CHAPTER -SEVEN

FRINGE AREA LAND USE PLAN AND SUGGESTIONS
FRINGE AREA LAND USE PLAN AND SUGGESTIONS

Allahabad Fringe Area has grown and expanded under combined effect of urbanization and natural growth of population. Its growth has been fast and steady. Its actual expansion started after 1971 when many of the institutions and industries, big or small started being localized around the city due to increasing cost of the land within the city. Educational institutions and health institutes got more and cheap space to be established outside the corporate boundary of the city. Fringe area expanded primarily along road sides due to easy accessibility. Roads connecting Allahabad city to other parts of districts are the main links to connect local people to the city to fetch their urban based needs. Seeking the opportunities to provide the urban services at shorter distance from countryside retail centers and essential urban services started growing in fringe areas. The growth and expansion of these economic activities in fringe areas are not well planned. Therefore, preparation of a separate land use plan for Allahabad Fringe Area has its own importance because of growing population and limited land resource. The carrying capacity of land is under stress due to environmental pollution, land degradation and conversion of land for non-agricultural purposes. Therefore, it is necessary to focus not only on quantification of required land for each land category but also on quality land use.

The growth of Allahabad Fringe Areas is not uniform in all the directions around the city. Therefore, there is need for macro as well as micro-level land use planning. This will make the best use of land in different segments of fringe areas. It needs formation or revamp of institution for this purpose. The plan also includes policy framework besides general suggestions and specific tasks. These are based on
information's collected from primary and secondary sources, discussions with the villages, managers of different institutions and service providers.

The focus on preparation and analysis of land use plan for the development of Allahabad Fringe Area has been two fold.

(i) Land use plan related to agricultural land,

(ii) Land use plan related to land put to non-agricultural uses.

LAND USE PLAN RELATED TO AGRICULTURAL LAND

Land use plan is concerned with the future of land and the changing demands of the society. It plays a crucial role in agriculture sector to maintain the land potentials. ‘Land planning is in essence the determination of the optimum use of every area of land which must be elastic and can change from time to time to adopt changing conditions’.¹ It suggests the future potentialities of land also. ‘Land use planning is more than a compound of architecture, engineering, public administration and social sciences. It is a new and engineering discipline with its own scientific and objective approach to its central theme, the use and development of land’.² To maintain the land capability and high nutritional level of inhabitants, land use planning is necessary. Agricultural production is low in comparison to increasing population and agricultural land is being put to non-agricultural purposes. Thus how to boost up agricultural production in different categories of land is the chief problem in the fringe area, so that balanced regional economic development may also be ensured.

Landholdings

In Allahabad Fringe Area, the average size of operational landholding was 0.71 hectare as per the 1995-96 agricultural
Census and about 98 percent holdings belonged to small and marginal farmers. While they accounted for only 71.36 percent of total area of all landholdings. The average size of landholding in the fringe was even less than Allahabad district as a whole and percentage of marginal and medium farmers was greater than district.

Operational landholding is distinct from ownership holding. It has been defined as ‘all land which was wholly or partly used for agricultural production and was operated as one technical unit by one person alone or with others without regard to title, legal form, size or location.’ The holding might be either fully owned or fully rented or partly owned. The land of the holding may be in a single compact block or scattered fragments.

In the light of average size of operational landholding and percentage of marginal and small farmers, it is clear that this class of farmers along with the medium peasants constitute, in fact, the backbone of agricultural economy of fringe area. As a class these peasants neither enjoy a large social influence on society nor possess adequate means to improve their method of cultivation. Therefore, one of the negative features of agrarian transformation is that of continued concentration of land in the hands of the upper strata of rural society. Agricultural structure has not undergone any radical change corresponding to changes in methods and modes of production and technological improvements. The various ceiling laws have not reduced the prevailing concentration of land ownership at the upper strata.

What is important to note here is that 0.31 percent of large holdings (10 hectare and above) in fringe area cover 6.81 percent of total area.

Thus a redistribution of land resource is needed as large
farmers either leave their land fallow or convert them to non-agricultural uses. This practice of conversion should be banned by enactment of proper laws. Preservation of first class agricultural land (level, fertile, irrigated) from encroachment for non-agricultural purposes is an immediate need. In the matter of land use policy, for the preservation of such lands for agricultural purposes effective enough legislation is important. It may be pointed out that with improved technology, second class land could be raised to status of first class land but with improved technology, the first class land will further improve and necessity for their preservation remains.

Net Sown Area

The net sown area as percentage of total reporting area has come down continuously from around 47.84 percent in 1990-91 to 38.59 percent in 2006-07 in Allahabad Fringe Area. The net sown area in Allahabad district increased from 65.12 percent in 1990-91 to 67.13 percent in 2001-01 but after ward it decreased to 58.67 percent in 2006-07. Although the net sown area has started declining in Allahabad district but it has come down heavily in fringe areas which is major cause of concern. This brings out the short comings and inefficiency of proper planning and negligence towards maintaining net sown area by effective policy implementation. The main cause behind it is the conversion of land to non-agricultural purposes to meet the demand of space for increasing urban population and diversified activities. Urban encroachment has aggravated the problem. Land acquisition by government for developing the industrial area or other institutes also puts stress on agricultural land and causes to decline net sown area.

Cropping Pattern

Cropping pattern in Allahabad Fringe Area has undergone major changes. Farmers have started cultivating commercial crops
along with major food grains i.e. wheat and rice. Mixed cropping is found to be superimposed in the areas of rain fed farming and irrigated farming in varying degree in the fringe area.

The cropping patterns have a close bearing of rainfall, irrigation and command area development; soil and moisture conservation; crops, animal husbandry, seeds, fertilizers and manures, plant protection chemicals; farm power and associated implements and machinery. All these factors are not well planned in the study region and need more focus for their development.

The **cropping intensity** of fringe area as well as Allahabad district has almost consistently increased since 1960-61 and it became 157.13 percent during the period of 2000-01. This area is very important and needs constant focus. 'Failure to intensify and diversify agriculture will be socially disastrous in predominantly agricultural third world countries. Importing food will have the same effect as importing unemployment in such countries. Therefore adoption of ecologically sustainable integrated, intensive farming techniques is a must in many developing countries'.

The **Productivity** of main crops like paddy, wheat, potato and sugarcane has increased since 1960-61 to 2000-01. But the productivity is comparatively low in food grain crops. In order to increase productivity four factors need to be focused:

1. Ecological balance,
2. Integrated Economic Return,
3. Integrated Energy System,
4. Agricultural Employment.

It can be concluded that the increase in productivity has mainly two aspects:
1. Regulation of Agricultural Land use by proper crop-combination. It can be put into four categories:
   
   (a) Ecological Control,
   
   (b) Diffusion of relevant technology and knowledge,
   
   (c) Transportations and marketing of agricultural products,
   
   (d) Processing of agricultural products.

2. Development of infrastructural elements and regulation of non-agricultural functions.

   International commission for peace and food has set the objective to lift total population of India above poverty line in coming decade. Therefore, the agriculture has been assumed to be the engine of development to create 10 crores of employment in one decade. The focus has been laid on commercial crops, agro-industries and export of agricultural products. It has assumed Indian agriculture not to be only sustaining one source of continuous life but to be of maximum profit. Resource based planning has been emphasized inspite of minimum need requirement. This objective is based on 4 percent growth rate of labour intensive agriculture and associated industries. The employment generation just about half of potentialities because of low conductivity, needs to address problems of:

   1. Integrated national and efficient land and water management,
   
   2. Expansion in agricultural irrigation by national utilization of water resources,
   
   3. Use of bio- fertilizers,
   
   4. Refined management of micro nutrients,
   
   5. Production of labour intensive commercial crops,
   
   6. Integrated Pest Management,
7. Multilevel use of water logged areas,

8. Organization and use of Geographical Information System and Environmental Impact Assessment,

9. Restructuring of Land Reform Concept.

**Irrigation Plan**

The future of new agricultural technologies lies on one hand in evolving new varieties of seeds of wheat, rice and other crops and on other hand in making the most efficient use of irrigation facilities supplies by minimizing losses. The most important factor which has affected cropping intensity is irrigation.

The **Irrigation intensity** i.e. net irrigated area as percentage of not sown area has increased from 23.16 percent in 1960-61 to 86 percent in 2006-07 in Allahabad Fringe Area.

Furthermore, gross irrigated area as percentage of net irrigated area has also increased during the last twenty years from around 120 percent in 1980-81 to around 165 percent in 2000-01 with fluctuating trend during intervening periods. Tube wells are now the major source of irrigation in Allahabad Fringe Area and account for 99 percent of net irrigated area.

There is another aspect of analysis of sources of irrigation. The role of public sources continues to be very important in Allahabad district but in fringe area private tube wells are important. That means public investment in irrigation is needed in fringe areas to increase gross irrigated area, which in turn would help in increasing the cropping intensity.

Productivity is related with crop diversification which in turn depends on adequate irrigation facilities. These irrigation facilities, no doubt play crucial role in increasing gross irrigated areas but **irrigation efficiency** needs to be given proper focus by maximum
utilization of irrigation capability in place of increasing the network of canals and tube wells. It can be brought about by developing Integrated Irrigation Command Area plan. It will take care of individual’s need of irrigation at the time of need.

The irrigation facilities have changed the cropping pattern in fringe areas. Farmers have shifted to crops which are highly irrigated. So we need to make efforts to increase production of more pulses, oilseeds and spices. Crop rotation also needs to be modified. Following steps are imperative to achieve it.

(a) More thrust be given for developing high yielding varieties for these crops,

(b) Rain fed areas should be encouraged to cultivate these crops,

(c) Orchards, fallow land and land under social forestry could be used for growing such crops,

(d) Processing industries of oilseeds and spices could be promoted at local level with support for technology up gradation, packaging and market access facilities.

Under ground water management also needs attention. In recent years water table has gone down due over exploitation of underground water as tube wells play crucial role in irrigation. Water harvesting needs to be promoted by water shed management. The ponds and lakes are being revived with the fund from Mahatma Gandhi National Rural employment Guarantee Scheme. This can bring level of water table up.

**Use of Fertilizers**

Fertilizer is the key input for increasing agricultural production. Use of fertilizer had been increasing in Allahabad Fringe
Area but their balanced and proportionate application has not been reported.

Urea is the most commonly used fertilizer and its selling price is fixed by the government of India. It should be emphasized that increase in production can be achieved through fertilizers, but NKP should be available at the right time and in right quantities and their application depends on the types of crops and water availability.

There is need to adopt following strategies to combat the menace of disproportionate use of fertilizers:

(a) Guide lines should be circulated to each unit of rural or urban areas on the basis of soil testing for the proportion of fertilizer which is required to be applied,

(b) Farmers meeting should be organized at village level before every cropping season to make than aware about guide lines,

(c) Farmer should also be informed about hazardous impact of non- proportionate application of area,

(d) Government functionaries, specially at the gram panchayat level be sensitized regarding these aspects.

In the view of rising cost of chemical fertilizers and the large amount of subsidies given to farmers, it is felt that natural waste and byproducts of crops could be a good source of orgasmic matter to increase the fertility of soil. Waste products include animal dung, bagasse, weeds, straw, night soil, town refuse, sewage, sludge, slaughter house waste, oil-cakes, fruits and vegetable processing waste, rice husks and seed weeds. The composting and recycling of these waste products would provide cheap and ideal organic manure to the soil.

**Biofertizors** are considered as an effective, cheap and
renewable supplement to chemical fertilizers. Rhizobium has been found to be effective for pulses and oilseeds. Blue-green algae (BGA) is effective for lowland paddy. The government of India has established a national and several regional centers to provide biofertilizers.

**Green manure crops** are of great help in making the farm land fertile. Green leguminous crops, when they attain some height, are ploughed in the field along with their roots, stems and leaves. This helps all the nutrients the plant had obtained from the soil to go back to the soil. Nitrogen, which the bacteria at the roots of plants had obtained from the atmosphere, is also received by the soil in the form of nitrogen. Sun hemp, dhaincha, barseem and pulses like black gram, green gram, horse gram, kidney beans, cluster bean, cowpea, pigeon pea, and peas are grouped in green manuring crops.

**Farmyard manure** is very important to make soil fertile. In farmland manure, cow dung, urine of animals and straw (which is used for the purposes of sitting of animals) is included. Almost 50 percent of the dung is in the form of protein and it takes long time to decay and plants obtain their nutrition from this material much later. The quantity of straw that is used to save urine from being lost and also to increase volume of the farmyard manure and its availability is, on an average, 4 Kg per cattle.

The farmyard manure that is used in India contains 0.3 percent nitrogen, 0.2 percent phosphorus, and 0.3 percent potassium oxide. Human excreta and urine can also be used as manure when dried up to be mixed with other chemicals. One of the easiest methods of converting human excreta into manure is to mix it with ash in suitable amount with lime or dry soil. Such a mixture is called **powderate**. Another method is to use it in bio-gas plants and the gas may produce electricity for cooking purposes and also give
energy to the fringe areas and the slush may be diverted to the fields as manure.

**Integrated Pest Management**

The application of pesticides is almost universal in the fringe areas because of the impact of green revolution. The use of pesticides has become necessary to avoid the losses in crop production. The control of pests enables a crop to yield maximum production within the limitations of its environment. In absence of such a contact, there are heavy losses in crop production.

There are another group of chemicals classified as herbicides or weedicides. These are beginning to be used in fringe areas but rarely. Just as the use of fertilizers is an essential part of new strategy of crop production, so is the increased use of pesticides to sustain the increased production.

Even though more and more specific chemicals are being introduced for plant protection in the country, evidence is growing that chemical treatment alone may create unfavorable condition. Chemicals, while killing a particular pest or a group of pests, may destroy the natural enemies of the pests and thereby aggravate the situation. The hazards of environmental pollution, ill-effects of excess chemicals, and the loss of ecological balance and the consequent danger to health require controlled use of pesticides.

The integrated pest management strategy aims at optimization of the natural controlling factors, for instances, adverse weather conditions for pests and favourable conditions for natural enemies of pests are created. Control measures are made to coincide with the most vulnerable stage of growth of pests.

Integrate Pest Management has been adopted as the main plank of plant protection since 1994, as it is an eco-friendly
approach aiming at the minimal used of chemical pesticides, with mere integration of other methods of control.

**Bio-pesticides** should also be promoted. Animal urines, garlic, tobacco leaves and neem leaves can be used as bio-pesticides. The chemical pesticides should be replaced by bio-pesticides gradually.

**Mechanization and Land Use Plan**

The extent of mechanization has increased in fringe areas. The number of tractors, sowing machine, sprayers, threshing machine etc. have increased, while the number of wood plough have decreased during the last 20 years.

In fringe areas, where agriculture is not only the source of livelihood, but a way of life, human labour is abundant and cheap. Mechanization of agricultural system in fringe areas can be considered at four levels:

(a) Agricultural fields which the farmers cultivate just to support himself and his family,

(b) Fields that are small in size, but still on which specialised agricultural implements are used at small scale,

(c) Plantations (as sugarcane and other early maturing trees in the fringe area) where technical skill, machines and capitals can be used on a large scale, with division of labour and management of cultivation on factory lines,

(d) Cooperative farming where machines are used at large scale.

Scientific research and use of technology increases the production with proper application of irrigation at rights time and in right quantities, use of chemical fertilizers, spraying of pesticides and insecticides, and HYV of seeds. In rice cultivation also where labour
is abundant, the use of technology may displace a good deal of labour from agricultural operations and the only solution to this is their absorption in suitable industries. Technology in agriculture shall prove to be a powerful instrument in the alleviation of poverty.

**Tenancy** and **share cropping** was found in fringe areas of Allahabad district. Thus sharing of land resource as well as services of machines indicates emergence of a new type of land–labour capital relations.

**Livestock**

Livestock, in study area, have two roles, one it provides drought animals or for pulling carts and secondly it generates income through animal products, which has serious implications for diversification of rural economy.

Although, in Allahabad fringe Area, the number native varieties of cows and oxen and buffaloes have decreased during the last two decades, but still they are large in cattle population. But problem with buffaloes and cows is that they have low productivity. Therefore, inspite of focusing on increasing the cattle population, they need breed enrichment by hybridization and attention towards their health. Favourable conditions, availability of fodder, sufficient labour force, small size of landholdings, decrease in number of oxen and inclination of farmers in dairy farming etc. indicate the potentialities of dairy farming. This needs basic facilities of animals breeding, artificial insemination and livestock extension services to be available within maximum radius of one kilometer. The farmers also require technical training for scientific domestication of these animals for commercial purposes.

The size of livestock has also a serious bearing on land use. The increase in livestock means more agricultural land would be required for pasture which will put an extra pressure on agricultural
land. Therefore, livestock farming should be practical in such a way as to keeps harmony and balance between livestock and agricultural land. One other aspect evolved in livestock farming it that is requires more land for fodder which again puts pressure on agricultural land.

Growth of urbanization and increase in extent of mechanization has resulted in decline in number of livestock in Allahabad Fringe Area. This is one of the basic reasons for decreasing number of oxen in the study areas. The number of pigs and poultry has increased due to increasing demand of meat in urban areas as in well as fringe areas.

**Agricultural Production and Land Use Plan**

In the study of agricultural production system, it was found that the majority of the landowners who leased out their land belonged to medium, small or marginal farmers. The fact that even small and marginal farmers where leasing out their land revealed two trends-one, in case of uneconomic holdings farmers want to search other opportunities and will be content to get market rent for their land yet they would prefer to retain land instead of selling it out their right. Moreover, the new generation, if educated seeks jobs in cities, and prefers to lease out the land. The other aspect was in regard to changing relationship. The exploitative relationship between tenant and the landlord is fast changing. It is now purely and economic arrangement of mutual interests. Small and marginal farmers also lease-out land to other small and marginal farmers. Thus enterprising farmers are continuing agricultural activities by pooling resources from fellow farmers, while some other farmers are trying to make efforts in secondary and tertiary sector of economic activities also.

Thus the new form of economic arrangement under tenancy was giving way to emergence of new enterprising farmers who were
seeking ways to pool resources for higher productivity and application of new technology.

Dependency relationship based tenancy was declining because not many cultivators wanted to be tied up for the whole of year with some small parcel of land which they did not own, and further depends on the landlord for resources and credit. Landless or near landless people also now want to keep options open for seeking job elsewhere as well. So they preferred to work as casual agricultural labour during peak periods rather than working as an attached labour or as a tenant.

On the other hand leasing-out by small farmers was on the increase because many small farmers wanted to get job outside agriculture and at the same time wanted some income from their land also. This was possible only by leasing-out land to fellow farmers at mutually agreed terms. This kind of tenancy was free from both the dependency and exploitative relationship.

Sharing of machines and equipments was also found to be widely prevalent among farmers of the fringe. It was found that almost all farmers owing agricultural machines and equipments hired out or shared their services with other farmers, many agricultural tools were also found to be shared among farmers on the exchange basis.

**INADEQUACY OF RESOURCES**

Many of the factors involved in inhibiting the growth of agriculture in fringe areas as well as urban and rural areas among small and marginal farmers are as follows:

1. Lack of resources,
2. Capital deficiency,
3. Lack of facility to sell at remunerative prices,
4. Problems of water logging and floods,
5. Drying of tube-wells, canal or any other means of irrigation,
6. The problem of salinity,
7. Pollution of under ground water i.e. higher level of iron content etc.

**STRATEGY TO IMPROVE AGRICULTURAL GROWTH**

Agricultural growth in fringe areas as well as in rural and urban area seems to be inhibited by the absence of proper strategy and suitable framework of growth. This concern needs to addressed immediately.

Among small and marginal farmers, agricultural productivity is hampered by poor logistical support and weak infrastructure. If food production is to be increased in a sustainable way, these deficiencies must be addressed and favourable economic framework for agriculture should be evolved. Such actions need to be backed up by practices aimed at enhancing fertility and productivity. It involves several steps.

The first step is to protect the best land for agriculture. In view of the scarcity of high quality arable land and the rising demand for foods and other agricultural products, the land that is most suitable for crops should be reserved for agriculture. Government should map and monitor the more productive areas of farm land and adopt planning and zoning policies to prevent the loss of prime land to urban settlements. Fringe Area Land Management Committee and local authorities should be entrusted with responsibility to ensure that these policies are implemented in their areas.

It has been found that the number of small and marginal farmers in the district is predominant. It was also found that the immediate factors which inhibited growth among small and marginal
farmers were lack of resources, capital deficiency and lack of facility to sell the products at remunerative prices. The most important factor which could become basis for future restructuring of agricultural production system is related to tenancy. It was found the majority of land owners who leased out their land (without entering into any written or formal contract) belonged to the category of medium, small or marginal farmers. This was for two reasons – one in case of uneconomic holdings, farmers wanted to search other opportunities and would be content to get the market rent for their land. Yet they would prefer to retain the land instead of selling it outright. The other aspect was in regard to non-exploitative nature of relationship between them. It is now purely an economic arrangement in which small and marginal farmers are also leasing out land to other small and marginal farmers. Thus enterprising farmers are continuing agricultural activities by pooling resources from fellow farmers, while some other farmers are seeking opportunities in nonagricultural activities also. Thus the new form of economic arrangement was giving way to pooling of resources by enterprising farmers, while other farmers who were leasing out their land were treating their land as a share capital for which they will receive the rent as well as the share in profit. The process of pooling of resources was further strengthened by a simultaneous process of sharing of machines and equipments hired out or shared their services with other farmers.

It seems to us that a limited restructuring of the production process in agriculture can be such that it serves the interests of small and marginal farmers and at the same time protects wider interests of the farming community.

One major step in this direction would be to allow formation of Collective Farming Society and Confederation of Farming Societies.
In the Collective Farming Society framework, tenancy to such farming societies could be permitted under specified conditions. In particular, such societies may be formed of small and marginal farmers for a complete package of inputs, and it may then be permissible for any member of such a society to lease out land to the society or to any other member of the society.

At the next level, a confederation of such Collective Farming Societies could be formed which will work as service societies. These confederations would provide high cost machinery and equipments to Collective Farming Societies on rent. The idea essentially is that it should be possible to increase number of viable farms by permitting some of the non-viable farmers to go out of agricultural business and seek other jobs and economic opportunities. This should on the one hand, improve productivity of labour on the expanded farms and on the other aid in much need shift of labour away from agriculture.

**Society Formation by Small and marginal Farmers**

The condition of small and marginal farmers in fringe areas can be improved by formation of collective society and they can be brought into main channel of economic development by implementation of some strategies as follows:

1. Collective farming units be allowed to be registered under a separate Collective Farming Society Registration Act,
2. Only small and marginal farmers be allowed to become members of such a society,
3. The number of members of society should not be above fifteen and below ten,
4. Those who become members of such a collective farming society will be allowed to lease out their land to the society for a minimum of ten years on a fixed annual rent,
5. A collective farming society will not bring under its purview more that eight hectares of irrigated land,

6. A collective farming society will be allowed to pool its resources on hire or through raising capital from its members,

7. The produce will be shared among members in proportion to the share amount of each member,

8. The share amount of each member will be weighted sum of (a) money invested under capital raising scheme plus, (b) the amount fixed as annual rent for the land leased out to the society, (c) operational holdings of actual cultivators.

**Marketing Syndicates of Farming Societies in Fringe Areas**

For storage facilities, transportation facilities and to work as marketing syndicates of farming societies, a confederation of three to six corporate farming societies be allowed to be formed.

These confederations will work in the following areas:

1. Marketing of agricultural goods at national and international level,

2. Provide transportation and storage facilities to Collective Farming Societies against such stored goods,

3. Function as cushions against speculative prices,

4. The confederation will also act as counseling centre for farmers projecting the production and demands of each agricultural commodity for the next two years,

5. Provide high costing tools and machines to Collective Farming Societies for land leveling, soil testing, land reclamation and other activities related to land and water management on rental basis,

6. Help in technological innovations and in increasing productive efficiency.
Some General Suggestions for Agricultural Development in Fringe Areas

1. Farmers should be motivated to cultivated potential and profitable crops,

2. Commercial cropping of vegetables should be promoted and better storage facilities and means of transportation should be developed,

3. Spices like chilly, turmeric and ginger etc should be produced commercially,

4. Maize should be cropped commercially.

5. The production of banana should be promoted at large scale to meet local needs and supply to other parts. Cultivation of sugarcane can be replaced by production of banana,

6. Commercial cropping of black gram, Arhar and gram,

7. Farming of medicinal plant should be motivated,

8. Floriculture in the fringe areas could be practiced at commercial level,

9. Bee farming should be promoted,

10. Sericulture can be initiated in fringe areas by bringing the silk worm from Maharashtra or any other part of the country,

11. Jatropha is also one of the promising plant for extraction of alternate oil and can be grown in the fringe areas,

12. Two crops can be grown at the same season by selecting right combination,
   (i) Cauliflower with sugarcane,
   (ii) Garlic with sugarcane,
   (iii) Other spices with sugarcane,
(iv) Potato with sugarcane,
(v) Black gram with sugarcane,
(vi) Turmeric and ginger with Arhar and maize,
(vii) Paddy and potato with banana plants.

13. Plantation of popular tree along the bunding of the landholdings and on the lands that has been walled after plotting and still they are vacant,

14. Plantation of guava trees,

15. Plantation of dwarf varieties of mango trees,

16. Ravi crop can be cultivated in combination with popular trees,

17. Promotion of poultry in the fringe areas,

18. Pisciculture should be promoted in the fringe especially the water logged areas where paddy crop is cultivated.

These the system of agriculture can be classified by adopting right combinations of crops that can be grown simultaneously.

**White revolution** has transformed the landscape of fringe areas by adopting breeds of high qualities of cows and buffaloes. Thus, the productivity of milking cattles have increased in fringe areas but still it needs more attention regarding awareness among farmers for healthy animals and their artificial insemination. The cows of foreign breeds need more care as they are basically from cold countries. Therefore, they feel uncomfortable in scorching and muggy climate of the fringe and consequently their productivity gets reduced. So farmers should be trained for proper domestication of milking animals.

The farmers should also be taught the importance of right kind of fodder required for milking animals and other ingredients of their diet.
Thus, all these suspects should be addressed properly in the fringe areas and a reasonable land use plan should be evolved for agricultural development.

**LAND USE PLAN RELATED TO OTHER THAN AGRICULTURAL LAND**

All categories of land use other than agricultural land have witnessed major changes in Allahabad Fringe Area due to factors like population increase, rapid urbanization, land degradation and encroachment on agricultural land etc. Following categories have been combined under the heading other than agricultural categories:

(i) Forest,

(ii) Land put to non-agricultural uses,

(iii) Barren and uncultivable land,

(iv) Culturable waste land,

(v) Permanent pastures and other grazing land,

(vi) Land under miscellaneous trees and groves,

(vii) In preparing land use plan for the land other than agricultural land, the objective of ecological balance and sustainable growth have been put forth. Therefore, the focus to meet these objectives have been five fold:

(i) Agricultural land should not transferred to be used for other purposes,

(ii) Maximum area should be brought under vegetative cover i.e.,

(a) Increase forest area,

(b) Increase area under miscellaneous trees and groves,
(c) Increase area under pasture and grazing land.

(iii) Use culturable waste and other fallow land for such purposes. Therefore, efforts should be made to convert land under these categories into forest, orchards or grazing land,

(iv) Barren and uncultivable land be used for constructing buildings or infrastructural facilities,

(v) Regulation of land at fringe areas.

Land use pattern has shown remarkable changes during the last decades.

**Forest**

The area under forest could be brought to around 2 percent of total reporting area, if some part of the land under other fallow and some part of land under culturable waste is brought under forest. This could be done by forming Joint Forest Management Committees consisting of plant growers from poor peasantry class and representatives of forest department and Fringe Area Land Use Committee. A cell should be formed to provide them the financial support and infra-structural support so that they could get suitable plants, methods to protect them and finally marketing of forest produce.

Secondly, development of such forests should be linked with watershed management in the area. For this purpose and area of 10 hectares to 20 hectares should be chosen as unit for micro-watershed management.

This would include (i) construction of water retention structures (ii) Clearing and desilting of natural courses of drainage
systems and (iii) restoration or reconstruction of ponds or tanks in totally barren lands or low lying lands.

Thirdly Programmes like Pradhan Mantri Rojgar Yojanna etc. and Mahatma Gandhi national Rural Employment Guarantee Scheme should be now utilised for construction of bundhis, management of wild resources including fisheries, drainage maintenance and enhancement etc.

Fourthly, more emphasis will have to be laid on energy plantation which would provide fuel wood besides growing of fruit trees rather than timber linked growth of forests.

**Social Forestry and Private Forests**

Private forest is different from orchards, as orchards generally comprise fruit bearing plants. The concept of private micro forest envisages that private individuals could also grow various varieties of plants. We have in the past found that eucalyptus had been grown in private land because it was expected to fetch good amount. The private waste land could also be used for growing timber energy plants, etc. This could also be linked with purification of surroundings. For this purpose plants related to different planets (Navgrah) and different Nakshatra which are 27 in numbers could be planted as per specified arrangement.

Even plants with medicinal value could be grown in such land if people could be informed about their medicinal and commercial value.

**Barren and Uncultivable Land**

Barren and uncultivable land could be used for further expansion of residential areas, playgrounds and construction of building for common sues such as school or government buildings. It could also be use as *Khalihan* if it is nearby fields. And it could be
used for cremation ground or graveyard if it is far away from habitation.

Thus, barren and uncultivable land could be shifted for use as land put to non-agricultural purposes. Some part of it could also be used for developing as pasture and grazing land.

We hope that through measures, area under barren and uncultivable land could be reduced from 4.59 percent of reporting area in Allahabad Fringe Area.

**Culturable Waste Land**

This is a category showing non-enterprise. There should be no such category. If cultivation is not possible then it could be converted into area for social forestry or developed as pasture and other grazing land.

Currently area under culturable waste land is 4.01 percent of total reporting area of Allahabad Fringe Area. A part of it (say around 3.0 per cent) could be converted into social forestry and the rest i.e. around 1.0 percent could be developed as pasture and other grazing land. At some places, such land could also be used for fodder cultivation—specially those areas, which are owned by private individuals.

Support should be provided for developing pasture land and growing fodder.

**Culturable Waste Land along River Side**

Allahabad had two major rivers and many tributaries flowing through it. The patches of land along side these rivers are undulating and at some places with high mounds. These areas could be developed as reserved forest strips with 500m to One kilometers width. Plant varieties which suit the local soils could be grown in these reserved forest strips.

Development of these reserved forest strips should also be
linked with river water pollution control systems. It means that water which goes through drainage courses and which meets these rivers should be treated before it reaches the river. The management of reserved strip forest should be entrusted with the responsibility to operate the treatment plants.

Besides reserved forest strips, parks and picnic spots could be developed at various points along the river route. Such parks/picnic spots could become centers of sight seeing and attraction for tourists as well.

**Land under Miscellaneous Trees and Groves**

Land use under this category had been the first victim of population growth and conversion for other uses.

Land under this category could be increased by 1.0 per cent of total reporting area by converting 1.0 per cent of total reporting area under other fallow land for growing miscellaneous trees and groves. It has been proposed because it felt that it would be difficult to bring back all the other fallow land under cultivation.

Reduction of such area increases run off of rain water. Such areas are best suited for agro-forestry. The main types of agro-forestry system are:

(a) Alley cropping- where annual crops are grown between lines of trees that produce valuable mulching material,

(b) Orchard systems- where the trees provide edible fruits, medicines and fuel wood, while the ground layer is cropped or grazed,

(c) Growth of scattered trees with pasture at the ground or grazing land.

**Conservation of Genetic Resources**

Land under the above category should also be used to conserve
genetic resources. This could be done by focusing on following programmes:

- Support grassroots associations of farmers and gardeners for the maintenance of traditional and local cultivars and breeds. Involve women's groups. Record farmers' knowledge of traditional and local cultivars and breeds,
- Develop a common information service for exchange in information and germplasm among grassroots, state and national agencies.

**Land Put to Non Agricultural Uses**

Area under land put to non-agricultural uses has been continuously over the past three decades. It was 20.51 percent in 1980-81 and has increased to 29.87 percent in 2006-07.

Land under this category has been rapidly increasing due to transfer of ownership of agricultural land to affluent class of the city. They have plotted these lands by raising boundary walls. This phenomenon can be observed in all segments of the fringe area around the city.

**Regulation of Land Use in Fringe Areas**

There is need to regulate land use in urban fringe area. This could be done by setting up an Allahabad Fringe Area Development Authority. The AFADA could decide on the following:

(i) Conservation of green areas such as orchards, agriculture, social forestry and allied activities,

(ii) Development of water management and drainage system. Ponds and other water retention structures should be revived. Any encroachment on such land should be identified and legal proceedings against encroachers be
initiated,

(iii) The provisions made under Zamindari Abolition and Land Reforms Acts (specially section 143 and 154) and Consolidation of Holdings Act be used effectively to check diversion of agricultural land for non-agricultural purposes,

(iv) Heavy fine should be imposed in case of such diversion on the owner of the land,

(v) In addition to it, if the agricultural land had been sold then capital gain tax should be imposed on purchaser of the land. Because huge capital gain accrues to the builders who develop colonies in such land,

(vi) The first priority be given to development of social services in the fringe area which will include hospitals, educational centers, training centers, for farmers and agro-based industries,

(vii) Barren and uncultivable land should be identified for development of micro-industrial estates and then for developing multistoried residential complexes which are lands saving as well.

Besides rural urban fringes, there is need to restrict the rate of increase of area under land put to non-agricultural uses, in rural areas in general to reduce the pressure on land in fringe areas. This could be made possible by adopting following steps:

(a) Discourage migration of people of nearby villages. This could be done by increasing transport facility and by improving road networks,

(b) Strengthen household industries of rural areas by providing them institutional support and market facilities,
(c) Develop green belt around city and construction in the green belt area be strictly prohibited,

(d) Encourage multi-storied buildings and economic flats to weaker section.

One important aspect of land put to non-agricultural uses is increasing number of residential houses. However, since population growth rate is faster, per person living area is decreasing. Even more disturbing factor is that per person open area in house premises is also declining. This is the trend in even rural areas. Hence space for community uses and common recreation places must be developed even in rural segment of fringe areas. In city planning we leave space for parks, playgrounds and recreation spots. Such planning should also be done for fringe areas. Watershed management could then be linked with development of parks and recreation places. Some area could also be reserved for floriculture and horticulture.

**Regulation of Land Use along Road Side**

There has been a tendency to change land use along road side—specially national highways and state highways. Houses and shops are constructed or such land is put to even other non-agricultural uses. As a result of this contiguous effect leads to further expansion of settlements near highways and such places become accident prone (Fig. 7.1). Therefore, there is need to regulate land use along roadside. Following measures could be adopted in this respect:

(i) A green strip should be developed on both sides of road.

   Such green strip on each side should not be less than 10 meter wide,

(ii) Wherever, highways are connected with other roads, construction along side even such connecting roads be prohibited for a length of at least 500 meters,
Fig. 7.1: Main Routes of Transportation in Allahabad
(iii) Those who construct house or buildings on agricultural lands along side road should be fined heavily.

The rate of increase of area under the category of land put to non-agricultural uses could then be restricted to around 20.00 percent of total reporting area by the year 2010.

The above mentioned strategies to regulate land uses in Allahabad Fringe Area should be legalized and implemented strictly by the authorities concerned to stop the haphazard growth of fringe areas.

**Three-Tire Planning for Development of Fringe Areas**

There have been some general suggestions for three tier planning:

(i) Macro-level (Total Fringe Area) Planning,

(ii) Meso-level (Segment of Fringe Area) Planning,

(iii) Micro-level (Village Census town level) Planning.

**Macro-level Planning**

Whole fringe level planning should be evolved at macro-level planning which should consult with AFADA.

(i) District land Use Committee should be strengthened. The Committee must meet at least once in a year and take stock of changes which have occurred during past one year. It should also be informed about up-dating of records and changes which have taken place during the year,

(ii) As regards it constitution, it should also include Authorities of the fringe and some more representatives of farmers and managers of different industries and institutes,

(iii) Each line department should be asked to furnish in
formations in a pre-structured proforma,

(iv) The annual proceedings should be documented and action plans drawn in the meeting be circulated to all concerned departments and function.

**Meso-level Planning**

There is land Use Committee at district level. There are Land Management committees at the village level. But there are no land use committees for the fringe areas.

Land records were maintained with a view to fix land revenue by the revenue department. There had been no systematic effort to maintain land records to identify land use categories on the basis of their potential development and quality.

The development perspective requires that unit for land use planning should be made at block level. Because at district level it remains too generalised, while at village level, it would create operational problems in coordinating various line departments who have bearing on the land use. Therefore, there is need to create a planning cum implementing agency at the block level.

Land Use Committee at meso-level may take up the following issues for planning and implementation in the fringe areas:

**(i) Salinity and Alkalinity**

The problem of alkalinity arises when infiltration rate of water in soil is low. This results in higher run off of surface water and creates problems of water logging in adjoining areas. As the water gets muddy, it also creates pollution of water streams. Reclamation of such land will have multiple effects. Such as increase in the infiltration rate, increase in recharge of ground water, reduction in water logging and control on water pollution.
Following steps should be encouraged for reclamation of such land:

(a) Construction of field bunds - through boundary mounds,

(b) Leveling of fields,

(c) Use of gypsum or pyrites, depending upon the degree of alkalinity,

(d) Rotation of crops.

Group of farmers should be formed for their collective action. Then such groups could be provided financial, technical and infra-structural support for reclamation of alkaline land.

(ii) Planning for Water Management

Reforms are needed to facilitate water management systems for various reasons:

(a) Rain and surface water needs to be preserved instead of being allowed to go waste via drain courses,

(b) Natural drain courses should not be allowed to be obstructed otherwise it leads to avoidable water-logging.

Increase in the number of private tubewells results in the lowering of level of ground water, therefore water management should include recharging by using rain or surface water.

By reducing run off, removal of top fertile soil can be checked on the one hand and maintain infiltration on the other. The catchments area of each water route should be mapped out and the programme to manage rain water should start from the highest land and end at the drainage basin.

Water harvesting will involve shaping farm land and sometimes also the catchments area of water course to slow the flow of water and thereby increase infiltration into soil. There are several cheap ways to make contours, if this is taken up collectively.
The sloppy areas and those along the drainage or field boundary which otherwise are not suitable for agriculture need conservation efforts with optimum plant productivity. The strip plantations of multipurpose trees or shelter belts for crop lands will provide wood or leaf fodder and also ameliorate environment.

Water reservoir tanks or ponds or bundhis be constructed at places where main drain routes meet. Such land should be mapped and brought under community or ownership. No other construction should be allowed to take place on such land through suitable modification in laws.

Drain network-allowing disposal of waste household water as well as community water using posts should be linked with natural drainage courses. Thus there should be micro drains for disposal of household waste water, which will have to be connected to a community drain and finally the entire waste water has to be drained to other reservoir sites after proper treatment.

Area along the drainage route should be allowed for fodder cultivation and if possible for farm forestry. Fodder cultivation and farm forestry needs to be developed in chronically water-logged areas. To facilitate this, land along drain routes and water-logged land be kept outside the purview of tenancy provisions. Secondly, land owners of such land should be permitted to form fodder or forest production units.

(iii) Planning for Development of Community Land

Common resource property has been one of the most important sources of sustenance of livelihood of less privileged communities. A support system for maintenance and quality improvement in land use is needed to protect grazing land, land under trees, bushes etc. As well as protection of land for chak road and drainage system is also necessary. Through detailed mapping of each village, community management and water recharging, drainage, trees etc. should be
brought under communal ownership which should become non transferable and any activity that leads to their destruction should become unlawful.

The role of common resource property and its allocation systems becomes crucial in management of these natural resources. It must be emphasized that management of such resources be vested with the local communities who will take a longer view. Outside commercial interest will come and go with narrow economic interest only.

Effective communal property rights and resource management systems could be developed by empowering panchayats to develop modes of their use in their respective panchayats and by providing them technical and managerial skill as the needed capital resources.

**(iv) Planning for Culturable Waste and Fallow Land**

Culturable waste land could be brought under vegetative cover by providing necessary institutional and infra-structural support. Following measures are suggested to facilitate their proper use:

(a) Presently such lands are identified and delineated through revenue records. Block Level Land Use Committee (BLUC) should be entrusted with the responsibility to identify and delineate such land in each block. Land Management Committees of each rural urban unit should be involved in the process,

(b) Land use maps for all the village should be prepared by the proposed BLUC,

(c) These types of land require huge investment and long waitings for their reclamation. If they remain within the purview of Tenancy Clause, it would be difficult for farmers to pool such land and invest on them, because farmers generally prefer to
invest on prime land rather than on degraded land,

(d) Most of such land is under State or Community ownership. Distribution of small parcel of such land to individual small farmers or land less peasants will not work. Because individual peasants in these categories have neither the sufficient capital to invest nor they could wait for longer periods to reap the profits of their investments. Landless peasants societies could be expected to make long term heavy investments provided such land are leased out to them for sufficiently a longer duration, and they are provided cheaper loans for this purpose.

(v) Planning for Culturable Waste and Degraded Land

For taking up regeneration activities of culturable waste and degraded land the following factors should be kept in mind:

(a) Size of such land in contiguity,

(b) Nature of regeneration programme,

(c) Raising of capital and acquisition of technical support,

(d) Incentive for participation of interested landless peasants and capacity building,

(e) Changes in the tenural rights over such land,

(f) Distribution of benefits.

Keeping these in view another model has been suggested in which local people could be involved, and its economic viability could be ensured.

A joint venture of state sector with local organisation has been suggested to be formed for this purpose.

A Public Corporate Organisation (approved by the government for the purpose) will then enter into an agreement with land
Development Society or SHG for a minimum of ten years for jointly developing the land and for its utilization.

(a) Members of Land Development Society or SHG would provide land and labour,

(b) Public Corporate Organisation will provide capital, technology and technical know-how,

(c) A joint management system will be evolved,

(d) One-third of the profit shall be ploughed back for further raising the capital stock of the joint venture,

(e) The rest of the profit shall be shared on 50:50 percent basis between the state unit and Land Development society.

**Micro-level Planning**

Micro-level planning has been evolved at the village level or census town level unit in fringe areas. Many of the suggestions have been put forth for the development of land use model.

(i) The land use plan is almost finalized after consolidation of holdings is implemented in a village or census town. It provides land for various purposes in the fringe besides consolidating holdings.

These include-

(a) Provision of roads and public irrigation channels,

(b) Provision of land for house sites for scheduled castes and other weaker sections,

(c) Provision of sector roads, inter village roads and link roads,

(d) Provision of land for community purposes namely- schools, playgrounds, Community building, hospital, cremation ground, graveyards, threshing floor, manure pits, pasture land,

(262)
plantation trees, playing sites etc.,

(e) Solving of common disputes in the village regarding roads or naalis for irrigation for each field through chak roads and chak naalis.

The problem is that powerful persons in the area influence functionaries of the consolidation work and get some of government and community land located near their farms. And once consolidation work is over, they easily encroach upon such community land.

Therefore effort should be made that community land is not left scattered at many places. The consolidation process should also consolidate government and communities land in one or two large consolidated chaks.

The land which had been carved out as orchard, grazing land or pond or tank in past, should not be allowed to be transferred for other purposes by new rounds of consolidation—neither through chak carvation nor through readjustment of community land.

(ii) Whenever consolidation is declared, illegal felling of trees takes place, land under orchards or pasture or such other uses is sought to be shown as land under cultivation. This happens on a large scale specially on community and government land. In order to check such changes in land use on the eve of consolidation, revenue officials and consolidation officials should jointly prepare reports and send report to concerned courts for quick action.

Similarly provisions of consolidation of Holdings Act and Manual regarding provision of inter-village link road, community and government land and other common property resources should be widely made known to people
so that its strict implementation is done with peoples participation.

(iii) After consolidation is over land use for each plot of the villages is well defined.

It should be the responsibility of LMC to see that land use is not altered. There should be training of LMC members to make them aware of their roles and responsibilities.

(iv) Land Management Committee should be treated as Consolidation Committee during the period of consolidation. Formation of separate committee does not prove helpful as it at the mercy of consolidation department and Pradhan only and ceases to exist after consolidation work is over.

(v) All members of Consolidation Committee should sign the final land use map prepared after consolidation work is over.

(vi) The map of the area should be made available to all the members of Land Management Committee, free of cost.

(vii) Encroachers of government and community land should be severely penalised and eviction proceedings against them should be made more stringent.

(viii) Land capability maps should be prepared for each unit. The land use of each type of land could then be planned for effective, efficient, sustainable and profitable use.

The land capability map indicates about the texture and quality of soil. It will give information about limitations of the land such an erosion, water logging, degree of alkalinity or salinity etc.

(264)
Thus land capability maps would provide necessary inputs for land use planning i.e. suitability of land for agriculture, horticulture, forestry etc. It will also indicate as to what measures would be needed for improving land for its optimum utilization.

(ix) The Land Management Committee at the micro level should be revamped. And there should be fair representation of weaker sections, beneficiaries of land allottees, self help groups and all the hamlets/communities of the village.

The committee should meet once every six months, develop plans for water conservation, drainage channels, regeneration of degraded land, effective use of lands in the category of (a) barren and uncultivable land, (b) pastures, (c) orchards, groves and land under trees and (d) fallow land.

(x) There are already legal provisions under consolidation of Holdings Act and Supreme Court Judgments in regard to protection of land uses. These should be widely circulated among members of Land Management Committee. Proceedings for eviction of encroachers should be launched in right earnest. The provision should be made in law for eviction of unauthorized occupation of community land by suitable proceedings.

The community land or pond or forest land should be given on lease to self help groups or tree growers’ society or such other collective groups rather than to individuals.

All these collective efforts make to evolve rational land use plan for the fringe for proper developments in the process of expansion.