind directions in the town from west to east and the thermal power plant is located west of the river Chambal. Therefore, any complacency part of local administration may cost city dearly in future.


RECENT TREND OF S.S.I. ESTABLISHMENT IN KOTA.
VALUES
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
9023
2306
691
646
562
501
577
772
392
849
590
478.35
129.02
117.91
180.01
151.95
176.57
364.65
434.41
571.3
410.8
Before 1985
310
1985-86
288
1986-87
161
1987-88
128
1988-89
140
1989-90
177
1990-91
206
1991-92
226
1992-93
159
1993-94
No of registered
Employment (lakhs)
Investment

SMALL SCALE AND ARTISAN INDUSTRIES (TABLE NO. 2.5)

S.No.	Type of industry	No. of units	Investment in (lakhs)	Employment
1	Agro based	428	576.30	1755
2	Tobacco soda based	7	5.94	53
3	Cotton textile	25	15.62	85
4	Wollen,silk and artificial thread dased clothes	121	56.85	318
5	Jute & jute based	4	5.97	50
6	Ready made garments & Embroidery	208	29.13	508
7	Wood/wooden based	615	129.27	1626
8	Paper & paper based	101	73.96	400
9	Leather based	710	60.84	1739
10	Chemical based	112	212.85	679
11	Rubber, plastic petro based	107	269.21	618
12	Mineral based	772	1051.92	3287
13	Metal based	489	266.44	1745
14	Engg. units	122	130. 92	878
15	Electrical m/c & transport equipment's	40	113.90	188
16	Repairing & servicing	189	67.99	517
17	Others	51	18.06	161
18	**TOTAL**	**4101**	**3114.97**	**14603**

2.14.9 DERIVATION FROM CASE STUDY: -

1) To check the haphazard development near the industrial areas. Schemes to be formulated for controlling the development there.

2) To check the mushroom growth of industries in old areas or city areas planned industrial areas to be developed and industrial units will not be allowed to operate in the city areas and area under industrial use to be increased in ratio of number of workers.

3) To the heavy traffic, coming to industries or going from them to various destination, bye pass shall be made near the industrial areas so that the heavy traffic can be controlled.

4) To check the pollution caused by industries, such units not to be allowed in the city areas and suitable measures shall be taken to check the pollution.

2.15 REVIEW OF SAHARANPUR MASTER PLAN (1985 – 2001): -

The Saharanpur Master Plan aims to ameliorate the short-comings of the past, to allocate areas for residential, commercial and industrial uses along with basic community facilities in right amount within the frame work of socio-economic conditions of the future urban community. The following is the short review of the Master Plan (ref. No. 2.3).

2.15.1 CHARACTERISTIC FEATURES: -

The population of Saharanpur is expected to grow to a size of about 5.789 lacks by the end of year 2001. The present area is as under municipal limit will not be able to meet the requirements of this increase in population; therefore, new areas will have to be found to take up future urbanization of Saharanpur. Considering different factors the regulated area was demarcated and it was found that there was enough scope for the growth of the city in all the directions except the southeast direction due to the presence of remount depot .

Proposed Saharanpur urban area (4288.37 hectares) includes the area of Saharanpur Municipality (9.7495 Sq. Miles). The Master plan envisages the following pattern land use in the city given in table no. 2.7.

PROPOSED LAND USE OF SAHARANPUR FOR 2001(TABLE NO. 2.7):

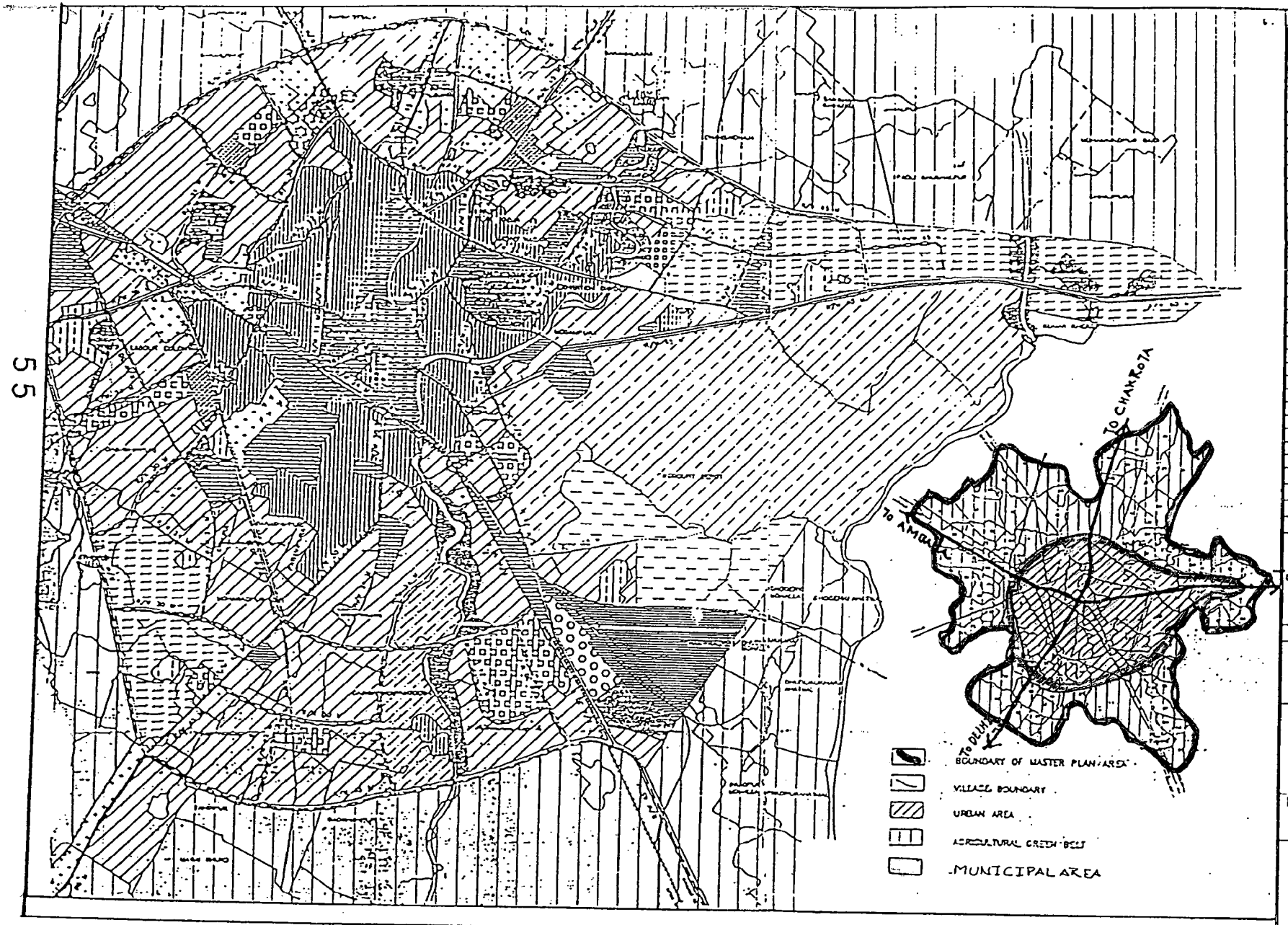
SNO	LAND USE	AREA IN HECTARE	%age OF DEVELOPED	PROPOSED AREA
1	DEVELOPED AREA	482.00	11.67	11.3
2	RESIDENTIAL	1572.42	38.04	36.1
3	COMMERCIAL	170.10	4.12	4.0
4	INDUSTRIES	670.15	16.70	16.2
5	PUBLIC FACILITIES	199.94	4.84	4.8
6	GOVT&SEMI-GOVT.	71.24	1.72	1.8
7	TRANSPORT	688.74	16.67	16.1
8	PARKS & PLAY GROUNDS	258.00	6.24	6.1
	TOTAL AREA	4132.62	100.00	
9	SEWAGE FARM	120.00		2.9
10	CREMATION & GRAVEYARD	35.75		0.9
	TOTAL AREA	**4288.37**		**100.00**

Source: Master plan

2.15.1.1 RESIDENTIAL AREA: -

The master plan has earmarked new areas for the development under residential land uses with a view to solving the housing problem of the city and beautification the city. The new residential areas are meant for an estimated population over a period of two and half decades. The new residential colonies are proposed on the south side of the railway line along the Delhi road and along the Nakur road. The plan aims to open the highly congested inner part of the old city, and suggests renewal programs for the thinning out the congested inner zones.

The plan reserves a total **887.56hectare** of land for the residential purposes. Out of which **38.84%** is developed and rest is undeveloped. According to them this has



LEGEND

- PRESENTLY CONSTRUCTED VILLAGE POPULATION
- RESIDENTIAL 125 PERSON/ACRE
- REGIONAL COMMERCIAL CENTRE
- CITY COMMERCIAL CENTRE
- WHOLE SALE COMMERCIAL CENTRE
- STORAGE/WARE HOUSE
- SMALL INDUSTRIES
- POLLUTION FREE INDUSTRIES
- HEAVY/MEDIUM INDUSTRIES
- COMMUNITY SERVICES
- BUS STAND
- TRANSPORT NAGAR
- ROADS/PROPOSED ROADS
- OVERHEAD BRIDGE
- GOVT. & SEMI GOVT. OFFICIES
- PARKS, RECREATIONAL FACILITIES
- GARDEND
- SEWERAGE FARMS
- GRAVEYARDS
- AGRICULTURAL GREEN BELT
- RIVERS/DRAINS
- RAILWAY LINE
- EXISTING RAILWAY AREA
- RESERVED FOR
- EXISTING UNDEFINED AREA
- RESERVED LAND
- BOUNDARY OF REGULATED AREA
- BOUNDARY OF MASTER PLAN

MASTER PLAN OF SAHARANPUR

NORTH :

FIG. No. 2.3

DISSERTATION TITLE:
IMPACT OF INDUSTRIAL GROWTH ON URBAN DEVELOPMENT AND ENVIRONMENT CASESTUDY SAHARANPUR

BY
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MURP 98-99

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been allocated in the following manner: **191.10** hectares for economic weaker section, **226.49** hectare for low income group, **271.79** hectare for the middle class peoples and **198.18** hectares for the high income group. Net density is **617** persons per hectare and the gross density is **339** persons per hectares.

2.15.1.2 COMMERCIAL AREAS: -

There is provision to lessen the pressure of the main markets of the city by separating the two functions, the retailing and the whole sale activities. Wholesale grains, vegetable and fruit markets are proposed to be shifted near Munnalal College on the Chilkana road. **50.25** hectare of land is under commercial uses in the present land use but **119.35** hectare of land is required for the future population. This land is proposed on the Chakrota road, Ambala road, and other main roads. It is proposed that **60.25** hectare of land is used for the retail shops, **3.85** hectare for the wholesale and **15** hectare for the godowns.

2.15.1.3 INDUSTRIAL AREAS: -

The trend of industrial component of working force in the total population shows that this proportion would increases from **33.96 percent in 1971 to 38.70 percent in 2001** and by that time Saharanpur will emerge as an industrial city. The master plan believes that the present mills and factories will remain where they are and proposed to expand on Dehradun road, Delhi road. New areas reserved for the location of industries for the future are on the Deoband road upto the Nala. Along the Janta road. As per the Master plan **523.15** hectare of the land is proposed of the development of the industries.

2.15.1.4 ADMINISTRATIVE AREA: -

At present Government offices are mostly concentrated on the court road. An area of **35** hectare near the north of Chakrota road and along the

south side of the canal has been allocated in the Master plan for the location of the offices.

2.15.1.5 COMMUNITY FACILITIES AND SERVICES:

The plan proposed to provide better recreational, educational and health facilities for the citizens in the future based on socio economic survey conducted by the department. To increase the present share of recreational land, **330.22** hectare of land is required for the parks and playgrounds.

Along with the provision of **9** more degree colleges located in different parts of the city, sites for high schools, senior secondary schools, are also proposed in the different part of the city. For this **200** hectare land is marked in the master plan.

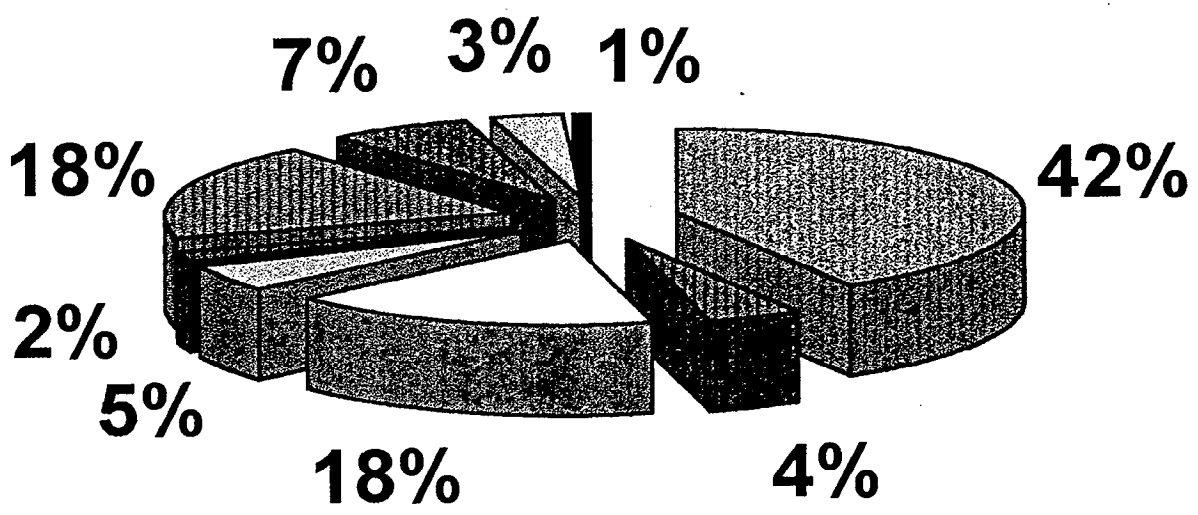
Considering the present and future need of the people the plan has earmarked **32 hectare** of land for the construction of **8 new hospitals** each with the capacity of 200 beds. Similarly **21 hectare** of land has been proposed for the primary health centers and for the family planning centres.

The water and sewer schemes have been revised to provide pure water for every citizen and to have adequate sewer and storm drainage facility in the city. For this purpose, the surface as well as under ground water resources, are to be tackled. The plan proposes one sewerage farm on the south side of the city on **120 hectare** of land.

2.15.1.6 TRAFFIC AND TRANSPORTATION: -

Based upon the general survey of volumetric and directional traffic at certain points of the roads, the master plan suggests re-developments of major intersections. Alignment of all the roads. Existing roads, which are major traffic arteries, have been proposed to be widened for relieving traffic congestion.

PROPOSED LANDUSE PATTERN OF SAHARANPUR



The proposed ring road joining Dehradun road to Deoband road is very important from the standpoint of intra city movement and daily business needs of the city. The Master plan further suggests opening up of some radial roads.

An area of **15 hectare** has been proposed on the Ambala road for the bus terminus and its workshop and area of **50 hectare** has been proposed for transport nagar on the Janta road.

2.16 INSTITUTIONAL ARRANGMENT: -

The state Government vested the work of urban development with a few agencies of development. The major and most important agency of development is Saharanpur Development Authority, Saharanpur Municipality, is also expected to do its best took up some specialized work which helps in the process of urban development, e.g., U.P.Avas Vikas Parishad, is involved in the construction of colonies and houses which helps in solving the housing problems of city, UPSIDC, etc. are helping in the planned industrialization of by developing industrial establishment and industrial areas.

2.16.1 SAHARANPUR MUNICIPALITY: -

Under the Act xxxvi of **1850,** the Municipality was made in 1867 for Saharanpur town. The total area of Saharanpur Municipality is **9.7495 sq. miles**. The major work of the municipality is to provide community facilities and civic amenities to the public such as proper roads, streetlights, water and sanitation, public health parks, play grounds, libraries etc. and other works related to community facilities. The most important but inefficiently discharged work of the corporation is to provide potable water, sanitation and better roads. The municipality has been made arrangements for the repair and cleaning of thousand Kms. of roads, drains and channels.

2.16.2 SAHARANPUR DEVELOPMENT AUTHORITY (S. D. A.):

S.D.A. was constituted on **5th May 1993.** It has a large area under its purview. Its border limits are **8 Kms.** from the municipal boundary. The source of income of S.A.D. is grants from the U.P. Government, development charges, fees and fines and rents from the its buildings etc. S.D.A. has also undertaken the job of implementation of master plan. Since its constitution, the S.D.A. is trying to control the growth of city according to the plan. At present S.D.A. has the proposal of construction of one colony for **250 families**.

Although, S.D.A. has done a lot of work in a short span of time, it is lagging much behind for the implementation of the master plan and is also not able to control the development in right direction due to lack of funds and pessimistic approach shown by people and by authority itself.

CHAPTER 3

PROFILE OF SAHARANPUR CITY

3.1 SAHARANPUR IN REGIONAL AND IN INDUSTRIAL CONTEXT

3.1.1 LOCATION & REGIONAL SETTING: -

Saharanpur city lies on 29° 58' North, latitude and 77° 32' East longitude and at mean sea level 283m and is the district headquarter of Saharanpur district. It is 332 miles west of Lucknow, the state capital and 113 miles east of Delhi on the Ambala Delhi section of the Northern Railways which skirts the most of the city. The city is situated in the western side of U.P. and in the plains of the two main rivers banks i.e. Ganga on east and Yamuna on the West Side. In spit of this two main rivers Dhamola river divide the city in two parts and Pav Dhodi river flows in its north part of the city (ref. Fig. No 3.1).

Other adjoining districts of Saharanpur are Haridwar in the east, Dehradun in the north, Muzaffarnagar in the south, and Yamunanagar in the west. The district is located in the rich agricultural tract of fertile Indo-gangetic and Yamuna plains and towards its north exist forest clad hill region and Garhwal areas of U.P. which are rich in forest and in agricultural resources (ref. Fig. No. 3.2)

The town is located on the Amritsar-Howrah section of Northern Railway and Jummu-Delhi main route of Broad gauge. State Highway No57 Delhi-Chakrota and State Highway No. 55 Ambala- Dehradun passes through the city and they crosses each other in the cetre of the city refer fig 3.3. The other industrial towns of near by areas are Meerut, Muzaffarnagar, Barily, Yammunanagar. The fig 3.4 shows the location of Saharanpur with other industrial towns of the State.

3.1.2 PHYSIOGRAPHY: -

The topography of the town is generally flat. The areas on its west slope southeastward to Pav Dhoi River and the area on its east slope westward to Dhamola river. The main drainage system is formed by river Pav Dhoi and Chirage nala that enters the city from north and flow southeast. The other river which forming the drainage system of the town is Dhamola river in the east, which flows in south westerly and southerly directions to join river Pav Dhoi. The site of the city is low and subsoil water level is very high.

3.1.3 CLIMATE: -

The climate of Saharanpur is similar to the prevalent climate of Uttar Pradesh though modified by its northern position and proximity to hills, it has got longer cold weather. The heat in May and June is considerable but it does no approach the temperature recorded in the south and southeast of India. The maximum temperature suddenly exceeds 105 F. frequent relief is afforded by local hills storm. The monsoon usually delays in its arrival precipitation are average, somewhat less than the eastern districts of U.P.

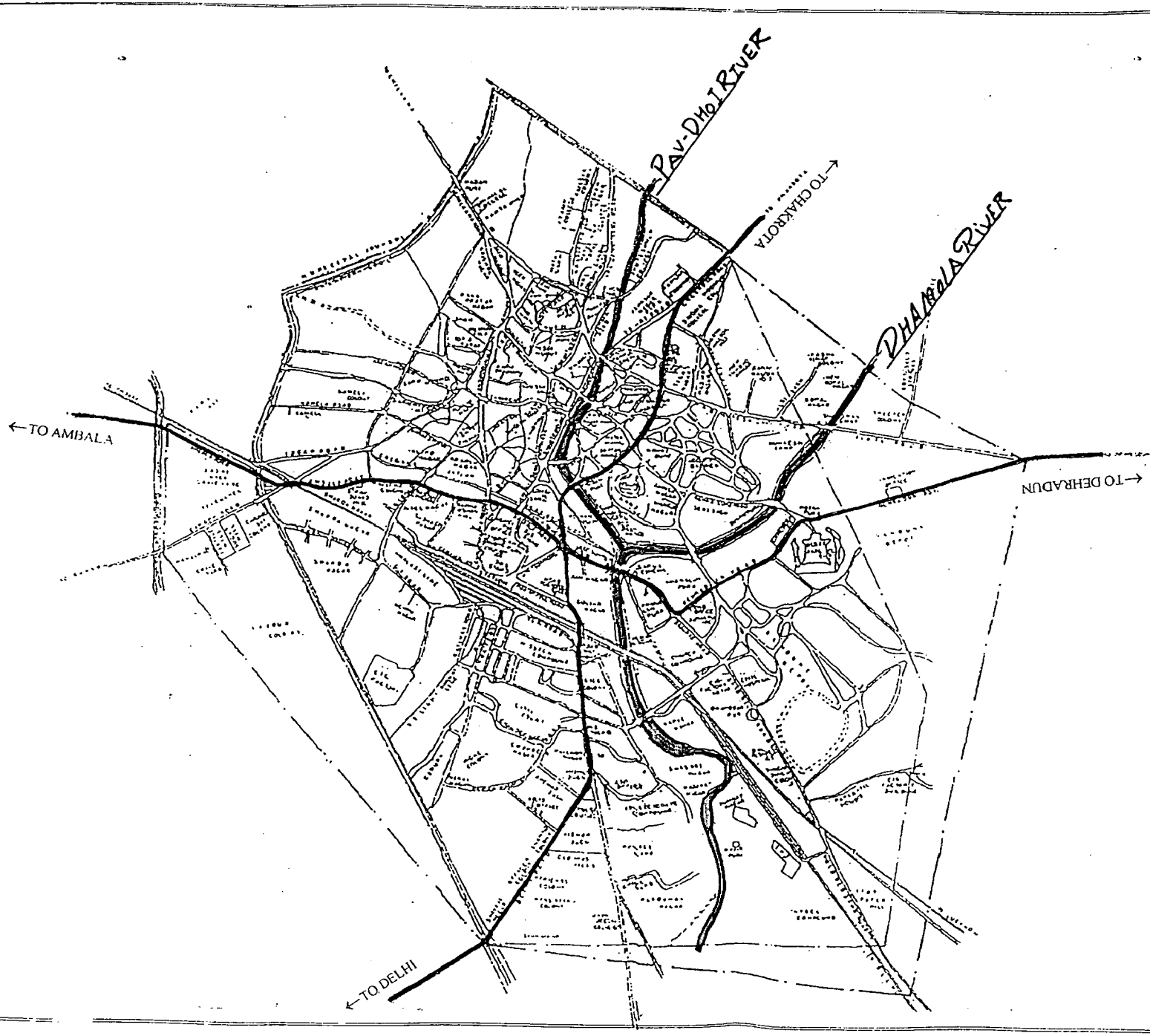
From the regular meteorological observations for the district taken at Roorkee, it appears that annual mean temperature is 75 F. the cold weather starts in November and minimum temperature in cold weather is fairly high, though severity of frost is distinctly uncommon. The mean temperature in November is 65 F, it falls to 58.5 F. in December and 56 F. in January. The mean temperature for the month of February is again 61 F. Table no. 3.1 shows the monthlies temperature of Saharanpur.

A rapid rise is experienced from the beginning of March, the average of this month being 72 F. while that of April is 81 F and of May 89 F. June is the hottest month and average temperature is over89 F. with the start of rains in July, the average mean temperature in July and August falls to 84 F and is September to 81.5 F. an appreciate

MONTH WISE TEMPERATURE OF SAHARANPUR
(TABLE NO. T-3.1)

S.NO.	MONTHS	TEMPERATURE (DEGREE CENTEGRADE)
1	JANUARY	14.4
2	FEBURY	15.3
3	MARCH	20.7
4	APRIL	24.2
5	MAY	31.1
6	JUNE	32.2
7	JULY	28.7
8	AGUSUT	28.4
9	SEPTEMPER	27.4
10	OCTOBER	24.9
11	NOVEMBER	19.7
12	DECEMBER	13.5
13	TOTAL	23.3

Source: - Saharanpur Municipality



TWO RIVER DHAMOLA AND PAV-DHOI DIVIDES THE CITY INTO TWO PARTS

RIVER

SCALE 6" = 1 MILE

NORTH :

FIG. No. 3.1

DISSERTATION TITLE:
IMPACT OF INDUSTRIAL GROWTH ON URBAN DEVELOPMENT AND ENVIRONMENT CASESTUDY SAHARANPUR

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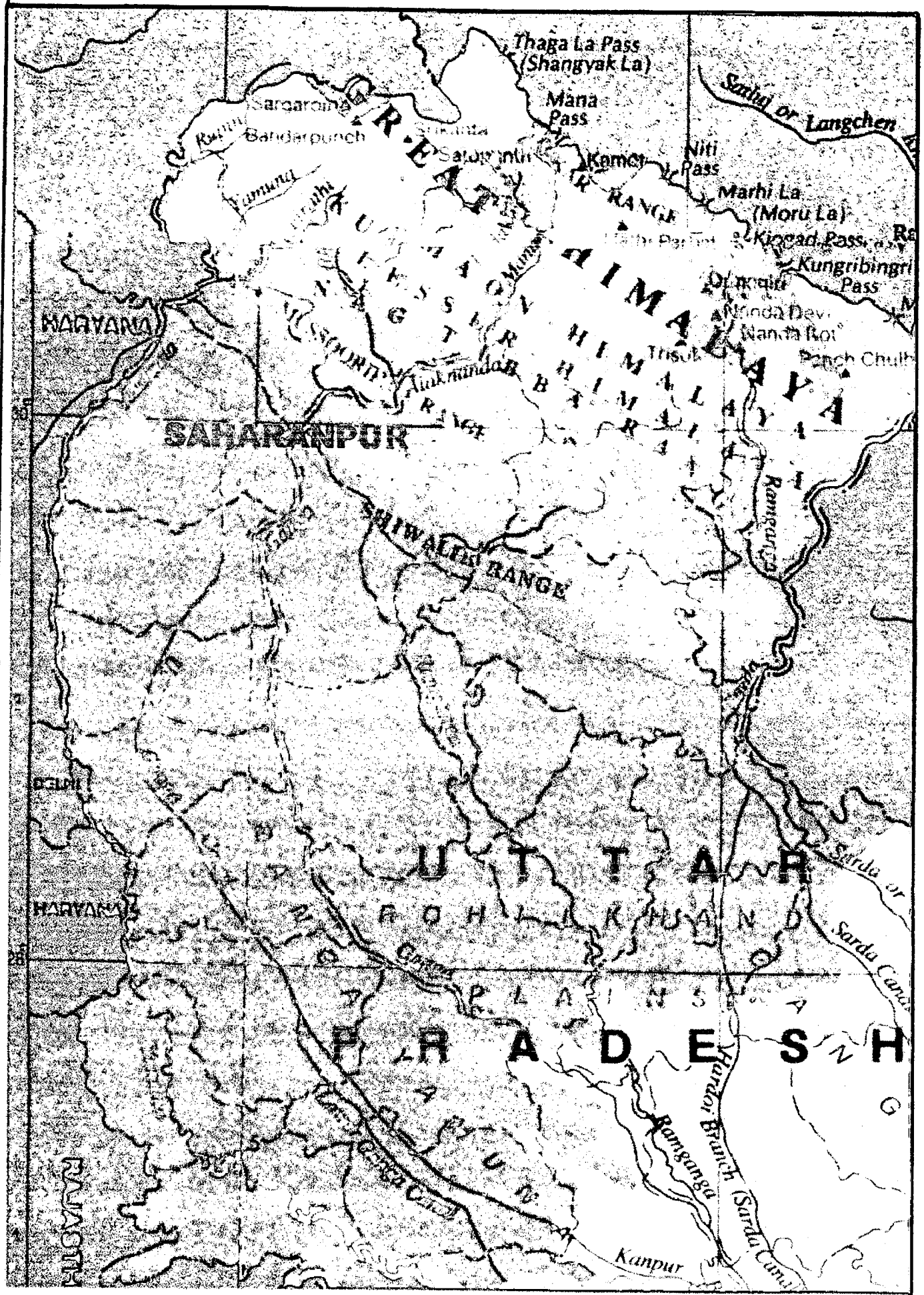


LOCATION OF SAHARANPUR IN THE PLAINS OF GANGA AND YAMUNA Fig. 3.2

MONTHWISE TEMPERATURE OF
SAHARANPUR CITY
TEMPERATURE IN DEGREE CENTIGRATE
0
5
10
15
20
25
30
35
14.4
15.3
20.7
24.2
31.1
32.2
28.7
28.4
27.4
24.9
19.7
13.5
JANUARY
FEBURY
MARCH
APRIL
MAY
JUNE
JULY
AGUSUT
SEPTEMPER
OCTOBER
NOVEMBER
DECEMBER
MONTHS

drop occurs in October when the winds are much cooler and the average temperature becomes 75 F.

Owing to the higher altitude and the influence of forest, the main annual rainfall for the district is 37.36". Though here is a great variation in different parts, western parts get more than eaten parts. The average rainfall of Saharanpur is 38.32" and is limited to the month of July, August and September.

The wind blows from NorthWest to SouthEast direction with major part of the year and from SouthEast during the summer months.

3.2 HISTORICAL BACKGROUND: -

The foundation of Saharanpur is traditionally assigned to a saint named Shah Haran Chisty whose Tomb remains an object of veneration and still attracts a considerable number of muslim pilgrims.

The town flourished during the region of Mohammad Bin Tuglag and shortly afterwards the place rose to some importance as one of the garrison was located in the north to protect the doab from the Mugal invasions. During the region of Mughals, Saharanpur was under the Governor of Delhi till 1541. The town started to developed during the reign of Akbar, but it never became a great note till its selection as a capital by Rohilla Nawab (ref. Fig. No. 3.4).

When the Britishers occupied India in 1803, Saharanpur was made district headquater of a district. The last great episode in the history of Saharanpur was the Munity of 1857. Therefore, it grew rapidly and became a trade centre.

Under the Act XXXVI of 1850, the Municipality was made in 1867 for the Saharanpur town but before that time some town form of local administration seems to have existed.

In 1901 the main city drain known as Craigie Nala was reconstructed in Masonary and connected with Dhamola River. This measure provides successful and now the surface drainage is carried off in a rapidly flowing stream into the river Dhamola. The district Saharanpur has been a research and training centre in plantation and it holds a premier position in the gardens. In the city, a garden known as Farhat Baksh was laid out by Imtiaz Muddanala in 1750 and later developed into 'Botanical Gardens'.

3.3 DEMOGRAPHY PATTERN: -

3.3.1 INTRODUCTION:

Characteristics of population such as its present size, potential growth rates, age and sex composition etc. are important and fundamental facts upon which planning of any kind must be based. Therefore to plan for various types of land uses, to assess the prospective needs for different kinds of urban amenities, housing, water supply, educational, recreational and other services etc. It is of great importance to know the magnitude of population.

It is easy to determine the present and past characteristics of a city's population, but it is difficult to verdict with certainty the future growth of population. An analysis of rate of growth of population, its trends, characteristics, will help in assessing the future growth of population. The below table no. 3.2 show the population of Saharanpur with other towns of U.P.

S.NO.	CITY	1981 POPULATION	1991 POPULATION
1	MEERUT	5,38,461	12,76,557
2	SAHARANPUR	2,94,361	5,89,652
3	GHAZIABAD	2,91,955	12,48,260
4	MUZAFARNAGAR	1,72,435	6,99,230
5	HARIDWAR	1,46,186	3,48,142
6	BULANDSHAIR	1,03,466	5,92,795
7	HAPUR	1,03,466	1,46,262
8	ROORKEE	0,79,145	1,47,040

Source: Master plan of Saharanpur.

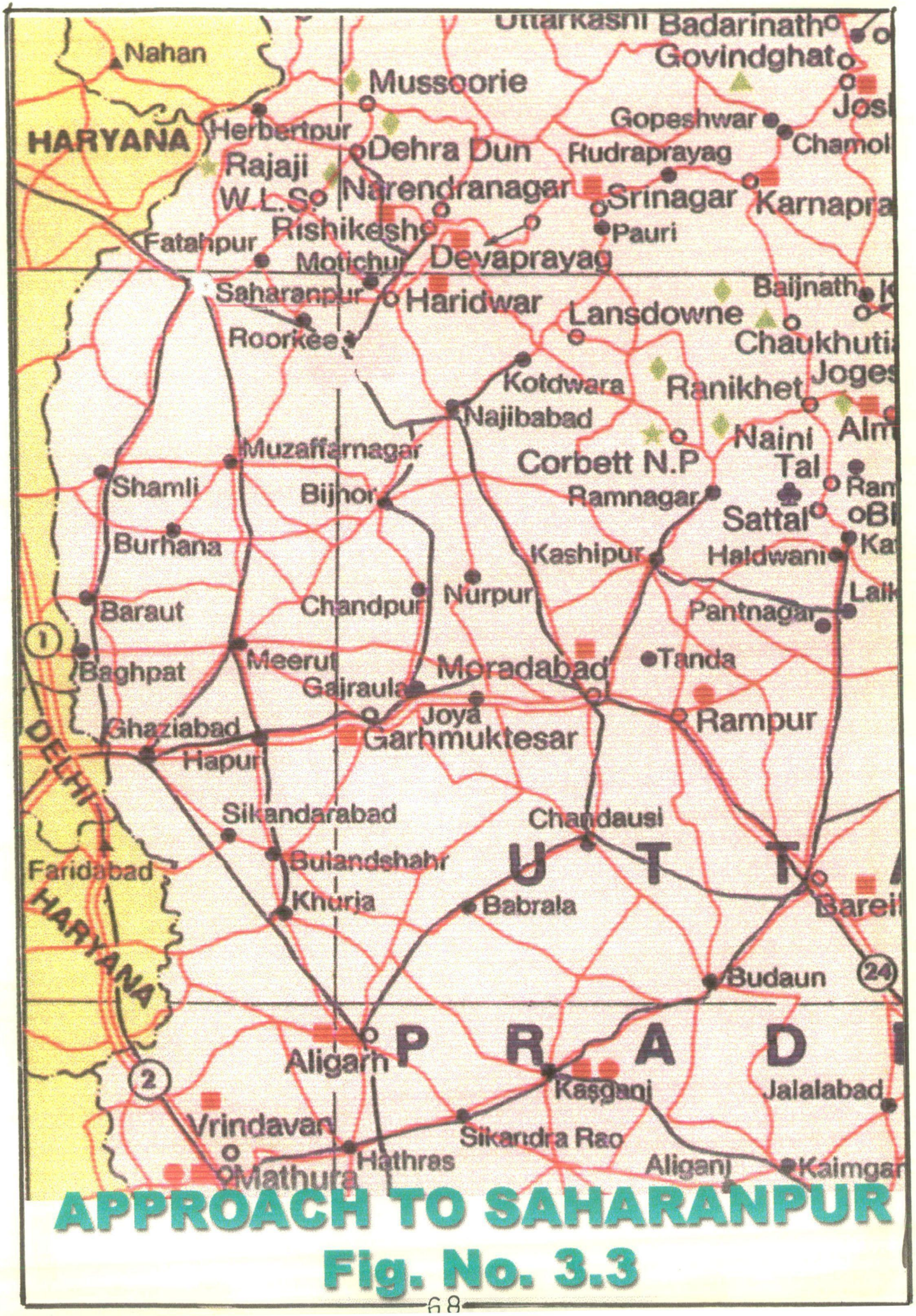
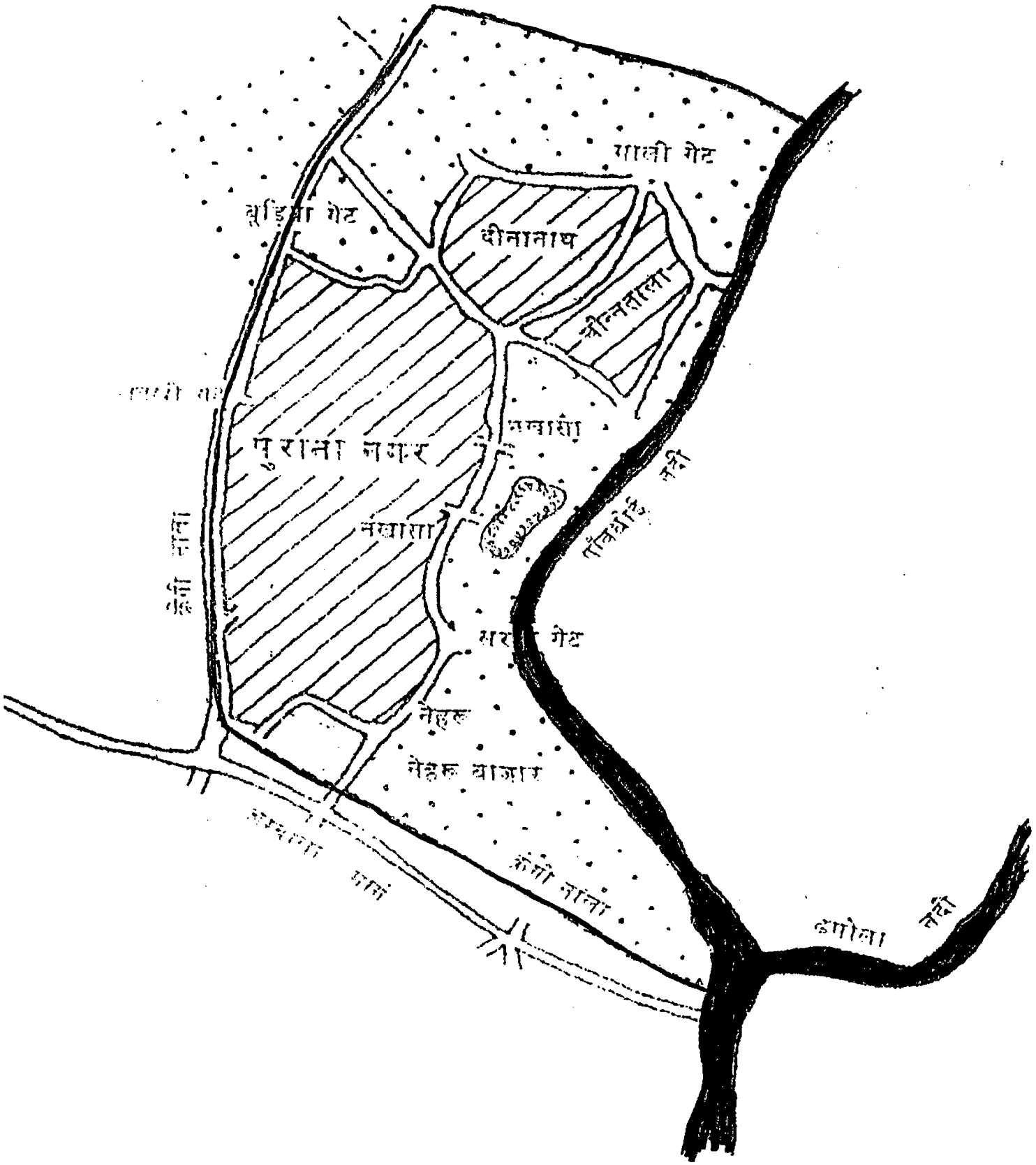

Nahan
Mussoorie
Uttarkashi
Badarinath
Govindghat
Gopeshwar
Chamol
HARYANA
Herbertpur
Dehra Dun
Rudraprayag
Rajaji
W.L.S.
Narendranagar
Srinagar
Karnapra
Rishikesh
Pauri
Fatahpur
Motichur
Devaprayag
Saharanpur
Haridwar
Baijnath
Lansdowne
Roorkee
Chaukhuti
Kotdwara
Ranikhet
Najibabad
Naini
Muzaffarnagar
Corbett N.P
Tal
Shamli
Bijnor
Ramnagar
Sattal
Burhana
Kashipur
Haldwani
Nurpur
Baraut
Chandpur
Pantnagar
Meerut
Moradabad
Tanda
Baghpat
Gajraula
Joya
Rampur
Ghaziabad
Garhmuktesar
Hapur
DELHI
Sikandarabad
Chandausi
Faridabad
Bulandshahr
U T T
Khuria
Babrala
HARYANA
Budaun
Aligarh
P R A D
Kasganj
Jalalabad
Vrindavan
Sikandra Rao
Hathras
Aliganj
Mathura
APPROACH TO SAHARANPUR

Fig. No. 3.3

SAHARANPUR CITY DURING THE TIME OF EMPEROR AKBHAR

Fig.. No.3.4



3.3.2 VARIATION IN POPULATION SINCE 1847 (Ist CENSUS):

At the time of first census the total population of city was 34,294 but had fallen to 31,968, that is by 2,362. But it subsequently rose to 44119 in 1861 i.e. by 12,151 or % of the total population in 1853. A decline again set in as in 1872, the total was 43,844. This decline in population in 1853 as well as in 1872 is because of disease, epidemics etc., which were very common in those days.

Since 1872 the growth of city has been very rapid upto 1901. The population was raised from 49,194 in 1881 to 63,194 in 1901, while in 1901 the city contained 66,254 souls of whom 30,562 were female and 35,692 were males.

Since 1901 to 1921 again there was decline in population of city which was by 0.51% of the total population of 1901 and 0.9% of the total population of 1911. So in successive census the population of city actually decreased upto 1921 due to many reasons such as poor harvest, ravage of disease, epidemics etc.

During the last few years before 1921 the industrial element had rapidly been on the increases and a number of cotton ginning and pressing factories, flour mills and other concerns came into existence giving the city a much more industrial character.

1921 to 1941 was actually a period of recovery in the absence of serious epidemics etc. there is an accelerated growth of population during the decade 1950-61. This acceleration in growth of population is mainly due to industrial development.

After 1961 there was a tremendous increase in population, as per the 1991 census the population was 3,74,908, which increases to 5,25,000 in 1998. This acceleration in growth of population is mainly due to development of household industries and due to the location of the city.

3.3.3 AGE AND SEX RATIO:

Age group and sex composition of population is directly related with its natural growth because it is the production age group of 15-59 years, which influences the natural rate of increase in population. As per the 1991, census, the sex ratio in Saharanpur is of 872 as compared to 882 for the U.P. State. i.e. for 1000 males there are only 872 females in the city. Age and sex composition of population of Saharanpur town group is given below in table no. 3.3.

SEX RATIO IN DIFFERENT AGE GROUPS TABLE NO. 3.3:

AGE GROUP YEARS	TOTAL PERSONS	PERCENTAGE		
		MALES	FEMALES	TOTAL
0-15	1,69,833	19.7	25.6	45.3%
16-39	1,36,841	22.1	14.4	36.5%
40-59	47,988	9.1	3.7	12.8%
60 & ABOVE	20,245	3.4	2.0	5.4%

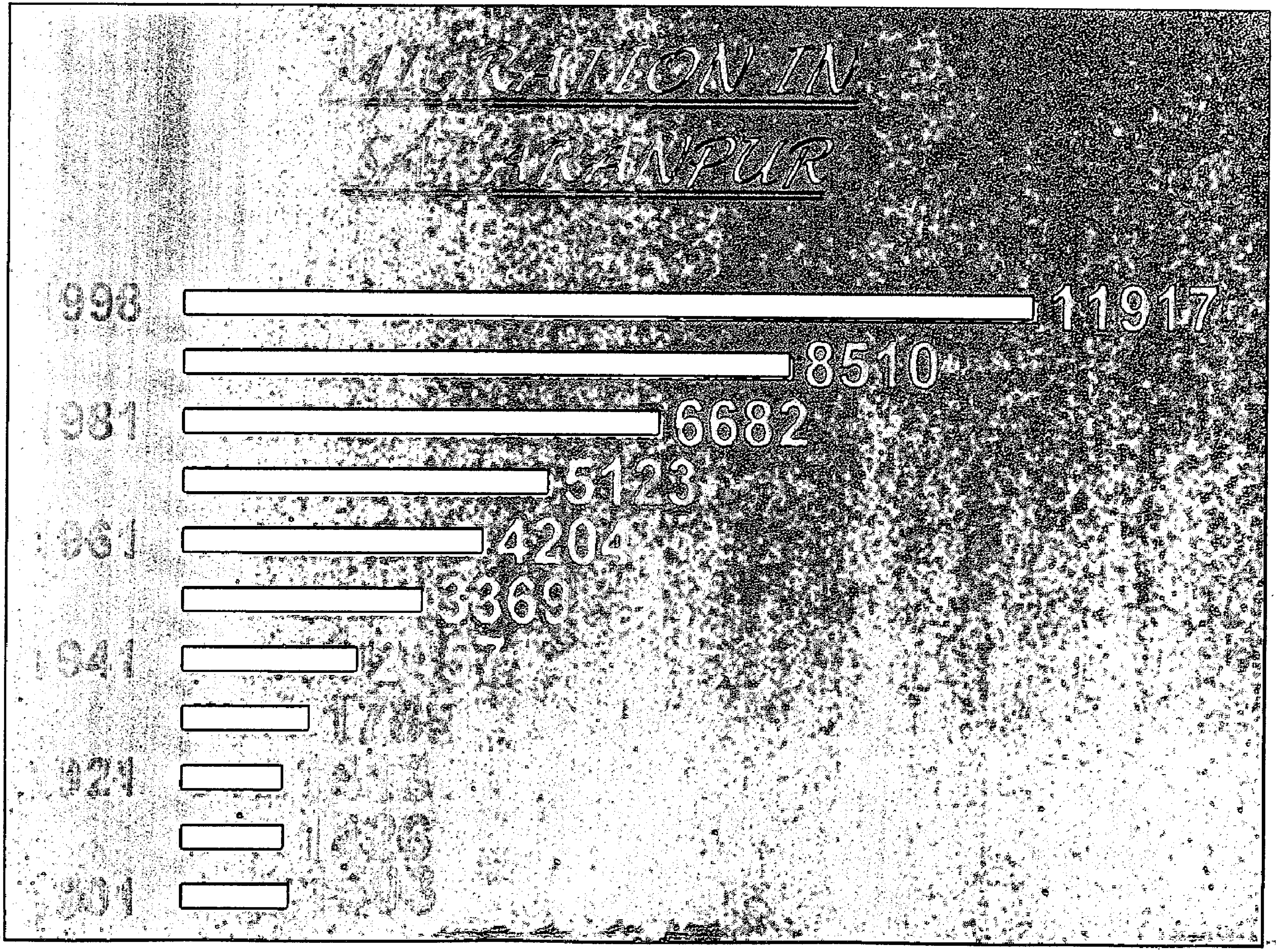
Source: Master plan & Saharanpur Municipality.

The table shows that the population of infants and children (age group 0-15) consists of 45.3 percent of total population of Saharanpur city. The age group 15-39 and 40-59 ambient from majority of the population. This shows majorities of people who are away are the most fertile age group and has the capability to do physical work.

3.3.4 LITERACY RATE:

Literacy is also considered as an index of the increasing pace of urbanization in a city. Growth of urban population increases the demand for the supply of desired qualified personnel both technical and non-technical. Moreover, the

POPULATION GROWTH OF SAHARANPUR
POPULATION
YEARS
600,000
500,000
400,000
300,000
200,000
100,000
0
1847
1847-1853
1853-1865
1865-1872
1872-1881
1881-1891
1891-1901
1901-1911
1911-1921
1921-1931
1931-1941
1941-1951
1951-1961
1961-1971
1971-1981
1981-1991
1991-1998
34,294
31,968
44,119
43,844
59,194
63,194
66,254
62,850
62,261
78,665
108263
148435
185213
225698
294391
374908
525000



11917
8510
6682
5123
4204
3369

SEX RATIO IN SAHARANPUR
1981
872
1961
860
1941
832
1921
821
1901
805
725
740
725
770
850
No. of FEMALES/1000 MALES

urban population is more exposed and prane to provide their children and youth the facilities of educational institutional of all grades and disciplines than the rural population. The table no. 3.4 shows the statistics and growth of literate persons in Saharanpur city.

At present the literacy rate is only 52.2% of the total population i.e. 5,25000 Males are only 43.7% literate outs of their population and female's are 22.5% literate of their population. The analysis of table shows that in the decade 1971-81 and 1981-91 there is a substantial growth of literate persons. It is evident from the high literacy rate, that the job opportunities in Saharanpur required literate persons and the industries and job available in Saharanpur are technical in nature.

LITERACY RATE TABLE NO. 3.4

S.NO.	YEAR	MALES	FEMALE
1	1911	5.5 %	0.6 %
2	1921	6.2 %	0.8 %
3	1931	7.3 %	1.2 %
4	1941	9.6 %	2.4 %
5	1951	20.8 %	5.3 %
6	1961	23.1 %	6.2 %
7	1971	33.1 %	12.8 %
8	1981	38.12 %	18.06 %
9	1991	41.7 %	20.2 %

Source: - District Census Handbook, Saharanpur

3.3.5 WORKFORCE PARTICIPATION RATE: -

There are 1,02,283 workers i.e. 29.00 % of the total population of 3,74,908 in Saharanpur city out of which 98,079 are males and 4,203 females. As the population rates for the Saharanpur city is only 29.00 % out of which 95.89% are males and females 4.11%. thus it is evident from the participation rates that the works existing in Saharanpur are of unskilled labour, i.e. why there is very low participation rate of females. Break up for the workers engaged in different economic activities is given below for Saharanpur city in table no. 3.5:

Total Workers	Male	Female	Primary sector	Secondary sector	Tertiary sector
1,02,283	98,079	4,203	2,557	37,845	61,881

It can be seen from the above table that out of total working population of Saharanpur. 2.50 % depends upon primary sector, and about 37.0% are engaged in secondary sector while remaining ones which constitute 60.50% of total working force are engaged in tertiary sector. This shows that the important economic activities of city are under secondary sector and to some extent under tertiary sector. It clearly shows the city future growth as industrial as well as business centre.

PARTICIPATION RATE OF SAHARANPUR SINCE 1971 TABLE NO. 3.6:

YEAR	TOTAL POPULATION	OUT OF TOTAL POPULATION TOTAL NO. OF LABOURS.	PERCENTAGE OF LABOURS.
1971	225396	61117	27.11
1981	294391	79463	26.99
1991	352699	102283	29.00
2001	600000	186000	31.00

Source: Master plan Saharanpur.

CHAPTER 4

INFRASTRUCTURE AND AMINITIES

Infrastructure has vital role in the development of any town. Provision of the infrastructure in the town at a time at the place is very essential for the balanced and controlled growth of the town. The infrastructure includes network (highway roads), electricity, water supply, sewerage and drainage, housing etc.

4.1 NET WORK:-

Saharanpur is connected by roads and railways network. Although it is not connected by Air routes .

4.1.1 ROAD:-

There are only two main roads which connect Saharanpur with different towns they are state highway No. 57 (Delhi- Chakrota) and the second one is state highway No. 55 (Ambala-Dehradun). Their length within the city limit is 7.7 Km. and 13.3 km. respectively. This roads passes through the city creating intermixing of highway traffic and town level traffic. Due to location of bus stand along main road and lack of transport terminal, main roads are congested. As bus stand is located near business area, the roadside parking of taxi, rickshaw tonga, scooter and cycles create the problems of traffic.

Inspite of theses two roads Saharanpur is connected to other important towns by Chilkana road, Old Deoband road etc.. Saharanpur has other 14 main roads for catering his traffic with in the city.

In short, Saharanpur has poor road network, Inspite of its headquater for the city. The condition of roads are poor in all respect i.e. Width of road are not up to mark, they are not maintained properly, roads are covered with water at the time of rains.

4.1.2 RAILWAY:-

Saharanpur is one of the important railway junction of the northern railway. Railway line was first laid here in the middle of eighteen century, due to uprising industrial growth. This lines passes through the centre of the city . Saharanpur lies on the main track of Amritsar-Howrah. and Jammu -Delhi. As these are main tracks so all the trains, which crosses Saharanpur, has a stoppage. So in this sense Saharanpur has good railway facilities for the people and also for the transportation of goods to the other town of the country.

Saharanpur has no Air port facility. The nearest airport is at Jolly Grant, Dehradun i.e. 85 Km. away from Saharanpur and the other is at the capital of the Country i.e. New Delhi (ref. Fig. No. 4.1).

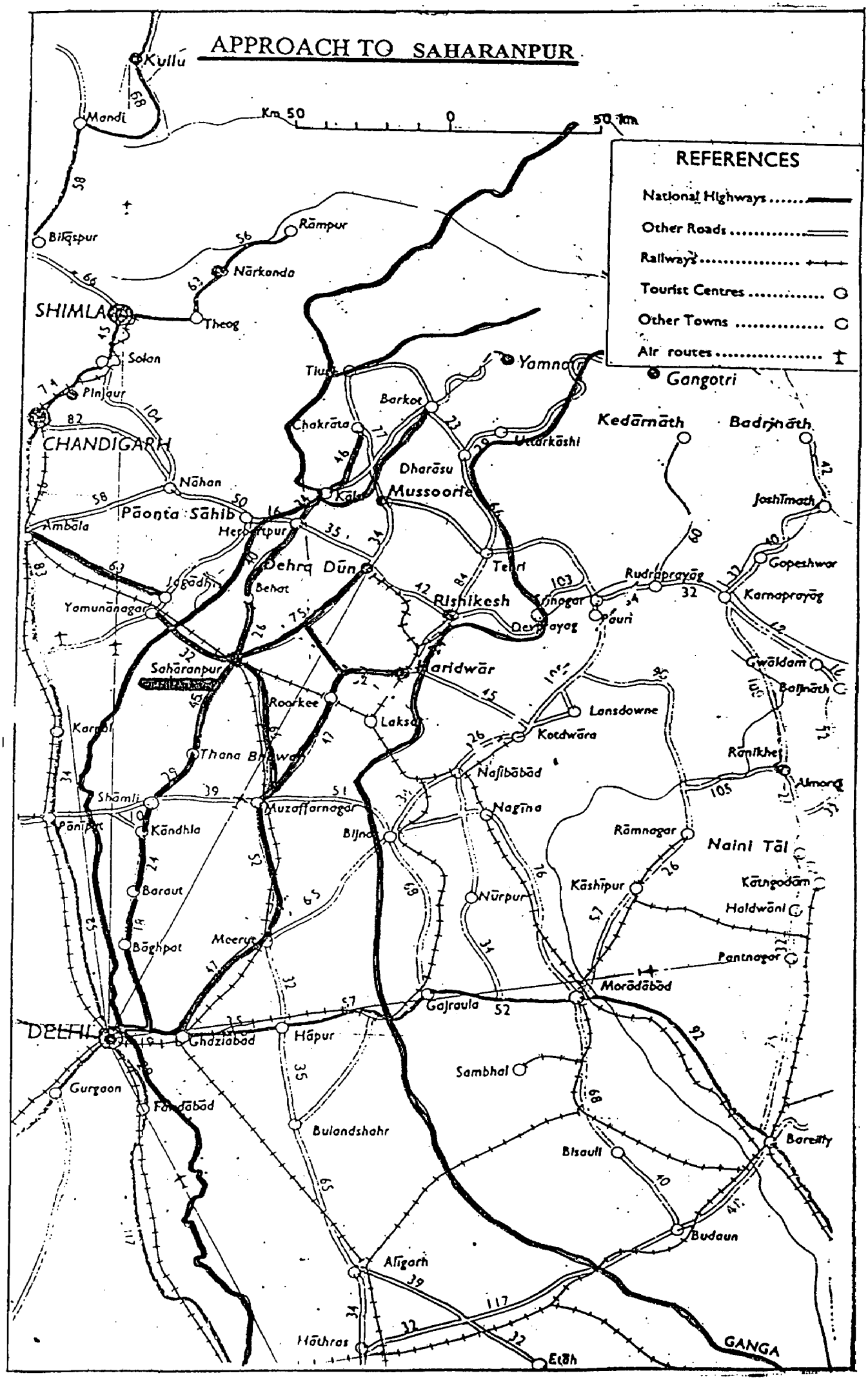
4.2 ELECTRICITY:

Saharanpur city started to enjoy the facility of electricity under the U.P. Electricity board through 132Kw. line from the year 1926. The electric distribution network to the city consists of about 105 km. of low-tension line, fed through 21 transformers and 3 converting sub-stations of power 132/33, 132/11, 132/33 kW. Entire area coming under the municipal limit is facilitated with lights. Year wise details for various type of electrical connections and number of streets light according to their type are given in table no. 4.1.:

NUMBER OF ELECTRICAL CONNECTIONS TABLE NO. 4.1.

CATEGORY	1983	1991	1998
DOMESTIC	33940	39874	48793
COMMERCIAL	178	12543	19886
INDUSTRIAL	1039	1298	2347

Source: Saharanpur Municipality.


APPROACH TO SAHARANPUR
Km 50 0 50 Km
REFERENCES
National Highways
Other Roads
Railways
Tourist Centres
Other Towns
Air routes
Kullu
Mandi
Bilaspur
Rāmpur
Nārkanda
SHIMLA
Theog
Solan
Pinjaur
CHANDIGARH
Nāhan
Pāonta Sāhib
Ambāla
Jagādhri
Yamunānagar
Saharanpur
Karnāl
Thana Bhawan
Shāmli
Pānīpat
Kāndhla
Baraut
Bāghpat
Meerut
DELHI
Ghaziabād
Gurgaon
Faridābād
Hāpur
Bulandshahr
Aligarh
Hāthras
Etāh
GANGA
Barkot
Chakrāta
Tiuni
Yamnotri
Gangotri
Uttarkāshi
Dharāsu
Mussoorie
Kedārnāth
Badrināth
Joshīmath
Tehri
Dehra Dūn
Behat
Rishikesh
Haridwār
Roorkee
Laksar
Najībābād
Nagīna
Bijnor
Muzaffarnagar
Rudraprayāg
Gopeshwar
Karnaprayāg
Srinagar
Pauri
Devprayag
Gwaldam
Badrināth
Lansdowne
Kotdwāra
Rānikhet
Almora
Rāmnagar
Naini Tāl
Kāshipur
Kāthgodām
Haldwāni
Nūrpur
Pantnagar
Morādābād
Gajraula
Sambhal
Bisauli
Bareilly
Budaun

DETAIL REGARDING THE NUMBER OF STREETLIGHTS TABLE NO. 4.2.

YEAR CATEGORY OF LAMPS	1996	1997	1998
LAMPS	2103	2432	2860
TUBES	354796	397824	424232
MERCURY SET	99	143	385
SODIUM LAMPS	378	427	656

Source: Saharanpur Municipality.

4.3 WATER SUPPLY:-

Earlier in the western part of U.P. the main source of drinking water had been brick wells as the region has a high water table, i.e. only 25 feet below the surface. In Saharanpur city, the source of water supply is sub-soil water pumped from the tube wells. At present the number of over head tanks was 7 with total storage capacity of 12 lacs gallons while the total number of tube-wells is 33 which supply 91.85 lacs gallon of water per day to the city. The total length of pipeline serving to tape connections is 115 Kms. Beside the tap water supply, Saharanpur municipality has provided 319 hand pumps in different localities for publics. There is 40,000 domestic, 1267 industrial, 2683 commercial and 562 public tape in the town.

4.4 DRAINAGE AND SEWERAGE:-

The absence or inadequacy of proper drainage and sewage system is among the major problems of urban areas in developing countries.

Apart from environmental problem, it causes serious health hazards, as open drainage and waste provides very favorable breeding grounds for all sorts of parasites and insects.

In Saharanpur, the drainage system is almost unplanned and covered drainage is hardly noticeable. The haphazard growth of the city, has resulted in the congested localities without any system of drainage. The water flows in open drains, wherever it finds slopes and these open drains are dirty, congested and choked. It all results in total unhygienic condition of city drains and over flow of water in the rainy season results in the water lying areas which causes water born diseases such as malaria, dingo fever, etc. The city sewerage system is also not adequate. Only 70% of the city have facility of sewer line. All the waster water weather it is of residential area or of, industrial area are connected in theses open drains and disposed in the Dhamola and Pav Dhoi river.

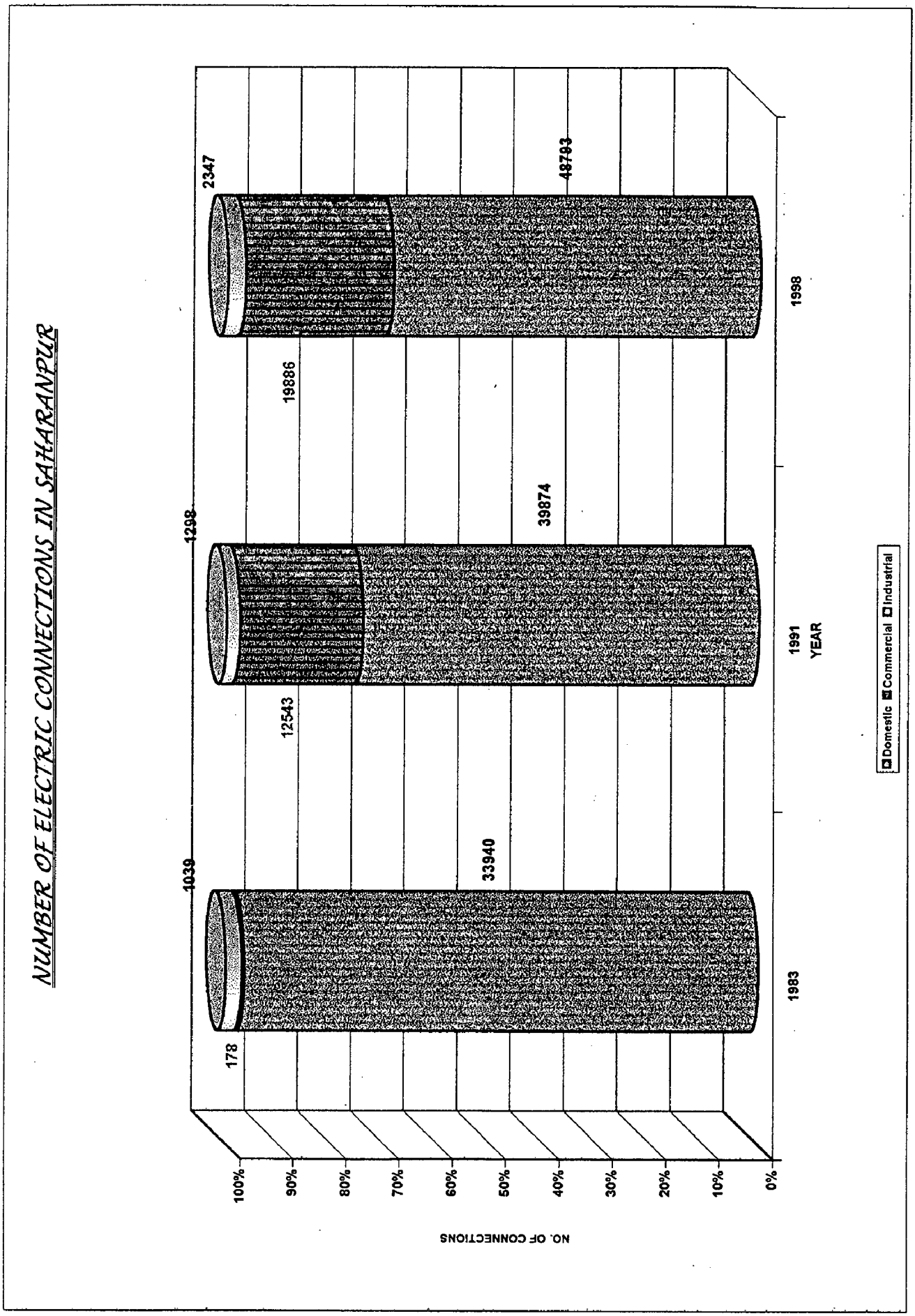
4.5 HOUSING:-

Housing is also considered as an infrastructure, as it provides facilities for peaceful living. The physical and mental rest after the working hours is essential to get prepared for the next day. House gives shelter against rain, sun and cold etc. Today, in our country-housing problem is burning problem. Situation of housing in the big cities is becoming difficult as demand, is increasing but supply can't pace with increasing demand. From the table no 4.3 it is seen that in Saharanpur city the average size, as there is an increase in population the family size also show increase which result in the shortage of houses. Saharanpur development authority and Saharanpur municipality has no proper records regarding total houses every year. In fact, most of people do not take permission before the construction of new building or after approval of the plan from S.D.A. they don't start the construction. It is difficult to find out the housing stock and requirement of houses from readily available data.

NUMBER OF HOUSES IN SAHARANPUR SINCE 1961 TABLE NO 4.3.

S.NO.	YEAR	POPULATION	NO. OF HOUSES	HOUSEHOLD SIZE
1	1961	1,85,000	37,755	4.9
2	1971	2,25,396	41,724	5.4
3	1981	2,95,355	44,029	6.7
4	1991	3,74,908	61,460	6.1

Source: Saharanpur Master plan.


NUMBER OF ELECTRIC CONNECTIONS IN SAHARANPUR
NO. OF CONNECTIONS
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1039
178
33940
1298
12543
39874
2347
19886
48783
1983
1991
1998
YEAR
Domestic
Commercial
Industrial

4.6 EDUCATION:-

In Saharanpur, facility of primary school has increased same trend has been shown in the case of secondary schools. Comparing other towns, facility is less particularly for secondary schools. More effort is required to provide good facility for education. In spite of primary and secondary schools Saharanpur city also has the facility of college and technical institution. Detail regarding education facilities are given below:

1)	Primary School	90
2)	High School	12
3)	Higher Secondary School	8
4)	Degree Colleges	3
5)	Technical Institutions	2

4.7 HEALTH:

From the old time Saharanpur has better health facility in comparison to the near by areas. In spite of Govt. hospitals and dispensary, Saharanpur has number of private doctors and nursing home. Detail regarding health facility are given in the below:

1)	Government Hospitals	2
2)	T.B. Sanatorium	1
3)	Family Planning Center	1
4)	Dispensary	4
5)	Clinic & Pvt. Nursing Homes	131

4.8 TRANSPORTATION AND COMMUNICATION:-

4.8.1 INTRODUCTION:-

Like other metro city of U.P. the Saharanpur city has also been growing rapidly in haphazard manner. After independence, its population has become nearly five times than what was in 1947. The road pattern within the city bears little relationships to the actual needs of present traffic. At certain points even both the state highway are so narrow due to encroachment that encroachment creates great problem for the smooth flow of traffic. Majority of roads in the developed areas of city, though sufficiently wide when constructed, but now the width has become inadequate to cope with the existing volume and nature of traffic.

The existing factors which lead's to the traffic problems are the following .

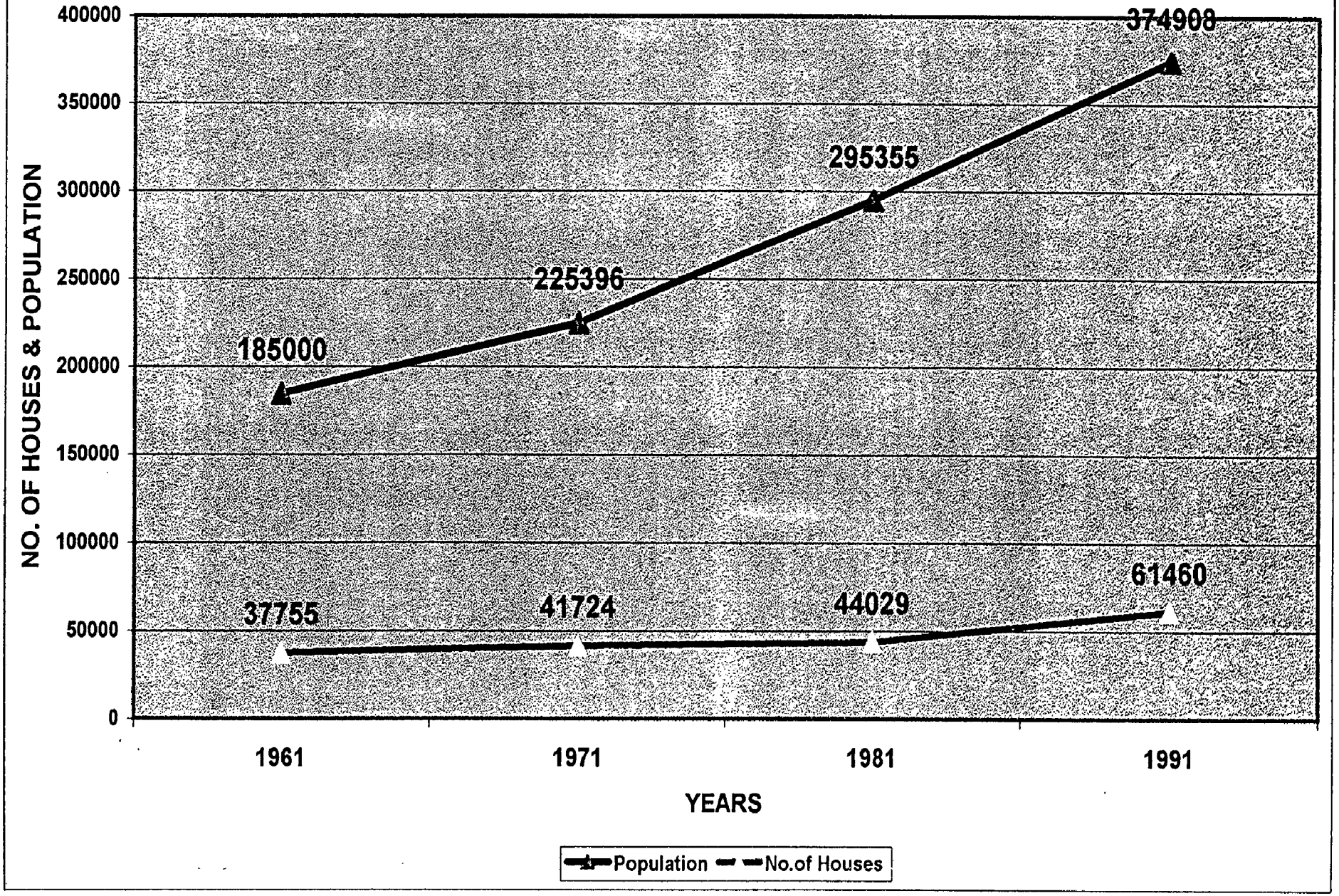
- Mixed traffic: There is mixing of slow moving traffic such as hand carts, bullock carts, Rickshaws, cycle etc. with the fast moving automobile traffic of trucks, buses, cars etc.
- Encroachment: Encroachment is another important factor for the traffic problems in Saharanpur city, because 90% of its main roads are encroached .
- Pedestrian way: There is lack of adequate footpaths for the use of pedestrians, which is also one major cause of traffic congestion in built up areas of the city.
- Truck terminals and parking: There is lack of parking for trucks in the city. In commercial areas, trucks have to be parked for loading and unloading on roads, creating problems in the movement of traffic.

4.8.2 CLASSIFICATION OF TRAFFIC:-

Traffic is classified under the following heading:

1) Passengers Traffic.
2) Movement of Passengers Into And Out Of the City.

NUMBER OF HOUSES IN SAHARANPUR IN COMPARRISION WITH ITS POPULATION



3) Movement of Passenger within the City.

4) Goods Traffic.

5) Movement Of Raw materials, Food Grains, Building Material And Industrial Output Into And Out Of The City.

6) Transporting Commodities of Various Kinds from One Part of City to the other.

4.8.3 PASSENGERS TRAFFIC:-

a) Like other city of India the movement of passengers into and out of the city is by.

1) Roadways Government owned and privately owned.

2) Railway

The traffic survey carried out reveals the following results.

S.NO.	MODE OF TRANSPORT	OUTGOING/DAY	INCOMING/DAY
1.	Road transport	50,978	58,587
2	Broad gauge (N. Rly.)	47,869	49,678
3.	Broad gauge (S.S. Light)	15,621	15,949
Total		**1,14,468**	**1,24,214**

b) There is no mass transport system in the city for the flow of people with in the city. The traffic survey reveals that 65% of the people use their private vehicles (two wheelers) and the rest depends upon tongas, rickshaws, auto rickshaws etc.. table no. 4.4 shows the No. and type of different vehicles in the city.

4.8.4 GOODS TRAFFIC:-

a) INCOMING AND OUTGOING GOODS.

b) MOVEMENT OF GOODS WITH IN THE CITY.

a) INCOMING AND OUTGOING GOODS:

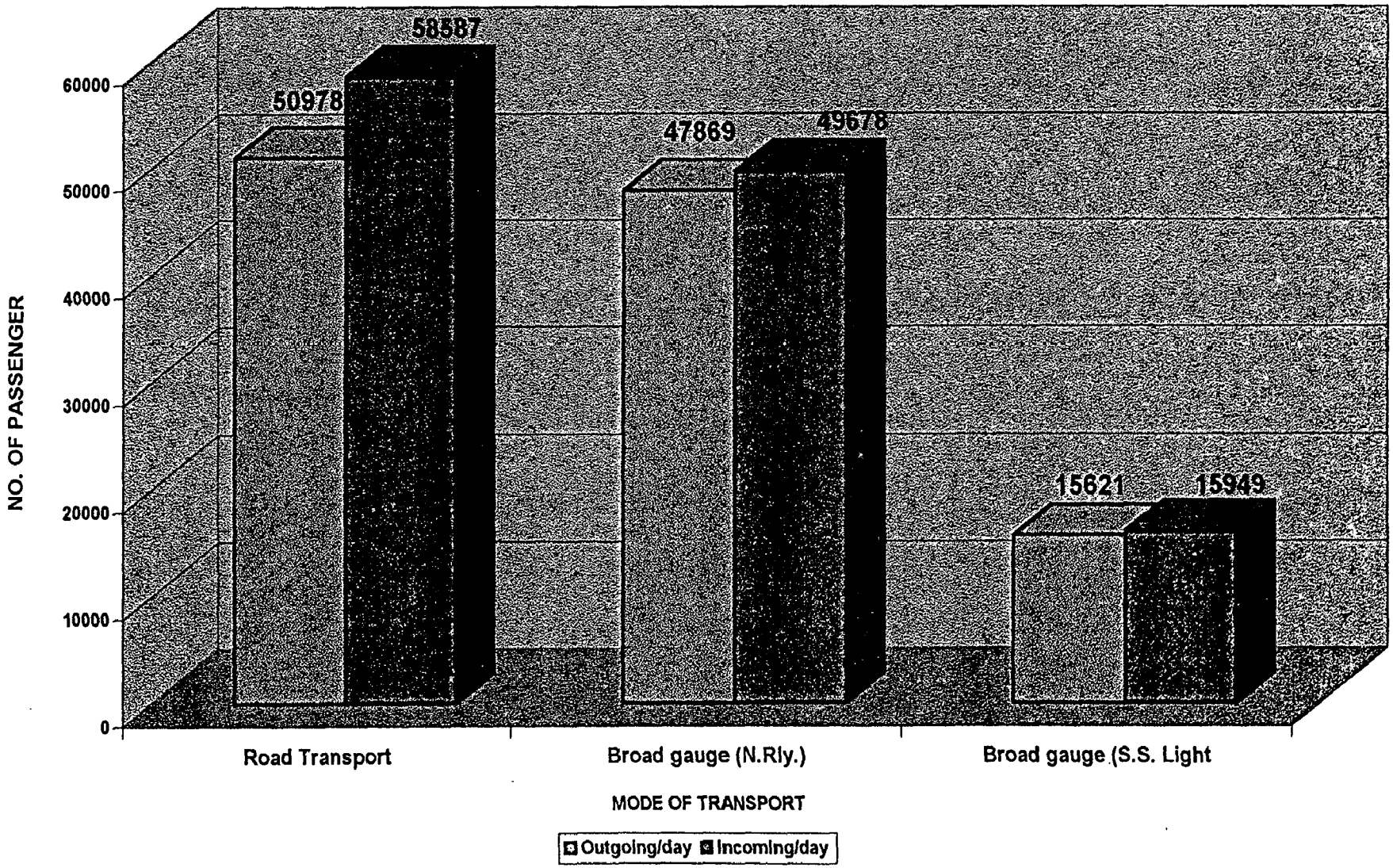
1) BY RAILWAY : Due to major industries like paper mill, sugar mill and cigarette factory the amount of incoming and outgoing goods increases day by day in the city. This increasesment of goods was found more on the main track of the N.Rly. as compared to the S.S. Light railway. Detail regarding the flow of goods per day is given in the below.

MODE OF TRANSPORT	INCOMING/DAY	OUTGOING/DAY
Northern Railway	3450t	2763t
S.S. Light Railway	1290t	1049t
Total	4740t	3812t

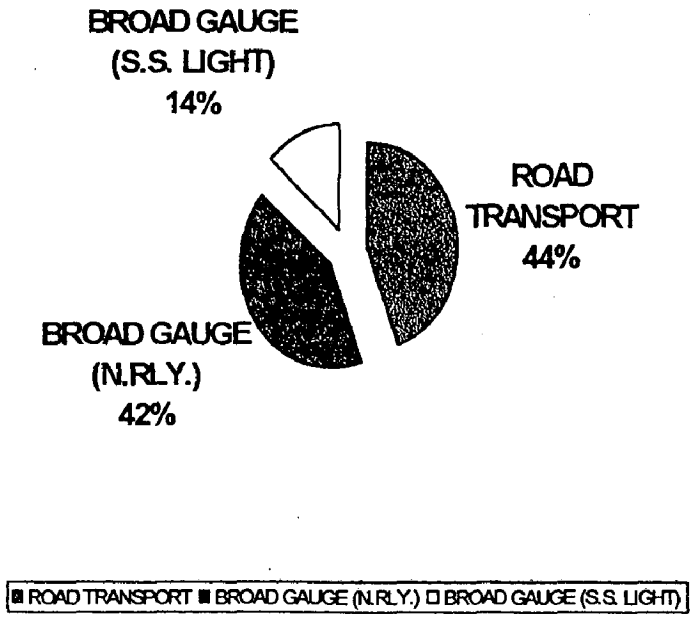
2) BY ROAD TRANSPORT: As Saharanpur has better road access in comparison to the trains. So naturally incoming/outgoing goods/day by road transport is much more than incoming and outgoing/day by railway. The other reasons for the better road transport are the following:

1) Majority of industries in Saharanpur is of small-scale nature. Therefore raw material as well as finished goods are light in nature. So road transport is preferred.
2) The direct road connection between Saharanpur and Delhi, the traders prefer, to send the goods by road rather than by railways as the freight charges are less.
3) To certain cities such as Haridwar, Dehradun, etc. train follows longer route.
4) For good incoming and outgoing to the goods to the neighboring area, and to the hilly areas road transport is only means of transportation.

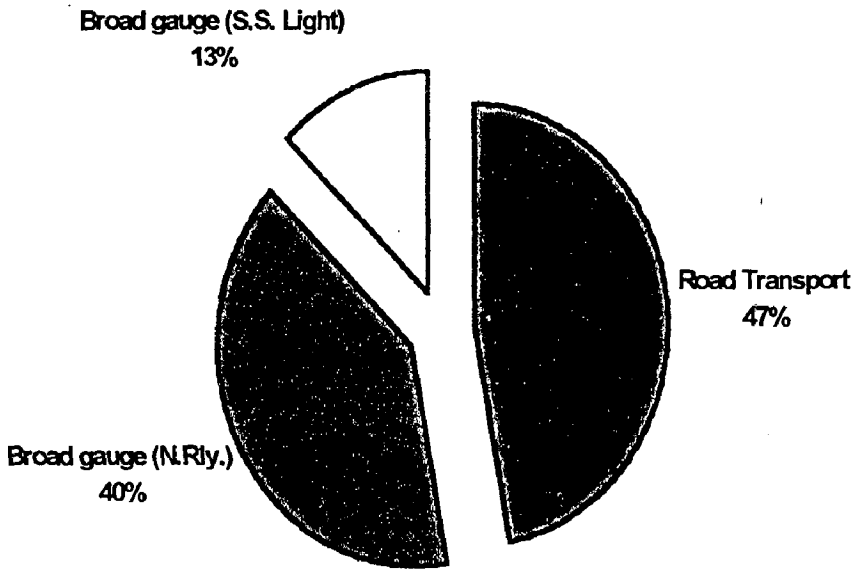
NUMBER OF PASSENGER COMING ANG GOING PER DAY BY DIFFERENT MODE OF TRANSPORT



OUTGOING PASSENGERS PER DAY BY DIFFERENT MODE OF TRANSPORT



NUMBER OF INCOMING PASSENGER PER DAY BY DIFFERENT MODE OF TRANSPORT



In order to manage the incoming and outgoing goods there are 41 transport agencies, which has there owned trucks for the supply of the goods. The total number of trucks and mini trucks.

These agencies are scattered along Ambala road near clock tower, on the left bank of Pavdhoi nadhi. But their location is away from the main industrial areas, creating the problems to industrialists to send their goods. Moreover, these agencies are located on main road having no parking space, creating problem to the smooth flow of traffic.

a) MOVEMENT OF GOOD WITHIN THE CITY.

The principal mode of internal goods transportation are five, 1) Motor truck, 2) Auto rickshaws, 3) Hand driven carts 4) Tractor trolley and 5) Animal carts. Trucks are used for transporting heavier material to relatively longer distances. Hand driven thela and bullock carts are used for relatively shorter distances.

4.8.5 IN RELATION TO INDUSTRIES, LOCATION OF RAILWAY GOODS PLATFORM:

In Saharanpur there are two good sheds i.e. on both the track (the northern railway and other at S.S. Light railway). Out of all industrial units, Sugarmill, textilemill, papermill have got railway siding for the incoming/outgoing goods. Sugar mill and textile mill has got siding on northern railway as well as in S.S. Light railway.

So far location of other industries concerned, both good sheds are quit far away from most of industries. Unfortunately there is no adequate access to S.S. Light railway station from different different industrial units. To reach station, the vehicle has to travel a long distance.

4.9 COMMUNICATION:-

Communication facility has vital role in the development of trade, commerce and industry and hence in the development of the town, Saharanpur has all the facility, which is needed, by any city for its development, details regarding community facility are given below.

List of Community Facilities: -

- **Post Office And Telephone Exchange**

  There is 1 Head Post office, 1 Telegraph office, 22 Sub-office and 3 Telephone exchange office.

- **Police Stations: -**

  There are 2 Kotwali, 5 Thana and 16 Police Station.

- **Fire Station: -**

  There is only 1 Fire station.

- **Parks and Playgrounds: -**

  There are 2 Parks, and 2 Baghs,

- **Library:-**

  There is only 1 library in the city.

- **Clubs :-**

  There is only 4 clubs in the city.

- **Banks:-**

  There are only 21 banks.

4.10 EXITING LANDUSE PATTERN: -

The functional efficiency of a city depends upon the inter-relationship of different uses of land. The arrangements of various landuses and the manner in which these interact determine to a larger extent the distinctive character of a city. The study of the process of the growth of Saharanpur discussed in preceding chapter reveals that various pockets of the town have grown at different periods of time in haphazard manner without any planning. The nature of topography together with historical, cultural, economic factors and means of transportation have played a great role in the location, character and spare requirements of different types of landuses. Thus based on the variable character of the urban land use, the following functional areas may be distinguished in the city. (ref. Fig. 4.1) .

4.10.1 RESIDENTIAL LANDUSE:-

Land under residential area forms a major use of the total urban land in Saharanpur. About 48.02% (782.54 hectares) of the total developed land is under this landuse. The present pattern of residential land use shows a mixed character of both planned and unplanned growth in the city. The central areas constitute older built up parts of the city with narrow zig-zaz pattern of streets. Situated on both sides of principal commercial streets viz., Raiwala Bazar, Purani Mandir, Denanath Baraz, Hiran Maran, Nabab Gunj, Numesh Camp, etc, these areas have greater concentration of population and higher densities ranging from 60-75 houses per hectare mean while the net density of the city is 617 person per hectare . These area thus fully built up and there is serious dearth of open spaces, and road's, streets are extremely narrow, dark and dingy.

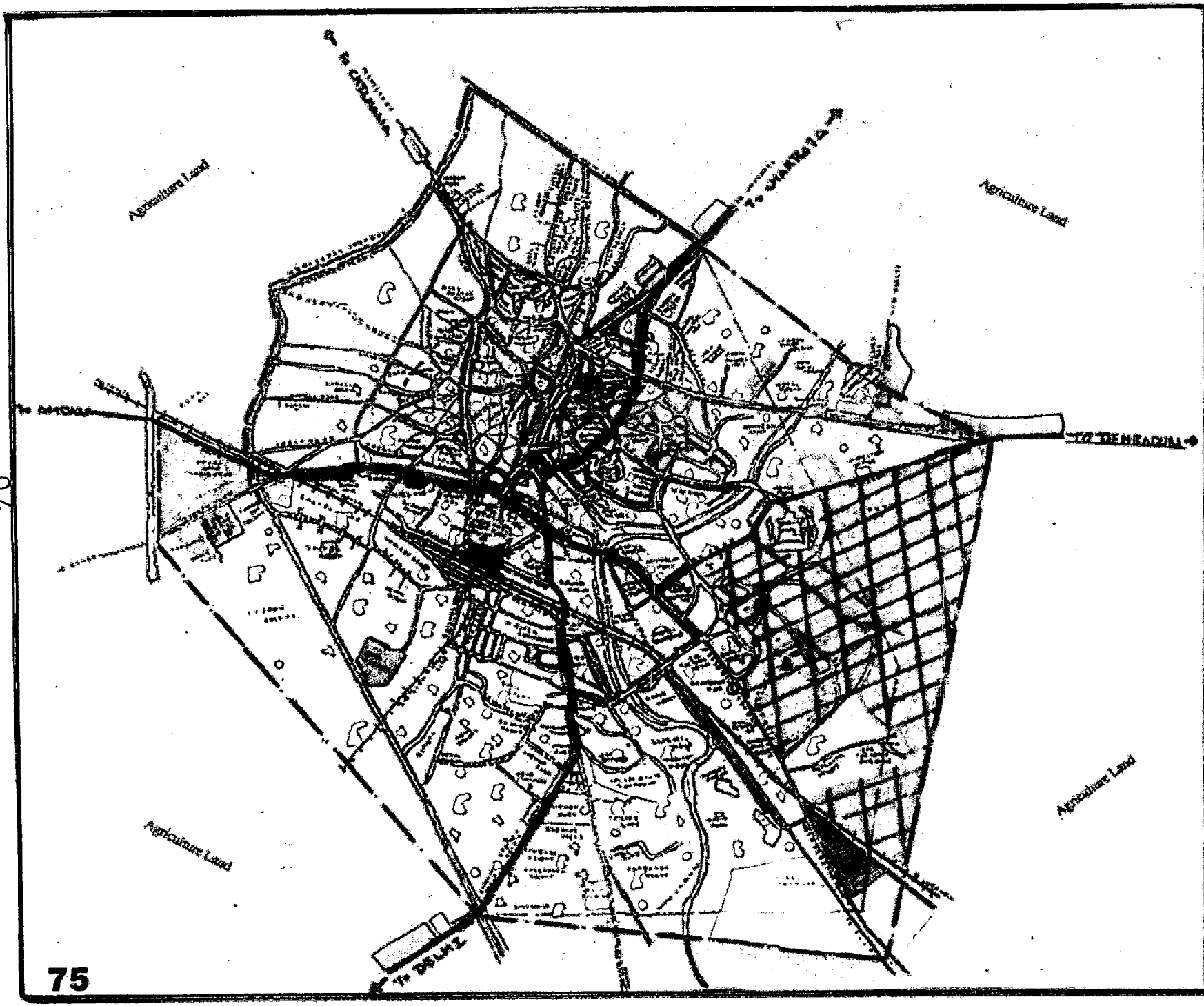
A number of residential localities viz. Mission compound, Gill colony, Avas vikas etc. which have grown across railway tracks in the south west and south direction of the city are developed in a planned way. Only the two railway bridges and one railway crossing in Patel nagar link the old and new part of the city. But the width of these bridges is very narrow which create a problem for the flow of four wheeler vehicles.

In addition to Mission compound few planned residential colonies Pant vihar, Avas Vikas, Kishor bagh, etc have also been developed either by the private individuals or by the Government. In Saharanpur there are 187 residential areas out of which only 45 % are considered to be developed. In all respect the residential areas in old part of the city are in bad connotation in comparison to the colonies in the new part of the city (ref. Fig. No 4.2).

4.10.2 COMMERCIAL LAND USE:-

The total area covered by the commercial establishments in Saharanpur is about 50.75 hectares which constitutes 3.11% of total developed land. Major part of this area is occupied by the wholesale and retail establishments covering 65.7% of the total area under commercial use. Almost entire business activity of the town is concentrated along court road, ambala road, dehradun road, Nehru market, shaid gunj, rani bazar, raiwala and arounfd the clock tower. Nehru market is the central nerve of business and commerce of Saharanpur City. General business establishments, and creditorganizations, specialized businessmen's flourishing on the local household and cottage industries for which Saharanpur is famous e.g. woodcraft are dispersed along Purani Mandi road. On court road a number of organized shopping areas have developed, e.g., Sophia market, Pashupati complex (under construction)., and this area has become the busiest new centre of the town.

The city of Saharanpur is the main distributing centre for the markets of the district as well as the region and the main commodities marketed in these mandies are oil seeds, wheat, rice, jaggery and pulses. Main grain market of city is located in Northwest



LEGEND

- RESIDENTIAL AREA
- COMMERCIAL AREA
- GOVT. GODOWNS
- SCHOOLS
- COLLEGES
- TECHNICAL INSTITUTES
- HOSPITALS
- POST OFFICE
- POLICE STATION
- CINEMA HALL
- ELECTRIC SUB-STATION
- RELIGIOUS BUILDING
- PARKS & PLAY GROUNDS
- BUS STAND
- ROADS
- LANE/ KUCHA ROADS
- STATE HIGHWAY
- GOVT. OFFICES
- CREMENATION GROUND
- RIVER/NALA
- TELEPHONE EXCHANGE
- HOUSE HOLD INDUSTRIES
- HEAVY INDUSTRIES
- OTHER INDUSTRIES
- PETROL PUMP
- WOOD CARVING INDUSTRIES
- HOUSIERY INDUSTRIES
- TUBEWELLS

LANDUSE PATTERN OF SAHARANPUR

SCALE 6" = 1 MILE

NORTH :

Fig. No. 4.1 & 4.2

DISSERTATION TITLE:
IMPACT OF INDUSTRIAL GROWTH ON URBAN DEVELOPMENT AND ENVIRONMENT CASESTUDY SAHARANPUR

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ROORKEE

part of the city, which has an area of 12.95 hectare. it is seen that the commercial areas mixed with other land uses are marked with high congestion and almost completely lack in the facility of parking, loading and unloading spaces (ref. Fig. No.4.3).

4.10.3 INDUSTRIAL LAND USES :-

There is no planned development of industrial sectors within Municipal limits. The total area covered by the industrial establishment both large and small is 170.41 hectare which constitute 10.40% of the total area of the city. The industrial units established within the congested residential and commercial areas are functioning at the cost of health and hygiene of the inhabitants. The small scale industries are scattered throughout the city proper with maximum concentration of wood carving units at Purani mandi area while the other large scale and other units like Paper mill, Cigarette factory, Straw board mill and some chemical factories like Rakesh chemicals also lies in the municipal limit. While the household industry 'Hosiery' is mostly concentrated in Hiran Maran and Matai mahal area (ref. Fig. No. 4.4).

4.10.4 GOVERNMENT OFFICIES:-

The total area covered by the Government offices is 36.24 hectares constituting the 2.22% of the total developed land. Out of the total area occupied by the administrative offices 81 percent covered by State Govt. Offices. A large percentage of Govt. offices is located on the court road while the police lines which require a large area is situated behind the collectrate court. While 70% of the Govt. offices lies in the residential building in residential areas (ref. No. 4.4).

4.10.5 RECREATION AND PUBLIC FACILITIES:-

Total area developed as park and play grounds in the city works out to be 58.30 hectares. In comparison to the total population of the city, the share

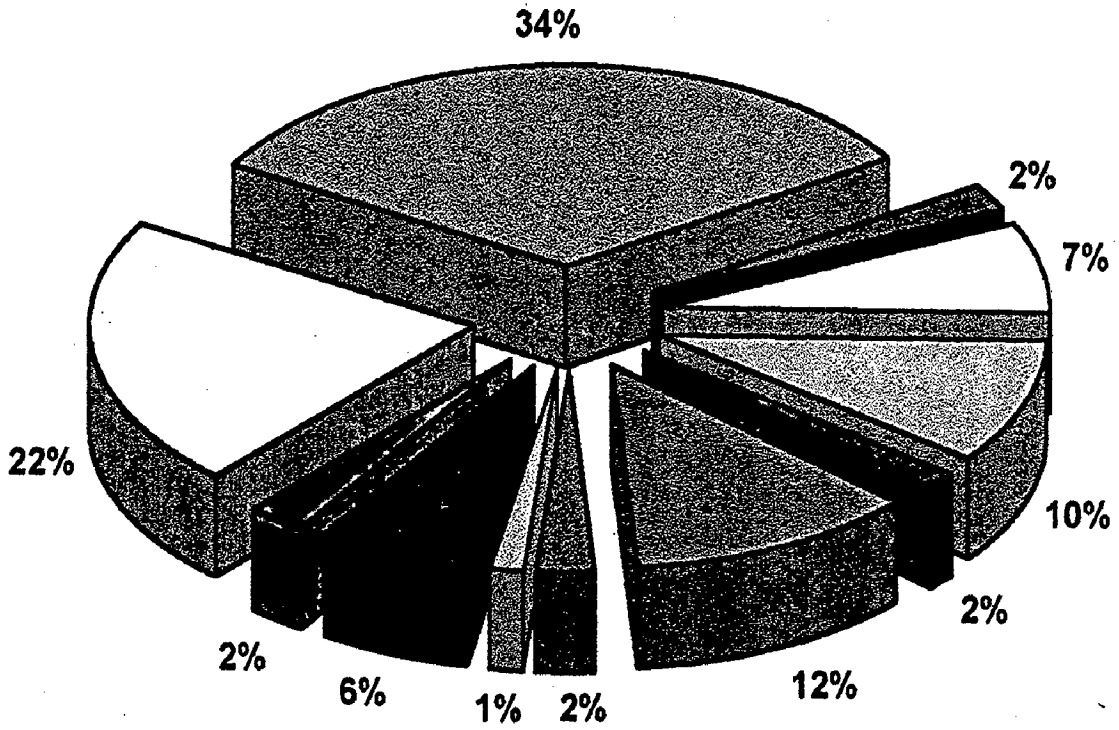
of the open spaces therefore is very low. There are two parks in the city, situated in the north part of the city.

The total area covered by the public and semi-public facilities in Saharanpur is 237.39 hectare, which constitute 14.57% of the total developed area. Table shows the distribution of land for various purposes and their percentage (ref. Fig. No. 4.4).

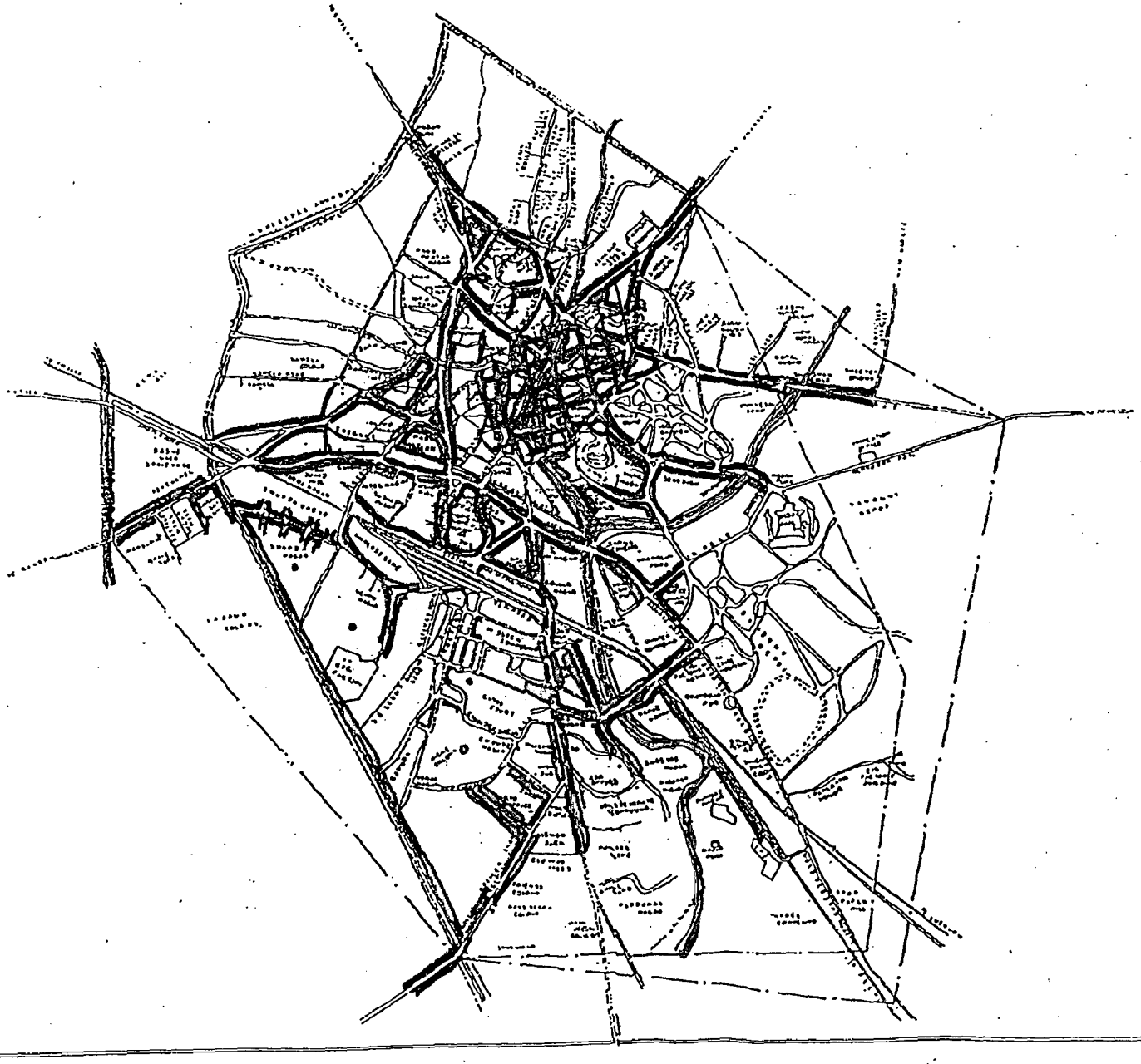
4.11 FINDINGS:-

1) The width of state highways in the city reduces due to encroachment.
2) There is mixing of highway traffic and local traffic, which creates the congestion's.
3) Supply of electricity to residential and to the industries is not proper mean's some part of the city has a supply for only 6 hours in a day.
4) JAL nigam can't able to supply the water according to the demand of the city.
5) Due to lack of proper sewerage system rivers are converted into the Nala.
6) The S.D.A and municipality for the supply of houses do no proper arrangement.
7) No. of primary and high school show their increase with the time but there is no increase in the colleges and other technical schools and institutions .
8) Due to less freight charges road transportation is preferred to the railway.
9) As industries are located in the residential and in congested area so they are not having railway sidings.
10) No truck terminal is near industries. These are located within the heart of city.
11) Few overhead bridges are required to be constructed.
12) There is no proper space for the truck parking even at the time of loading and unloading they are parked on the roads.
13) Traffic volume in commercial area is so much that present width of roads is inadequate.

LANDUSE PATTERN OF SAHARANPUR (1983)



RESIDENTIAL	COMMERCIAL	INDUSTRIAL	COMMUNITY FACILITIES
PUBLIC & SEMI-PUBLIC OFFICIES	TRANSPORTATION	PARKS, PLAYGROUND	GRAVEYARD & CREMATION LAND
GARDENS	LAKES & RIVERS	AGRICULTURAL & OPEN SPACE	



LEGEND

- RESIDENTIAL AREA
- COMMERCIAL AREA
- GOVT. GODOWNS
- SCHOOLS
- COLLEGES
- TECHNICAL INSTITUTES
- HOSPITALS
- POST OFFICE
- POLICE STATION
- CINEMA HALL
- ELECTRIC SUB-STATION
- RELIGIOUS BUILDING
- PARKS & PLAY GROUNDS
- BUS STAND
- ROADS
- LANE/ KUCHA ROADS
- STATE HIGHWAY
- GOVT. OFFICIES
- CREMENATION GROUND
- RIVER/NALA
- TELEPHONE EXCHANGE
- HOUSE HOLD INDUSTRIES
- HEAVY INDUSTRIES
- OTHER INDUSTRIES
- PETROL PUMP
- WOOD CARVING INDUSTR IES
- HOUSIERY INDUSTRIES
- TUBEWELLS
- WHOLE SALE MARKET

COMMERCIAL AREA IN CITY.

SCALE 6" = 1 MILE

NORTH :

Fig. No. 4.3.

DISSERTATION TITLE:
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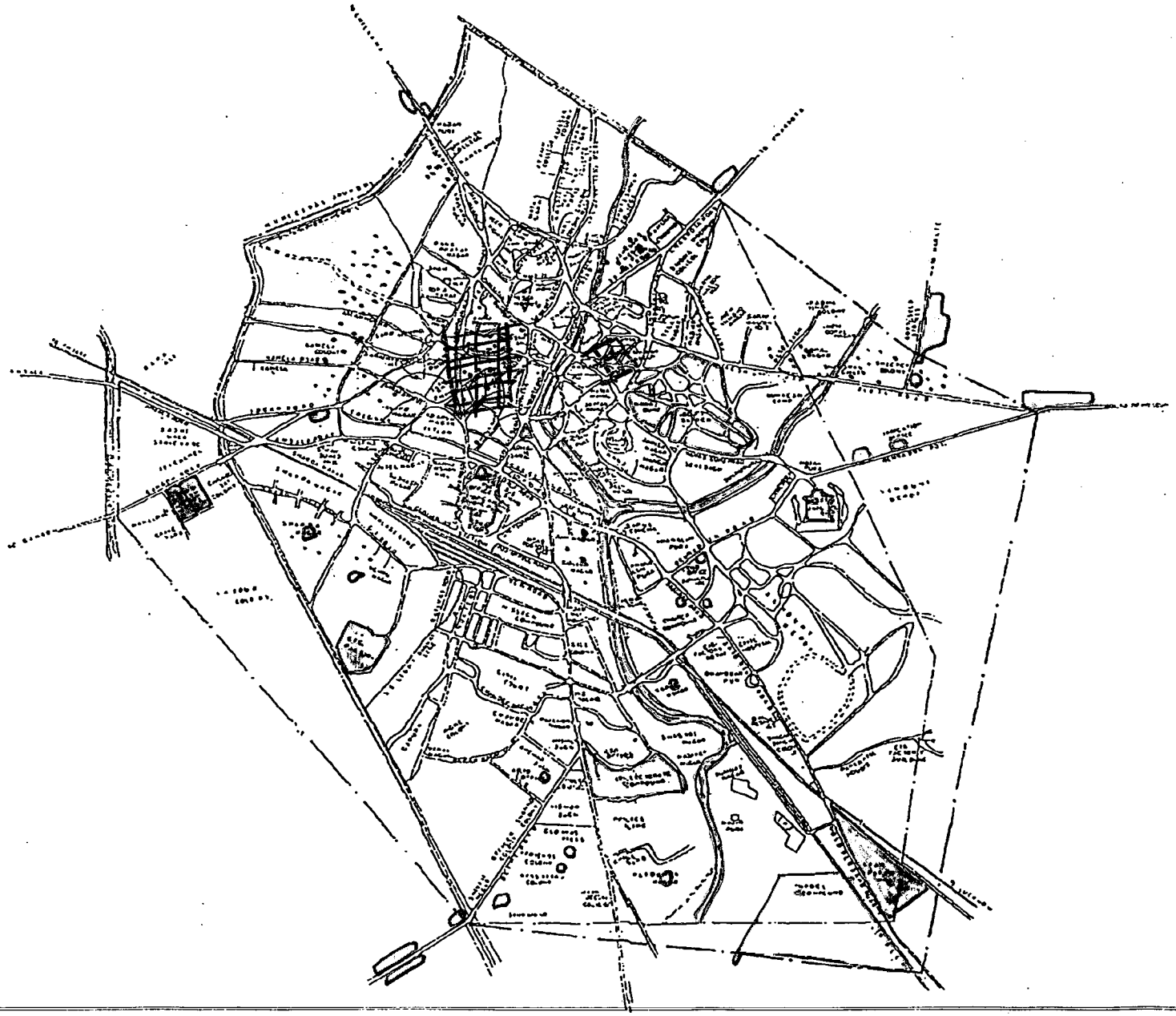

LEGEND

- RESIDENTIAL AREA
- COMMERCIAL AREA
- GOVT. GODOWNS
- SCHOOLS
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- WOOD CARVING INDUSTR IES
- HOUSIERY INDUSTRIES
- TUBEWELLS

LOCATION OF INDUSTRIES GOVT OFFICES & PARKS IN CITY

SCALE 6" = 1 MILE

NORTH :

FIG. 4.4

DISSERTATION TITLE:
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14) There is no proper system for the drainage and for the garbage.

15) Even the health facility is better in comparison to the other near by city but these are not as per the standards of the TCPO.

CHAPTER 5

5.2 DISTRIBUTION OF POPULATION ACCORDING TO OCCUPATION:

Out of the present total working population nearly 1.8% depend on agriculture, directly or indirectly. Maximum number of persons are engaged in manufacturing industry i.e. 30.03% and in commerce 23.00% and 21.4% are employed in other services and 12.6 % are in transport. The comparison between the distribution of work according to the census is shown in the table no. 5.1.

After comparison from the table it is found that the growth rate of industries is continuously increasing. According to 1991 census total workers in population other than agriculture come out to be 37.00% where as it is only 34.9 % according to 1961. It shows that a lot of opportunities were provided in industrial section due to a expansion of existing units or by establishing new units.

DISTRIBUTION OF POPULATION BY OCCUPATION STRUCTURE (1997-98)

TABLE NO. 5.2

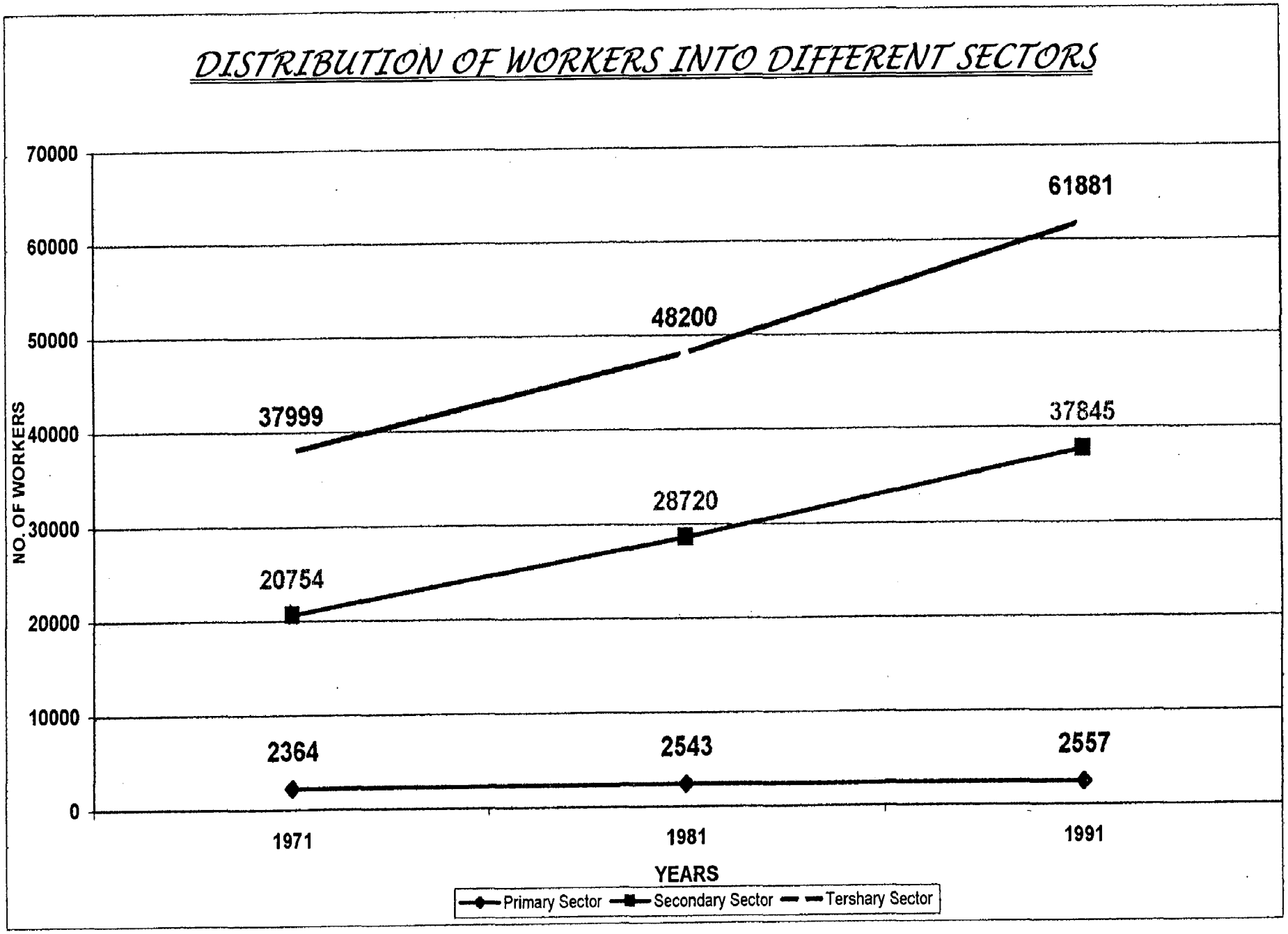
S.NO.	Type of occupation	% of total working population
1	Cultivation	1.05%
2	Agri-labour	0.75%
3	Mining, Quarrying etc	1.25%
4	Household industry	7.42%
5	Manufacturing industry	30.03%
6	Construction	2.5%
7	Trade & Commerce	23.0%
8	Transport	12.6%
9	Other services	21.4%

Source: Municipality

DISTRIBUTION OF POPULATION ACCORDING TO OCCUPATION (1971-1991) TABLE NO. 5.1.

S. NO	TYPE OF OCCUPATION	*1971* NO. OF LABOUR	%age	*1981* NO.OF LABOUR	%age	*1991* NO.OF LABOUR	%age
1	PRIMARY SECTOR	*2,364*	*3.87%*	*2,543*	*3.20%*	*2,557*	*2.50%*
	FARMERS	867	1.43%	1,096	1.39%	1,023	1.00%
	FARMER HELPER	895	1.46%	0,659	0.82%	716	0.76%
	POTTARY,FOREST	602	0.98%	0788	0.99%	0818	0.80%
2	SECONDARY SECTOR	*20,754*	*33.96%*	*28,720*	*36.14%*	*37,845*	*37.00%*
	HOME INDUSTRY	2,749	4.50%	4,287	5.39%	6,137	6.00%
	MANUFACTURING	16,403	26.84%	22,250	28.00%	28,639	28.00%
	CONSTRUCTION	1,602	2.64%	2,183	2.75%	3,069	3.00%
3	TERSHARY SECTOR	*37,999*	*60.17%*	*48,200*	*60.66%*	*61,881*	*60.50%*
	TRADE	13,844	22.65%	18,275	23.00%	23,525	23.00%
	TRANSPORT	10,469	17.12%	13,905	17.50%	17,899	17.50%
	OTHER SERVICES	13,690	22.49%	16,020	20.16%	20,457	20.00%
4	*TOTAL LABOUR*	*61,111*	*100%*	*79,463*	*100%*	*1,02,283*	*100%*

As industrial development is always connected with transport and commerce as a result with industries development these two things also develops. So the table shows that the persons engaged in these things are increasing continuously.


DISTRIBUTION OF WORKERS INTO DIFFERENT SECTORS
70000
60000
50000
40000
30000
20000
10000
0
NO. OF WORKERS
61881
48200
37999
37845
28720
20754
2364
2543
2557
1971
1981
1991
YEARS
Primary Sector
Secondary Sector
Tershary Sector

5.3 COMMERCE :-

Saharanpur has been the centre of trade and commerce since beginning. It is a very famous centre of food grains such as rice, sugar, oilseeds, fruits etc. these products are brought to Saharanpur from surrounding rural areas, which is a rich agricultural area.

The main exports of Saharanpur area are the following:

a) Sugar
b) Food grains
c) Cigarettes
d) Paper
e) Wood carved furniture's
f) Fruits etc.

5.3.1 WHOLE SALE TRADE :-

The importance of wholesale trade in Saharanpur is due to the geographical location of the region. The soil and climate of the area is very good for the agriculture products such as sugarcane, rice, fruits etc.

The food grains and fruit trade was developed to a great extent. The earlier wholesale grain and fruit markets became congested. Now it is shifted in the north west of the city, but the centre of trade for garments and wood products is Shaheed Ganj and Nall Ganj markets. Detail regarding the no. of different whole sale shop is given in the table no. 5.3.

NUMBER OF WHOLESALE SHOPS TABLE NO. 5.3

S.NO.	TYPE OF SHOP	NO. OF SHOPS	%age
1	FOOD GRAINS	350	24.96%
2	RICE	96	6.84%
3	SUGGAR JAGGARY	108	7.77%
4	FRUITS	68	4.85%
5	VEGETABLES	98	6.99%
6	GARMENTS	97	21.21%
7	WOOD PRODUCTS	315	22.46%
8	TABBACO	70	4.92%
	TOTAL	**1402**	**100%**

5.3.2 RETAIL SALE TRADE:-

The importance of retail trade in Saharanpur is due to the physical location of the city in this area. On examining the retail sale map it will be seen that all the town surrounding Saharanpur City are quit far off. Hence the retail sale influence is sufficiently large.

NUMBERS OF RETAIL SHOPS TABLE NO. 5.4

S.NO	TYPE OF SHOPS	NO. OF SHOPS	% OF TOTAL SHOPS
1	FOOD STUFF	4874	13.58 %
2	PROVISION STORE	4589	12.79 %
3	GARMENTS	3665	10.21 %
4	AUTOMOBILE MACHINARY	0427	1.19 %
5	METAL PRODUCTS	0983	2.74 %
6	PROFESSIONALS	2347	6.54 %
7	WOOD PRODUCTS	1653	4.60 %
8	BUILDING MATERIALS	1123	3.13 %
9	ELECTRIC GOODS	0989	2.75 %
10	RESTAURANTS	1002	2.79 %

11	HOTELS	0224	0.68 %
12	SERVICES	9753	27.19 %
13	MISCELLENEOUS	4236	11.81 %
	TOTAL	**35865**	**100 %**

In the past there has been a general tendency to have commercial establishments and shops not only in the surroundings residential areas but also along the main road without having adequate parking facilities storage space and in many cases shop keepers have encroached on the road which result's in great obstruction to the pedestrians as well as to vehicular movement . Out of total 35,865, 27.19% i.e. 9753 of services, 13.58% of foodstuff and 12.79% are provision store. The high percentage of later two show's that the general standard of people in Saharanpur is quit high. So far as area under commerce is concerned it is only 50.75-hectare i.e. 2.11% of total residential 32.62 % and industrial 7.1%.

The area under commerce is insignificant while it is giving employment to 23.0% of total working population and has been very important position . The reason behind it is that the frontage of shops is very less and they are extremely congested.

5.4 FINDINGS:-

- The economic of the city is based entirely on industry and commerce.
- Industries in city are continuously increasing from the past.
- Whole economic of the city depends upon industries and commerce giving maximum employment opportunities.
- As there are large no. of shops but the frontage are small.
- Due too continuous increases in industries the commerce and transport also increases.
- Maximum number of shops is located in the congested areas.
- No one is able to differentiate in between the wholesale and retail shops, as both are located in the same areas.
- Maximum people are engaged in manufacturing industries i.e. 30.03% of the total working population.

CHAPTER 6

EXISTING INDUSTRIAL PATTERN OF SAHARANPUR CITY.

6.1 INTRODUCTION:-

Due to nearness of forest and hills, Saharanpur city have a healthy climate and it is a very luxurious town of western U.P as well as it has all the facilities which are required by an industrial town. The transportation system links it up with other parts of state as well as other important towns of India like Delhi, Mumbai, and Calcutta with broadgauge. It has also got direct connection with Delhi by S.S. light railway.

Under the impact of five-year plan and due to political change Saharanpur develops as an industrial town of western U.P. ref. Fig. No.6.1. Due to these potentialities for industrial growth, industries have developed here, but in an unplanned manner, with the result that industries are now scattered all over the town.

From the very old time Saharanpur is famous for its wood carving industry but maximum number of these industries are running on small scale and large amount of their production is exported to foreign countries like Africa, U.A.E., U.S.A., Australia, France, and in most part of the world.

6.2 INDUSTRIAL GROWTH:

Since some of the major industries established in Saharanpur before independence so the history of the industrial growth of Saharanpur reveals that Saharanpur has been a famous industrial town of U.P. before 1921. At that

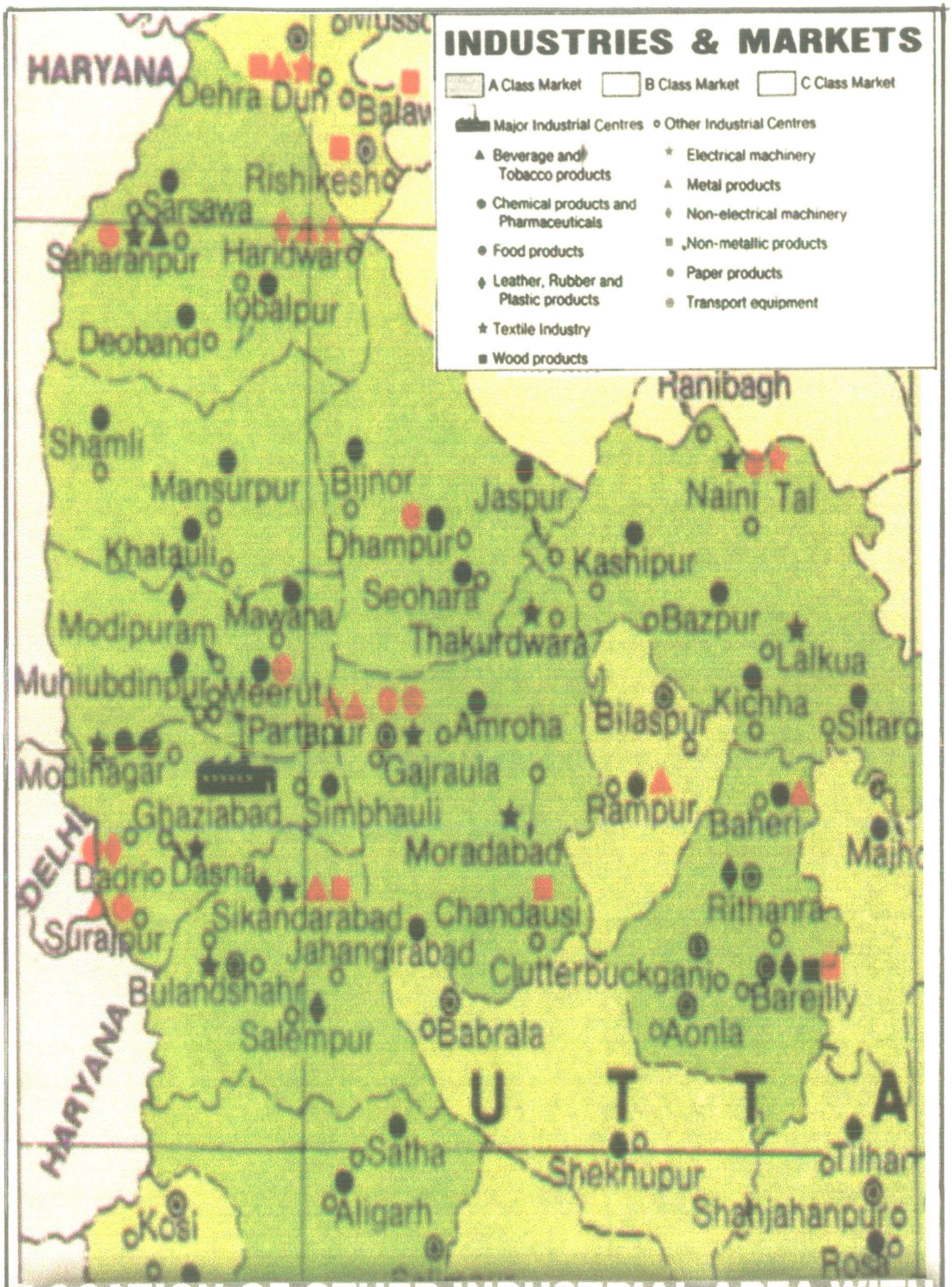
time it had 22 industries all of them were running on small scale. Total number of worker employed in these industries was 276.

Till 1931 industries increased to 65, out of which two are large-scale industries. One was sugar factory and other was sugar mill machinery industry. Sugar industry was one of the famous industry of that period because it was the only sugar industry in the whole district at that time giving employment to more than 1000 persons.

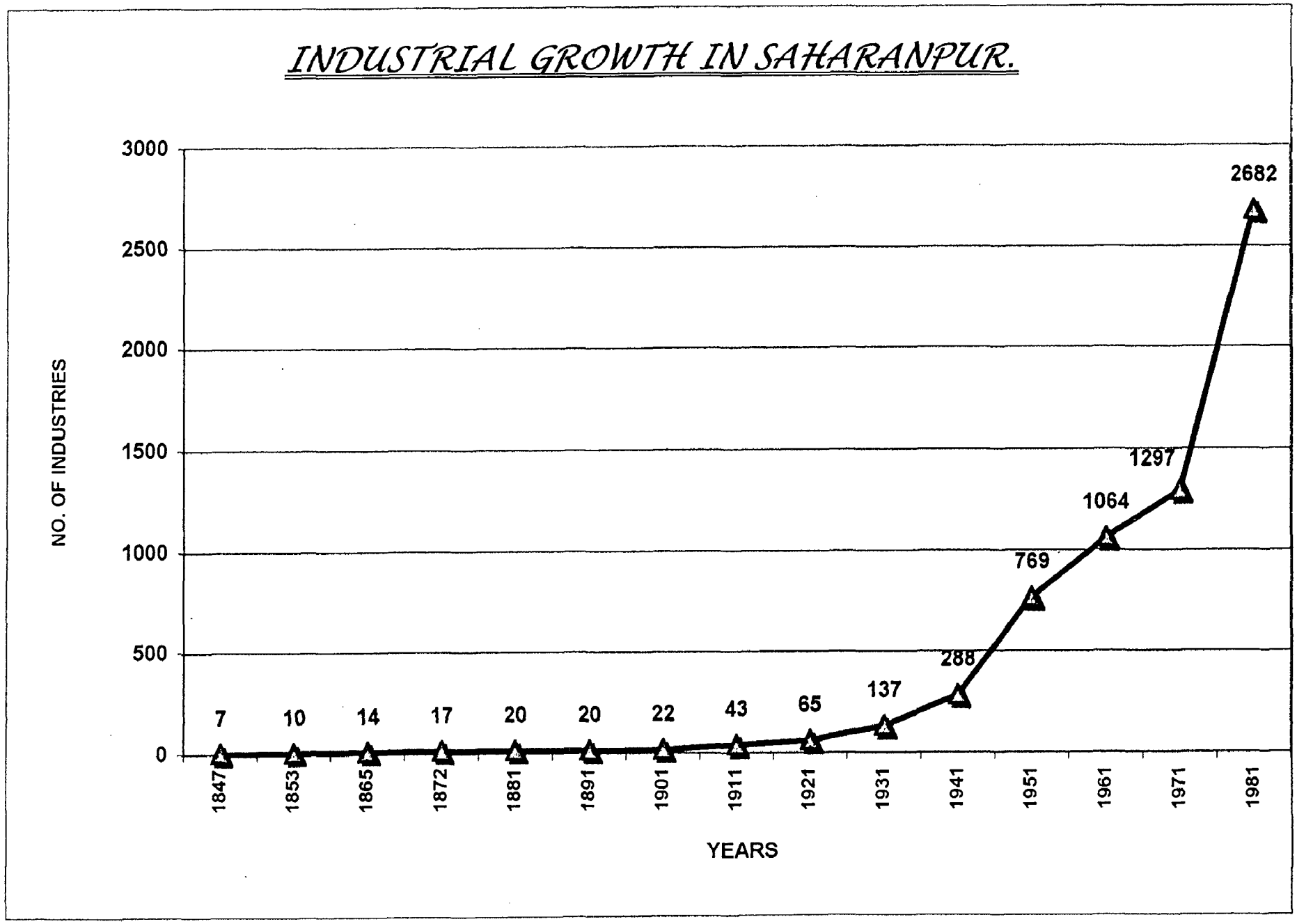
After 1931, industries develops like any thing means it is the actual period of industrial development, the number of industries became more than double what was in 1931. Total number of industrial workers also raised to a great extent and it became 8161 while in 1931 total industrial workers were only 2035. It is because during this period three very large scale units were started, giving employment to more than 1500 workers. Mostly large-scale units were started during this period.

Second World War and partition of the country affected the industrial development of the country as well as of the city. Upto 1951, there was very little development in the field of industries. But after 1951, the development of industries again started, because of, for giving more employment to the displaced persons. During the period of 1951-61, he rate of growth of number of industries was more than other periods, but the rate of growth in terms of workers was less than as in 1931-41. Because during 1951-61, mostly small-scale units were started as they need less capital investment. Total number of industries became 288 by the end of decade.

During 1961-71, the growth of industries was of small scale and some large-scale units came on the fringes of the city. But during 1971-81, industries of small scale and large-scale units came up along the Dehradun road. After 1981, when the master plan of Saharanpur came into existence the industrial area are proposed on the Delhi road, Dehradun road as a result some scale as well as large scale units come up in this areas.



LOCATION OF OTHER INDUSTRIAL AREA WITH RESPECT TO SAHARANPUR Fig.no 3.4,6.1


INDUSTRIAL GROWTH IN SAHARANPUR.
NO. OF INDUSTRIES
3000
2500
2000
1500
1000
500
0
7
10
14
17
20
20
22
43
65
137
288
769
1064
1297
2682
1847
1853
1865
1872
1881
1891
1901
1911
1921
1931
1941
1951
1961
1971
1981
YEARS

The impact of the five-year plans also gave a lot of impetus to industrial development. The area has got a lot of potential for industrial growth mainly in-

1) Agriculture- Agrobased industries.
2) Forest based industries.

because area around the city is quit rich in agriculture production such as sugar cane, rice, oilseeds, tobacco and wheat and also the forest belt ring on the north border about 25 to 30 miles away from the city. Timber of good quality is easily and economically available in Saharanpur, because of its geographical location, that is it is the first major city in the plains situated near the foot hills of Shivalik mountains which avails both the benefits of plains as well as mountains. This type of situation has helped Saharanpur City to a great extent in its industrial development, on which its whole economy is based .

1) WOOD CARVING INDUSTRY:

Wood carving industry is highly specialized in Saharanpur. They are running on a small scale from the old time. It is believed that this industry started at the time of Akbar but it vanished from the city, later it started again. Know this time the art of woodcarving was brought from Kashmir. As in 1865 and even today this type of art is existing only at two places Kashmir and Saharanpur. These people came from Kashmir in 1835 and settled here. The first industry was started in 1838. By 1900, the number was raised to 3 units and in 1912 there were 5 units in the city. In the beginning this industry could not develop due to :

1 Lack of availability of good timber.
2 Lack of transport facility means difficulty in bringing timber from the forest.
3 At that time skilled labour was also less.

With the development of means of transportation this industry stated developing. after 1920, the total number of units was 15. The work done in these industries being of

fine quality with highly artistic touch, it was appreciated not only in India but also in foreign countries. This industry helps the government in earning a lot of foreign exchange. After independence Government gave a good attention to this industry.

Due to this, now the total number of industrial units of woodcarving has risen in the city upto 613, giving the total employment to more than 7953 workers per day. Only 21 industries are on large scale and giving employment to 1974 workers/day. The carving is done on tables, beds, wooden boxes etc.. in most of the industries work is done manually.

2 STAR PAPER MILL:

Star Paper Mill is one of the oldest industries of Saharanpur. It established before independence in year 1938, with an authorized capital of 40 Lakhs, which were raised to more than 40 crores. It give employment to more than 10,000 workers employed from the process of collection of raw material in the forest, till the finished good roll out. The daily number of workers in the factory itself is about 3200, and its present output is Rs. 20 crores per year. It is located on the southeastern part of the city.

3 ITC :

This industry is also one of the oldest and major industry of Saharanpur, this factory manufactures the cigarettes under the different names such as Wills, Classics, Gold Flake etc. It provides employment to 1758 workers daily. The investment of 13.29 crores results in finished product of 27.46 crores per year. It is located on the southwestern part of the city.

6.2 • A LOCATION AND DISTRIBUTION:-

Industries in Saharanpur develop in an unplanned manner, like other older cities of the India. With this unplanned growth the industries in Saharanpur are now scattered all over the town. Some of them like woodcarving, hosiery, etc. are located in the most densely populated areas of the city.

However, the major concentration of large scale industrial development such as Lord Krishna sugar mills, L.K. textile mill, ITC Ltd., Flour mill, cardboard mill, Engineering and metal works, exists on the south west part of the city towards Ambala road. In the past two decade some of large scale industries such as Foremost industries Pvt. Ltd., Siddh Solvent Pvt. Ltd., Mahalakshmi roller flour mill, Rakesh chemicals, Moolchand steel Pvt. Ltd., have come up along Dehradun road which is in the outskirts of city. Only one heavy industry i.e. Star Paper Mill exists on the south west part of the city, on old Deoband road between railway lines to Delhi and Lucknow.

Large and small-scale industrial establishments though scattered all over the town seem to be more concentrated at a particular location with in the city. It will be observed that this have been concentrates along the principal roads leading to other towns of the region. The areas of concentration are as follows.

1 South West Side of the town.
2 South East Side, between two railways lines one leading to Lucknow and other to Delhi.
3 On both side of Ambala road.
4 Woodcarving in Purani Mandi wards.
5 On either side of Delhi Road.
6 On either side of Dehradun road.
7 On either side of Paodhoi Nala.

The general location of industrial establishment is shown in the existing land use map of the city. From the map, it is clear that every type of industries is distributed in different parts of the city. No particular type of industry s located in a particular area except small-scale unit of woodcarving. All these industries are located in the central portion of the city, which is a congested area in the city and in this area the landuse is mixed. i.e. industrial and residential, industrial and commercial. This Industry is so developing that in this area on every road and on every lane this industry will be found.

All the rice mills are located in the North East Side on the outskirts of the town. It is because of –

1 Nearness to rice mandi.

2 The area on this side of the town is very good for rice production.

Most of the engineering (metallic) units are located on the Ambala road except one big unit i.e. Saharanpur Engineering works, which is at present is demolished and the land is used for the commercial purpose.

6.3 ORGANISATIONAL SETUP :-

In Saharanpur, there are 2687 units out of which 69.33% i.e. 1863 units are working as private companies, 596 units i.e. 22.18% are working in partnership, 206 units i.e. 7.67 % are working as limited concerns, and the rest i.e. .82 % (18 units) are working as cooperative firms.

Mostly all the woodcarving industries are working as private concern. In Saharanpur the number of small-scale industries is more because they are either Agro-based or forest based and moreover, the high capital is not needed for these types of industries. Therefore in Saharanpur there is more percentage of private concerns.

Most of the industries, setup privately are based on partnership. Most of the large industries like textile mill, sugar mill, engineering works etc. which need large

capital investment and consequently heavy burden of economic resources are, working in the partnership, while the units are owned in general by two or more partners rather than single individual. The units under limited and cooperative setup are insufficient. These are very few industries in relation to total units.

6.4 CLASSIFICATION OF INDUSTRIES:-

6.4.1 BY TYPE OF UNITS:-

To analysis industries, they are classified in eleven categories, which include all types.

1 Processing and manufacturing of food, drinks etc. other than sugar industry:

This type has got 195 units in all. It includes 63 bakeries, 48 rice mills, 9 cold storage, 15 ice factories, 38 beverages, 16 oil mills.

2 Sugar and Sugar products:

In this category, there are only 7 units, of which one is sugar mill, one is distillery and other 5 are crushers.

3 Textiles:

In Saharanpur there are 214 units out of which 2 are big textile mills and rest are working as small-scale units of hosiery's.

4 Paper and Paper Products:

In these category there are 140 units, one is the famous Star paper mill, which manufactures Star brand writing and printing paper. Three are strawboard manufacturing co.. Their products are boards, envelopes etc.. One is sandpaper industry its products are glass paper, garnet paper, gummed tapes etc.. and rest is a small-scale unit. Their main products are hands made paper, strawboard.

5 Leather and Leather Products:

There are total 168 units in all in this category. Mostly all units are of small scale. And they manufacture shoes, chapels, and leather bags. The number of leather industry is quit high because leather is easily available due the Govt. tenneries, which are three in this region.

6 Chemical and Chemical Products:

In this category there are 132 units. Only 9 units are large-scale units and the rest 123 are of small-scale size. The descriptions of these units are as follows: 15 are of lime, they manufacture lime from lime stone available from Dehradun hills, 5 units are of copper sulphate, 7 units are of soda silicate, 21 of chalk industries, 30 are of other chemicals and the rest are of soap industries.

7 General Engineering (Non metallic Products):

Under this category there are 110 units, out of which 49 are of building construction materials, 10 units are of enameled works, 7 are of cement jali, 25 units are of scientific instruments and rest 17 units are of electric appliances.

8 General Engineering (Metallic Products):

These are 354 units in all out of which 267 units are of machine and iron implements industry, 53 are of agriculture implements. 12 units are of sewing machine, 9 units are of lock industry, and 13 units are of block industries making block for printing purposes.

9 Tobacco Product:

There are only 4 units , out of which one is world famous ITC Ltd.. it produces tobacco for cigarettes and finished cigarettes etc.. and the rest 3 units are of small-scale units.

10 Wood Products:

These industries are 613 in number. Out of them 27 are large-scale units. There are 519 unit of woodcarving, 35 units of wooden chapels 43 units of making wooden furniture, wood sawing and one is globe education co., making globes etc. the number of units under this category is sufficiently large i.e. 60 % of total units. The reason is that timber is easily available here in quality as well as in quality.

11 Miscellaneous:

Under this category there are 499 units out of which 380 are working under the category of service industry, 54 units are of candle making, 17 are of brick kilns, 33 are printing press, 7 are brush industries, 3units are of artificial eye and teeth, 5units are of musical instruments.

6.5.2 CLASSIFICATION BY NUMBER OF WORKERS:

1 FOOD PRODUCTS:

Under this category the total number of workers are 3216 i.e. 8.5 % of the total industrial workers. Out of them 399 are involved in floor mills, 420

in oil mills, 80 in bakeries, 1784 in rice mills, 210 in cold-storage's and ice factories, 323 in beverages.

2 SUGAR AND SUGAR PRODUCTS:

Total number of workers under this category are 1898 i.e. 6.5 % of the total industrial labour. Out of them, 1781 are working in large sugar industry and 117 workers in distillery.

3 TEXTILES:

Total number of workers under this category is 5160 i.e. 10.0 % of total industrial labour. Out of them 3687 are working in L.K.Textile mill, 748 are working in Saharanpur textile mill. 725 workers are employed in hosiery works.

4 PAPER AND PAPER PRODUCTS:

In Paper and Paper products industry the total number of workers are 56843 i.e. 15.02% of total industrial labour out of which, 3182 are employed in Star paper mill, 353 in Straw board mill, 53 in Sand paper mill,. In the remaining 5 large units the total number of workers are only 290, and the remaining workers are engaged in small-scale units.

5 LEATHER AND LEATHER PRODUCTS:

1400 workers are engaged in this industry they are only 3.7% of the total industrial labour. As all the industries are running on small scale so all the workers are engaged in the small-scale units.

6 CHEMICAL AND CHEMICAL PRODUCTS:

In this 9% of the total industrial workers i.e. 3406 workers are involved. Out of them 1429 is employed in Lime Industry, 278 in Copper Sulphate industry, 221 in Soda Silicate industry, 241 in Chalk industry, 1237 in Soap industry.

7 GERERAL ENGINEERING (NON-METALLIC):

Total number of workers are 2566 i.e. 6.78% of total industrial labour, out of them 1817 are in Building Construction Material Industry, 229 in Enameled work, 107 in Cement Jali, 176 in Scientific instruments, 237 in Electric appliances.

8 GENERAL ENGINEERING (METALLIC):

In this industry the total number of workers are 3178 i.e. 8.4% of total industrial labour out of them, 2055 are employed in Iron works, 518 are in Agricultural implements, 87 in Lock industry, 279 in Sewing machine industry, 179 in Block making industry.

9 TOBACCO PRODUCTS:

In this industry the total number of workers employed are 2270 i.e. 6.00% of the total industrial labour, out this 1758 are employed in ITC ltd. and the remaining are employed in three small scale units.

10 WOOD BASED INDUSTRIES:

Total number of workers is 7953 i.e. 21.00% of total industrial labour. Out of them 7357 are working in Wood carving industry, 179 in wooden chapel unit. 239 in wooden furniture units, 153 in Wooden Sawing units, 25 in Globe education company.

11 MISCELLANEOUS:

The total number of miscellaneous industries are 499 in these industries the total number of workers are 2649 i.e. 7.00% of the total industrial workers. Out of them 1009 are in Service industry, 89 in Candle making, 547 in Brick kilns, 724 in Printing, 184 in Brush industry, 32 are in Artificial eye units, 64 in Musical instruments making.

6.5.3 CLASSIFICATION BY PRODUCTION:

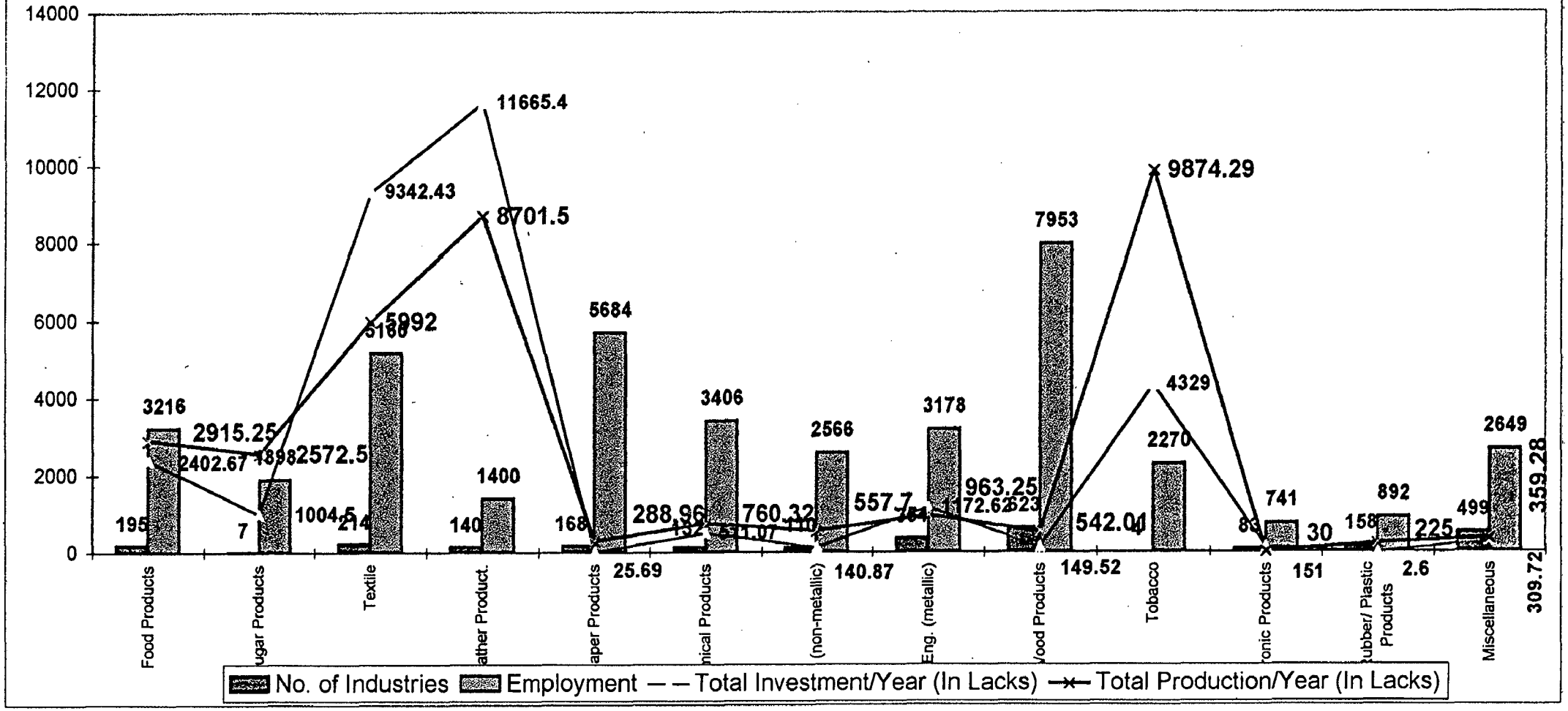
CLASSIFICATION BY PRODUCTION TABLE NO. 6.1

S.NO.	TYPES OF INDUSTRIES	NO OF UNITS	TOTAL PROD/YEAR (IN LACKS)	% OF TOTAL PRODUCTION
1	FOOD PRODUCTS	195	2915.25	8.75 %
2	SUGAR PRODUCTS	07	2572.50	7.72%
3	TEXTILE	214	5992.00	17.88%
4	PAPER PRODUCTS	140	8701.50	26.12%
5	LEATHER PRODUCTS	168	288.96	0.86%
6	CHEMICAL PRODS.	132	760.32	2.28%
7	ENG (Non-metallic)	110	557.70	1.67%
8	Eng. (Metallic)	354	963.25	2.69%
9	WOOD PRODUCTS	623	542.01	0.87%
10	TOBACCO	04	9874.29	29.44%
11	ELECTRONIC PROD.	83	30.00	0.09%
12	RUBBER/PLASTIC PRODUCTS	158	225.00	0.57%
13	MISCELANIOUS	499	359.28	1.07%
	TOTAL	**2687**	**33557.06**	**100%**

By analyzing the industries according to their production:

- The maximum production is in tobacco unit, i.e 29.44% of the total production of all the industries.
- While the production of paper industry is 26.12% of the total production as a result it holds the second position.

TYPE OF INDUSTRIES , THEIR INVESTMENT , PRODUCTION AND EMPLOYMENT



- While the textile industry has the production of only 17.88% .
- While the wood carving industry, rubber & plastic industry, electronic and leather industries are having least production due to their set up as small-scale industry.
- The food and sugar industries have a production of 8.75 % and 7.72 % respectively.

Out of total unit i.e.. 2687 the total production is 33557.06 lakhs per year

6.5.4 CLASSIFICATION BY INVESTMENT:

. By analyzing the industries according to their production:

- The maximum production is in tobacco unit, i.e 29.44% of the total production of all the industries.
- While the production of paper industry is 26.12% of the total production as a result it holds the second position.
- While the textile industry has the production of only 17.88% .
- While the wood carving industry, rubber & plastic industry, electronic and leather industries are having least production due to their set up as small-scale industry.
- The food and sugar industries have a production of 8.75 % and 7.72 % respectively.
- Out of total unit i.e.. 2687 the total production is 33557.06 lakhs per year

It is clear from the analysis of the table that:

- The total investment in the whole industrial development of Saharanpur City is Rs. 31,207.09 lacks.
- Out of the total investment the maximum investment is in Paper and Paper products i.e. Rs. 11,665.40 lacks which is 37.49% of the total investment.

CLASSIFICATION BY INVESTMENT TABLE NO. 6.2

SN O	TYPES OF INDUSTRIES	NO OF UNITS	TOTAL INVESTMENT (IN LACKS)	% age OF TOTAL INVESTMENT
1	FOOD PRODUCTS	195	2402.67	7.72 %
2	SUGAR PRODUCTS	07	1004.50	3.22%
3	TEXTILE	214	9342.43	30.02%
4	PAPER PRODUCTS	140	11665.40	37.49%
5	LEATHER RODUCTS	168	25.69	0.08%
6	CHEMICAL PRODS.	132	511.07	1.64%
7	ENG (Non-metallic)	110	140.87	0.45%
8	Eng. (Metallic)	354	1172.62	3.76%
9	WOOD PRODUCTS	623	149.52	0.24%
10	TOBACCO	04	4329.00	13.91%
11	ELECTRONIC PROD.	83	151.00	0.48%
12	RUBBER/PLASTIC	158	2.60	0.02%
13	MISCELANIOUS	499	309.72	0.99%
	TOTAL	**2687**	**31207.09**	**100%**

Source: D.I.C. Saharanpur.

- Textile hold the second position with a total investment of Rs. 9,342.43 lacks i.e. 30.02% of the total investment.
- Food product has an investment of Rs.2402.67 lacks. I.e. 7.72% of the total investment.
- The investment in tobacco products is of Rs. 4329.00 lacks i.e. 13.91% of the total investment.
- While the Sugar products, Engg. (Metallic) & Chemical products has an investment of Rs. 1,004.50 i.e 3.22%, 1,172.62 i.e. 3.76% and 511.07 i.e. 1.64% of the total investment.

6.1.1 CLASSIFICATION BY PHYSICAL CHARACTERSTICS: -

TABLE NO. 6.3

TYPES OF INDUSTRIES	NO OF UNIT	FUMES	LIQUID WASTE	SPARKE	SMOKE	ODOUR	NOISE
FOOD PRODUCTS	195	-	35	-	40	24	18
SUGAR PRODUCTS	07	7	7	-	7	7	5
TEXTILE	214	-	4	-	6	-	9
PAPER PRODUCTS	140	-	28	-	28	28	11
LEATHER PRODUCTS	168	-	-	-	-	68	4
CHEMICAL	132	32	10	-	22	47	-
ENG (Non-metallic)	110	11	-	-	15	55	-
Eng. (Metallic)	354	-	-	58	64	-	354
WOOD PRODUCTS	623	-	-	-	-	-	623
TOBACCO	04	-	-	-	2	-	4
ELECTRONI-C PRODS.	83	-	-	-	-	-	-
RUBBER/ PLASTIC PRODUCTS	158	4	-	-	10	42	-
MISCELANI-OUS	499	9	50	2	67	14	169

Source: - District Industry Office, Saharanpur

Atmospheric pollution is one of the enemies of city dweller's health. Its presence infects lungs and obstructing the health-gaining ray of sun. But besides the atmospheric pollution an industrial pollution an industrial city can have in addition, multiple factors which may be determined for the healthy growth of citizens.

These factors like smoke fumes, dust, obnoxious odour, noise, glare, vibration and the nature of the liquid waste and effluents have been tabulated for all the 2687 industries. From the table 6.3 we find out that out of the total units, Maximum are

creating Noise because of the wood industry the total number of noise creating industries are 1197. Smoke is giving by 194 units. 285 of them are odour giving, Spark is produced by 60 units, 63 units are producing fumes, and 134 units are producing liquid waste.

6.5.6 CLASSIFICATION BY UTILITIES AND SERVICES:-

TABLE NO. 6.4

S. NO	TYPES OF INDUSTRIES	NO OF UNITS	WATER	ELECT-RICITY	TELE-PHONE	SEWER
1	FOOD PRODUCTS	195	162	195	153	97
2	SUGAR PRODUCTS	07	07	07	05	03
3	TEXTILE	214	204	214	105	183
4	PAPER PRODUCTS	140	120	140	121	107
5	LEATHER PRODUCTS	168	10	127	59	96
6	CHEMICAL PRODS.	132	128	132	98	29
7	ENG (Non-metallic)	110	65	110	82	62
8	Eng. (Metallic)	354	273	354	319	87
9	WOOD PRODUCTS	623	0	597	426	00
10	TOBACCO	04	03	04	03	02
11	ELECTRONIC PROD.	83	00	83	61	49
12	RUBBER/ PLASTIC PRODUCTS	158	00	47	35	51
13	MISCELANI-OUS	499	295	337	297	164
	TOTAL	**2687**	**1267**	**2347**	**1764**	**930**

Utilities and Services is divided into two category:

- PRIMARY
- SECONDARY

PRIMARY are Water and Electricity.

SECONDARY are Telephone and Sewer.

Out of the total units only 47.15% are having Water supply connection, 87.35% are having Electricity connection, Telephone facility is enjoyed by only 65.64% of the units out of the total but the Sewer connection is only in 34.61% of the units.

6.6 FINDINGS: -

- As timber is easily available in Saharanpur both in quality and quantity so the wood products units are maximum i.e. 23.18 % of the total units.
- Out of the total wood products units 84.66 % of the units are of wood carving products.
- There are only three units of the tabacco products, but they are giving employment to 6 % of the workers out of the total working force.
- Only 7 units giving 6.5 % of total employment in Sugar units.
- Total industrial development is mainly based on:
    1) Agro based industries, 420 i.e. 15.63% of the total units, employ 31.00% of the total working force.
    2) Forest based industries 763 i.e. 28.4 % of the total units, employ 36.02 % of the total working force.
- Maximum number of worker i.e. 21.00 % of the total working force is working in wood product units.
- Leather, Chemical, General Engg.(WM) etc, are having minimum number of workers.
- Total working force of Agro based and forest based workers is 44.03 % of total industrial workers in Saharanpur, hence these are important.
- Maximum number of industries is noise creating i.e 1197 and all of them are located in the core of the city.

- Odour creating and smoke producing are quit large in number i.e.285 and 261 respectively.
- Fumes and liquid waste creating industries are 65 and 134 respectively.

6.7 PRODUCTION AND RAW MATERIAL ANALYSIS:-

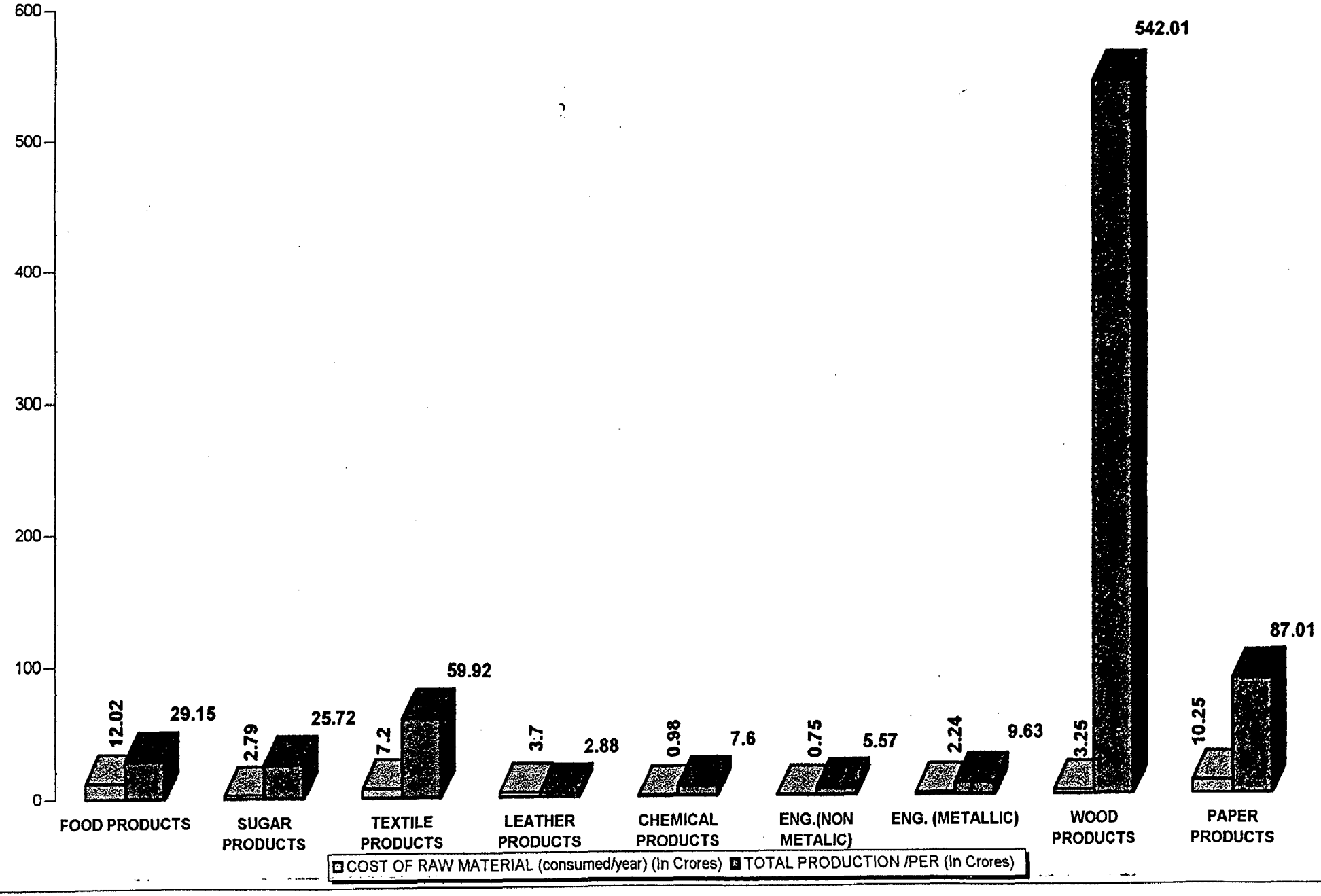
1) In Food Products the total cost of raw materials consumed/year is Rs 12.02 crore. Out of which 81% are locally available and 19% is brought from neighboring districts. Total production in all the food products units/year is equal to Rs. 2915.25 lakhs/year out of which local sale is 80 % and outside sale is 15%, outside consuming centers are neighboring cities and States.

2) In Sugar Products the total cost of raw materials consumed/year is Rs 2.79 crore Out of which 95% is locally available and 5% is brought from neighboring districts and states. Total production in all the sugar products units/year is equal to Rs. 2572.50 lakhs/year out of which local sale is 97 % and outside sale is only 3%, outside consuming centers are neighboring cities and States.

3) In Textile Products the total production per year is Rs. 5992.00 lakhs/year. The local sale is 30% of the total production and the rest i.e. 70% in the areas of Rajasthan, Punjab, Delhi, and Haryana. Total amount spent on raw material is Rs. 7.2 crore/year. Out of which only 10% locally available and 90% comes from other states.

4) In Leather Products the total cost of raw materials consumed/year is Rs 3.70 crore. Out of which 65% are locally available and 35% is brought from neighboring districts and states. Total production in all the leather products units/year is equal to Rs. 288.96 lakhs/year out of which local sale is 92 % and outside sale is only 8%, outside consuming centers are neighboring cities and States.

CONSUMPTION OF RAW MATERIAL AND PRODUCTION PER YEAR



CONSUMPTION OF RAW MATERIAL AND PRODUCTION PER YEAR

TABLE NO. 6.5

TYPE OF PRODUCTION	RAW MATERIAL AVAILABLE IN % age		TOTALCOST OF RAW MATERIAL CONSUMED/YEAR	TOTAL PRODUCTION (LAKHS/YEAR)	TOTAL SALE IN %age	
	LOCAL	OUTSIDE			LOCAL	EXPORT
FOOD PRODS.	81%	19%	12.02 CRORES	2915.25	80%	20%
SUGAR PROD	95%	5%	2.79 CRORES	2572.50	97%	3%
TEXTILE	10%	90%	7.2 CRORES	5992.00	30%	70%
LEATHER PRODS.	65%	35%	3.7 CRORES	288.96	92%	8%
CHEMICALS	26%	74%	98.7 LAKHS	760.32	76%	24%
ENG(NON-METALLIC)	66%	34%	75 LAKHS	557.70	73%	27%
ENG(METALLIC)	80%	20%	224 LAKHS	963.25	55%	45%
WOOD PRODS	12%	88%	3.25 CRORES	542.01 crore	15%	85%
PAPER PRODS.	75%	25%	10.29 CRORES	8701.50	35%	65%

Source: - District Industry office, Saharanpur & Industrial Association of Saharanpur.

5) In Chemical Products the total production per year is Rs. 760.32 lakhs/year. Local sale is 76% of the total production and the rest i.e. 24% in the areas of Rajasthan, Punjab, Delhi, and Haryana. Total amount spent on raw material is Rs. 98.7

lakhs/year. Out of which only 26% locally available and 74% comes from Haridwar, Dehradun and other states.

6) In Eng. (non-metallic) Products the total cost of raw materials consumed/year is Rs 75 lakhs. Out of which 66% are locally available and 34% is brought from neighboring states Delhi and Mumbai. Total production in all the Eng. (non metallic) products units/year is equal to Rs. 557.70 lakhs/year out of which local sale is 73 % and outside sale is only 27%, outside consuming centers are neighboring cities and States.

7) In Eng. (metallic) Products the total production per year is Rs. 963.25 lakhs/year. Local sale is 55% of the total production and the rest i.e. 45% in the areas of Rajasthan, Punjab, Delhi, and Haryana. Total amount spent on raw material is Rs. 224 lakhs/year. Out of which only 80% locally available and 20% comes from Delhi and Kanpur.

8) In Wood Products the total cost of raw materials consumed/year is Rs 3.25 crore. Out of which 12% are locally available and 88% is brought from neighboring Dehradun, Nanital, Almora, and Bareilly and from some foreign countries. Total production in all the wood products units/year is equal to Rs. 542.01 crore/year out of which local sale is 15 % and outside sale is only 85%, outside consuming centers are rest part of India and foreign countries.

9) In Paper Products the total production per year is Rs. 8701.50 lakhs/year. Local sale is 35% of the total production and the rest i.e. 65% in the rest part of India. Total amount spent on raw material is Rs. 10.29 crore/year. Out of which only 35% locally available and 65% comes from Dehradun and Bareilly.

CHAPTER 7

QUALITY OF ENVIRONMENT IN CITY

7.1 INTRODUCTION:

In urban areas there is more population density, shortage of houses, congestion, more automobiles, shortage of parks. Playgrounds, and open space. Problem of stray cattle on urban roads and areas, air, water, and noise pollution, traffic hazards, industries also creates slumps and squatter settlements. Besides this, there is more contaminant dusts, more cloudiness, fog in winter, high temperature, less relative humidity, less radiation & less wind speed.

The urban ecosystem is in a crisis which will increase in geometrical progression as urbanisation accelerates and as the availability of financial resources for urban development declines". This was the warning contained in the book 'Planning The Indian City' by Mahesh N. Buch. The warning still holds good, considering the pace and the manner of urban growth and the deterioration of its management.

Over crowding, pollution diseases and civic amenities stretched to breaking point, the classic urban nightmare is already starting in the face millions of people living in Indian cities. Although at national level the urban growth rate has declined form 46% in 1971-81 to 36% in 1981-91, there has been a doubling in the number of metropolitan cities with a population of over one million form 12 in 1981 to 23 in 1991. This population alone accounts for one third of the total urban population.

With the spatial spread of cities, environmental degradation sets in. In the first pace a city grows to cover a large area however as the availability of land is limited an intense competition develops for the limited space and consequence is that urban agglomerations develop haphazardly and face greater civic problems. However the most

common growth pattern is the sprawl that converts prime agricultural and pastoral land to urban uses.

Second, there is an impact on the surrounding region by the growing demand for energy, food and materials. Rapid urban growth leads to accelerated and exploitative with drawl of the resources base. Large areas around cities are taken up for further development and forest is destroyed to meet the needs of the people, thus leaving the soil in an incurable condition.

Third, the metabolism of the city increases resulting in a higher generation of metabolic by products such as wastewater, air pollution, noise etc. Much of the pollution of the river can be traced to the discharge of untreated industrial waste. Gases from industrial units and vehicles affect air, the weather undergoes a distinct change as the density of population increases.

Though the implication of such a rapid growth of urban population have from time to time been high lighted in general and sought to be tackled; not enough attention has been focused on the environmental aspect of this demographic trend. The planning of the town should be such as to integrate the existing habitations within the town framework, causing a change only in the economic livelihood which retaining the social and cultural patterns and improving the physical and living environments. In other words it thrusts on minimising if not completely removing the adverse effects on the environment of rapid growth in urban population and the haphazard development of urban centres.

The ecology of Saharanpur City is acute. One can find haphazard and chaotic growth of city misuse of land slums, unplanned residential colonies in all parts of city. Industries are established on political ground without consideration of pollution, it is likely to cause, most of the residential areas are having noise creating industries traffic passes through residential colonies, there is also problem for energy, electric and water

supply, health and hygienic facilities etc. The main environmental problems faced by Saharanpur are described below.

(a) **Water Pollution**

(b) **Air Pollution**

(c) **Noise Pollution**

7.2 QUALITY OF AIR IN CITY:

Gaseous substances are released into the atmosphere with unlimited assimilating capacity, however, air being of vital importance, cannot be exploited to the extremes when it becomes unsafe for use, its capacity to assimilate waste gases is not unlimited. The air that man breathes is polluted by the industrial and automobile emissions, bringing into the atmosphere suspended particulate matter (SPM), Oxides of sulphur (SO_2) and oxides of nitrogen (NOx), carbon monoxide (CO), photo chemical oxidants and hydrocarbons (HC). These pollutants, individually and collectively, have teratogenic and carcinogenic effects and also cause respiratory ailments.

- The Central Pollution Control Board (C.P.C.B) has fixed standards.
- Emission norms for industries based on the carrying capacity of the atmosphere.
- Stringent exhaust emission standards for automobiles; which are values that are not to be equalled or exceeded of various pollutants, so that the quality of air we breathe, is maintained which is the Ambient Air Quality Standard (A.A.Q.S). The A.A.Q.S. is the level of air

Quality necessary with an adequate margin of safety, to protect the public health, vegetation and property, Table 7.1 shows the Ambient Air Quality Status at different places in the city of Saharanpur.

AMBIENT AIR QUALITY STATUS OF SAHARANPUR

TABLE 7.1

(Annual Average - $\mu g/m^3$)

SAMPLING STATION	1999			STANDARD (kg/m^2)		
	SPM	SO2	NOX	SPM	SO2	NOX
Clock Tower	304.12	10.79	9.74	200	80	80
Bus Stand	283.15	7.86	9.07	200	80	80
Purani Mandi	343.49	18.08	17.09	500	120	120
Civil Court	233.98	5.46	8.07	200	80	80
Kamdehnu Industrial Area	368.01	17.44	16.06	500	120	120

Source: Survey.

7.2.1 Vehicular Pollution:

Traffic is derived commodity; it is generated/attracted because of some kind of activity or other. Traffic volume, its nature, composition and all other related characteristics are intimately connected with the growth pattern of the city.

NUMBER OF REGISTERED VEHICLE AND POPULATION IN 1981 &1991

TABLE 7.2

YEAR	POPULATION	NO.OF REGISTERD VEHICLES
1981	2,95,355	38,378
1991	3,74,908	1,18142

Source: RTO & Master Plan Saharanpur

The population growth trend has been phenomenal during the last decade 1981-91; as compared to the previous decade's ref. Table7.2 and so has been the growth in vehicles. In addition, a large number of vehicles come to the city every day from the adjoining area/towns.

The table 7.3 shows that the growth in the number of two wheelers is quite marked-in 1980-81, out of the total number of registered vehicles about 76.67% were two wheelers, whereas in 1990-91 two wheelers are 83.81% of the total registered vehicles. In the absence of an efficient public transport system, the intermediate public transport modes meet the travel requirement of the people, these modes consists of cycle Rickshwas, Tonga and tempos.

MODE WISE REGISTERED VEHICLE GROWTH IN SAHARANPUR

TABLE 7.3

Year	Two Wheelers	Motor Passenger Vehicles	Goods Vehicles	Cars/ Jeeps	Taxis	Bus	Total
1980-81	29,425	00	4,786	3,839	53	275	**38378**
1981-82	31328	00	4923	3,993	59	326	**40629**
1882-83	36201	00	5237	4409	72	376	**46295**
1983-84	37699	00	5525	4750	103	420	**48567**
1984-85	42255	00	5846	5103	147	574	**53925**
1985-96	49014	00	6180	5795	196	617	**61,802**
1986-87	54037	00	6435	6003	237	685	**67,397**
1987-88	59254	00	6729	6525	308	778	**73,594**
1988-89	66,064	00	6945	6840	377	821	**81,047**
1989-90	82413	02	7096	7486	21	875	**28,293**
1990-91	100,787	06	7604	8294	486	965	**1,18,142**
1991-98	15,4805	170	8,676	19,246	601	1205	**1,84,703**

Source: RTO. Department, Saharanpur

MODE WISE PER CAPITA TRIP RATE

TABLE 7.4

S. No.	MODE OF TRANSPORT	PER CAPITA TRIP RATE
1	WALK	0.26
2	SCOOTER/MOTOR CYCLE	0.19
3	BUS	0.004
4	TEMPOS	0.06
5	CYCLE	0.20
6	CAR	0.06
7	SLOW VEHICLES (CYCLE RICKSHAW, TONGAS)	0.66
8	OTHERS	0.06

Source: Survey.

Amongst the different modes Table 7.4 used for intra city trips, scooters and motorcycles and cycles are found to have the highest contribution i.e. 0.19(19%) and 0.20 (20%) respectively. Tempo is another popular mode of transport and contributes about 0.06 i.e. 6% of passenger mode of transport trips. However walk trips contributes 26% (0.26) towards total trips.

The high intensity and heterogeneity of traffic against in- adequate capacity of the transport system has its manifestations-congestion, increase in waiting time (delays), accidents and pollution. The vehicular pollution load in Saharanpur for the year 1993-94, is particulate (0.6473 tonnes), SO_2 (0.46449 tonnes), Nox (2.04372) tonnes & HC (9.7476 tonnes). But according to Word Health Organisation (W.H.O.) emission factors described are given in table 7.5.

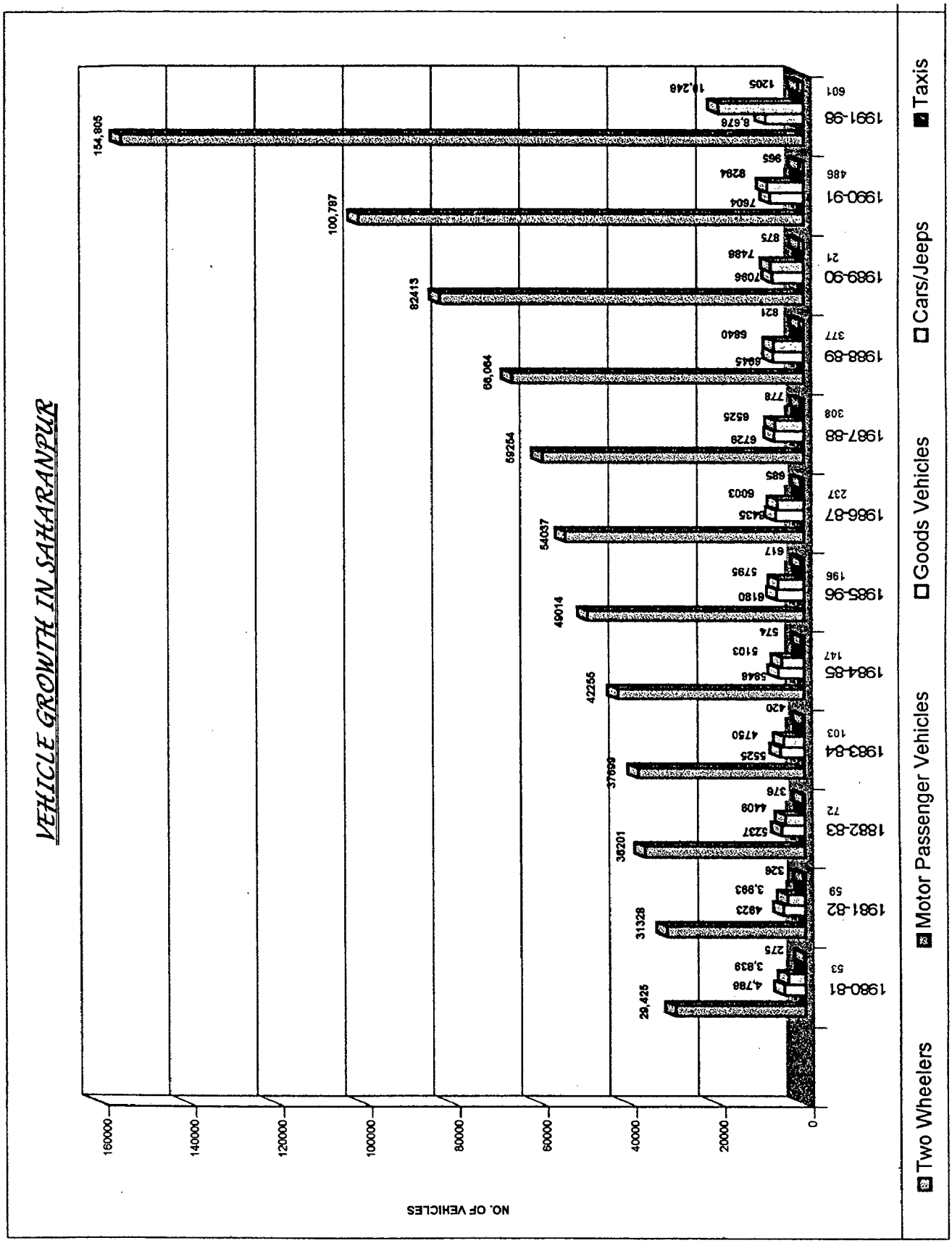
EMMISION FACTOR FOR VEHICLES

TABLE 7.5

TYPE OF VEHICLES	PARTICULA-TES kg/unit	SO_2 kg/unit	Nox kg/unit	HC kg/unit	CO kg/unit
LIGHT DUTY	0.33	0.08	3.20	6.00	40.00
GASLINE					
POWERED					
LIGHT DUTY	0.45	0.39	0.99	0.28	1.10
DIESEL POWERED					
HEAVY DUTY	0.75	1.50	21.00	2.10	12.70
DIESEL POWERED					
MOTOR CYCLE/ SCOOTERS	0.20	0.02	0.07	10.00	17.00

Unit 1000 km

Source: World Health Organisation


VEHICLE GROWTH IN SAHARANPUR
NO. OF VEHICLES
160000
140000
120000
100000
80000
60000
40000
20000
0
1980-81
53
275
4,788
3,839
29,425
1981-82
59
326
4823
3,883
31328
1982-83
72
376
4409
5237
36201
1983-84
103
420
4750
5525
37699
1984-85
147
574
5103
5848
42256
1985-96
196
617
5785
6180
49014
1986-87
237
685
6035
6435
54037
1987-88
308
778
6525
6729
59254
1988-89
377
821
6840
6845
68,064
1989-90
21
875
7486
7096
82413
1990-91
486
965
8294
7604
100,787
1991-98
601
1205
10,246
8,678
134,805
Two Wheelers
Motor Passenger Vehicles
Goods Vehicles
Cars/Jeeps
Taxis

- The total vehicular pollution load generated in the city in 1995-96 was about 64 tonnes/day.
- Petrol driven vehicles contribute about 86.29% of the total vehicular pollution load and rest is contributed by diesel driven vehicles.
- Petrol driven vehicles are major contributors of HC 95.45% and CO 90.76% and contribute 44.9% Particulate.
- Diesel driven vehicles contribute a major share of NOX 86.74% and 55.1% of Particulate, Autorickshaw contributing a major share 47%.
- By visual observation pollution created by vehicles is visible especially in the daytime or in evenings. Some major's roads and their surroundings such as Dehradun Road near clock tower become Smokey and sooty in the evening time and morning peak hours due to exhaust emissions of vehicles specially two-wheelers, auto-rickshaw & buses.

7.2.2 Industrial pollution:

Industries are another major source of air pollution. However, Saharanpur being an administrative centre and able to attract manufacturing actives, on a large scale, is free form the menace caused as a consequence of industrial emissions. Of the few large scale the State Pollution Control Board (S.PC.B.) is being monitoring establishments in the city ITC and Star paper mill. The emissions from these units are within the normal permissible range indicating that these units are being operated and maintained satisfactorily. Detail regarding, which type industry create how much pollution is given in appendix.

7.3 NOISE POLLUTION:

If all the symbols of civilisation from jet planes, vehicles and railway engines to factories, generators, construction, machinery. Televisions, radio sets and public address systems have one thing in common, it is noise. Its measurement is made in terms of relative units of energy or power on a logarithmic decibel (dB) scale.

Normal conversation touches 60 dB. The annoyance level (subjective) is determined by measuring the sound pressure level on the A-weighted network on the sound level meter and the measurements are indicated as dB (A).Exposure to noise levels exceeding 75-dB (A) for more than eight hours daily can impair hearing. Other effects include hypertensions, disturbance in sleep speech interference and stress reaction. On the basis of extensive research into human response and preferences, the World Health Organisation (W.H.O.) has recommended ambient noises level limits for the various areas as follows (Table 7.6).

THE AMBIENT NOISE LEVEL LIMITS (W.H.O) (TABLE 7.6)

AREA	DAY TIME Db,(A)	NIGHT TIME Db (A)
INDUSTRIAL AREA	75	65
COMMERCIAL AREA	65	55
RESIDENTIAL AREA	55	45
SILENCE ZONE	50	45

Source: World Health Organisation

The Ambient noise levels recorded at various places in Saharanpur are above the levels prescribed. A sensitive area like the clock tower, too has noise levels almost 78 dB (Table 7.7) where as the prescribed is 50 dB.

AMBIENT NOISE LEVELS IN SAHARANPUR (TABLE 7.7)

LAND USE CAYTEGORY	AREA	TIME	NOISE LEVEL DB(A)
	Purani Mandi/ Moregunj	DAY TIME NIGHT TIME	51 48.70
RESIDENTIAL			
	Krishanpura/ShardaNagar	DAY TIME NIGHT TIME	62.57 46.80
	Delhi Road Industrial area	DAY TIME NIGHT TIME	76.8 57.45
INDUSTRIAL			
	Dehradun Road Industrial area	DAY TIME NIGHT TIME	79.40 60.30
	Nehru Market	DAY TIME NIGHT TIME	80.05 58.66
COMMERCIAL			
	Ambala Road	DAY TIME NIGHT TIME	77.70 60.80
	Clock tower	DAY TIME NIGHT TIME	78.10 58.50
SENSITIVE AREA /civil court		DAY TIME NIGHT TIME	68.10 58.00

7.4 QUALITY OF WATER:

Reasons for contamination of water are not far to seek. Few settlements near lakes or rivers have systems to treat their wastes. The ability of the water body to clean it-self has been affected because of the sheer quantity of wastes generated by the ever-increasing population. Of the 3119 towns and cities in the country, only 209 have partial and just 8 have full sewage treatment facility. This problem of water pollution is aggravated by the diversity of industrial wastes. This problem becomes complex because of the qualitative differences in pollution according to the industries involved, and due to the non-degra debility of many of the effluents. Though industrial wastes, discharged into water bodies, are just a fourth of the community wastes, the treatment of the polluted water becomes more complex and expensive.

As soon as the river Pav dhoi enters the city, only after a distance of 0.5 km it started polluting as at the entrance there is Dhobi Ghat, due to which the soap; mix with water and at the same place one huge drain fall into it. 10 large drains and rest 13 small, out of 23 fall into the river in a span of 1.5 km i.e. from Jogiyan pull to Dhobi Ghat, total number of drain which fall into the river within the municipal limit are 97 out of which 37 are large and the rest are small. Not so much drains fall in the river Dhamola. It got polluted at the intersection of the Chairagi Nala, and Pav Dhoi river.

- At some place, one can't see the water in the river only he gets the view of floating garbage in the river.
- The other main cause of its pollution is Sabzi Mandi, which is situated on its side as the sellers dump their waste material into it.
- Water pollution is not much cause by the industries in Saharanpur, only some Chemical industries cause this pollution.

INDUSTRIES WHICH CREATE THE POLLUTION IN SAHARANPUR
TABLE NO. 7.8

TYPES OF INDUSTRIES	NO OF UNIT	FUMES	LIQUID WASTE	SPARKE	SMOKE	ODOUR	NOISE
FOOD PRODUCTS	195	-	35	-	40	24	18
SUGAR PRODUCTS	07	7	7	-	7	7	5
TEXTILE	214	-	4	-	6	-	9
PAPER PRODUCTS	140	-	28	-	28	28	11
LEATHER PRODUCTS	168	-	-	-	-	68	4
CHEMICAL	132	32	10	-	22	47	-
ENG (Non-metallic)	110	11	-	-	15	55	-
Eng. (Metallic)	354	-	-	58	64	-	354
WOOD PRODUCTS	623	-	-	-	-	-	623
TOBACCO	04	-	-	-	2	-	4
ELECTRONI-C PRODS.	83	-	-	-	-	-	-
RUBBER/ PLASTIC PRODUCTS	158	4	-	-	10	42	-
MISCELANI-OUS	499	9	50	2	67	14	169
Total	**2687**	**63**	**134**	**60**	**261**	**285**	**1197**

Source :- District Industry Office , Saharanpur

7.4 LAND POLLUTION IN CITY DUE TO WASTES:

In urban areas the land position is too tight, that even to throw the household wastes, a great exercise has to be done in finding out a suitable site for it, in case if it dose not exist. And, if there is no removal of it, from there, then, it may create hell, if not to you, than to your neighbours, near by whom you had it thrown. But even if it is thrown away from mohalla then where is the land for dumping it? Ok, if we

have land but can't afford it lying fir months like that and too in the centre of the cities there by creating pollution.

In Saharanpur the conditions are also similar as described above. In city the land pollution is not caused by the liquid waste of the industries but by the solid waste of the industry and by the household waste. In city there are 58 garbage collection centres (ref. Fig.7.1). Some of them are quit big and the garbage is removed from these centres with the help of trucks, rollers and by hand driven vehicles. In Saharanpur there are 4-machine roller, 1 JUC, 6 trucks and hand driven vehicle are not unknown to the municipality means they have no record of them. Garbage is collected daily from these centres but from some centres garbage is collected twice in a day. For dumping this garbage there are 4 sites, which are outside the municipal limit (ref. Fig.7.1) but inspite of all these sites, trucks and trolley disposed the garbage by the side of Janta road, Dehradun road, the total trip of trucks from these centre to the city are 47 in a day. Table 7.8 gives the detail regarding what type of industries in Saharanpur create what type of pollution.

7.5 FINDINGS:

- The total vehicular pollution load generated in the city in 1998-99 was about 64 tonnes/day.
- Petrol driven vehicles contribute about 86.29% of the total vehicular pollution load and rest is contributed by diesel driven vehicles.
- Petrol driven vehicles are major contributors of HC 95.45% and CO 90.76% and contribute 44.9% Particulate.
- Diesel driven vehicles contribute a major share of NOX 86.74% and 55.1% of Particulate, Autorickshaw contributing a major share 47%.
- By visual observation pollution created by vehicles is visible especially in the daytime or in evenings. Some major's roads and their surroundings such as Dehradun Road near clock tower become Smokey and sooty in the evening time and morning peak hours due to exhaust emissions of vehicles specially two-wheelers and auto-rickshaw.

- In city the land pollution is not caused by the liquid waste of the industries but by the solid waste of the industry and by the household waste.
- At some place, one can't see the water in the river only he gets the view of floating garbage in the river.
- The other main cause of its pollution is Sabzi Mandi, which is situated on its side as the sellers dump their waste material into it.
- Water pollution is not much cause by the industries in Saharanpur, only some Chemical industries cause this pollution.
- For noise pollution the sensitive zone is civil court area where the noise level is high both in the day as well as in the night.
- The vehicular pollution load in Saharanpur for the year 1993-94, is particulate (0.6473 tonnes), SO_2 (0.46449 tonnes), Nox (2.04372) tonnes & HC (9.7476 tonnes).
- Out of the total units 44.54% of the units create noise pollution in the city.
- Only 4.98% of the units discharge liquid waste into Pav Dhoi and Dhamola river.
- Air pollution is cause by only 9.71% of the industries.
- While fumes, sparks and odour are emitted by 2.34%, 2.23% and 10.60% of the industries.
- In Saharanpur the maximum pollution is only due to noise creating industries.

CHAPTER 8

IMPACT OF INDUSTRIAL GROWTH ON CITY

8.1 INTRODUCTION:

As the main causes of industrialization are the availability of resources, market facilities, infrastructure, financial help, and Govt. policy and transport linkages. As a result immigration and vast population concentration which leads to increase in demand for housing, space for industries, shopping, education, health facilities, infrastructure. Due to this entire factor following are the main impact of industries on the urban structure.

- Development of slums and scattered settlements.
- Shortage of industrial township.
- Industrial growth beyond proposed location in the master plan.
- Increase in railways and roadways linkages.
- Congestion in commercial areas.
- Demand for skilled and technical people.
- Extra burden on infrastructure facilities.

8.2 IMPACT ON SECTORIAL DISTRIBUTION OF WORKERS:

The analysis of urbanisation have invariably considered 'Occupational structure mobility' of centres to show that the index for urban population is lower than that of rural population in agricultural occupations, as a whole and vice – versa for rural population in non agricultural occupations as a whole.

The perusal of the Table 8.1 shows clearly that except for a mearage 2.5% percent, rest of the working force of the city is involved in secondary and tertiary occupations.

The trend of participation rates of Saharanpur town group since 1971 is presented in Table 8.2.

TRENDS OF PARTICIPATION: SAHARANPUR TABLE NO. 8.2

Decade	Population	Workers	Participation rate
1971	225396	61117	27.11
1981	294391	79463	26.99
1981	352699	102283	29.00%
2001	6,00,000	1,86,000	31.00%

Source : Master Plan.

It may be observed form the Table 6.2 that participation rates in Saharanpur have gradually declined during 1971-81 form 27.11% to 26.99%. It is observed from the above table that proportion of working force in the primary sector has decreased since 1971 i.e. from 3.87% to 2.5% in 1991.

The secondary sector has shown continuously rising trend except during the last decade i.e. form 33.96% to 37% in 1991 area of Municipality. The secondary sector wills forms the most important economic activity of the city. According to 1991 census, out of total working force of 1,02,283, 2557 employed in primary sector and remaining were under secondary and tertiary occupation.

Thus, we can conclude that city speaks of dynamism that the city seem to be gaining economically, due to industrialisation and there has been a tendency of shifting economic activities from categories of primary sector to secondary sector especially for manufacturing activity, and to some extent to tertiary sector, Due to the impact of industrialisation, in initial stages, economic activities shifted from primary sector to

secondary some industrialisation gives rise to trade and commerce activity's well as transportation the economic activities starts shifting form secondary to tertiary sector upto a certain extent. Thus, this clearly shows the city's future as industrial commercial center.

DISTRIBUTION OF POPULATION ACCORDING TO OCCUPATION (1971-1991) TABLES NO 8.1

TYPE OF OCCUPATION	*1971*		*1981*		*1991*	
	NO. OF LABOUR	%age	NO.OF LABOUR	%age	NO.OF LABOUR	%age
PRIMARY SECTOR	***2,364***	***3.87%***	***2,543***	***3.20%***	***2,557***	***2.50%***
FARMERS	867	1.43%	1,096	1.39%	1,023	1.00%
FARMER HELPER	895	1.46%	0,659	0.82%	716	0.76%
POTTARY,FOREST	602	0.98%	0788	0.99%	0818	0.80%
SECONDARY SECTOR	***20,754***	***33.96%***	***28,720***	***36.14%***	***37,845***	***37.00%***
HOME INDUSTRY	2,749	4.50%	4,287	5.39%	6,137	6.00%
MANUFACTURING	16,403	26.84%	22,250	28.00%	28,639	28.00%
CONSTRUCTION	1,602	2.64%	2,183	2.75%	3,069	3.00%
TERSHARY SECTOR	***37,999***	***6.17%***	***48,200***	***60.66%***	***61,881***	***60.50%***
TRADE	13,844	22.65%	18,275	23.00%	23,525	23.00%
TRANSPORT	10,469	17.12%	13,905	17.50%	17,899	17.50%
OTHER SERVICES	13,690	22.49%	16,020	20.16%	20,457	20.00%
TOTAL LABOUR	***61,111***	***100%***	***79,463***	***100%***	***1,02,283***	***100%***

Source : Master Plan

DISTRIBUTION OF WORKERS IN DIFFERNT
SECONDARY SECTOR
Home Industry
Manufacturing Industry
Construction Industry
7.42%
30.03%
2.50%
6.00%
28.00%
3.00%
5.39%
28.00%
4.50%
26.84%
2.64%
1997
1991
1981
1971
YEARS
0.00%
5.00%
10.00%
15.00%
20.00%
25.00%
30.00%
35.00%
40.00%
45.00%
PERCENTAGE OF WORKERS

8.3 IMPACT ON RESIDENTIAL AND COMMERCIAL DEVELOPMENT:

Expansion of urban built up area and the changing use of land are among the most dynamic spatial processes of urban growth. Conversion of agricultural land to urban uses is a continuous phenomena whose rate is stimulated due to the centrifugal forces of the city and its influence on the region. The factors like accessibility nature of the relief, distance forms the city center, increased transport facility; inefficient control and lack of co-ordination among the development bodies have stimulated the conversion of agricultural land into urban uses.

The impact of industrialisation on the Saharanpur City is highly reflected through the dynamic of landuses. But after independence city's urban pattern are largely influenced by the industrial growth in city and the important role played by development agencies for the urban development of Saharanpur.

Residential land use constitutes 48.02% i.e. (782.54 Hectare) developed land and the maximum land comes under this use. Due to industrialisation and availability of employment opportunities, people from adjoining area starts migrating to the city as seen from population trends. With the increase in population residential area starts coming up with the growth of industries and thus compelling people to settle in the fringe areas and city starts growing upto various directions. But the two most important areas that developed due to industries are Dehradun Road and Delhi Road where people tend to settle because of nearness to the their centers.

The existing land use pattern of Saharanpur reveals a mixed type of land predominantly industrial in the center of city. A comparatively lesser intensity of mixed landuse is usable in the east, Southwest quarter of the fringe. The general landuse pattern is dominated by various agricultural and rural activities, as it forms more than two thirds of the total area of the fringe.

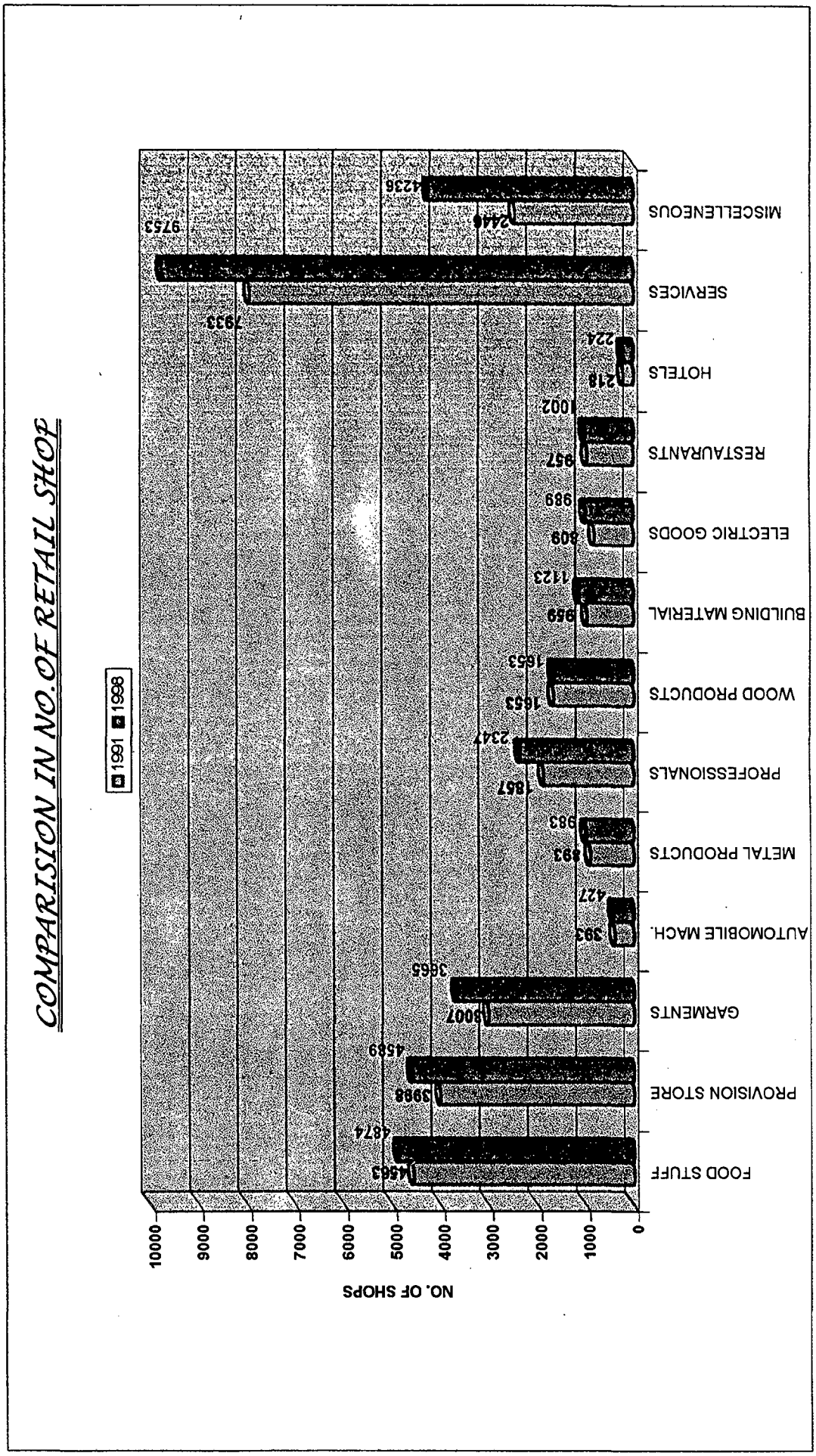
The built up area (including residential areas, and industries etc.) increased form 11.2 percent (1993-94) to 12.9% (1994-95). Several areas along the main roads radiating

from the city were taken over by these non-agricultural uses during these years. The expansion of settlement sites and the increases in the number of industrial units have been the sole factors in the extension of the built up area in these areas. The degree of landuse changes is not the same in all areas. The Southwest area has multiple uses mainly due to the fact that these areas has better transport linkages and provides better land for future expansion. The core parts of the city present a different character. This area particularly Purani Mandi faces, the problem of inundation, therefore, the built up area could not extend as much as in this sector as in the south west area.

Area under commercial use in Saharanpur is 50.75hectare i.e. 3.11% of the developed area. It is very less percentage for a commercial area in industrially developed city. It is because of small frontage of shops. These commercial areas also developed with the growth of Industries. It is also a need-based development. Most of commercial areas are in the older part of city. These are along the roads of narrow width. These areas have no parking area and public right of way is encroached by shopkeepers. It results in a very unsmooth flow of traffic.

COMPARISION IN NUMBERS OF RETAIL SHOPS (TABLE 8.3)

TYPE OF SHOPS	NO. OF SHOPS IN 1998		NO. OF SHOPS IN 1991	
FOOD STUFF	4874	13.58%	4563	15.33%
PROVISION STORE	4589	12.79%	3998	13.43%
GARMENTS	3665	10.21%	3007	10.20%
AUTOMOBILE MACH.	0427	1.19%	0393	01.32%
METAL PRODUCTS	0983	2.74%	0893	03.10%
PROFESSIONALS	2347	6.54%	1857	06.24%
WOOD PRODUCTS	1653	4.60%	1653	05.55%
BUILDING MATERIAL	1123	3.13%	0959	03.22%
ELECTRIC GOODS	0989	2.75%	0809	02.82%
RESTAURANTS	1002	2.79%	0957	03.21%
HOTELS	0224	0.68%	0218	00.73%
SERVICES	9753	27.19%	7933	26.67%
MISCELLENEOUS	4236	11.81%	2446	08.21%
TOTAL	**35865**	**100%**	**29886**	**100%**


COMPARISION IN NO.OF RETAIL SHOP
1991
1998
NO. OF SHOPS
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
FOOD STUFF
4563
4874
PROVISION STORE
3988
4589
GARMENTS
3007
3665
AUTOMOBILE MACH.
392
427
METAL PRODUCTS
893
983
PROFESSIONALS
857
2347
WOOD PRODUCTS
1653
1653
BUILDING MATERIAL
959
1123
ELECTRIC GOODS
809
989
RESTAURANTS
957
1002
HOTELS
218
224
SERVICES
7933
9753
MISCELLENEOUS
2446
4236

Industrialisation increases the land prices too much compelling people to develop residential area at fringes of the city and commercial area's are developing in the old part of the city means change in the landuse pattern. Thus the city keep on growing and becoming congested day by day. Now most of residential area especially in old part of city become very congested, areas as Purani mandi, where most of residences do not have any proper light and ventilation. As due to industries the commercial activity increases, the below table 8.3 and 8.4 shows the increasement in the number of shops within the time period of only 7 years.

COMPARISION IN NUMBER OF WHOLESALE SHOPS (TABLE NO. 8.4)

S.NO.	TYPE OF SHOP	NO. OF SHOPS IN 1998		NO. OF SHOPS IN 1991	
1	FOOD GRAINS	350	24.96%	319	26.58%
2	RICE	96	6.84%	93	07.75%
3	SUGGAR JAGGARY	108	7.74%	108	09.00%
4	FRUITS	68	4.85%	48	04.00%
5	VEGETABLES	98	6.99%	87	07.25%
6	GARMENTS	297	21.21%	167	13.51%
7	WOOD PRODUCTS	315	22.46%	315	26.25%
8	TABBACO	70	4.92%	67	05.58%
9	**TOTAL**	**1402**	**100%**	**1200**	**100.00%**

Source: - Saharanpur Municipality

8.4 IMPACT ON LAND VALUES:

With the advent of rapid industrialisation and growth of population the vacant land is getting scarce day by day. The land values are soaring high every where in urban areas. The land values differ due to various reasons. Almost every where different kind of land uses are associated with varying land values which may be

related to the types of operations taking place upon the property but also may reflect factors of land ownership.

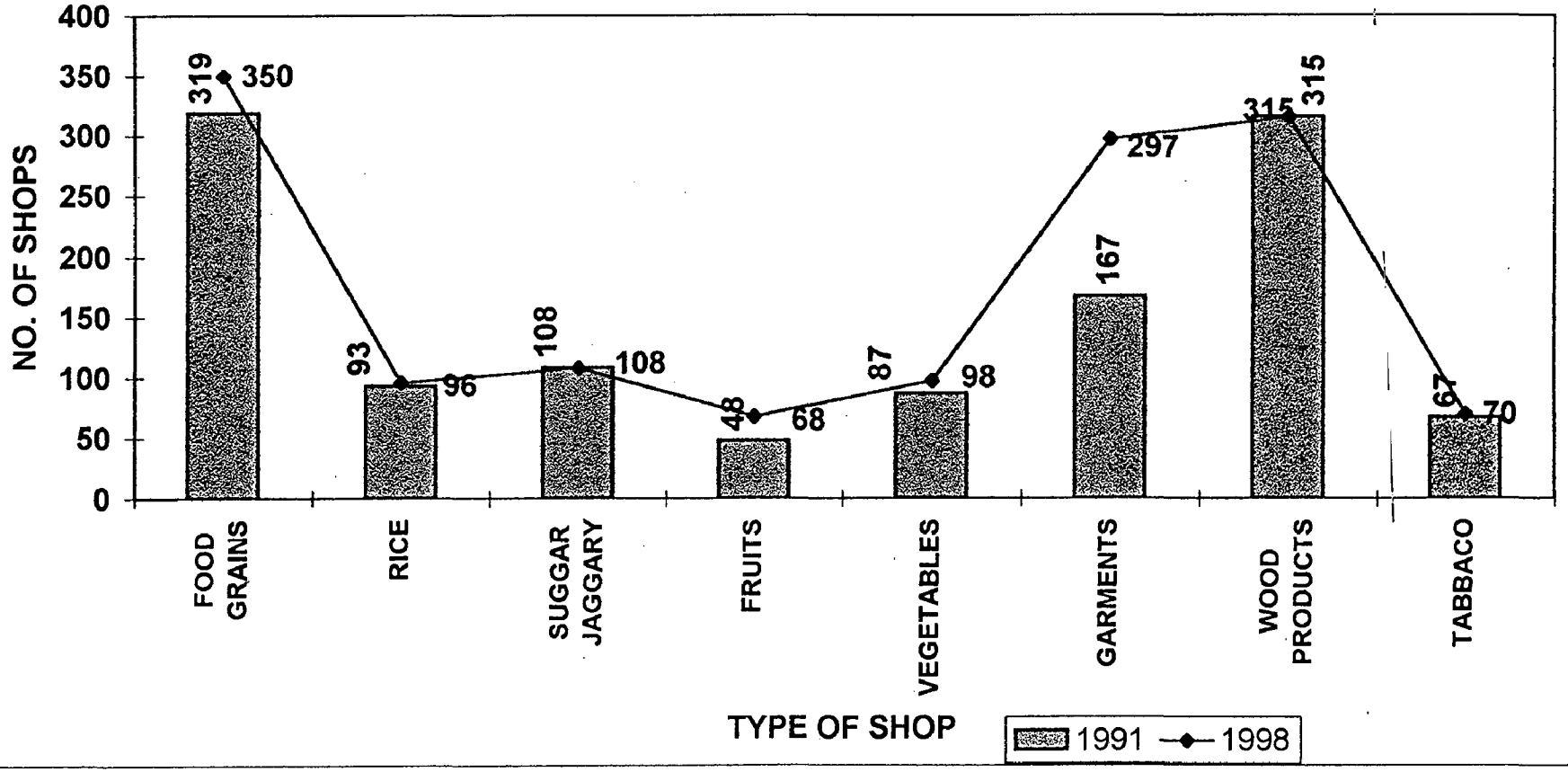
The District Magistrate's office fixes the land values of different areas from time to time, which indicates the rate at which the sale or purchase of land at any particular area shall take place. However, these rates don't reflect rates, but they indicate the minimum value at which the land at any particular area is sold.

The land values in Saharanpur ranges from Rs.5000/m^2 to Rs. 300/m^2 in municipal limits. Outside municipal limits, the value of agricultural land is Rs. 18,000 to Rs. 30,000/Bigha. To study the trend of land values, we divide it into five categories.

1.	Class I	Rs. 3000/m^2	Rs. 5000/m^2
2.	Class II	Rs. 2500/m^2	Rs. 4500/m^2
3.	Class III	Rs. 1200/m^2	Rs. 3000/m^2
4.	Class IV	Rs. 2000/m^2	Rs. 3500/m^2
5.	Class V	Rs. 300/m^2	Rs.1000/m^2

The land having the values between Rs.3000 to Rs.5000/m^2 is from Ghantaghar Chowk to Nehru Market. It is because this area is the main commercial area of the city. Class II land also lies in the heart of the city. The covered under this class are Ghantaghar to Satyug Ashram, Ghantaghar to Head post office, Ghantaghar to railway station, Ghantaghar to Court, Lohani Sarai, Nakhasa, Naia Bazaar, Ghantaghar to Kalpana Talkies. The value decreases as the distance from the road increases. Class III land is in the old part of city. This covers the area as court to bridge Dhamola, Pansari Bazaar, Deenanath, Meerkot, and Sarafa Bazaar. These areas are mostly commercial one. Class IV cover the area's of residential colony like Mission compound, Gill colony, Chander Nagar, Rajender Nagar, Ahemad Bagh, Kishor Bagh, Partap Nagar to Rani Bazaar, Raivala, Halwi Hatta, P.S. Kutubsher to J. B. School, Gol Khoti, Kutubsher to Railway Station, Gurudara Road, Sughash Nagar, Patel Nagar, Hussainabad, Cardboard Mill, Satyug Ashram to Dehradun Crossing. All these areas are mostly residential areas. Class

COMPARISION IN NO. OF WHOLESALE SHOPS



V land covers the other area of the city. In the outskirts of city, landvalue is Rs.18, 000/Bigha to 30,000/Bigha. On the East Side of city, the defence area exists on one side of Dehradun road.

In Saharanpur due to unplanned industrialisation in the core part of city the avability of land is getting scare and scare as a result there is a tremendous increase in land value especially in class IV which include mostly residential area's table 8.5 show the increase in landvalue from 1991.

COMPARISION IN LAND VALUE TABLE 8.5

CATEGORY	1998		1991	
Class I	Rs. 3000/m^2	Rs. 5000/m^2	Rs.1500/m^2	Rs. 2500/m^2
Class II	Rs. 2500/m^2	Rs. 4500/m^2	Rs. 1000/m^2	Rs. 2000/m^2
Class III	Rs. 1200/m^2	Rs. 3000/m^2	Rs. 600/m^2	Rs. 1500/m^2
Class IV	Rs. 2000/m^2	Rs. 3500/m^2	Rs. 500/m^2	Rs. 1000/m^2
Class V	Rs. 300/m^2	Rs.1000/m^2	Rs. 100/m^2	Rs. 500/m^2

8.5 IMPACT ON TRANSPORTATION:

Industrial developments have created the pressure on existing transportation net work of the city. In Saharanpur City, the total area under transport and major roads works out to be 178.89 hectares, forming 17.50% percent of developed land. The absence of proper channelization of traffic, incorrect alignment and unplanned inter-sections an absence of parking facilities are the general features of the net work of roads in the town.

In Saharanpur the central business district has developed in the center of city along the major Road of vehicular traffic so it creating problems for the business and commercial units which are located in this area. During the peak traffic hours of morning and evening, due to simultaneous movement of a large segment of city's population to

and for aggravates the conditions further, giving rise to traffic bottle-necks and heavy congestion on all major roads.

As it is seen from previous chapters, that the dispersal of industries in Saharanpur city are of interesting nature, i.e., the industrial development in Saharanpur city has taken place along two major roads viz. Dehradun road and Delhi Road area along these developed as important industrial areas. As most of these industries situated here are raw material based and gets their raw materials from these roads. Since in the absence of any bye pass in Saharanpur all these heavy traffic passes through the inner parts of city thus creating traffic problems in the city as well as safety problems for the residents of city.

In Saharanpur city, all the large industries have provided residential accommodation to a very small number of workers and remaining workers come form city to factories by there own vehicles. while the workers of small units also use their own mode of conveyance to come their respective units and thus affect the free flow of traffic on high ways especially during morning and evening times. Since most of these units does not have proper parking facilities for unloading and loading and these operation are to be done along the side of roads, thus affecting the free flow of traffic on high ways.

Besides this, in city, a large percentage of transport agencies are located along the Dhamola River ref. Fig no. 8.1, while the industrial areas on the other parts of city, thus goods which will be consumes within the region to be transported to these agencies, by different modes of conveyance, and thus increasing the number of trips as well as trip times, this is affecting the traffic flows in the city.

8.6 IMPACT ON INFRASTRUCTURE AND AMMINITIES:

As we see previously, due to industries there is an increase in the population, rise in landvalue, shop's etc but in comparison to this entire thing there is not so such increasement in the infrastructure facility as a result these facilities get the

LEGEND

- RESIDENTIAL AREA
- COMMERCIAL AREA
- GOVT. GODOWNS
- SCHOOLS
- COLLEGES
- TECHNICAL INSTITUTES
- HOSPITALS
- POST OFFICE
- POLICE STATION
- CINEMA HALL
- ELECTRIC SUB-STATION
- RELIGIOUS BUILDING
- PARKS & PLAY GROUNDS
- BUS STAND
- ROADS
- LANE/ KUCHA ROADS
- STATE HIGHWAY (MAINTAIN
- GOVT. OFFICES
- CREMENATION GROUND
- RIVER/NALA
- TELEPHONE EXCHANGE
- HOUSE HOLD INDUSTRIES
- HEAVY INDUSTRIES
- OTHER INDUSTRIES
- PETROL PUMP
- WOOD CARVING INDUSTRIES
- HOSIERY INDUSTRIES
- TUBEWELLS
- DUMPING AREA IN CITY
- SECONDARY ROADS
- TERTIARY ROAD
- ROAD JUNCTIONS (PROPOSED)

TRANSPORTATION NETWORK OF SAHARANPUR

SCALE 6" = 1 MILE

NORTH

DISSERTATION TITLE:
IMPACT OF INDUSTRIAL GROWTH ON URBAN DEVELOPMENT AND ENVIRONMENT CASESTUDY SAHARANPUR

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burden of the surplus population. So in Saharanpur City the infrastructure facilities are not according to population they are becoming day by day lesser and lesser.

8.7 IMPACT ON ENVIRONMENT:

8.7.1 Introduction:

As, Saharanpur is located in the foothills of Shivalik range but due to more & more industrialisation ecology of the city started disturbing. Therefore, it becomes necessary to check these ecological imbalances in the city.

For the healthy living of people, it is necessary to maintain an ecological balance in the city. Otherwise after few decades the people will use the oxygen masks before leaving their homes. The city instead of flourishing will start decaying. One day will come that the growth of city stopped & it starts decaying.

8.7.2 Land Pollution:

As solid & liquid waste is discharge by industries without treatment, they create the land pollution. Due to this wastes some of the fertile land lose its fertility & become a barren land. Due to disposal of solid wastes near residential area, the livestock & residents of area is affected. Moreover, they have an unhealthy living due to garbage, night soil.

The waste thrown by the wood carving industries in their own residential area becomes a breeding place for mosquitoes & files. These act as a catalyst in the sudden attack of malaria fever in the area. The open garbage bins become a breeding place for mosquitoes & files. These also produce odour, which makes the living of, people impossible.

The solid waste & liquid waste thrown by chemical & food industries in agricultural land become a reason for the lost of fertility of that land. So these wastes and land pollution are directly proportional to each other.

8.7.3 Air Pollution;

In Saharanpur air pollution is only due to automobiles but also due to industries the sugar mill, ITC & paper mill, which will the best example of an air pollution-producing unit. The govt. labour colony is located adjacent to sugar & textile mill. So the smoke produced by these directly effects the living of people in the area.

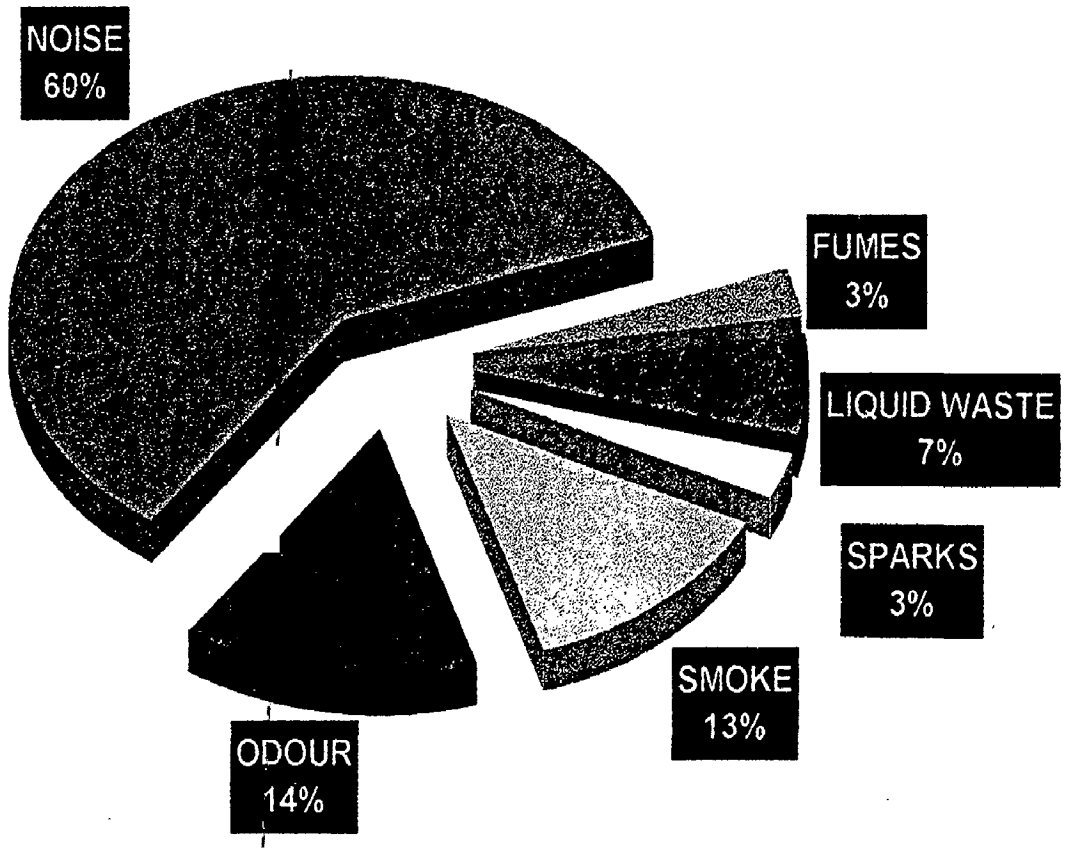
Due to industrialisation there is a rapid increase in the traffic volume. The number of vehicles plying on the road is too much. Moreover, there is a mixed traffic flow in the city, which makes the moving traffic slow. Thus more smoke produced by vehicles is retained in the atmosphere at a lower level.

Saharanpur is a railway junction. So there is always a movement of locomotives. The railway line passes through the centre of whole of the city. Thus lot of smoke is produced by present railway system in the heart of city.

8.7.4 Water Pollution;

Disposal of untreated industrial liquid waste poses greater threat not only to Saharanpur City but agricultural land surrounding it. The industrial liquid waste form paper mill, chemical factory, sugar mill & textile mill, which is untreated, is drained into the Pav dhoi and Dhamola river. Now it is no more a river but it has become a nala. Till known there no seepage but in future if these seepage of this wastewater into underground water table happens it will be adversely effected.

DIFFERENT TYPE OF POLLUTION CAUSED BY INDUSTRIES IN SAHARANPUR



8.7.5 Noise Pollution:

Most of industries in Saharanpur are noise polluting. The wood carving units & textile mill (on large scale) creates a lot of noise & all are located in the residential areas. The traffic is also creating a lot of noise in the commercial as well as residential area. The main reason of it is the mixed traffic flow, 60% of vehicles are old. The parking of vehicles on road, resulting in reduction of right of way, is the another important reason. Then the railway line passing through the city is a major factor helping in the increment of noise pollution all these loads to effect the health of the citizen of the city.

8.8 FINDING:

1. Solid wastes should be discharged separately & may be utilised for land reclamation & composting.
2. Most of the industries do not have any water treatment plant.
3. Lack of open spaces in the city.
4. The length of chimneys is too small in present condition.
5. No buffer zone in between industrial zone & in residentia
6. Improper traffic & transport planning for the present conditions.
7. Improper drainage system is seen in most of industries.
8. Due to industrialisation there has been a tendency of shifting economic activities from categories of primary sector to secondary sector.
9. The participation rate from 1981 to 2000 shows an increment i.e. from 26.99 % to 31.0%.
10. Some of the residential areas show the change in the landuse pattern.

11. In Purani mandi, most of the residential units do not have proper ventilation and light

12 Industrialisation increases the land prices too much, compelling people to develop residential areas at fringes of the city.

13 The commercial area increases with the increase of the industries and most of them are located in the old part of the city

14 There is a tremendous increase in the value of land prices.

15 No truck terminal is located near the industrial zone. As these are located within the heart of the city.

16 There is no railway access in the different industrial units, which increase the volume of traffic on road.

17 The traffic volume on highways increase with the growth of industries

18 As the population increases within city, result of that thing is the lack of infrastructure facilities in the city.

19 Forest based industries are having maximum number of workers i.e. 42.32%.

20 Agro based industries are having only 37.86% of workers.

21 Change in landuse pattern, i.e. most of the old residential areas are know converted into commercial areas.

CHAPTER 9

INDUSTRIAL LABOUR CHARACTERSTICS

9.1 INTRODUCTION:

The total industrial labour engaged in the entire industrial unit's (large-scale as well as small scale) running in Saharanpur is 37,845 i.e. 37.0% of total working population of town. From the result obtained form previous data, it is clear, that industrial units in Saharanpur can be broadly classified into:

1. **Agro based Industries**: Food products, sugar products, Textile & Tobacco etc.
2. **Forest based Industries**: paper mill, wood products industries.
3. **Mineral Based**: Lime &Soda Ash industries etc.
4. **Livestock based**: Leather
5. Engineering (metallic & Non Metallic)
6. **Miscellaneous**

Out of these six types, Forest based industries are having maximum number of workers i.e. 42.32% of total industrial labour. Agro based industries are having 37.86% of total industrial workers. So both these types consist, 80.18% of total industrial workers & remaining 19.82% in other four categories.

9.2 CLASSIFICATION OF WORKERS UNDER DIFFERENT INCOME GROUPS:

The total working forces can be divided into two types.

1. Skilled Labour
2. Unskilled Labour

The workers whose average remuneration is above is above Rs 2500/month are skilled workers & whose average remuneration is less than Rs. 2000/month are unskilled labour. The total skilled worker is 26% of total working force. The percentage of skilled is less because of:

1. There are some units like sugar mill, paper mill & tobacco factory which requires more unskilled labour.
2. In the industries like woodcarving, Rice Mill, Leather etc. works, mostly labour are on contract basis where majority of worker are getting Rs. 55/day.
3. Except for a few industries, other industries are not of highly technical nature.

Workers have different income slab according to there work, the general income slab is divided into four category which is given below.

1. Below – Rs 1500
2. Rs. 1501- Rs 2000
3. Rs. 2001- Rs 3000
4. Rs. 3001- & above.

9.3 JOURNEY TO WORK:

As per analysis of the study, relations between place of work & residences as well as mode of conveyance, it is found that 23% of total workers resides with in 1 km radius, 46% between 1km to 2Km radius, 31% between 2 km to 5 km radius & very few more than 5 km. As per analysis of mode of conveyance 17% of the total workers come on foot, 59% come on cycles & 24% come by cars & scooters.

9.4 INDUSTRIAL HOUSING;

The study of industrial housing has been done in two aspects.

(a) Qualitative aspects

(b) Quantitative aspects

9.4.1 Quantitative Aspect:

The total number of industrial workers in Saharanpur working in manufacturing & processing units is 29520. Out of them i.e. 4.20% of total worker are having houses facilities, constructed by mill owners & by Govt. under industrial housing schemes. The remaining 96.7% of total worker is living in rented houses or have there own parental house.

Total houses constructed by Govt. under industrial housing scheme are 300 in number. All of them are one roomed quarters. Houses are being given on the basis of allotment.

Different mill owner constructs the remaining housing units i.e. 954. There are 17 housing units in flourmill. Out of them 15 are for labour & two for staff. The total housing in sugar mill is 385. Out of them, 300 for labour 75 for staff & 10 for officers. In textile mill, total housing units are 125. Out of them 100 units are for labour & 25 for staff.

The total units in paper mill are 238. Out of them 160 for labour, 38 for staff & 40 for officers. Total housing units in tobacco factory are 54. Out of them 20 are for labour & 34 for staff.

9.4.2 Qualitative Aspects:

Qualitative aspects of the housing study includes:

(a) Accommodation in each type of units

(b) Structural Conditions.

(c) Water Supply

(d) Electricity

(e) Sewers etc.

(a) As far as accommodation in different type of housing units are concerned, all the labour quarters have one room, one kitchen, one Verandah, Courtyard, W.C. & Bathroom. The accommodation in staff quarters is tow rooms Kitchen Verandah W.C. Bath. The officer quarters are 3,4 & five roomed with all the ancillary facilities.

(b) Structural Condition: So far as structural conditions are concerned, in general it is good for all the industrial housing units except housing units in sugar mill which are quite old & bad in conditions.

(c) Housing unit of all type is having electricity as well as water supply. Every colony has got sewer systems. Community Facilities

Except government industrial colony, nowhere the community facilities are provided. The Govt. colony has got one central green park, one dispensary, one workers club & 10 shops to cater the daily needs of workers.

9.5 SOCIO ECONOMIC SURVEY OF INDUSTRIAL WORKERS:

9.5.1 Introduction;

In the context of our economy, which is moving, direct of rapid industrialisation, the role of industrial labour is of greater importance. But the labour can perform its part well, only if he is provided with reasonable standards of living.

If the worker is subjected to a low standard of living, then it is impossible to expect of him an efficient performance. The national interest therefore demands that every employer should keep its labour satisfied to get maximum productivity apart from other human consideration.

This sample survey is conducted for 100 workers. The primary unit in such case is the worker.

9.5.2 Place of Origin & Migration:

S.No.	Name of the State of district	No. of Workers	Percentage
1.	**Uttar Pardesh**	70	70%
(a)	Saharanpur district	62	88%
(b)	other district	08	12%
2.	Punjab	15	15%
3.	Delhi	00	00%
4.	Bihar	10	10%
5.	Haryana	05	05%
	Total	**100**	**100%**

The above analysis shows that 70% of the total workers come from home state i.e. U.P. Hence workers shows a great tendency towards clustering round the nearest industrial centers. They are relectant to go other states because of:

1. Long distances
2. Different Languages
3. Different Customs & habits.

It is seen most of the workers have migrated from small villages.

9.5.3 The Size &Composition of The Family:

Total number of persons in all the sampled families is 523. Hence the average size of family is 5.23. The following table shows the relative strength of different age groups in an average family group.

1. Below 15 years	Children	Non working
2. 15 years to 60	Adults	Working
3. Above 60 years	Old	Non working

Working group is only 20% of the total family member i.e. 80% are dependent.

9.5.4 Income of the Workers:

It is classified into four groups:

S.NO.	Income Group	No. of Workers	% age
1.	Below Rs 1500	29	29%
2.	Rs 1501 - Rs 2000	37	37%
3	Rs. 2001 -Rs 3000	24	24%
4	3001 & above	10	10%

The table 11.1 shows that maximum no. Of workers are in the income group of Rs. 1500-2000.

9.5.5 Expenditure & State of Living

The analysis of the family budget will give the overall average distribution of the total family expenditure on the important & major groups of commodities.

1. Food	53.7%
2. Clothes	7.4 %
3. Fuel & Lighting	7.0 %
4. House rent	2.3%
5. Misc.	19.2%
6 Saving	0.50%
7 Education	7.7%

9.5.6 Journey to Work:

Distance from factory gate	No. of dwellings	% age.
Less than 1 km	36	36%
1 Km to 2 Km	32	32%
2 Km to 3 Kim	19	19%
3 Km to 4 Km	10	10%
Above 4 Km	03	03%

9.6 FINDINGS:

1 In most of the units, like food, leather etc, nearly 80 % total workers are getting less than Rs. 2000.

2 In textile, sugar, paper, tobacco etc. nearly 85 to 90% are getting below Rs. 2000

3 In chemical, leather, Mis. Etc. a few are getting more than Rs. 3000 per month because of the small-scale nature of units.

4 Most of workers live within the radius of 1 to 2 Km from work place.

5 Very few workers coming form long distances

6 Most of the workers are using cycles as mode of conveyance.

7 An acute shortage of industrial housing only, 4.2% of workers are having mill houses which are provided by mill owners. Existing colonies have inadequate community facilities.

8 Most of the workers come with in the district. It shows the tendency of worker to cluster round nearest industrial center.

9 Average size of family of a worker is 5.23 80% of family members are dependant.

10 Most of income is spent on food i.e. 53.7% on average.

11 Percentage of skilled labour are very less in comparrission to unskilled labour, only 26% of the workers are skilled and the rest are unskilled.

CHAPTER 10

URBAN DEVELOPMENT AND MANAGEMENT

10.1 INTRODUCTION:

Urban development management system plays important role in the development of city. Success of any development program depends largely on the efficiency of management machinery. All-important aspect such as planning, implementation, maintenance, co-ordination and monitoring have relevance in overall framework of development management. As development is continuo process so its management holds key for the fulfillment of the needs of people.

In Saharanpur City the authorities involved in urban development management are Saharanpur development authority, Municipality, Industry association, District industry center, P.W.D. etc. the pollution board issues no objection certificate after checking the location validity of the industry. With that NOC, the entrepreneur gets the license from the district industry center for establishing the industry and then only the plans are approved by the SDA for the construction of the building. To get financial aids and other incentives, it is essential that industry should be registered in the district industry center.

10.2 SAHARANPUR DEVELOPMENT AUTHORITY:

S.D.A. was constituted on **5th May 1993.** It has a large area under its purview. Its border limits are **8 Kms.** from the municipal boundary. The source of income of S.A.D. is grants from the U.P. Government, development charges, fees and fines and rents from the its buildings etc. S.D.A. has also undertaken the job of implementation of master plan. Since its constitution, the S.D.A. is trying to control the growth of city according to the plan. At present S.D.A. has the proposal of construction of one colony for **250 families**.

Although, S.D.A. done lot of work in a short span of time, but they are lagging much behind for the implementation of the master plan and is also not able to control the development in right direction due to lack of funds and pessimistic approach shown by people and by authority itself.

10.3 SAHARANPUR MUNICIPALITY:

Under the Act xxxvi of **1850,** the Municipality was made in 1867 for Saharanpur town. The total area of Saharanpur Municipality is **9.7495 sq. miles**. The municipality divides the city area into 40 wards. The population according to the ward is given in the below table 10.1. The major work of the municipality is to provide community facilities and civic amenities to the public such as proper roads, streetlights, water and sanitation, public health parks, play grounds, libraries etc. and other works related to community facilities. The most important but inefficiently discharged work of the corporation is to provide potable water, sanitation and better roads. The municipality has been made arrangements for the repair and cleaning of thousand Kms. of roads, drains and channels.

10.4 FUNCTIONS:

There are two types of functions, which are performed by them:

1) Obligatory Functions
2) Discretionary Functions

1) **Obligatory Functions:**

- Maintaining Public Streets
- Scavenging
- Disposal of Dead Animals.
- Removal of Encroachment

2) **Discretionary Functions:**

- Controlling Pollution
- Public Health and Sanitation
- Drainage and Water Supply
- Execution of Development work
- Regulation of Construction Work.
- Levying Taxes

From urban development point of view, Municipality's and SDA important work is to execute the development work and this only can be done through a systematic planning of the city. The existing administrative set up of SDA has Chairman, Secretary, Town planner, Additional Engineer and the other important is JE. But the existing administrative set up of Saharanpur Municipality has President, Vice-President and Chief Officer. To carry out the functions, and there are various committees having a chairman from the municipality members. The whole staff works under the control of chief officer.

WARD WISE POPULATION TABLE NO 10.1

WARD NO.	POPULATION	S.C	WARD NO.	POPULATION	S.C
Ward No. 1	9883	3506	Ward No. 21	8922	364
Ward No. 2	10419	2887	Ward No. 22	8344	328
Ward No. 3	9886	2277	Ward No. 23	9009	270
Ward No. 4	10503	2001	Ward No. 24	10626	266
Ward No. 5	10893	1825	Ward No. 25	8209	156
Ward No. 6	8673	1702	Ward No. 26	7920	147
Ward No. 7	8480	1655	Ward No. 27	8308	146
Ward No. 8	9326	1466	Ward No. 28	9406	100
Ward No. 9	10135	1501	Ward No. 29	10043	85
Ward No. 10	9191	1325	Ward No. 30	10226	85
Ward No. 11	8063	916	Ward No. 31	8391	75
Ward No. 12	9035	898	Ward No. 32	10478	64
Ward No. 13	9571	854	Ward No. 33	10729	27
Ward No. 14	8740	836	Ward No. 34	10221	49
Ward No. 15	10764	816	Ward No. 35	10407	-
Ward No. 16	9649	804	Ward No. 36	10724	-
Ward No. 17	10160	695	Ward No. 37	8621	-
Ward No. 18	8547	627	Ward No. 38	10543	-
Ward No. 19	10749	402	Ward No. 39	8797	-
Ward No. 20	9970	378	Ward No. 40	8743	-

Source: - Saharanpur Municipality

10.5 LEGAL FRAMEWORK:

Presently, the urban development activities are managed under the provision of following legislation:

1) The Municipality Act.
2) The U.P. Town Planning and Urban Development Act.
3) The peripheral Development Control Act.
4) Avas Vikas Board
5) Land Acquisition Act.
6) Yammuna Action Plan.

Though there are several other legislation's which regulate and control some of the activities, yet the above mentioned ones are the main laws.

The Municipality act gives legal powers to the Municipality to perform obligatory and discretionary functions within the municipal limits. The town planning and urban development act by this act master plans; action plans etc. can be prepared.

The peripheral development control act is to control the development, which occurs on the periphery of town or city. The Yammuna action plan gives legal powers for cleaning the river Yammuna and its tributaries.

The Avas vikas gives powers for the construction of houses at a large scale. Land acquisition act, which was drastically amended in 1984, is the principal legislation for acquisition of land for public purpose.

10.6 PROBLEMS AND SUGGETIONS:

There are problems with municipality and SDA regarding the finance, its legislation, administration etc.

WARDWISE POPULATION
POPULATION
S.C
Ward No. 1
Ward No. 3
Ward No. 5
Ward No. 7
Ward No. 9
Ward No. 11
Ward No. 13
Ward No. 15
Ward No. 17
Ward No. 19
Ward No. 21
Ward No. 23
Ward No. 25
Ward No. 27
Ward No. 29
Ward No. 31
Ward No. 33
Ward No. 35
Ward No. 37
Ward No. 39
0
2000
4000
6000
8000
10000
12000

CHAPTER 11

POTENTIAL FOR FUTURE DEVELOPMENT

11.1 ANALYSIS OF INDUSTRIES BY ECONOMIC ORIENTATION:

The study of existing industrial structure of Saharanpur city reveals that the industries in Saharanpur are of mostly, raw material oriented but there are also some market oriented.

The analysis reveals that there are 1,483 raw material oriented units employing 30,987 workers and has a capital investment of Rs. 29,430.29 lakhs, while the market oriented industries are 1204 employing 8364 workers and has a capital investment of 1776.81 lakh's. They break up of these units is given below in Table 11.1.

CLASSIFICATION OF INDUSTRIES BY ECONOMIC TABLE NO. 11.1

1. Raw Material Oriented :

S.No.	Type	Units	Workers
1.	Large scale	4	9689
2.	Small scale	1479	21298
	TOTAL	**1483 (55.19%)**	**30987 (78.74%)**
2. Market Oriented:			
1.	Large scale	0	000
2.	Small scale	1204	83647
	TOTAL	**1204 (44.81%)**	**83647 (21.26%)**

It is evident from the above Table 11.1 that in Saharanpur city, there are 4 large scale raw material oriented units and these industries employ 30,987 workers and has a largest share of investment, while there is not a single large scale market oriented units. The reasons for large capital investment in raw material oriented industries, is that raw

material oriented industries convert agro and forest materials into various finished products ranging form chemicals to rubber by processing and for these processing, these units require large plants and more energy and the large investments, Besides, the other advantage is obtained by raw material oriented units, is that their finished products are less bulky while their raw materials are bulky so these units enjoy a locations advantage as their raw materials are available in region in abundance and also saves a large amount on transportation.

For analysis purpose, these raw material oriented and market oriented industries can be classified into categories given below. Raw material oriented industries are classified into Agrobased industries. Forest based industries, mineral based industries & leather based in dustries while market oriented industries are classified into consumer goods industry and producer good industry and the break up of these units is given below in Table 11.2

From the Table 11.2(a), we find that raw material oriented industry is dominated by agro and forest based units. Out of 420 agro based units including 3 large scale units employed 18,227 workers and has got a maximum investment of 17,078.6 lakhs as compared to forest based industries which has only 763 units including 1 large scale units and employed 13,637 workers with a capital investment of 11,814.92 lakhs, while there are only 132 small mineral based units employing about 3406 workers with a small investment of 511.07 lakhs and the leather based industry are only 168 in umber giving employment to 1400 worker with a small investment of only Rs. 25.69 lakhs. It is seen that agro based industries got about 58.03% of total capital investment in raw material oriented industries as compared to forest based which has got only 40.14%. The reason being that the agro based industries in Saharanpur uses the agro products as their primary raw material while their finished product as their primary raw material while their finished product is a value add product achieved through varioius intermediate and final process and thus the areas required and running and establishing cost of plants is very high while in case of forest based industries at Saharanpur, these simply extracts the

FOR RAW MATERIAL ORIENTED INDUSTRIES

TABLE 11.2(A)

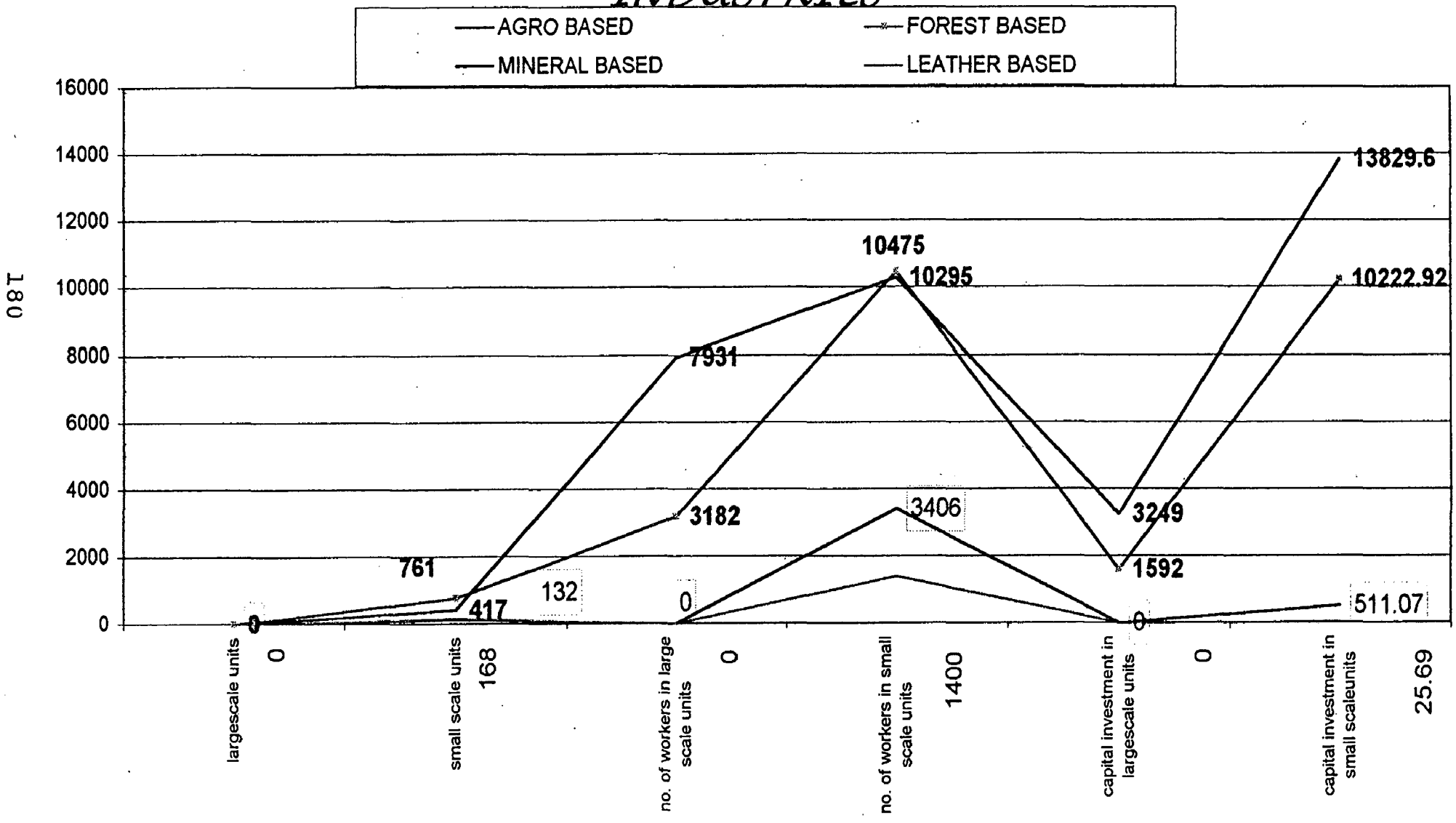
S.No.	Type	No. of Units			No. of Workers			Capital Investment (\Rs. In Lakhs)		
		Total	Large	Small	Total	Large	Small	Total	Large	Small
1.	Agro	420 (28.32%)	3	417	18227 (58.8%)	7931	10295	17078.6 (58.03%)	3249	13829.6
2.	Forest based	763 (31.44%)	1	761	13677 (44.66%)	3182	10475	1181492 (40.14%)	1592	10222.92
3.	Mineral based	132 (8.91%)	-	132	3406 (10.0%)	-	3406	511.07 (1.77%)	-	511.07
4.	Leather based	168 (11.32%)	-	168	1400 (4.56%)	-	1400	25.69 (0.087%)	-	25.69
	Total	1483 (100%)	84 (0.26%)	1478 (90.76%)	30987 (100%)	11113 (35.86%)	19874 (64.1%)	29430.28 (100%)	4841.0 16.4%	24589.28 (83.55%)

FOR MARKET ORIENTED INDUSTRIES

TABLE 11.2(B)

S.No.	Type	No. of Units			No. of Workers			Capital Investment (\Rs. In Lakhs)		
		Total	Large	Small	Total	Large	Small	Total	Large	Small
1.	Consumer good	830 (68.9%)	0	830	3441 (40.9%)	0	3441	639.5 (36.00%)	0	639.5
2.	Producer goods	374 (31.1%)	0	374	4952 (62.10%)	0	4952	116.50 (64.00%)	0	1136.59
	Total	1204 (100%)	0 (0.00)	1204 (100.00)	8783 (100)	0	8393 (52.85%)	1776.00 (100%)	0	1776.09 (7.03%)

ANALYSIS FOR RAW MATERIAL ORIENTED INDUSTRIES



products from the primary raw material which is forest based and thus require less operation cost, less skilled workers and less investments in plants.

It is also evident from Table 11.2(b), that in case of market oriented industries 68.9% units are consumer oriented while 31.1% are producer good oriented. But it is seen from Table 11.2(b) that producer good industry employed 59.1 of workers and has got the investment of 1136.59 lakhs (64.00%) as against the consumer good which employed 3441 workers 40.9% and has an investment of only 639.5 lakhs 36.00%. The reason being that, consumer good industries only serves to the needs of city and upto a certain extent needs of region population, and as such their plants are small and require less workers and less investment and are viable at small turnove while in case of producer goods units, their products are marketed over a large distance and serves as a raw material to other units and to achieve the break even or to adjust the internal economics as well as external economics, they got the plant of a certain size rquiring higher investments and highly skilled workers to achieve quality products.

11.2 AVAILABLE RESOURCES FOR THE FUTURE INDUSTRIAL DEVELOPMENT:

After analysing the trends of the industrial development in the city, the second stage for the future industrial development is to know the availability of raw material in the area, on the basis of which new industries are put up. The various resources available in the district are discussed under.

11.2.1 Land as a Resource:

Land is a limiting resource. In the study area the land available for industries is surplus. While identifying land these are certain things which as to be considered that land used for putting up industries should not fertile land otherwise it will be the benefit of one use on the cost of another use. The land values, analysed, previously are less in the outskirts of city, about 4 to 5 kms. From inner-core of

city and ranges between Rs. 18,000 to Rs. 30,000 per Bigha. The industry shifted in from the city will get a good amount of compensation according to their location.

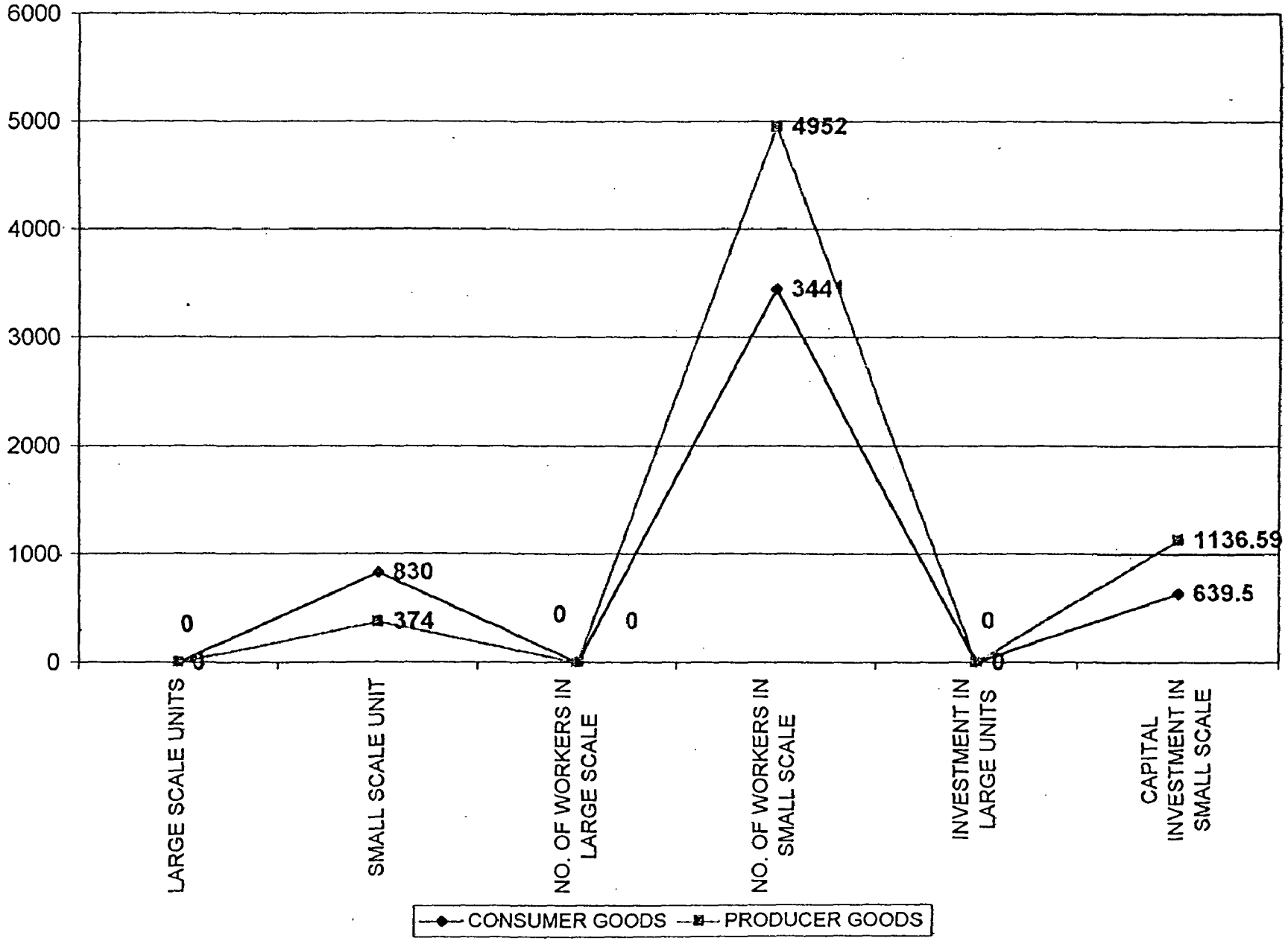
11.2.2 Agricultural Products : Available in the District :

The super structure of modern industrial development can be build on the solid foundation of a dynamic and viable agriculture system which will in turn give good returns to farmers and help in raising the living standards of rural folk. As the Saharanpur district is located in the plans of Yammun & Ganga and has a good fertile land, thus agriculture is the predominant activity of the District. The most important agricultural products of Saharanpur district are Sugarcane, Rice and Wheat. The total area under agriculture of Saharanpur district is 3,95,820 hectares.

1. Sugar cane:

The total area under sugarcane cultivation is 1,47,589 hectares in Saharanpur district and the production of sugarcane is 79,46,095 metric tonnes. Since in Saharanpur district, The amount of sugarcane consumed by mills is comparatively low as compared to Khandsari units which consumed about 52% of total sugar cane production and thus it results in under utilisation of sugar cane as Khandsari and jaggery are the low priced yields of sugar cane. However, the by products of Khandsari units is molasses which is used for making power alcohol and in Saharanpur there is only one distillery which consumed 17.43 million litres of molasses per year. Thus, in Saharanpur city, more sugar mills can be established for producing sugar which will also increase the utilisation of sugarcan and from the by product `mollasses' of sugar industry, more distilleries can be set up which will produce alcohol, spirits & wine. The second by product mainly of sugar mills is Baggasse. It can be used for making cardboard, straw board, paper etc. the most part of its is sent to Delhi, Bombay, Calcutta, Lucknow etc.

ANALYSIS OF MARKET ORIENTED INDUSTRIES



2. Paddy

The second important agriculture product of Saharanpur district is paddy. The rice is famous for its good taste and it is produced in all blocks of the district. Total area of the district under paddy cultivation is 78,364 hectares. Total production of paddy per year is 1,37,374.0 metric tonnes. Total amount of paddy consumed in rice mill in Saharanpur is equal to 59,303 metric tonnes. About 56.8% of paddy production are sent to Rajasthan, Delhi and other neighbouring cities. Rice husk, or Bhoosi is the important by product of the rice mills which can be used for the production of 'Activated charcoll' oil used in medicines. The total amount of Bhoosi produced in al the rice mils is 29,319 metric tons. There is not a single industry in saharanpur which consumed the byproduct of rice, so such type of industries are needed to be set up in saharanpur.

3. Wheat:

The another important agriculture product of Sharanpur district is wheat. Total area of district under wheat cultivation is 1,54,456 hectares and the production of wheat in the district is 2,54,324.0 metric tonnes. In Saharanpur flour mills consumed only about 27% of the produced wheat, while the remaining amount as well as sent to other States.

4. Tobacco:

The total production of Tabasco in district is 305 metric tons per year. The area under cultivation of Tobacco is only 10 hectare this production of 305 metric tons per year is consumed in Tabasco factory as well as in the market.

5. Oilseeds:

Oilseeds like mustard & ground nut are also very good agriculture products of district. Total area under oilseeds is equal to 14,898 hectare & the

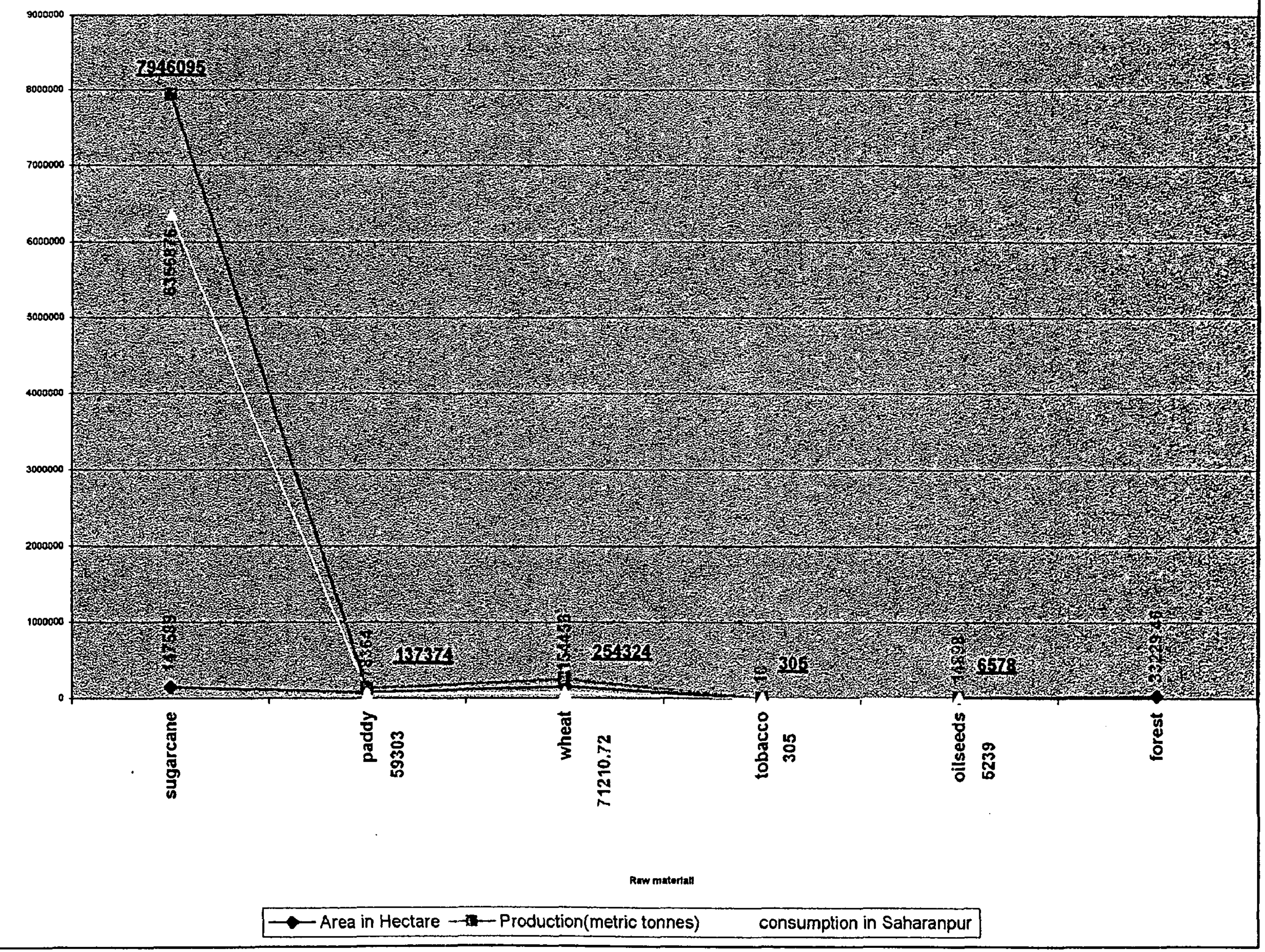
total production is 6,578 metric tons. The oil seeds consumed in all the oil mills small & large scale as well as cottage industries (gharni) is equal to 5239 metric ton & the smearing 20.35% is sent out side from the markets of Saharanpur to the other towns of the district.

6. Fruits:

Saharanpur is a research & training centre in plantation & it holds a premier position in the gardens. The garden known as far hat Baksh which was laid out in 1750 was later developed into Botanical garden of Saharanpur. This botanical garden hold a important position in the state. Important kind of species for different varieties of fruits such as margoes, pluns, peaches, oranges, line illichies & pear and are grown here and send to different part of the country. One of the primary objects of the gardens was the culture of medical plants, for the supply of drugs to the medical departments. Inspire of so much production of fruits in Saharanpur there is no fruit preserving & packing industry which are very necessary for such a fruit producing area.

As described in earlier Chapters that Saharanpur district is located in the plains of Yammuna & Ganga and towards its north exist forest clad hill region. Besides this the other important crops of the district are Tomatoes, patotes, and Guava which are also grown in adjoining districts. Since in the Saharanpur district and as well as in Saharanpur city, there are only few units of food products resulting in the under utilisation of these products. Since processed food gives the higher returns as compared to their use, as unprocessed food items, and in turn farmers gets a higher prices for their crops and thus raise their earnings. Since Saharanpur district has the fertile land and agricultural products are available in abundance, so there lies a very much potential for setting up of the food processing industries as well as industries which are based on these products which in turn give better yields and also lesser burden on cold storage's.

Analysis Of Raw material Available In Saharanpur



11.2.3 Forests:

The area under the forest in Saharanpur district is 33,229.46 hectare. This forest is the part of the forest running along the northern boundary. These are of considerable value & importance, yielding good forest produce in fair proportion. There are several kind of trees in these forest. In the trees forest areas, oak is predominating species. It is never found along but is every where accompanied by many other trees. The most common species found in Saharanpur one oak. pine & deodar. The maximum area under oak is 18,263.34 hectares, and then under pine, which is 5,349.87 hectares.

But due to illegal cutting of trees in the forests, the depletion of these resource will result in decay of the forest based industries. There is an urgent need to develop a strategy for the development of forest area & to give a concrete base for forest based industrialisation.

11.2.4 Minerals:

Several type of minerals are available in Saharanpur district & in its neighbouring districts. Out of them lime stone resource are in abundance. Between Dehradun & Mussorie, several hills are made of lime stone. Hence there is a great potential for cement industries. The cost of freight form lime stone queries upto Saharanpur is not much. This is generally carried by trucks. But limestone queues can directly be connected with Saharanpur by railway line, because upto Dehradun railway lines is there & queues are only 8 miles from Dehradun.

The other minerals are like stone boulders & a fine quality of sand. These are also easily & cheaply available from the bed of Ganga & Yammuna river. These can be used for starting the building industry Reserves of gypsum & sulphur are also found in Dehradun district.

From the above fact a large number of minerals found in the region are not exploited. These can be utilised at a minimum transport & labour cost most economically, if Saharanpur, an industrial centre of western U.P., which is near to the region which is developed for the industries based on these minerals.

11.3 VIABLE INDUSTRIES FOR THE CITY:

From the above analysis, it is found that there are plenty of resources in the district. But due to unplanned industrial development these resources are not utilised properly. For the optimum utilisation of resources, following type of industries has been identified.

1. AGROBASED

(a) Food products:

1. Flour mill
2. Rice Mill
3. Dal Mill
4. Oil Mill
5. Rice Brran Oil
6. Acatiated Charcoal
7. Maize Starch
8. Corn Flakes
9. Bread Factory
10. Pottato Chips
11. Spice Mills
12. Creamery Butter
13. Pickle Industry
14. Pectine From Fruits
15. Dehydration of Foods & vegetables

16. Baby Foods, Fruit Cereals
17. Ice Plant
18. Cold Storages

(b) Sugar & Its Products:

1. Alcohal Based Chemicals
2. Manufacture of Acetone
3. Butyle Alcohal
4. Country Wines

(c) Textile Industry:

1. Dying & finishing of Textiles
2. Hosieries
3. Cloth Bags

(d) Tobacco Industry;

1 Insecticide
2 Neotonic Acid

3 FOREST BASED

(a) Wood Products:

1. Packing Cases
2. Mill
3. Veneer Mill
4. Wood Carving
5. Ply board mill

(b) Paper Industry:

1. Pulp Mill
2. Insulating Board
3. Converted Paper Board Products
4. Rayon Grade Pulp
5. Matches
6. Blotting Paper
7. Paper Coating & Glazing
8. Card Board

4 LEATHER BASED

1. Tanned Leather Industry
2. Leather Bags

5 MINERAL BASED

1. Fertiliser Factory

6 ENGINEERING INDUSTRY

1 Sugar Mill Machinery
2 Paper Mill Machinery
3 Tool Plants
4 Electrical Goods
5 Electroplating
6 Nuts, Bolts, Sears
7 Paint & Varnish Units

CHAPTER 12

STRATEGIES FOR LOCATION OF INDUSTRIES AS PER MASTER PLAN

The main objective of the fore going study and analysis has been to provide the strategies for the industrial development in Saharanpur city which be also conducive to urban growth and to provide a detailed base for the planning improvement of the town. With the growth of population and increase in the complexity of function in the city, unbalanced growth and unplaned development has been taking place in the city and its fringe areas. To overcome these problems a comprehensive approach is needed but within the limited scope of the present study, an attempt is being made here to outline the main futures of the strategies.

12.1 STRATEGIES FOR THE INDUSTRIAL DEVELOPMENT:

12.1.1. Future industrial areas:

It is seen from the study done in preceding chapter that the total land needed for future industrial development in Saharanpur city will be 670.15 hectares by 2001 A.D. The manufacturing and industrial zones should be separated from the residential zones and should have any conflict with other land uses. The criteria used for the study and for identifying the location of future industrial areas is vi., favourable wind direction, nearest to market and sources of raw material, accessibility of services e.g. power, water and sewerage, transportation linkages, facilities for disposal of industrial waste and space for future expansion and the land should not be good agricultural land.

12.A Dehradun Industrial Area:

This area is one of the biggest area for industries in the master plan of Saharanpur. Area under this zone is 315 hectare. As per the master plan pollution free industries are proposed in this zone on both sides of the road. As this area lies on the east side of the city and wind direction is towards the city so it is correct proposal for the pollution free industries in this area, but there should be a green buffer zone in between industries and in the proposed transport nagar. There should also be a parallel road to the state highway in this industrial area with green belt in between them for the free movement of traffic on the state highway.

12.A.1 Location of the site:

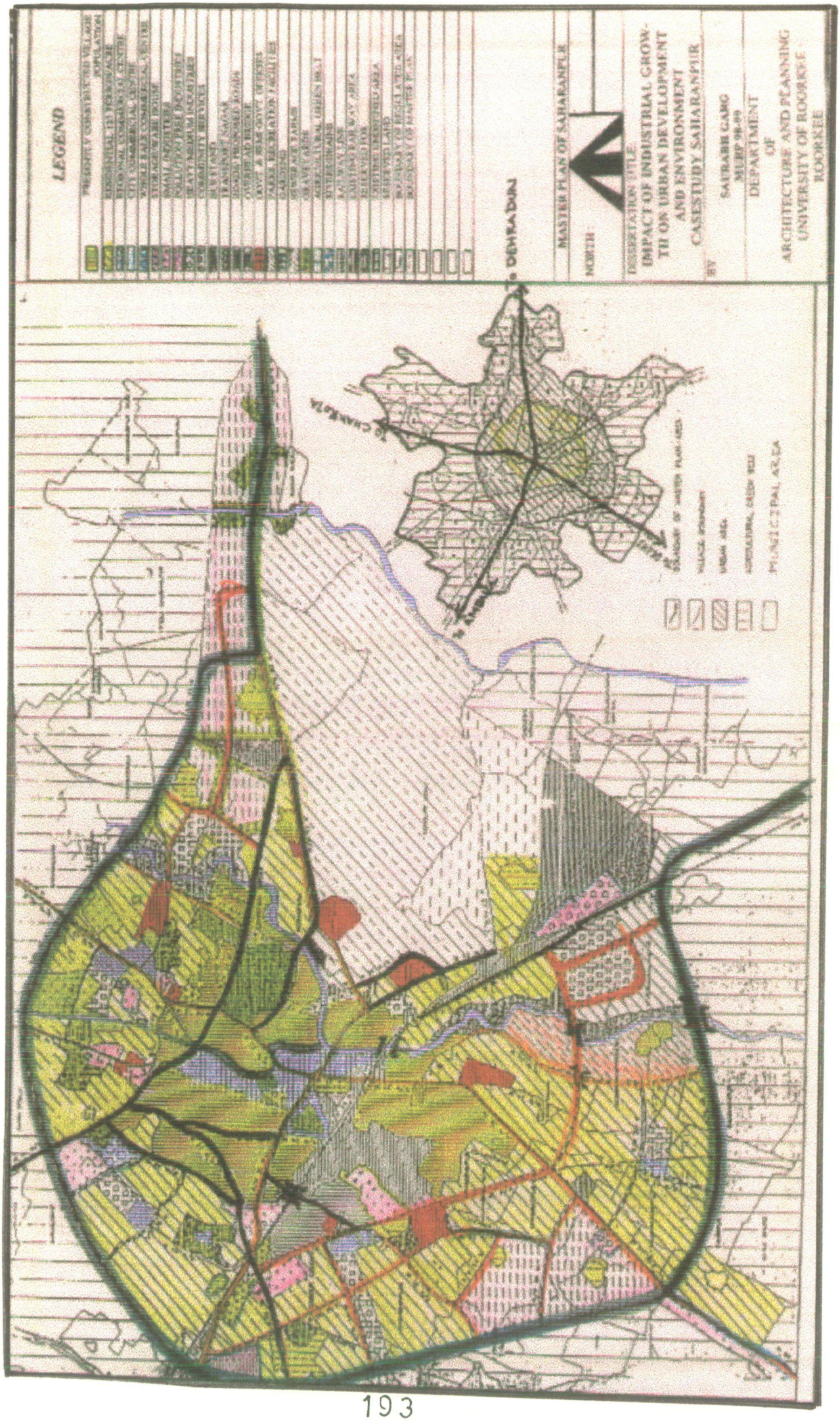
The site is located along Dehradun road, 4.5 km from Ghantaghar, in east of Saharanpur. Remount Depot is in the south of site. The total area of proposed site is 315 hectare.

12.A.2 Existing Industries on the Dehradun and Ambala road:

There are 178 existing industries on this road. Out of which 69 units are paper industries, 8 units are enamel industries, 34 units are building construction material industry, 53 units are iron implement industries and 14 units are agricultural implement industries. These are smoke, noise and spark producing industries. Raw materials for these industries come through Dehradun Road and through Ambala Road. The wind direction is also favorable at this site. Hence situated industries are justified for this site except for the paper industries and engineering industries.

12.A.3 Industries to be shifted:

Paper base industries and engineering industries are proposed to be shifted from their present location. The paper industries are located along Ambala Road (near the Kalapana cinema) and fall in the residential area of the city. There is no proper place for the parking of vehicles meant for loading and unloading of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IMPACT OF INDUSTRIAL GROWTH ON URBAN DEVELOPMENT AND ENVIRONMENT
CASESTUDY SAHARANPUR
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ROORKEE

goods. The engineering industries are also located along Ambala Road (near Darpan cinema), producing smoke and noise. Their present site is unfavorable according to wind direction. As these units are creating pollution in their present location. Some of engineering industries are presently located in densely populated areas. Hosiery units are proposed to be shifted to this site from densely populated residential areas.

For the free movement of traffic for industries, Parking loading, unloading has been considered as the Dehradun road industrial area has the transport nagar in between the industries. The wind direction is also favorable. Site is well connected with other roads by the proposed Ring Road. So these industries are to be shifted to the new location that is along the Dehradun in the outskirts of the city

12.A.3 Proposed Industries:

New industries proposed at this site are enamel work, tool plants, electrical goods manufacturing units, electroplating units and nut bolts and sear units. These industries have enough potential to grow. These are medium scale and small-scale units. These are noise pollution producing industries and therefore, are proposed to be located far away from residential areas.

12.B Old Deoband Road Industrial Area:

In Saharanpur master plan this area is the only area for the location of heavy industries. Area under this is only 50 hectare As per the proposal of DIC and other government institution preference is given to small scale industries in comparison to heavy industries. In this area one of the famous industry i.e. Star Paper Mill is located. As per the wind direction this area is best for the proposal of heavy industry and this area also has the chances of future extension but should have a green buffer zone all around this industrial area. This area also have the facility for disposal of wastes.

12.B.1 Location:

Deoband road is in the west of the site with railway line to Meerut parallel to it. The railway line to Lucknow is in the east of the site. Ghantaghar is at a distance of 3 m from the site in the northwest direction. The area of the site is 50 hectare. Wind direction is favorable for the smoke producing units as the wind flows from northwest to southeast during most the year. Railway goods platform is located near the site. Dhamola River is in the west of the site.

12.B.2 Existing Industries in the Site:

There are 18 existing industries in this site, with 1 paper mill, 6 lime industries, 1 distillery, and 10 brick kilns. These industries are pollution creating. Paper mill produces liquid waste, as well as, smoke. Lime industries produce liquid waste and brick kilns produce smoke. Since wind direction is favorable to site and Dhamola River is near to the site, these industries do not create problem. The large-scale units such as paper mill require railway line, which is easily available, her. The raw materials can easily be transported by railway from Dehradun for paper mill and for lime industry.

12.B.3 Industries to be shifted:

Large-scale units like sugar mill, cigarette factory, textile mill, sand paper mill, chemical industries and brick kilns are being proposed to be shifted from their existing site. The sugar mill, textile mill and cigarette factory, which are smoke producing, have come under the residential area presently. These are producing liquid waste, odour and noise pollution, creating problems in their existing location. Since these industries are large-scale units they need railway line for the incoming and outgoing goods. Wind direction is unfavorable in their present location.

These industries are proposed to be shifted to this site where wind direction favorable and Dhamola river is also near to drain out the waste effluents after the treatment of waste through waste treatment plant. Railway line is also available to industrial units in this site. The road transport is quite efficient here, as it is located along Deoband road. The proposed ring road connecting all the highways is near to it.

12.B.4 Proposed Industries:

The new industries proposed at this site are sugar products and by products based industries, paper-based industries, fertilizer factory, tobacco based units and engineering units. All these units are large scales in nature and is pollution creating units. These units also need railway line for the transportation of good.

12.C Delhi Road Industrial Area:

This area is the second largest area for industries in the master plan of Saharanpur; Area under this is only 265 hectare. In this area also pollution free industries are proposed as similar to Dehradun industrial area this area extended from Delhi road towards proposed ring road on the west. In the master plan all the facilities are proposed for its development.

12.C.1 Location:

The site is 4 Kms away from Ghantaghar, the focal point of the city, in the northeast direction. The Delhi road is in the south of west of the city. The proposed ring road, having 45 m R/W, is in the west of the industrial area the total proposed area for this site is 265 hectare.

12.C.2 Existing Industries:

Presently there are 143 units on this site, with 21 food products, 12 textile products, 5 chemical products, 2 leather products, 7 electronic products, 51 Eng. (metallic) products, 24 Eng. (non metallic) products. 5 rubber and plastic products and the rest are miscellaneous. The above industries are suitable for the above industrial area, as the wind direction is suitable, for the raw material this area is very well connected with the other roads.

12.C.3 Industries to be shifted:

Rice mills are proposed to be shifted to this site from the residential areas, flour mills are proposed to be shifted from their existing location i.e. Nakur Road and Dehradun Road, because the wholesale and retail markets are far away from their existing location and approach roads are not wide enough for easy transportation of goods, this site is well linked up with market and does not have any transportation. Problem.

Oil mills are also proposed to be shifted from different parts of city, to the proposed site. The reason for shifting being difficulty in transportation and improper market link up in their existing location. 18 bakeries, presently located in the residential area, are proposed to be shifted to this new site. The total ice factories in the town and cold storage are also being proposed to be shifted to this new site.

Leather units of shoe making are proposed to be shifted to this site. Tannery, which is presently located on Amble Road, is far way from present location of shoe making units. Tannery is well linked up with the proposed site through proposed ring road.

Chalk industries and soap factories are proposed to be shifted to this site. These two industries are polluting the environment of the densely populated area, where they

are presently located. Candle industries, lock industries and cement jali units are proposed to be shifted to this area.

12.C.4 Proposed industries:

In present study, it is proposed to establish units of food products, because of easy availability of raw material and nearness of market. The labor is easily and cheaply available from nearby village. units of dyeing and finishing of textiles, unit of cloth bags and units of hosiries are being proposed to be established here. units of tanned leather and units of leather bags are being proposed to be located here.

12.D. Chilkana Road Industrial Area:

This area is marked for small-scale industries in the master plan; area under this is 40.15 hectare. This area lies very close to the city as compared to the other industrial area. Like Delhi road industrial area this area also have all the facility for its development.

This area is nearer to the city and has favorable wind direction, facilities for disposal of wastes, transport linkages etc. However, since this area is near to the city only small scale industries are allowed in this area, because small-scale units require lesser space employment size, services and utilities and due to their less polluting nature there can be placed near to the city ref. Fig no. 12.1.

12.D.1 Location:

The site is 3.5 km away from Ghantaghar, in the southern direction. Chilkana Road which is in west of the city. The proposed ring road, having 45 m F/W, is in the south of industrial area. The total proposed area for this site is 40.15 hectares.

12.D.2 Industries to be shifted:

The wood based industries, which are to be shifted to the proposed site it is proposed to have, only wood based industrial units on this site. Presently these are located in the densely populated residential areas of the city like Police Station Kutubsher Area, Lohani Sarai, Nakhasa Market, which have very narrow lanes. The work is carried out in very unhygienic conditions, with improper lights and ventilation. The structural conditions of these units are very bad. It is also very difficult to transport raw materials and finish goods to and from these places.

The raw material required for the wood based industries is wood, which is brought in from the north and north-west part of Saharanpur and forest of Dehradun, through Dehradun Road and Chakrata Road. The site is in close proximity of above mentioned high ways. Retail markets are also required in closed proximity of small scale industries for the sale of their finished goods. The retail market of the good is at a distance of 2 to 2.5 kms from the site and is well linked up with the site by Chilkana Road. The site is linked with other five highways by proposed ring road having a width of 45 m.

12.D.3 Proposed Industries:

New units proposed at this site are packing cases units, building material industries, planning mills, wood-seasoning plants, veneer mill and wood carving units. Packing cases have a good demand for the packing of finished goods. Wood used for various purposes must be seasoned well. So there is a requirement of wood seasoning plant.

12.2 RESIDENTIAL AREA:

As discussed in the foregoing, the city is faced with serious residential and housing problems. The inner core of city needs urgent urban renewal.

For urban renewal it is proposed that the life of houses should be fixed under certain regulation and demolition of old and dilapidated houses will take after the expiry of the life of the houses and no building activity should take plane in the space left for. Such method in course of town will open the congested inner zone.

As the population of the town is growing at the high rate, the number of additional houses required for the growing population and the migrants will be very large. So it is proposed to increase the residential area by providing residential area in it fringes area. Proposed residential area are marked in the master plans properly.

12.3 COMMERCIAL AREAS:

The present business areas and centres have developed along the major through fares and regional routes without leaving much space for parking and for loading and unloading of goods. The Saharanpur master plan proposed for the extension and expansion of wholesale market and to develop a city's centre on court Road. All the proposals of master plan regarding commercial activity seems to be adequate and hence no changes are proposed in the commercial areas. But it is proposed to declare the court road, Ambala road, as well as road stretch from clock tower to Dena nath as 'Market Streets' which will allowed the authorities to impose same restrictions on the traffic and would help in controlling and regulating the traffic at these areas. Besides to this it is also proposed to use the civil court site for commercial use as the civil court is proposed to be shifted on the Delhi road.

12.4 TRANSPORTATION AND CIRCULATION PATTERN:

Provision for adequate transport facilities and efficient circulation pattern is the basic need of the city. To segregate the regional traffic and local traffic, the master proposed 2 bye-pass viz., The bye pass linking the Dehradun road to Nakur road Delhi bye-pass and other linking Delhi road to Deoband road and these bye

passes acting as the limit of the future urban area. These bye pass will act as the ring road. However, any of these bye-passes until now has not been constructed.

12.5 ENVIRONMENT:

To control the environmental pollution which is caused by the industrial units, the following proposals are recommended.

(1) An effluent treatment plant is proposed at Kam dehnu industrial area on Dehradun Road which would treat the effluents of small and medium scale industries which do not have treatment plant because of their small sizes. Besides this it is also proposed, that all the large-scale chemical works should install their own effluent treatment plant for the treatment of effluents before discharging them into water streams.

(2) Electronic smoke preceptors are to be proposed in all large-scale industries which have their own power generation and thus the smoke emitted by these units contain large amounts of particulate matter. Installation of electronic smoke preceptors will facilitate in the reduction of particulate matter in air.

(3) It is also proposed to provide green buffer zones, to act as noise absorbers and breathing spaces. Between residential area and industrial areas along the high way of 100.0 m.

(4) A scheme for the management and disposal of solid industrial waste is proposed to be developed for the extensive industrial areas to avoid the problems due to open dumping.

CHAPTER 13

CONCLUSION AND RECOMMENDATION

13.1 CONCLUSION:

Based on the study and analysis of Saharanpur City, the major findings, which came into light, are summarised below:

The analysis of the historicity of Saharanpur City reveals that Saharanpur City developed and expended largely due to its strategic geographical location in the plains of Ganga and Yammuna River. The geographical location of Saharanpur made it a nodal point, which provides markets, employment and services to the region around it. All these factors helped in the growth of trade, commerce and industry of Saharanpur.

The industrial growth, to a large extent is caused and effects both for the growth of Saharanpur. The industrialisation started in Saharanpur in the 19th century when industries of Paper Mill and ITC came into existence. After the independence a major thrust is taken by the industrial development of city. The area of Saharanpur has shown a remarkable growth for industries, which resulted in a 31.04 percent growth of its population in the decade (1971-81) and 26.93 percent growth in the decade (1981-91). The major areas of industrial growth were in the field of food, agro based, textile, engineering, wood products and chemical industries.

It is also seen that industries located in Saharanpur City enjoy location advantages as majority of the industries is based on raw materials, which are available from the adjoining Dehradun forests. However, a large percentage of small scale industries especially of Hosiery and Wood Carving are located in older parts of city viz. 'Purani Mandi and Hiran Maran' areas creating problems to nearby residents and cause pollution.

The present scene of industries is very encouraging, there are 2687 industries, with an employment of 1,14,634 workers out of which 4 were large scale units providing employment to 9,687 workers and in small scale sector 2683 units providing employment

to 1,04,945 workers. The industry shows a remarkable growth in which units increased from 1297 in 1991 to 2687 in 1998. The industrial growth and present scenario of it suggests that Saharanpur city will develop in a major industrial centre having a large base of various small scale industries

The trade and commerce constitute an important sequence of economic activity of Saharanpur City. The growth of market originated from old markets of Raiwala, Nakhasa, Purani Mandi, More Gunj, Halwai Atta and Sarafa Bazaar and spreader over various roads radiating from Clock tower. However, the shopping areas are not functioning as per the needs of growing population as these developed haphazardly but the new markets of Court Road and Nehru market showed a planned character.

The condition of urban transportation is also not satisfactory. Since, there is no bye passes in the city, the regional traffic also passes through the city affecting the city traffic. Besides this due to encroachment on both the state highways, the smooth flow of traffic is affected and at Nehru market, Court rout and Halwai Atta, traffic is also affected during the peak hours. The intra city traffic also does not have smooth flow. The reasons are mainly the narrow roads, encroachments, intermixing of traffic of all kinds and unrelated land use locations.

With the passing of Saharanpur Master Plan in 1983, the Saharanpur Development Authority was constituted in 1993 to implement the master plan, and municipality was given the role for maintaining the infrastructure and facilities of the city. However, till today, Saharanpur development Authority is able to implement only a few segments of Master plan.

The major drawback of the agencies of development is lack of funds and the rampant corruption in the various department as well as inadequate staff.

13.2 RECOMMENDATIONS:

In the light of the issues and inferences drawn from the study done in the preceding Chapters, the following recommendations are proposed to achieve a rapid industrial development, which will be also conducive to urban growth:

1. The industries located in residential areas creating problems like water pollution, traffic, parking, congestion, noise pollution etc. should be shifted to the proposed industrial estates.
2. Constructing proposed ring road should separate local traffic, regional traffics and traffic generated by industries and commercial activities.
3. To check the air and noise pollution, green buffer zones is recommended to be provided in between industrial and residential area.
4. The bus-stand (roadway and private) should be shifted to the proposed site i.e. on the Ambala road.
5. To check unhygienic situation, there should be under ground drainage system.
6. Infrastructure facilities should be increased with in the city and proposed industrial area with the same pace as the demand increases.
7. Recreation facilities in Saharanpur City are poor. Children parks and gardens should be developed at proper places.
8. There should be co-ordination between SDA and other Govt. departments.
9. The industrial development of an area must be based on the selective development of prospective industries.
10. While selecting the prospective industries in Saharanpur, Agro-based and forest based industries should be given preference.
11. In order to reduce trips and trip time Work centres should be developed in relation to the residential areas.
12. Fly-over is to be constructed over railway line in Patel nagar, so that the existing road that is wide enough should able to take the load of the local traffic.
13. There should be a green belt on both sides, along the proposed ring road to discourage the ribbon development along the proposed ring road.

14. An effluent treatment plant is proposed at Kam dehnu industrial area on Dehradun Road that would treat the effluents of small and medium scale industries that do not have treatment plant because of their small sizes. Besides this it is also proposed, that all the large-scale chemical works should install their own effluent treatment plant for the treatment of effluents before discharging them into water streams.

15. Electronic smoke preceptors are to be proposed in all large-scale industries which have their own power generation and thus the smoke emitted by these units contain large amounts of particulate matter. Installation of electronic smoke preceptors will facilitate in the reduction of particulate matter in air.

16. A scheme for the management and disposal of solid industrial waste is proposed to be developed for the extensive industrial areas to avoid the problems due to open dumping

17. For this growing industrial town State and Central Govt. should make adequate financial allocation for the development in a proper direction.

18. To achieve a faster industrial development of city the role of district industrial centre should be increased.

19. The densities in the core areas of the city are to be maintained at there present level as the rehabilitation of the people would require a huge capital investment and a large area of land to be acquired.

20. The peripheral wards, which have very low density and posses ample scope for accommodating more people, shall be further densified.

21. Emissions from vehicles should be monitored regularly, and roadworthiness of vehicles should be enforced as a law.

22. Roadside plantation along major traffic corridors should be taken up with special emphasis on such species of trees which help in minimize the ill effects of air pollution.

23. The pollution of river is a major source of concern. The drains discharging the city sewage directly into the river should be trapped and sewage diverted and treated before disposal.

24. An inventory of the small-scale units operating in various parts of the city should be made, as they are also sources of water, noise and air pollution.

25. The raw sewage is directly discharged into the river, which polluted the river so sewage treatment plant is recommended so that the river becomes pollution free.

APPENDICES

APPENDICES: A

QUESTIONNAIRE TO STUDY THE IMPACT OF INDUSTRIES ON THE URBAN DEVELOPMENT AND ENVIRONMENT

(Case Study- Saharanpur)

1. Name of industry :
2. Year of Establishment :
3. Nature of industry :
   1. Service:
   2. Light :
   3. Heavy :
   4. Obnoxious :
4. Locality :
   1. Present:
   2. Prior to present:
5. Annual turn over in Rs:
6. Annual production value in Rs.
7. Physical structure :
   1. Plot Area :
   2. Built up Area:
   3. No. of story :
8. Name of place from where raw material is produced:
   1. From the State:
   2. Out side the State:
   3. From within the district :
9. Mode of transport to procure raw material :
   1. By Truck :
   2. By Rail :
   3. Others :
10. Market for products :
    1. Local :
    2. Within the state :

3. Outside the state :

11 % of total production sold locally :

12 No. of workers & their place of residence :

i.	**Technical**	**Place of Residence**
a)	Skilled:	
b)	Unskilled	
c)	Semi skilled	
d)	Administrative/Managerial	

13 Type of Physical Linkage between residence and work place :

1) Rail
2) Pucca road with bus service
3) Pucca road without bus service
4) Kutcha road
5) Own vehicles
6) Others

14 Details of workers

Workers Categories	No.	Sex	Age	Education
1) Managerial Administration				
2) Skilled Technical Workers				
3) Unskilled				
4) Others Workers				

15 Name of Product:

16 Problems of industry : 1)
2)
3)
4)
5)

17 weather industry is situated in :

1) Residential area :
2) Commercial area:
3) Industrial area:

4) Other area:

18 Government aids in term of :

1) Loan:

2) Grant:

3) Sub-Sidies :

4) Factory shed:

5) Tax exemption:

19 Facilities for the industry:

1) Excellent

2) Good

3) Satisfactory

4) Poor

5) Water supply

6) Electricity

7) Telephone

8) Bank

9) Storage facility

10) Transportation

20 Disposal of effluents & industrial waste

1) Solid

2) Liquid

3) Gas

4) Method of disposal:

21 Ancillary units of the industry:

APPENDICES: B

STANDARDS

For the town having population of 100,000 and above the following criteria's of land uses are to be incorporated as prescribed and suggested by copp Bureau of Public Enterprises and TCPO.

A RESIDENTIAL:

i) Gross residential density: 125-135 persons/hect.

ii) Net residential density: 500-600 person/hect.

B COMMUNITY FACILITIES:

(I) EDUCATIONAL FACILITIES:

i) Nursery School: One for 1200-1500 population, area of .10 hect.

ii) Primary School: One for 3500 population, area of 0.10 hect.

iii) Higher Secondary: One for 8000 population, area of 2.5 hect.

iv) Colleges: One for 1,50,000 population, area of 6 hect.

v) Technical Institution: 1 or 2 depending upon size of town, area: 6 hect

(II) **HEALTH FACILITIES:** 4 beds/1000 population, area for 100-bed hospital 6 hect.

(III)

(IV) COMMERCIAL FACILITIES:

i) Retail Shops: 12 to 14 shops/1000 populations, area of shop 10 sq. Mt.

ii)	Whole Sale:	30 % of area occupied by retail commercial activity.
iii)	Community & Civic cultural Facilities:	One club for 20,000 to 30,000 population. area : 0.75 hect.
iv)	Other Facilities at town level:	Three police station, Cremation ground Religious area.

LAND-USE PATTERN

1.	Residential including open spaces, tot-lots, path ways etc.	40% - 50%
2.	Roads and circulation except pathways	22% - 24%
3.	Public and semi public buildings and facilities.	11% - 14%
4.	Organized recreational open spaces.	16% - 19%
5.	Commercial – retail, whole sale and ware houses.	2.75% - 3%
6.	Service and small scale industries.	1.25% - 2%
7.	Public utilities and services:	

i) Water supply 40 – 50 gallons per day/capita.

ii) Storm water drainage for domestic use.

iii) Public lavatories and urinals.

iv) Refuse collection.

v) Sewage treatment.

ROADS AND STREET –STANDARDS AS ADOPTED BY TCPO:

S.NO.	TYPE	RIGHT OF WAY	NO. OF LANES
1	MAJOR ROADS	15 – 20	TWO LANES
2	RESIDENTIAL STREETS	10 – 15	TWO LANES
3	CUL-DE-SEC NOT EXCEEDI-NG 600^{I} IN LENGTH.	8 – 10	TWO LANES
4	LOOP FOR RESIDENCES	3 - 5	----
5	SERVICE LANES	5 – 7	----
6	CYCLE TRACKS	2 - 3	----

The following criteria should also be considered while providing the width:

i) Footpath should be provided for sr. no. 1 and 2. All roads should be topped except service lanes.

ACCESS STANDARDS:

Based on the planning principles, the following table give the maximum and minimum distances to be covered for gaining access to schools, recreational areas, parks and playgrounds, shops and various other public buildings in a sector.

(I) SCHOOLS:

i)	Nursery and primary.	0.4 km.
ii)	Secondary	0.5 km.
iii)	College	0.8 to 1.6 km.

(II) RECREATION AND OTHER AMENITIES:

i)	Tot – lot	0.2 km.
ii)	Children's parks	0.4 to 0.5 km.
iii)	Adult play ground	0.8 to 1.6 km.
iv)	Local shopping	0.4 to 0.8 km.
v)	Health Center	0.8 to 1.6 km.
vi)	Post office	0.8 to 1.6 km.
vii)	Service shopping	0.8 to 1.6 km.

APPENDICES: C

TREATMENT AND DISPOSAL OF EFFLUENTS OF TANNING INDUSTRY

(As per IS: 5183-1977)

POLLUTIONAL EFFECTS

1. Effect on Streams – The constituents generally present in a composite tannery effluent are varied in character and load, and damage a stream when discharged into it untreated. Tannery effluent contains considerable amounts of protein when a hair-pulping unhairing system is used. These are biodegradable and cause a very high oxygen demand. Spend vegetable tan liquors significant portion of non-biodegradable materials, which can persist in the streams. The salt and hydrogen sulphide present in tannery effluent may adversely affect the stream quality and cause bad taste and. The effluent carries large amounts of suspended matter in the form of lime suspension, hair, fleshing, etc, etc, which are detrimental to the utility of the stream in that they can make the water turbid and settle on the bottom, thereby affecting fisheries by covering the bottom of the stream and destroying fish food, bottom fauna or the spawning ground of fish. The effluent from a vegetable tannery is highly colored, and when discharged into a stream, the color may persist for a long period. Chrome tan effluent is highly toxic to fish and other aquatic life. Excessive alkalinity, high pH and sulfides may also be transmitted to bathers coming in contact with tannery effluent discharged into a stream.
2. Effect on Land. The productivity of the soil is found to be decreased when tannery wastes are applied on fields, and some parts of the land become completely infertile. Germination of paddy seeds was fond to be not satisfactory.
3. Effect on Ground Water. Discharge of tannery effluents on land adversely affects ground water due to presence of high amounts of chlorides, chromium, etc.

TYPICAL ANALYSIS OF TANNERY EFFUENTS

S. No	Effluent	Volume 1/100 kg or Hide or Skin Tanned	Analysis			
			pH Value	Total Solids	Suspended Solids	Biochemical Oxygen demand (5 days at 20°C)
(1)	(2)	(3)	(4)	(5) mg/1	(6) mg/1	(7)mg/1
(i)	Soaking	250 to 400	7.5 to 8.0	8000 to 28000	2500 to 4000	1100 to 2500
(ii)	Liming	650 to 1000	10.0 to 12.5	16000 to 45000	4500 to 6500	6000 to 9000
(iii)	Delimiting	700 to 400	3.0 to 9.0	1200 to 12000	200 to 1200	1000 to 2000
(iv)	Vegetable tanning	200 to 300	5.0 to 6.8	8000 to 50000	5000 to 2000	6000 to 12000
(v)	Picking					
(vi)	Chrome	3000 to	2.6 to 3.2	2400 to 12000	300 to 1000	800 to 1200
(vii)	Composite (including washing)	3500	7.5 to 10.0	10000 to 25000	1250 to 6000	2000 to 3000

4. Effect on Land. The productivity of the soil is found to be decreased when tannery wastes are applied on fields, and some parts of the land become

completely infertile. Germination of paddy seeds was fond to be not satisfactory.

5. Effect on Ground Water. Discharge of tannery effluents on land adversely affects ground water due to presence of high amounts of chlorides, chromium, etc.

6. Effect on Sewers. Tannery effluent is known to cause deposition of calcium carbonate inside a receiving sewer and choke it. Lime is converted to calcium carbonate by the carbon dioxide produced by decompositions of the organic matter present in the effluent and the hair and fleshing help to forma binder with this calcium carbonate which it. Difficulties with sewer choke have been experienced in many places. Concrete sewers are likely to suffer damage when they are made to carry sewage containing a high concentration of hydrogen sulfide due to admixture with tannery wastes.

TREATMENT AND DISPOSAL OF EFFLUENTS OF DAIRY INDUSTRY

As per I.S.: 8682-1977

POLLUTIONAL EFFECTS

Discharged into inland Surface Waters:

Depletion of Dissolved Oxygen – The most important problem of water pollution associated dairy effluents is the depletion of dissolved oxygen. As dairy effluents contain all the nutrients for bacterial life and, as the water temperatures encountered in most parts of India are ideal for Bacterial growth, the rate of decomposition is high resulting in anaerobic conditions followed by bad odors, conditions suitable for fly and mosquito breeding. When discharged into open MALLAH and ponds the following adverse conditions are likely to arise:

(a) Putrefaction due to rapid degradation of lactose and production of lactic acid and butyric acid leading to foul odorous.

(b) Fly breeding on the sludge rafts floated by anaerobic decompositions.

(c) Grease floating on the top and adhering to aquatic weeds leading to ugly sight.

Effect on fish - It has been reported that at a dilution of 1:15, dairy effluents (excluding whey) had distressing effect on fish. At a dilution of 1:35, whey had been found to be toxic to fish in a few hours. Lactic acid can be toxic to fish at a concentration of 654mg/1 of hard water or even less in soft waters and when the dissolved oxygen content is low. Dairy effluent is reported to contain soaps that are toxic to fish at concentrations of 600mg/1. Butyric acid, a product of anaerobic metabolism, has a very unpleasant rancid odor. Beyond 100mg/1 concentration it is known to adversely effect and above 400mg/1 to kill fish. It is also know to effect Daphnia (a crustacean) and Scenedesmus (as algae).

Radioactivity – Milk as well as its effluents can concentrate strontium 90, a beta-emitting radioisotope that seeks the bone. This property is of extreme significance when pastureland is contaminated with this isotope due to radioactive spills or fallout of fission products.

Discharge on land – While disposal of dairy effluent on land is a common method; not al soils are suitable for this purpose. Heavy soils like clay can lead to pounding, anaerobic conditions and foul odorous if the irrigation system is not properly designed.

Discharge into public sewers- as dairy effluents are known to be readily biodegradable, it is often presumed that there is no problem in treating them along with sewage. As they contains significant amount of carbohydrate and the temperature of discharge is idea, the possibility of sewage water waste mixture becoming septic in the sewer itself is very great and this may need additional pre-aeration in the sewage treatment plant.

TREATMENT AND DISPOSAL OF EFFLUENTS OF COTTON AND SYNTHETIC TEXTILE INDUSTRY (As per IS: 9508-1980)

POLLUTIONAL EFFECTS

Wastewater's from cotton textile industry are of highly pollution nature and affect the water quality in several ways.

PH Value The high alkalinity of the wastes causes an increase in pH value. Any increase in pH value of the receiving stream greater then 9.0 will have an adverse effect on aquatic life. Color the soluble dyes and colours present in the wastes will persist in the stream and interfere with penetration of sunlight essential for photosynthesis.

Turbidity The colloidal organic matter in the wastes will increase turbidity of the water and along with the colours, dyes and oily scum will produce an unsightly appearance. The oily scum formed on the surface of water will interfere with the mechanism of oxygen transfer at the air/water interface.

Oxygen Depletion the most serious effects of textile wastes on the receiving body of water will be depletion of dissolves oxygen. The organic matter in the textile wastes like starch, dextrin and inorganic chemicals like sulfide and hydrosulphite and nitrite will exert an immediate oxygen demand, while dyes and colours will exert long term oxygen demand. Such changes in the oxygen balance of receiving stream will be deleterious to fish life and will also interfere with self-purification. Toxic chemicals like sulfide, chlorine, chromium and aniline dyes will also affect the aquatic life.

Characteristics of Wastes Small

Textile Processing Units

(Clause 4.33.11)

S.No.	Characteristics	Range
(1)	(2)	(e)
(i)	pH value	6.2 to 8.3
(ii)	Total dissolved solids, mg/1	640 to 5880
(iii)	Suspended solids, mg/1	10 to 1040

EFFECT OF TEXTILE WASTES ON SEWERS AND AGRICULTURAL LAND;

Effect on sewers Due to high pH value, alkalinity and total dissolved solids, the textile wastes have a tendency for incrustation in the sewers. On the other hand, the sulfur dyes and sulfur compounds present in the wastes will gradually lead to crown corrosion. Hence it is desirable that process waste streams containing sulfur dyes and sulfides are excluded from the wastewater discharged from the sewer.

Pollution Load Contributed By Textile Mills

S.No.	Mill No.	Production Kg/day	Waste Volume		BOD Load		Suspended Solids	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(i)	1	4200	2050 to 2300	49 to 55	1634	39 31	1	
(ii)	2	12000	1845	154	628	52	554	46
(iii)	3	25000	6250	245	1850	72	8300	336
(iv)	4	7500	1800	240	392	52.5	64.3	86
(v)	5	6700	900	134	234	35	263	59
(vi)	*	6150	980	165	312	51	294	48
(vii)	6+	7000	3011	430	542	77	300	43

*Average for a group of 25 cotton textile mills

*From a mill producing synthetic textiles only

Effects on sewage treatment plant – The plant and machinery of municipal sewage treatment plants will be exposed to corrosive action caused by acids and Hydrogen

Sulfide. The pumps and pipelines may be subjected to incrustation. In any case the cumulative effect of textile wastes on sewage treatment plants be increased cost of maintenance and repairs.

Effects on Agricultural Land Textile wastes have adverse effects on land in many ways as follows:

- The suspended and colloidal matter may clog the pores of the soil by forming and impervious mat;
- The high alkalinity may be harmful to crops and high salinity of the wastes will impair their growth;
- Sodium has a deflocculating effect on prolonged application;
- Sodium displaces divalent cautions like Ca^{++}/Mg^{++};
- Sodium displaces the texture of the soils, prevents penetrations of the roots; and
- The soil loses it water holding capacity. As a cumulative effect, the soil will lose its productivity.

TREATMENT AND DISPOSAL OF STEEL PLANT EFFLUENT
As per IS: 8073-1976

POLLUTIONAL EFFECTS AND EFFLUENT QUALITY CRITERIA

Water in an integrated steel plant gets polluted due to the following operations:

- Coal benefaction operations;
- Coal carbonization;

- Pig iron manufacture;
- Ingot steel manufacture;
- Steel products manufacture; and
- Auxiliary units generating power, steam and others.

The water pollutants from the steel industry vary from mere rise in temperature of water (waste heat) to toxic chemicals. Suspended and colloidal solids (mostly inorganic) emanate in this industry by either washing the raw materials and products or scrubbing the dust and gases with water. Oils and grease, minerals as well as vegetable are used for lubrication and in cold rolling mills and ultimately find their way into the wastewaters. Toxic and oxygen demanding organic chemicals and tar are released in the coal carbonization and by-product recovery units and may be considered as the most serious water pollutants.

Acids and alkalis are utilized for regenerating the ion exchange resins used in demineralization of boiler waters. Acids is also utilized for cleaning the metal (pickling).

The major pollution effects due to the wastewater's from an integrated steel plant are the following.

- Toxicity to aquatic life,
- Lowering of dissolved oxygen in the receiving water course,
- Deposition of suspended matter on the receiving water,
- Causing taste and odor problems in the receiving water,
- Coal tar choking pipes and waste treatment appurtenances,
- Raising the temperature of the receiving water, and
- Floating of soils and grease on water leading to ugly ore slicks.

Ammonia, phenols (monohydric, poluhydric and derivatives of phenols), cyanides and sulfides are well known for their toxicity to aquatic life. Among the toxicants mentioned above, free ammonia and cyanide are the most toxic substances. The

concentration of free ammonia increases with increase in the pH value of the medium. Hence ammonia toxicity is particularly severe at high pH values.

When biodegradable organic substances are discharged into watercourses, the soil and water bacteria utilize the organic matter as their source of carbon and the dissolved oxygen in the water body for their respiration requirement. Coke oven wastes have enough types and quantities of biodegradable organic matter that can lead to depletion of dissolved oxygen in the stream. When the dissolved oxygen is depleted to zero anaerobic conditions set in leading to foul odorous and ugly conditions. At low dissolved oxygen levels sensitive fish do not survive. The toxicity of other substances is compounded at low dissolved oxygen levels.

Iron and steel industry leads to discharge of a considerable quantity of suspended and colloidal matter. Unless trapped, these solids can reduce the penetration of sunlight and reduce the photosynthetic activity of microorganisms, an essential feature of the self-purification of polluted water bodies. Suspended and colloidal solids can also smother bottom dwelling aquatic organisms thus affecting the life of a stream or a lake. Dense suspended matter normally encountered in steel industry can lead to a heavy salutation of streams and lakes and affect the flow and life in the water body.

Oils and grease unless trapped from the wastes will lead to the formation of ugly oil slicks and iridescentcolorss, all leading to poor aesthetics. Oil slicks reduce the diffusion of oxygen from the air into water and affect self-purification of water bodies. Where steel plants are located on the coast, wave action invariably brings the oil and grease to the coast and spoils the beaches.

Coal tar is a component of the coke oven wastes that creates maximum physical problems. Light tar floats on water and attaches itself to anything on its way giving ugly appearance. Heavy tar settles down and has a tendency to choke pipes and cavities (of all sorts) in wastes treatment units and seriously interferes with the treatment process.

The phonemic substances in the coke oven wastes are known to create taste and odor problem. Fish living in waters containing non-toxic levels of phenol are found to be tainted (that is, acquire an unpleasant phonemic taste in its flesh). Waters containing 0.002 mg/1 of phenol are known to give rise to unpleasant taste to water when chlorinated. Soluble iron and manganese are known to give rise to bad taste in drinking water at 0.1-mg/1 level.

Nearly two-thirds of the water used in the steel plant is utilized for heat exchange. It is not directly brought into contact with either the raw materials or the finished products and hence remains clean. Such flows, if segregated from dirty streams, donut require any treatment other than cooling. The reat of the discharges require primary, secondary and tertiary treatment depending upon the type and degree of contamination they are subjected to.

No water body receiving effluents can be kept as clean as virgin streams. However it is essential to keep them clean enough so that the downstream users do not have to resort to special treatment processes which would raise the cost of water treatment from its normal values.

For meeting the effluent quality criteria two parameters may be suggested.

- The plant should be able to discharge effluent of such a character that the treated water ca be used within the plant; the best test to verify this is the ability of the plant to recycle the effluent into its own service water system; and
- The effluent character is such that the desired quality of the receiving water is attainable with a minimum dilution and at a minimum distance from the discharge of the treated plant effluent.

steel plant effluents need correction in quality in the following parameters:

- Temperature
- Colloidal and suspended matter.

- Soluble inorganic (acid and iron salts in pickling wastes) and salts in cooling water.
- Soluble organic including toxic (from coke oven wastes), and
- Floating and suspended organic (oil and tar).

As correction of quality to the extent desired for in-plant recalculation is not economical for all the streams it is highly desirable to segregate the streams of cooling water and loss contaminated wastes from the more severely contaminated wastes.

TREATMENT AND DISPOSAL OF EFFLUENTS OF PULP, PAPER AND BOARD INDUSTRIES

POLLUTIONAL EFFECTS

The main pollution constituents in pulp and paper mill effluents are suspended solids, color, foam, inorganic such as sodium carbonate (when recovery system isn't practiced), toxic chemicals such as mercaptans and inorganic sulfides. Mercury is present if mercury cells form a part of pulp and paper mill. The effluents have high BOD and COD and when discharged untreated will damage the receiving watercourse due to the presence of high oxygen demanding organic and inorganic constituents present in the effluents. Further the effluents impart color to the stream and it persists for a long distance since lignin and its derivatives present in the effluent are not readily biologically degraded. The effluent may also impart odor to the receiving stream.

POLLUTIONAL EFFECTS OF INDIVIDUAL EFFLUENTS

Raw Materials Preparation (Chipper House) Effluent from this section does not exert severe pollution problems since it has low biochemical oxygen demand. However, the heavy suspended matter, which settles rapidly, will have adverse effect by way of settling.

Sulfate Kraft and Soda Mill Effluent the combined effluent from sulfate mill will exert BOD in the range of 110 to 235 mg/1. In case of soda mills with smaller capacity for papermaking, the spent liquors are not used for chemical recovery and hence the combined effluent from such mills will be very high in BOD (780 mg/1). Suspended solids in big as well as small mills will be high. Traces of chemicals in the effluent, suh as alkali, sulfides, merceptans will have effect on aquatic life. Further the presence of lignin and its derivatives in the combined waste will persist for considerable time in the receiving waters.

Sulfite Process Effluent Spend sulfite liquor causes the greatest pollution effect on receiving streams due to the high BOD in the liquor. The constituents present in it are calcium and magnesium salts of lignosulphonic acid, carbohydrates, salts of volatile fatty acids, sulfites, bisulphites, methanol, acetone etc. Between 40 to 50 percent of the total wood substance is prevent in the waste sulfite liquor. The pollution effects of the combined effluent are mainly due to the discharge of spent liquor.

In general in calcium based sulfite pulp and paper mills there is no recovery system for recovering the cooking chemicals and the spent liquor obtained after pulping is discharged into the stream. Due to the great pollution exerted by this spent liquor, no more sulfite mills are being installed in the world and the existing one are also being replaced by sulfate mills or soluble base sulfite mills.

With the introduction of soluble bases, namely magnesium, sodium, ammonium etc. It is not possible to have a recovery system for the sulfite mills also. But, even for a sulfite mill having a recovery system, the BOD exerted will be much more as compared to sulfate mills due to the very high BOD being exerted by condense obtained during the concentration of sulfite spent liquor due to their low pH

The sulfite effluents exert immediate oxygen demand due to the presence of reducing compounds.

Semichemical Pulping Effluent Oxygen demand, color and high or low pH value are the main objectionable features of the effluents but these have not been reported to be toxic to aquatic life except through deoxygenating and change in pH value.

Pulp Washing and Bleaching Effluents The combined effluents from the pulp washing and bleaching operations contribute nearly 65 percent of the total BOD load of the entire mill's effluents and hence the high oxygen demand of these results in the rapid.

Depletion of oxygen in the receiving stream. The persistence of lignin results in discoloration of the receiving waters.

Paper Machine Effluent The pollution effect of white water is not of a serious magnitude since the organic matter present in this effluent contributes only about 20 percent of the total BOD load exerted by the composite mill effluents. However, the white water contains fibber debris, small fibbers, soluble matter and a high percentage of non-fibrous suspended matter such as pigment, filling materials etc. Stream pollution problem result mostly out of the fine suspended solids content, which may settle at low stream velocities and cause deposits, which, might decompose very slowly.

Deigning Effluent Pollution effects of these effluents are due to the high oxygen demand of the organic matter in solution and the suspended matter derived from the suspended debris. Deigning process in not so far practiced in India.

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