
CHAPTER - VII

CONCLUSIONS

Geographically the Indore-Dewas-Ujjain industrial triangle region extends between 22°40' N to 23°10' N latitudes and 75°50' E to 76°50' E longitudes and is located in the heart of the country. The oval shaped region is situated in the south-eastern part of the Malwa plateau. The region lies within the administrative territories of Indore, Dewas and Ujjain districts of M.P. It is divided into five development blocks i.e. Indore, Sawer, Dewas, Ujjain and Ghatiya. 1,718,819 persons residing in the state are being accommodated by the region. Population density of the region comes to 428 persons per square km. and the sex-ratio is 946 females per 1000 males.

The region is accessible both by rail and road transport. There is also an airport at Indore. The Agra-Bombay National Highway No. 3 traversing the region provides the direct accessibility of the region with Delhi and Bombay. State Highways along with other types of roads have helped the region to have a direct inter-regional and intra-regional accessibility. Indore is the only privileged city in the region, which has got an aerodrome for operation of commercial air services.

Physiographically region occupies the northwestern parts of the Deccan tableland and is a significant industrial region of the state. Geomorphologically the region under study is a part of the Malwa plateau and has a undulating land surface. The topography is a result of the variation in hardness of different lava flows. The hard portions are forming the tops

of the terraces and plateaus. Erosion succeeded during tertiary period in making an extensive level across the pile of lavas. The general elevation of the area ranges from 475-500 metres. The general slope of the region is towards north and the elevation beyond Indore city gradually lowers down to Ujjain. The region comes under the chambal river basin which is a part of the Yamuna basin. The main rivers of the region are Kshipra, Gambhir, Khan and Chhoti Kali Sindh. The Southern boundary of the region is formed by Narmada river basin.

Soils are among those factors which determine the nature and character of socio-economic activities which in turn determines the availability of raw material for various industries. The region is situated in the black cotton soil tract of the Deccan trap. The most prevalent soil is the black cotton soil and is rich in plant nutrient. The soil is well suited for cotton and certain other crops. The climate of the region has a general monsoon character with seasonal rhythm of temperature and rainfall. The region has a humid mesothermal climate. Since the region is located in the interior of the sub-continent and shows some continental contrasts. The region enjoys a pleasant climate and except during the monsoon season the climate remains dry.

Forest resources are among the important considerations for the industrialization and rural transformation. Forests are an important element of the geographical environment which ultimately determines the suitability of a region for industrial development. The forests of the tropical dry deciduous and

dry mixed deciduous and most of the forests occupy the hilly tracts mainly concentrating the southern parts of the region. The forest of the region provide raw materials for industries engaged in the manufacturing of celledose, rayon, pulp and bidies.

The term industrialization has been used for interpreting the growth of industrial activities. The term industrialization incorporates many phases to explain the socio-economic phenomena which have been experienced, are being experienced, and will be experienced. The main object of industrialization is to provide work for growing population to meet the demand for manufactured goods and to raise the standard of living through a steady increase in the efficiency of the factors of production. The growth of industries in the Indore-Dewas-Ujjain industrial triangle region dates back to the second half of the 18th century. Among the princely states of India, Holkar State of the region under study was one of the few states known for its progressive attitude and efficient administration.

Except for the units manufacturing arms and ammunitions, there were no large scale manufacturing units till the end of the 19th century. Beginning of the 20th Century made a slow start in the industrial field and was accompanied by the development of railways and roads. The progress of industrial development continued to be slow till 1930, When the world wide depression set in after the second world war, the rulers of the erstwhile princely states encouraged and favoured the development of their states, and resulted the unplanned and heterogenous development of the large and small scale industrial units in the region.

By this time some old and uneconomic units were closed down. During 1941-51 industrial employment recorded an increase of units and employment but the pace of industrial development though was fast and heterogenous but remained lopsided. The growth of industries in the region was confining to the state of Indore and that to the Indore city.

Number of factors were responsible for retarding the industrial development of the region. A legacy of feudal attitude and interstate barriers, inadequate and lopsided development of transport and communication lines, ignorance about the local resources and shortage of cheap and adequate hydroelectric power were mainly responsible for impending growth and development of industrial activities in the study region.

After independence, the region made a beginning to achieve the balanced regional growth of economic and industrial development with the implementation of the first five year plan but remained preoccupied with problems of integration of services. Law, administrative services etc. and could not do much in the industrial field. During the second plan more attention was given to the development of small scale and cottage industries. The increase in the quality and the quantity and the variety of industrial products too has been initiated as a change in the industrial pattern of the region with an addition of modern large scale units. Though the region has made a considerable headway in industrial expansion, it is still one of the industrially developing regions in the country as well as well as in the state. The region has a total of 5.5 per cent of registered factories and 11.4 per cent industrial

employment of the state.

The industrial growth has not been uniform all over the region but industrywise and areawise disparities also existed. The region has recorded a net increase of 468.4 per cent for the period 1948-91 and not a single district registered a downward trend as far as industrial employment is concerned. Industrial employment in Indore increased after the establishment of some new industrial units. While increase in the industrial employment in Dewas may be accounted with the establishment of large medium and small scale industries where as Ujjain is attributable to the establishment of cotton textile, sugar, chemical and synthetic yarn and cloth units. As a result of these changes since 1948 in industrial employment the rank of leading industrial districts has changed considerably by the year 1991.

The per cent increase recorded by the region in large and medium scale units ranges from 433.0 to 5900. On the otherhand per cent increase in investment ranges from 340.0 per cent in Indore district to 58,488 per cent in Dewas district.

The industrial structure of the region may be defined as the aggregate of individual industries that account for all units in the region ranked by magnitude. The magnitude is measured proportionally in term of industrial units, employment and value added by manufacturing. On the basis of the average daily employment, the main industrial groups in the region comprise of textiles, chemical-based, metal and engineering based industries. Regionally, the industrial development of the triangle region has been uneven. Most of the large scale

units are concentrating in Indore together accounts for about 55.4 per cent of the total industrial units followed by Dewas and Ujjain.

This clearly shows that though industrial development of the region has been fast but has remained uneven. Industrial activities are mainly concentrating in northern and eastern parts of the region that too mainly in big cities and towns which provide better transport facilities and assured supply of rawmaterials.

Industrialisation gives way to demographic transformation. By creating job opportunities to attract people from the neighboring rural and urban areas to such centres and causes a rapid increase in urban population. This also leads to the increasing population density and the size of the centre and adjoining villages. Due to this process the literacy rate increases at one hand and reduces the sex-ratio on the other hand. Similarly other population characteristics do not remain unaffected from urbanisation through industrialisation. The impact of industrialisation is also seen in the occupational structure of the population. Participation of females increases. On the other hand Proportion of agricultural workers declines and non-agricultural occupations along with manufacturing gain significance. The impulses of such changes are strongly felt at the industrial centre but as one moves away from these centres the impact of industrialisation on population characteristics gradually declines depending upon the size of the industrial centre and the distance from it. Attention has particularly been paid on the analysis of

the relationship of the above aspects with the increasing distance from the industrial centres by using the villagewise household data extracted and tabulated from the district census handbooks and questionnaires.

During 1961-81, demographic attributes of this region were modified rapidly because of the growth of industrial activities. People were attracted to the industrial centres of the region, causing not only rapid growth of population of these centres and the surrounding villages but also increasing the density of population. Creation of enormous employment opportunities has been the primary force for attracting people from within and outside the region. It means migration has played a crucial role in population growth of Indore, Dewas and Ujjain. Impact of large scale immigration can be seen on literacy, sex-ratio, participation and occupational structure. Due to male-selective immigration sex ratio is comparatively low and predominance of non-agricultural occupations (66.4 per cent) literacy rate is high.

Population density in region comes to 426 persons per sq.km. which is higher than the average density of 118 persons per sq.km. for the state (1981). Even the density of rural population (143 persons per sq.km.) is higher than the average of the state. Similarly density of urban population (5436 persons sq. km.) too is very high and has become possible due to rapid increase in industrialisation in the region. The distribution of population in the region is uneven. Density of population gradually decreases outside from the core areas. The density

of population has increased from 226 persons per sq. km. in 1961 to 426 persons per sq.km. in 1981 and along with this pattern of distribution too has changed. Population density increased by 7306 persons per sq.km. in the Indore city areas. Similarly, in and around Dewas industrial centre increase in density has been very high. On the otherhand density has declined along Ujjain due to the increase in area. Away from these areas the density difference gradually decreases, with the increasing distance from roads.

Population growth in the region has been much higher than the state average and has not been uniform throughout the region. It ranges from 141 per cent in Dewas city to 5.4 per cent in Nawada Khedi village. Population growth in these areas indicates that immigration is significant and is influenced by the level of transport development and the accessibility of villages with the industrial centres of the region.

The numerical superiority of males over female in the region as well as elsewhere in the country is mainly due to the male selective rural-urban migration. The opportunities for female employment in urban areas are scanty and the cost of living in these areas is so high that the male migrants prefer to leave their families in the rural areas, while they go to urban places in search of work, region under study is not an exception to this. Average sex-ratio of the region is 913 females per 1000 males and is lower than the average sex-ratio of M.P. (941) in 1981. But sex composition of the area exhibits sharp areal variations.

Literacy is one of the important characteristics of population and helps in measuring the degree of modernisation. As a demographic characteristic this indicates the level of sophistication, socio-economic position, the degree of familiarity and the receptivity to new ideas and information on the part of individuals. More than 41.6 per cent of the total population in the region is literate and is much higher than the average literacy rate of 21.9 per cent of the state. The proportion of literate males and females was 60.2 and 36.5 per cent, much higher than the states average of 39.5 and 15.5 per cent respectively due to degree of urbanisation based on industrialisation. The proportion of literates increased rapidly in the region than the state as a whole during 1961-81. Industrialisation has played a very vital role in the rural transformation of the region. Since literacy is induced by the Urban and industrial centres, it is very high in and around these centres and also along roads, but declines with the declining impulses of industrial impact.

Occupation is perhaps the most important social characteristic, influencing man's life and exerts its influence as one of the major determinants of rural transformation. That is why occupation is considered as a significant component for identifying rural transformation. Proportion of the main workers was 31.4 per cent in the region during 1981 and was lower than the state average of 38.4 per cent. Proportion of female workers is just half (11.4 per cent) of the state average. Out of the total main workers only 33.6 per cent are engaged in agriculture and related occupations while state

average is 52.0 per cent and this has been possible due to the development of several other non-agricultural occupation providing employment to workers. 66.4 per cent of the total workers in the region engaged in the non-agricultural occupation is just double of the average of (23.8 per cent) M.P. This clearly shows the impact of industrial activities which has been centering in and around Indore, Dewas and Ujjain Centres.

All attributes of population present the influence of industrial development. Among them, high population density, very high growth induced by immigration, low sex-ratio and high proportion of literates and non-agricultural workers are worth mentioning. They all are high in the industrial centres and surrounding villages and along the main transport lines and this pattern has been due to industrialization.

Thus, industrialisation has gone a long way in transforming the physical, social and economic attributes of the people of this region and has uplifted their status in the state.

If the physical environment is favourable, industrialisation boosts industrial development. Industrialisation helps agricultural development in several ways. It places requirement of consumer's goods and raw materials which act as impetus in improving the agricultural production. Thus the expansion of local market helps in agricultural transformation. Land use is highly intensive and commercialised near market place, but gradually, becomes less remunerative with the increasing distance from market. Industrial centres provide inputs for agriculture and are the sources of innovations.

Agricultural situations in the region is much better in this as compared to the average condition in the state. Net sown area in the region is almost double as compared to M.P. Most of the agricultural land is under cultivation and it is possible only when modern agricultural inputs are available which has been made possible only by industrialisation. 43.5 per cent of the net sown area is cultivated more than once and such a high intensity of cropping is the evidence of industrial impact. Pre dominance of horticultural cash and commercial crops with 45.7 per cent is another evidence of expanding market, use of modern agricultural implements is very high in this region as compared to the state average.

The proportion of agricultural workers was very high in 1961 but has declined remarkably in 1981. Agricultural population too has decreased in the nearby areas of Indore, Dewas and Ujjain industrial Centres due to the increasing nonagricultural occupations. Analysis of the households data clearly shows that as distance increases from the industrial centres, the percentage of agricultural population increases and the proportion of nonagricultural population decreases as distance increases from the industrial centres.

The average percentage of net sown area is very high (86.4 per cent) as compared to the state average (44.7 per cent). It is clear from the analysis of data that as distance increases from the industrial centres the percentage of net sown area increases. The main reason of this is that in the inner zone, (0-5 kms) most of the land is put to non-agricultural

use and only 79.3 per cent remains as net sown area and in the outer zone (Above 21 kms) net sown area proportion reaches to 90.2 per cent. Indore, Dewas and Ujjain industrial centres also have the similar picture. The proportion of double cropped area is 43.5 per cent in the region as compared to 17.5 per cent in the state. Availability of new agricultural technologies has facilitated intensive farming with the increasing demand for cash and commercial crops. The average of double cropped area has been highest in the influence zone of Indore (45.9 per cent), while it has been lowest (34.0 per cent) around Ujjain. There is inverse relationship between distance and proportion of the double cropped area. In the inner zone of Indore, 60.8 per cent of NSA is double cropped and declines to 42.0 per cent in the outer zone. Similarly intensity of cropping has been highest in the inner zone of the other industrial centres.

It is the cropping pattern which is easily susceptible to change, with changes occurring in methods, techniques and even in objectives of farming. The characteristics of land use and crop structure evidently show the industrial influence on them. Area under cereals increases from inner zone to the outer zone while vegetables, flowers and other perishable crops are produced near to the industrial centres.

The development of high yielding varieties, improved methods of crop fertilization and discovery of application of new means of diseases and pests control are the progressive biological techniques that help in improving the per hectare production. This all has revolutionised the agriculture of the region and farm production has recorded many fold increase.

It has been accepted that among the inputs essential for agricultural development irrigation is indispensable. Its use is conditioned by several variables. Land is intensively used in the inner zone and their significance declines with the increasing distance from them. The intensive and commercial farming in the inner zone necessitates and facilitates the development and use of irrigation in these inner zones. Due to high value of crops provision of irrigation becomes economic in these areas. 55.2 per cent of the total cropped area is irrigated among the sample farmers in the region. As the distance from the Indore, Dewas and Ujjain industrial centres increases, proportion of irrigated area decreases. Irrigational facilities alongwith electric pumps are more developed near the industrial centres. Per 1000 hectares density of electric pumps comes to 149.7. Intensification and commercialisation of agriculture has been made possible by the facilities of irrigation.

Modern agriculture relies on adequate and timely supply of inputs. Fertilizer being a key input, directly effecting agricultural production and the development of rural areas. More than 67.3 per cent of the cropped area in the region receives fertilizers and is higher than the state average. Like other facilities use of fertilizers is also more prevalent in the inner zone. Those areas where percentage of irrigated land is high, the use of fertilizers is also high. In the nearby areas of Indore industrial centre fertilizer is used practically on the total cropped area where land is cent per cent irrigated. Similarly in the nearby areas of Dewas and Ujjain industrial centres 47.2 and 50.0 per cent area has

irrigational facilities and 53.1 and 67.6 per cent fertilizers is used. But as the distance from these industrial centres increases popularity and the availability of fertilizers gradually declines. Use of pesticides is also popular in the adjoining areas of Indore (33.0 per cent) and Dewas (23.4 per cent). Mechanisation has also led to the proper utilisation of inputs. Average density of the iron plough is 67.0 per cent, per 1000 hectares. Ujjain ranks first with highest proportion of 92.9 while Indore has only 56.8 contrary to this tractors are more common in the inner zone and the ratio comes to 49.9 per 1000 hectares and gradually declines to 13.4 in the outer zone. Similarly industrial centres within the inner zones have the maximum density of electric pumps i.e. 124.8 electric pumps per 1000 hectares. Indore ranks first with 490 electric pumps per 1000 hectares in the inner zone and declines to 120.3 in the outer zone.

Development of modern agricultural technology in the study region has been very high and has been due to the fast industrialization and has influenced various aspects of agriculture in the region and further decreases according to distance from these industrial centres.

Infrastructural facilities such as transport, power, banking etc. play a catalytic role in the process of rural transformation. The development of infrastructural facilities is a prerequisite to reduce the regional disparities and helps us in gauging the level of the region. The existence of these facilities speedup the tempo of industrialisation. Transport

has been recognised as a primary infrastructure not only for the socio-economic development of an individual settlement but also of a region or state as a whole and helps in reducing the gap between the developed and distressed areas. It is considered as the foundation stone of economic development.

Roads and railways are the main arteries for inter-regional and intra-regional traffic flow in the industrial triangle region. Roads provide linkage between industrial centres and villages in their influence areas. Roads have recorded an increase of 321.7 per cent, much higher than the state average of 146.9 per cent during 1960-85 while the population in the region has increased only by 91.4 per cent during 1961-81. Rapid expansion of the road system has been possible due to the prevailing socio-economic and industrial conditions. Average road density per 100 sq.km. in the region comes to 35.5 km as compared to 17.4 km per 100 sq.kms for the state. Apart from the main routes several small stretches of metalled and unmetalled roads with varying density provide links with the interior parts of the region. In terms of area, road density the region has 37.5 Kms per 100 sq.km. while in terms of population it has been about 88.0 kms. per lakh population. Indore and Ujjain blocks have 52.3 and 41.1 kms. of roads per 100 sq.km. respectively. While in population-road ratio Dewas ranks first with 130.0 kms. per lakh of population whereas Indore has only 51.3 kms. per lakh population. It means there is inverse relationship between the size, of the industrial centre and population-road ratio due to very high density of population at these centres. In spite of rapid expansion

of pucca roads most of the villages still lack pucca road approaches since expansion of pucca road facilities are closely associated with the industrial development. Villages nearer to industrial centres not only have numerous but better road transport facilities and with increasing distance from the centre gradually declines. The highest growth of bus stops has been 266.7 per cent in Dewas and 122.7 per cent in Indore as compared to the 310.0 per cent average growth of the region. This high growth has been due to industrialisation. Thus impact of industrialisation on rural transformation has been faster in Indore and Dewas tahsils.

Process of industrialisation is very closely associated with the development of rail transport facilities. Therefore density of rail-routes is usually high in industrially advanced areas and region under study is not an exception to this. The rail-area density in the region is very high (5.7 kms.) per 100 sq.km of area as compared to the state average (1.27 Km/100 sq.km). The industrial triangle region has a sharp variation in rail density. Ujjain block in the region ranks first with 11.6 km per 100 sq.km and Dewas ranks last with (2.9 km per 100 sq.km). Considering the ratios of railways to population region's average of 13.3 kms per lakh of population Indore and Dewas have the lower proportion than the region's average. The Indore, Dewas and Ujjain blocks which are comparatively more industrialised have higher demand for railways.

Electricity is vital part of infrastructure which is required for development. Industrial triangle region has only

1.7 per cent electrified villages in 1960-61 and by 1990-91 hundred per cent villages of the region have been electrified. Number of electrified villages per lakh population in the region has more from 4.0 in 1960-61 to 142.4 during 1990-91. The average per capita energy consumption of the industrial districts was 55.97 kwh, higher than the state average of 30.7 kwh in 1960-61 and rose to 415.8 kwh and 258.4 kwh during 1990-91. Indore recorded the highest consumption (85.3 kwh) while the lowest was in Dewas (16.9 kwh) in 1965-66. During 1990-91 highest power consumption was in Ujjain (549.1 kwh) while the lowest was in Indore (342.0 kwh). The lowest growth by Indore in Power consumption has been due to its higher position in the base year. Higher industrial status is evident from the number of consumers per lakh population. It has been highest in Indore district (15,145) followed by Ujjain (13,111) and Dewas (12042) in reference to number of consumers per lakh people.

The regional development of a region/nation depends on the growth and interplay of various sectors of economy and banking is one of them. The development of banking is a function of necessity facility-prosperity mix. The region had about 1.6 banks per lakh of population in 1960-61 and rose to 2.7 during 1983-84. The highest growth was recorded in the highly industrialised districts of Dewas (580.0 per cent) followed by Indore and Dewas. Than the regional average of 411.4 per cent. On the otherhand concentration of cooperative banks is associated with the agricultural development and has been associated with the process of industrialisation in the region. Similarly number of credit societies per lakh

population is also an indicator of rural transformation. Credit societies are created to facilitate the agricultural development. The region has about 20 rural agricultural credit societies per lakh population during 1984-85. Indore block in the region recorded the highest credit advances than the region's average of Rs. 128.8 during 1984-85.

In terms of population post office ratio the region presents heavy pressure per post and telegraph office. Though the post and telegraph offices increased very rapidly in the state but it was very slow in the region due to the rapid growth of population in the region than other parts of the state. The impact of industrialization on rural transformation has been faster in highly industrially developed Indore and Dewas tahsils.

The changes caused by the industrialization and urbanisation have no doubt affected the quality of life not only in the industrial centres but also in the regions of their influence. These impacts can be beneficial and or harmful. Industrial development exerts heavy pressure on housing, water supply, health and educational facilities and living conditions in rural areas are influenced directly and indirectly by these. People get chance of raising their income not only by commuting and working at industrial centres but also by marketing their agricultural produces there.

Though the quality of life is an abstract thing but can be gauged by the level of living. However, the living conditions, views, and adoption of modern way of life and

way of working and sustained efforts for betterment expresses the level of living.

All the respondents living in 19 sample villages have their own house for living. But these houses vary in their construction materials and facilities available in them. 88.8 per cent of the total households have Kutcha houses made of mud and thatched with tiles etc. On the otherhand about 10.0 per cent of the total houses are Paccua and are in the inner zone. On average there are only 2.7 rooms per house in the region. Jairampur village has 1.4 rooms per house while Hingonia and Jalodia villages have 1.8 and 4.7 rooms per house respectively. As an impact of urbanisation use of flush latrine is gradually increasing. Villages with latrine facilities are in the inner zone. But villages like Amona, Nagukhedi very near to Dewas and Bhangarh and Nainod on the outskirts of Indore donot have sufficient number of latrines and open space has being used by the residents for this purpose. Hence, this basic amenity could not percolate to the rural areas of this industrial triangle region.

The quality of health and environment hygiene depends on the source and quality of drinking water. None of the village in the region has the facility of filtered and purified water. Majority of the people are depending on public handpumps along with available dugwells in their respective villages.

Increasing use of electricity is also considered as an index of good life and indicates the living standard. Most of the households residing in the villages lying in the inner

zone are using electricity but proportion gradually declines as we move to the outer zones. This clearly shows that impact of electrification are still to be felt in the outer zone of the industrial centres/towns. Apart from the electrification process, use of electricity for productive purposes is also increasing rapidly. More than 50.0 per cent are using electricity for irrigation and other agricultural pursuits. This is certainly the symptom of urban influence on the ways of life of the otherwise tradition - bound farmers.

Development of transport facilities have also been elaborated in the earlier chapter. Most of the residents from villages in the inner zone are owning bicycle to tractor and this gradually declines in reference to increasing distance from these centres.

Education is viewed as an important input and is virtually linked with the industrial development. Impact of industrialization on the distribution of educational institutions and level of literacy is very evident. Density of these institutions per unit of area as well as population - institution ratio is very high in this industrial triangle region as compared to the state. It has manifested in very high literacy in the region with 41.7 per cent of the literates as compared to 27.9 per cent in the state. Again there is tendency of concentration of these characteristics in the inner zones of the industrial hubs of the industrial triangle region.

Medical facilities are also not only providing medical care but also changing the orientation of the people. These

facilities are more frequent in industrialised zones. The over all density of all medical institutions is very high in the region as well as in rural areas. With this people are readily accepting modern medical practices.

Commercialisation of orientation of the people is a higher level of development. People are increasingly using bank facilities and credit facilities of cooperative societies. Realising the risk of life and property they are also investing in insurance policies. All these changes have helped in raising the standard of living and improving the quality of life in the industrial triangle region.

This is how the process of industrialization in the Indore-Dewas-Ujjain industrial triangle region has positively influenced the rural transformation in the region.

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