9.1 Summary

Chapter 1

- Rapid growth of population in Delhi has gone beyond the carrying capacity of the Metropolis and thus spreading in the peri-urban areas. High growth of population in the peri-urban areas increases the demand for residential land. Speculators purchase land from the farmers in bulk and convert the same into residential plots. The process of agricultural sale in the informal market reduces the size of the land holdings and forces the farmers and others engaged in agricultural activities to change over to other occupations.

- Further, in the wake of exemptions for certain industries in the village Lal Dora, local as well as outsiders establish small and medium scale industries and commercial establishments, which attract the labour force in the area. In the absence of strict regulations, the expansion of peri urban areas takes place very haphazardly and leads to many environmental problems. Thus, dynamics of land use not only reduces the agricultural land resources but also transforms the demographic, socio-economic and environmental structure of the peri-urban areas.

- Synthesis of the review of literature reveals that though researchers from different fields have made attempts to study various themes in this zone in different parts of the world, there is no comprehensive study which could be helpful to the planners to formulate a policy for the sustainable development of this dynamic zone.

- With these contents and observations in mind, a comprehensive study in this zone has been attempted with the main objectives: to study the land use pattern in the peri-urban area of NCT Delhi; the process of land use conversion from agricultural to residential, commercial, industrial and other non-agricultural uses; the diversity of occupational structure and alternative sources of income with change in land use; the environmental implications of urbanisation and migration into peri-urban areas; and to suggest strategies for land use development and environmental planning in peri-urban areas.
Present research is based mainly on the primary data, collected through comprehensive four tier questionnaire from 9 sample villages in three zones formulated by measuring distance from the urban agglomeration. However, secondary data collected from various sources has also been used.

Data thus collected were transformed into variables and indicators suitable to the theme of the study. For the objective assessment of the study, suitable statistical techniques like simple percentage distribution, cross tabulation, correlation, rank coefficient, composite index, diversification index were worked out showing intra as well inter settlement variations among the sampled villages. Maps have been generated using GIS digitization technique while graphs have been prepared using excel software package in the computer.

The study runs in nine chapters. Chapter one introduces the background of the study, review of literature, objectives and hypothesis, database and methodology, sample plan and design and research design. Chapter two gives an account of the general profile of the National Capital Territory of Delhi covering physical, economic and demographic profile. Chapter three deals with the general land use pattern and changes in time and space. It also highlights the pattern and changes in land use with respect to the distance from the highway and urban agglomeration. Chapter four covers the changing face of agriculture in the peri-urban and includes classification of land holdings, farmers, cropping pattern, crop intensity and diversification, livestock and problems of peri-urban agriculture. Chapter five deals with constituents of urbanisation process in peri-urban. This chapter reviews the urbanisation process in the urban and peri-urban of Delhi and highlights the migration, industrialisation and commercialisation; and land market and land prices as the main constituents of urbanisation process in the peri-urban. Chapter six gives an account of the socio-economic changes in the peri-urban and highlights the occupation structure, economic status of the population, quality of life and social change. Chapter seven covers the housing, household amenities and environment in the peri-urban. Chapter eight gives an account of the perception of local population about to the socio-economic and socio-cultural changes at the village level and their perception to the urbanisation process in their region. Chapter nine summarises the results of the study, conclusion and gives recommendations for the alternative form of development in the peri-urban to reduce the negative impact of urban expansion.
Chapter 2

- Area of the National Capital Territory of Delhi is a part of Indo Gangetic Alluvial plain and has five distinct physiographic units viz. active alluvial plain, recent alluvial plain, old alluvial plain, piedmont plain and ridge and hillocks. The main drainage flowing through the territory is Yamuna river. The soils of the territory is mainly alluvial deposited by the river action except in the Aravallis, where the soils are in-situ formed by the disintegration of rocks. The fertility of soils is medium. The climate of the territory is semi-arid with intensely hot summer and cold winter. The ground water resources are deteriorating both in quality and its reserves. In general land use, the area not available for cultivation has the highest percentage to total geographical area of the state followed by net sown area. Net sown area is constantly decreasing while area not available for cultivation is increasing.

- Population of the territory has increased rapidly since independence and its density has increased from 1174 persons km$^2$ in 1951 to 6352 persons km$^2$ in 1991. Sex ratio in Delhi Territory is increasing since 1951. Migration from different states to Delhi has been significant since 1951 and about 1/3 of the population of the Territory belongs to migrants.

- The economy of the Territory is based mainly on the tertiary sector which has about ¾ share in its net domestic product. The importance of primary sector is decreasing. Similarly, in the workforce participation, the share of primary sector is decreasing while of secondary and tertiary is increasing. Tertiary sector has highest share in the workforce participation. Number of industrial units in the territory have increased about five times between 1970 and 1996 while production has increased from 380 crores to 5748 crores in the corresponding period. Delhi territory has vast net work of trade and commerce. About 27 major commodities are handled by the whole sale trade in Delhi. There are 1 lakh retail shops in 1600 markets. Besides, open markets on the footpaths and weekly markets are also playing equally significant role in the trade and commerce in the territory.
Chapter 3

- The distribution of land under different uses is not uniform in the peri-urban and the variation is on the rise with the expansion of Delhi metropolis.

- There has been a general decline in the percentage of cultivated area and rise in cultivable wasteland and area not available for cultivation during 1971-81 and 1981-91.

- Cultivated land near the highway has the lowest proportion as compared to distant areas during the period under study. Further, this zone experienced highest negative growth in the cultivated area during 1971-81 and 1981-91 as compared to distant areas. Its sphere of influence was increased during 1981-91 in comparison to 1971-81. There has been highest continuous increase in area not available for cultivation near the highway zone than the distant ones. This shows high intensity of non-agricultural activities in the vicinity of highway. These areas are high value zones, which provide ample transport facilities to the commercial and industrial activities and commuting facilities to the working population.

- Similarly, the nearest zone of peri-urban from the urban agglomeration has lowest proportion of cultivated land during 1971, 1981, and 1991 as compared to distant areas. This zone has experienced highest negative growth in the cultivated area and highest positive growth in the area not available for cultivation in comparison to distant areas during 1971-81 and 1981-91. It indicates the spillover effect of Delhi metropolis on the adjoining area, which further spreads, in a decreasing order.

- Percentage of cultivable wasteland that has increased in both the decades has no clear-cut pattern of its expansion.

Chapter 4

- Expansion of urbanisation is reducing the size of agricultural land holdings and inner peri-urban has highest percent of smallholding while middle and the outer has medium. Reduction in size of land holding is leading to part time farming and leasing out uneconomic holdings to others for agriculture.

- Significant change in the cropping pattern in peri-urban during 1980-81 to 1998-99 has been observed in which Bajra and Guar has experienced significant decline in the
percentage area and paddy has experienced equally significant increase in the percentage area. Small holdings have Jowar and Wheat as the major seasonal crops while medium holding have Wheat and Paddy.

- In the crop combination, wheat is the dominant first rank crop while paddy is the second rank crop. The diversification of crops is on the decline with the increasing concentration in specialised crops.

- Zone-wise, crop intensity is highest in middle peri-urban and lowest in outer peri-urban. Diversification of crops is highest in the outer peri-urban and lowest in the middle peri-urban. In both the cases, the trends are not in accordance to the hypothesis. Natural factors like quantity and quality of irrigation water has played important role in deciding the intensity and diversity of crops than the urban impact as thought while framing the hypothesis.

- The low acreage under vegetables and horticultural crops is mainly on account of high cost of labour, poor quality of irrigation water and reduction in the size of holdings.

- In the urban side effects, the percentage of crop damage is highest by the animals and the local residents and its percentage is higher in the inner peri-urban.

- In livestock, milk-producing animals have shown positive growth while all other animals have experienced negative growth during this period. Per household animal ratio is higher among the farmers than the landless. Further, it is higher among the medium size farmers and low among the small farmers.

Chapter 5

- Outgrowth in the peripheries of the city has been a regular phenomenon, which is informal in nature and is mainly controlled by speculators. In this process, number of unauthorised colonies developed in the peripheries have been approved from time to time and presently more than 1000 colonies located in the peri-urban are still waiting for govt approval.

- Urbanisation process in the peri-urban involves migration; commercial and industrial establishments; the land conversion and the prices as the major constituents.
• Highest percent of male migrants have migrated on account of economic reasons while the females have been migrated on account of family reasons. Large percent of owner migrants have not come directly in the peri-urban while large percent of tenant migrants have come directly. The main reason for purchasing the plot in the unauthorised area is the cheap prices.

• Highest percent of owners of commercial and industrial establishments belong to Delhi urban area. This is on account of expansion of their business in the main city requiring more space or shifting of polluting units to these areas where the pressure of the pollution controlling authorities is low. Highest percent of workers in these establishments are migrants.

• Large percent of establishments are engaged in manufacturing followed by processing, storing and selling. Percent of establishments having largest size increases towards outer peri-urban. Cheap land, low rent, nearness to highway and Delhi market are the chief reasons for the establishments of these activities in the peri-urban.

• Land market system in the peri-urban is both formal and informal in nature and the land prices are generally higher in informal system than the formal. The speculators who control the informal land market are more active in the inner peri-urban where more than 90 percent land in the unregulated residential sector is sold through them. Away from the inner peri-urban, the significance of the speculators is reduced as the demand for residential land is decreased in the distant area.

Chapter 6

• Peri-urban workforce has experienced a significant shift from the primary sector to the secondary and tertiary sectors during 1981-91. The inner-peri-urban has higher percentage of tertiary workers than the middle and the outer peri-urban. This shows declining impact of urbanisation away from Delhi Metropolis. Farming class has higher percentage of secondary occupations in addition to main occupation than other population groups.
• Zone-wise, the percentage change in the occupation of the heads of the households is higher in the inner peri-urban while class-wise it is higher among the migrants (tenants). Major shift in occupation to other occupation is from the agricultural labourers while major occupations which absorbed the occupational change in the peri-urban is govt. and private service.

• Inner and the middle peri-urban have highly diversified occupation structure while outer peri-urban has low. Farming and non-farming class (original) has very high diversification in occupation structure while the migrants—owners and tenants have low and moderate respectively.

• The proportion of households having highest average per capita expenditure class is higher in the inner than the middle and the outer peri-urban. Farming class has highest average per-capita expenditure while the migrants (tenants), the lowest.

• Percentage of households leading very high quality of life is highest in the inner peri-urban than the middle and the outer peri-urban. Highest percentage of farming class households are leading equally very high to medium high quality of life while the non-farming (original) and migrants—owners and tenants are leading medium high to low, low to very low and low quality of life respectively.

• There is significant increase in the percentage of literacy in the peri-urban of Delhi during 1981-91 and this increase is more pronounced in females than males. The level of education is higher in the outer peri-urban than the inner and the middle. There is no significant correlation between per capita expenditure and the level of education.

• Percentage of children attending schools is higher in the inner than the middle and the outer peri-urban. Percentage of school going children attending private schools is also higher in the inner peri-urban among all the population groups.

Chapter 7

• Study reveals that there is general shift from kutcha to pucca houses as no kutcha house is observed among the sample households in the peri-urban in comparison to 1991 census of the rural areas. Residential plot size decreases from the inner peri-
urban to the outer and the average size of the plots is highest among the farming class and lowest among the migrants.

- The inner peri-urban has highest percent of multi-storeyed houses while the outer, the lowest. Class-wise, the farming class has highest percent of multi-storeyed houses while the migrants, the lowest.

- The percentage of rental houses decreases towards outer peri-urban. Farming class has low room occupancy ratio while tenants have the highest.

- Percentage of LPG kitchen fuel users is highest among the inner peri-urban and lowest among the outer and vice-versa in the users of cow-dung fuel. LPG user percentage is highest among the migrants (owners) and lowest among the tenants. Highest percent of tenants are using kerosene fuel in the kitchen.

- Percentage households having toilet and bathrooms decreases from the inner peri-urban to the outer. Percentage of septic tanks to the toilets is highest in the outer peri-urban and lowest in the inner peri-urban. Outer peri-urban has higher percent of separate and ventilated kitchen facilities than the inner-peri-urban.

- The highest percent of households in the peri-urban are using tap drinking water. The middle peri-urban has the highest percentage of households using tap water while the inner has the lowest.

- Inner peri-urban has highest composite pollution index of all variables as well as of each single variable. Fume, smoke, noise, overcrowding, dampness and foul smell are the major air pollutants in the peri-urban. Structural degradation of houses, which involves the lowering of its surface level, is another environmental problem. This problem is highest in the inner peri-urban and lowest in the outer. Ground water resources are deteriorating both in quality and quantity. The depletion of quality is highest in the Southwest outer peri-urban while the quantity depletion is highest in South Delhi peri-urban, which lies in the ridge area.

Chapter 8

- Higher percentage of farmers wants to sell land in the open market. High and direct payment by the informal buyers is the main reasons.
Higher percentage of respondents perceives that landless population is adversely affected with the land use changes. Higher percentage of respondents perceive that land sale has positive affected the young generation while the low percentage perceive that it adversely.

Highest percentage of respondent perceive that though increasing industrial and commercial establishments are creating pollution to certain level, they are positively contributing towards the development of the area.

100 percent respondents are in favour of extension of Lal Dora and the introduction of planning agency for the rural area. Low percentage of respondents is in favour of the revival of village Panchayats in existing form.

Large percent of respondents perceive that migrants are directly responsible for bringing socio-cultural changes in the village society. However, no respondent from the age group of 20-40 years have such perception.

Significant percentage of respondents perceive that some migrants play negative role in the village society that degrades the moral values and brings bad reputation to the village families. However, very low percentage of respondents from the younger age group has such perception. Rather, more than ¼ respondents from this age group perceive that migrants play positive role that brings prosperity to the local population.

9.2 Conclusion

Land use in the peri-urban of NCT Delhi in general is diversified which is evident from the fact that percentage of area not available for cultivation which is mainly occupied by the non-agricultural uses like residential, commercial, industrial and roads etc. is about three times the all India percentage under these uses in 1991. Study further highlights that diversification of land uses within peri-urban is higher along the highways and near the city and as the distance increases from both, the percentage of area not available for cultivation reduces resulting in reduction of diversification of land use and concentration of higher percentage of land under agricultural uses.

These results prove the hypothesis that land use in the peri-urban is diversified and shows inverse relation with distance from the city and the highway.
• Comparing the impact of highway and the city, it is found that impact of city on the diversification of land use is more pronounced than the highway. Percentage of area not available for cultivation which indicate the level of diversification of land use is higher near the city (0-3 kilometre distance zone) than the highway in the similar distance zone during 1971, 1981 and 1991. Moreover, the growth of area not available for cultivation during 1971-81 and 1981-91 is higher in the nearest zone from the city than the highway in the similar zone. This further highlights that the impact of the city for the diversification of land use is growing at the higher rate than the highway.

• Urbanisation in the peri-urban is leading to reduction in the size of land holdings in which the inner peri-urban zone is most affected. Reduction in the size of land holdings has led to increase in the number of part time farmers. Another trend emerged with reduction in size of land holdings is the lease of land to others for agriculture. About 50 percent land holdings in the inner peri-urban are given on lease as the farmers feel it uneconomical to lead agriculture as main occupation.

• There has been drastic change in the cropping pattern especially in the kharif crops where paddy has experienced high rise in percentage area and bajra and guar has experienced significant decline during 1980-81 to 1998-99. Percentage of gross irrigated area to total cropped area is constantly rising but the crop intensity is declining since 1990-91.

• The working hypothesis that intensity and diversity of crops has positive relation with the distance from the city is not proved.

• Decline in per ha. yield of major crops like wheat and paddy and general decline in the intensity of crops since 1990-91 is reflecting the negative signs in the development agriculture in the peri-urban of NCT Delhi. This decline is the result of combined impact of deterioration of physical resources like soil and water and the changed economic environment in the peri-urban. The rising land prices have made the farmers to think the agricultural land as a commodity rather than a resource for production. As a result, they are loosing interest in agriculture which indirectly reflect in the yield of crops.
• As the urbanisation advances, the menace of roaming Scot-free animals is increased which damage the standing crops. The diversion of residential drainage towards open fields is water logging the nearby lands causing soil deterioration and crop damage.

• Urbanisation process in the peri-urban is essentially the result of growth of population and economic activities beyond the carrying capacity of Delhi Metropolis and the poor affording capacity of the migrants to pay high rents in the city. This process has so far led to unauthorised expansion of urban peripheries which had been approved from time to time. Major constituents identified for the urbanisation process in the peri-urban areas are migration, industrial and commercial expansion, land market and land prices.

• Peri-urban receives two types of migrants. First, those who come directly to this area in search of employment or residence. These are mainly tenant migrants. Second, those who after staying for sometimes in other areas of Delhi, migrate to this area for the construction of own house.

• Analysis of the land sale reveals that out of the total sale of agricultural land by the farmers, about 2/3 has been made to the speculators during 1975-99. Speculators generally keep the land vacant for some time in the hope of rise in prices. Also, while selling they donot dispose of the entire land in one lot but in different time intervals. This way agricultural land remains vacant for some time. Further, it is observed that about 90 percent buyers of unregulated residential plots in the inner peri-urban purchase through speculators. They also invariably keep the land vacant for sometime either to manage money for its construction or resale. As a result, agricultural land which is converted to these plots remain unused for years together right from the speculators to the small buyers.

• These results prove the hypothesis that speculators dominate in the land conversion and large tracts of land remain uncultivated for years together in the peri-urban near the city.

• Exemptions in the Lal Dora of peri-urban are attracting the entrepreneurs to establish commercial and industrial establishments. Highest percent of these owners belong to
Delhi Metropolis who have either hired or owned the premises for storage of goods to supplement their city units or have shifted to these sites on account of shrinkage of space in the city or other reasons. Cheap land, low rent, nearness to highway and Delhi market are the main reasons for the establishment of commercial and industrial establishments. More than 90 percent workers in these establishments are migrants as local population don’t work in these industries reportedly on account of low wages. However, the establishment owners have different version for not employing the local workers. They are of the view that local people donot work sincerely and make many hurdles, which results in loss in the business.

- Peri-urban has both formal and informal land market system and the prices are generally higher in the informal sale. The urbanisation process decides the land prices and as such prices are higher in the inner peri-urban which is running in the advanced stage of this process. Rise in prices shift the commercial and industrial establishments requiring more space to middle and outer areas.

- On account of land use changes, there has been remarkable change in the occupation structure of workforce in the peri-urban. During 1981-91, the rural areas of Delhi experienced significant growth in the secondary and tertiary sectors. The inner peri-urban where the land use has experienced significant changes has higher rate of occupational change than the other two zones. Major shift in the occupation structure is from the agricultural labourers and the major occupation, which has absorbed this shift, is service class. Local population has highly diversified occupation structure while the migrants have low to medium. Significant percentage of local population has other sources of income like renting of houses, factory sheds, shops etc. Besides, higher percentage of local workforce has secondary occupations in addition to main occupations.

- These results prove the hypothesis that local population has more diversified sources of generating income than the migrants as the former are engaged in several economic activities simultaneously.

- Average per capita expenditure is highest among the farming class while it is lowest among the tenants. It is comparatively higher in the inner peri-urban than the middle
and the outer peri-urban among all the identified population groups but coefficient of variation is higher in the farming class. Average quality of life is higher among the farming class, medium among the non-farming (original) and migrants (owners); and very low among the tenants. Quality of life decreases towards outer peri-urban and the rate of decrease is higher among the farming class.

- Land use change and shift from traditional activities to urban activities has not only benefited the population in terms of economy but has brought social change in terms of literacy which is showing steady increase. Unlike the traditional rural areas where children attend mainly the govt. schools, the peri-urban zone under study has significant percentage of children attending private institutions. This percentage is highest among the farming class and lowest among the tenants. Also, this percentage is comparatively higher in the inner peri-urban than the middle and the outer.

- The living conditions of the peri-urban population are improving in terms of housing and household amenities. There is general shift from kutcha houses to pucca houses, single storeyed to multistoried storied houses, own use to sharing with tenants, defecating in the fields to the toilet and septic tank culture, traditional cooking fuel to cooking gas fuel. These amenities are more enjoyed by the farming class than others and in the inner than the middle and the outer zones. However, with the increase of population pressure on limited infrastructure, unregulated growth of colonies, unchecked growth of pollution creating industries in the Lal Dora, the negative impacts of the urbanisation has been felt. The intensity of such impacts is higher in the inner peri-urban than the middle and the outer peri-urban. Fume, smoke, noise, overcrowding, dampness and foul smell are the major air pollutants in the peri-urban. The structural changes in the houses with the lowering of surface level are the other environmental problems in the old settlements of peri-urban. Over use of water resources has resulted in deterioration of its quality.

- These results prove the hypothesis that there is general physical environmental deterioration as a result of urbanisation and migration in peri-urban areas. But, the socio-economic environment of such areas has improved with urbanisation and migration.
• Study reveals that farmers are mainly interested to sell land in the informal market and major reasons for such preference are high prices and direct payment by the buyers. With regard to the effects of land use changes, farmers generally believe that it has adversely effected the landless. However, they perceive that land sale has positively effected the young generation of the farming community.

• Though industrial and commercial establishments are creating pollution to certain extent, their growth in the peri-urban area is welcomed by the local community who generally considers it as sign of development. Local population is mainly in favour of extension of village Lal Dora to meet the growing need of residential land and the introduction of rural planning and development agency to regulate the development of the area.

• Local population of the higher age group perceives that migrants are directly responsible for the socio-cultural change in the village society. However, the younger generation that is very objective in thinking perceive that it is not the migrants but the changed socio-economic environment that has brought changes in the socio-cultural environment in the village society.

• To conclude, peri-urban is highly dynamic zone where land use changes are reflecting in the demographic, socio-economic and physical environment at a very rapid rate under the influence of Delhi Metropolis. In the present situation, these changes are taking place without the proper enforcement of any regulations and yield both positive and negative results. However, it is feared that the positive effects may likely to be precluded by the negative effects in the absence of regular monitoring of the activities. Therefore, this zone needs careful handling of the development activities for its sustainable development. On the basis of the present study, following recommendations are made in this direction.

9.3 Recommendations

• Linkages of the urban development plans with peri-urban: The pattern of general land use shows that clusters of unauthorised colonies just outside the limits of the metropolis in the peri-urban zone are converting the agricultural land to non-
agricultural uses without following any regulations. It is unfortunate that though master plan has been in practice for regular urban growth for the last 40 years, there is no planning to check unregulated outgrowth in the peri-urban, which are the future urban areas. This outgrowth takes place ahead of the plan and by the time master plan is ready for implementation, large parts of the land are already encroached upon under the unauthorised colonies or other non-conforming uses. At this juncture, it becomes difficult for the authorities to remove these wide spread structures uprooting large number of population. As a result, these unauthorised structures are regulated which not only disturbs the planned development in the city but also encourages further encroachment out side the city. In this regard, it is suggested that there is utmost need for long term planning not only for the urban but also for the peri-urban to check the unregulated expansion.

- **Introduction of planning and development agency for the peri-urban:** With regard to land use development of peri-urban areas, there is strong need for rural planning and development agency which could plan and develop the peri-urban areas in a systematic manner so that these villages when merge in the city are not considered as slums but the planned developed areas. Planning and development agency is more essential for the peri-urban than the urban which is base for future urban areas. If base is not handled carefully by checking haphazard growth, future master plans will not achieve its objective of planned city growth.

- In the absence of any rural planning agency household amenities like toilets and septic tanks are designed by the individual skills without following the proper method. As a result these septic tanks which are growing in the absence of sewage system are creating problem. The rural planning agency can take care of these aspects in improving the quality of life in the village. It is observed that peri-urban villages though have been expanded many times, it lacks the public toilet facilities. As a result, the migrants and the original population who don’t have private facilities defecate on the road sides and drainage lines which further deteriorates the environment. There is urgent need for public toilets for the poor people who cannot afford to have private facilities in their houses.
• **Acquisition of land at an appropriate time** It has been observed that large tract of land remain unused for years together both in the formal acquired areas and the speculative holdings in the informal growing areas. These are potential agricultural lands and keeping such areas without any use for a longer period make a question mark on the food security of the country. It is suggested that long term planning may earmark the future use of land but its acquisition for the development work should be taken at the time of actual use. Once the land is acquired, development work should start immediately so that land does not remain vacant for a longer period. Keeping the land vacant for a longer period after acquisition also gives rise to encroachment and squatting. Therefore, if land is acquired at an appropriate time, such irregularities can be avoided.

• **Review of exemption granted in the Lal Dora:** In the present set up, Lal Dora has been exempted from the restriction of the MCD act 507 under some sections and it is felt that these exemptions are grossly misused. The purpose for the exemptions to rural industries in Lal Dora was to develop the area as independent employment generating units for growing population and the development of the area. These units are misusing the exemptions extended in the rural areas for industrial growth by setting up highly polluting units, crossing the limits of workers earmarked in the exemptions, power load etc. Many of the industries are using high power generators in the absence of non-availability of electric connections for such a high power load. 92 percent workers in these factories are migrants as local workers don't want to work in these units because of low wages. Large number of rural industries are in the informal sector where wage rules are not followed which exploits the workers. Large percent of owners live in the city area and the brunt of the pollution created by their factories and generators is to be borne by the village people and the factory workers.

• Similarly, under exemptions, the buildings of the residential units do not require approval of any authority. As a result, people are constructing houses as per their own layout plan covering sometimes the 100 percent of the plot area and from 3 to 4 storeyed houses.
• Therefore, it is suggested that the exemptions made during 1963 are not yielding the desired results and need its review in the present circumstances. Industries of informal sector should be registered and recognised so that owners don't exploit the workers by violating the wage act.

• **Streamline of land market system:** There is need to streamline the informal land market system, which runs on power of attorney. To check the unregulated sale of land, the power of attorney should be recognised as legal document in the sale purchase of land so that Delhi land act is not easily violated. Similarly, land acquisition policy should be streamlined so that farmers whose land is acquired by the govt. don't feel embarrassed.

• **Long term planning for the agricultural development:** To promote agricultural activities including animal husbandry, long term planning is required with strict zoning of areas for such activities so that farmers in those areas are free from any uncertain situations in regard to the land acquisition in the near future.

• **Need for water harvesting techniques and judicious use of water for irrigation:** It has been discussed in the results that deteriorating water quality is the main constraint in agriculture as the output of water is higher than the recharge. The areas where natural recharge is taking place have low problem of this sort. Therefore, there is need to improve water resources by adopting water harvesting techniques.

• Further, there is need to use water judiciously by adopting latest techniques like sprinkler and drip irrigation system. Excess of irrigation is not going to increase production as is evident from the present study that though irrigation intensity is constantly increasing cropping intensity has shown declining trends.

• **Rational distribution of land in the extended Lal Dora and provision of space for amenities:** Village Lal Dora extension is a good practice to meet the growing residential needs of the farming class from their own land but there is no rational distribution. It has been observed during the fieldwork that Lal Dora land has been allotted to many farmers in excess of their needs. As result, they are engaged in resale.
practice to the outsiders. If such practice of allotting Lal Dora land in excess of the need is continued, farmers will indulge in the division of large size plots for the purpose of sale. This will again lead to narrow lane and sub lanes carved out in the process of division, which will deteriorate the environment like the old Lal Dora. Secondly, villages where Lal Dora has been extended, no provision of land for the common facilities like park, garbage disposal site, playground, site for community centre, public library, dispensary or any other public utility services has been made. If such facilities are not taken care of, these settlements when merge in the city area will encroach upon the facilities in the surrounding planned areas, which will lead to tension in the society.

- In this regard, it is suggested that land should be allotted to the farming class as per the genuine need and not for further sale in small plots. Before allotments, the provision of land for public utility services should be made. There is need for separate plots for non-polluting small scale industries in the extended Lal Dora so that residential areas are not disturbed by the commercial and industrial activities