



Linking Land Tenure and Use for Shared Prosperity

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STRATEGIC APPROACH FOR SUSTAINABLE LAND USE IN AN EMERGING COUNTRY – CASE OF INDIA

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Abstract

Land is a limited resource and yet an indispensable resource for meeting the social, economic and environmental demands and targets. The growing development associated by the growing population and the associated urbanization and industrialization is increasing pressure on land resource. Due to unplanned and haphazard use of land resources, land gets increasingly affected by the conflicting land uses and competition of mutually exclusive uses, besides posing serious concerns and negative impacts. The concerns can even become more serious in an emerging country like India, which has at present over 17% of world's population living on 2.6% of the world's geographical area.

Land use planning and management is a known strategy for achieving sustainable development. A properly prepared land use plan based on sound scientific and technical procedures, and land utilisation strategies can summarize rationally the future demands. This accompanied by a strong planning process, where communities and various stakeholders are involved, can strengthen the decision making process on allocation and utilisation of land resources.

The present paper details a strategic approach for sustainable land use for an emerging country like India to achieve its socio, economic and environmental goals and targets.

Key Words:

Land use, Challenges, Guiding principles, Strategic approach, Planning system

1. INTRODUCTION

Land is a limited resource and yet an indispensable resource for meeting the social, economic and environmental demands and targets. The growing development associated by the growing population and the associated urbanization and industrialization is increasing pressure on land resource. Due to unplanned and haphazard use of land resources, land gets increasingly affected by the conflicting land uses and competition of mutually exclusive uses, besides posing serious concerns and negative impacts due to over exploitation of natural resources, pollution, climate change, disaster risks, erosion and desertification, and social concerns particularly due to diversion of agricultural lands.

The concerns can become more serious in emerging countries such as India, which have large population size, but with limited geographical area. India has over 17% of world's population living on 2.6% of the world's geographical area. To address the issues of land use, under the Indo German Development Cooperation, in accordance with the decisions taken between the governments of the Federal Republic of Germany and the Government India, a study project on "Improvement of Land Management to Mitigate the Potential Conflict of Competing Land Use Types in India" was undertaken by the Department of the Land Resources, Government of India and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH¹, during September 2011 to December 2013.

During the project, studies were undertaken on land use planning and management to look into the planning systems and identify core issues. Pilot work was undertaken in two selected States. Series of brainstorming sessions and discussions were held with various sectoral ministries at the national level, representatives from States, experts and academicians to look into the existing land use planning systems and to find solutions for optimal utilisation of land resources in India. In the process, strategic approaches were evolved for land use planning and management catering to the needs of the country.

Using the experiences of the work in India, the present paper focuses on the strategic approaches for land resource planning and management that may be relevant for similar countries.

¹ Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH is a federal enterprise of the German Federal Ministry for Economic Cooperation and Development (BMZ) with operations around the globe. It supports the German Government in the fields of international cooperation for sustainable development and international education. GIZ supports people and societies in shaping their own futures and improving their living conditions.

2. KEY CHALLENGES

The land area of India is 328.73 million hectares with a population of about 1.2 billion (2011). The land use break-up of India (refer Table below), shows that during 2010-11, as compared to 1950-51, the net sown area in the country has increased from 41.77% to 46.28%, the forest area has increased from 14.24% to 22.89%, and the area under non-agriculture use, which includes industrial complexes, transport network, mining, heritage sites, water bodies, and urban and rural settlements, has increased from 3.29% to 8.67%. These increases of land use have led to reduction of land use elsewhere. During the same period (1950-51 to 2010-11), the barren & unculturable land, other uncultivated land, and fallow lands have drastically decreased by nearly half from 40.7% to 22.17%.

Table 1: Break-up details of land use in India
(area in million hectares)

	1950- 51		1990-91		2000-01		2009-10*		2010-11*	
	Area	%	Area	%	Area	%	Area	%	Area	%
Forest	40.48	14.24	67.81	22.24	69.84	22.88	69.99	22.89	70.01	22.89
Area under non agricultural uses	9.36	3.29	21.09	6.92	23.75	7.78	26.28	8.59	26.51	8.67
Barren & unculturable land	38.16	13.42	19.39	6.36	17.48	5.73	17.05	5.57	17.05	5.57
Other uncultivated land excluding fallow land ²	49.45	17.39	30.22	9.91	27.74	9.09	26.50	8.66	26.17	8.56
Fallow Lands	28.12	9.89	23.37	7.67	25.04	8.20	26.84	8.78	24.59	8.04
Net Area Sown	118.75	41.77	143.00	46.91	141.34	46.31	139.18	45.51	141.58	46.28
Total reporting area for land utilisation statistics	284.32	100	304.86	100	305.19	100	305.83	100	305.90	100
Total geographical area	328.73		328.73		328.73		328.73		328.73	

* Provisional

Source: Pocket Book on Agricultural Statistics 2013, Directorate of Economics & Statistics, Department of Agriculture & Cooperation, Ministry of Agriculture, Government of India

With the progression of development, finite land is becoming scarcer as a resource. The land use demands come from various sectors. The major existing uses of land include agriculture (approximately 60% of

² Includes Permanent Pasture & other Grazing Land, Land under Miscellaneous Tree Crops & Groves not included in Net Area Sown and Culturable Waste Land

India's population depends on agriculture), urban and rural habitat (about 72.2% of the Indian population lives in about 638,000 villages and the remaining 27.8% lives in more than 5,100 towns and over 380 urban agglomerations), industrial, mining, transportation and environmentally sensitive/fragile ecosystem areas including forests and bio-diversity areas.

India is targeting increase in economic growth rate and envisions that infrastructure across the country must expand rapidly in order to significantly increase the quality of life of its citizens, reduce poverty and foster environmentally sustainable development. The industrialisation, especially in the manufacturing sector, is inevitable and will accelerate. The 12th Five Year Plan of India proposes growth of economy at 9 to 9.5% during the Plan period (2012-17). The government has an ambitious plan for creation of additional 220 million jobs by 2025 and for increasing the share of manufacturing industry in gross domestic product from currently 16 to 25%. The Government of India is building a pentagon of industrial corridors across the country to boost manufacturing and to project India as a global manufacturing hub and destination of the world. To facilitate investments, foster innovation, build best-in-class manufacturing infrastructure and enhance skill development, the Government of India has recently launched a major new national programme called "Make in India".

Urbanisation is on a drastic rise. There is an increased movement of population from rural areas to urban centres and villages get transferred into urban agglomerations. According to the world population prospects by the United Nations, 55% population of India will be urban by the year 2050. With this pattern of urbanisation, the urban population of 377 million of India as in 2011 will be 915 million by the year 2050. The rural population has grown by 1.49 times during the past 5 decades, while the urban population has grown by 3.58 times during the same period. The per capita availability of arable land has declined from 0.19 hectares in 1990 to 0.13 hectares in 2011, which poses threat to food security of the country (*S.No. 10 of Reference*). The per capita availability of land in India had declined from 0.91 hectares per capita in 1951 to 0.27 hectares per capita in 2011 due to increase of population from 361,088,090 to 1,210,569,573.

The increasing pressure on land poses challenges for sustainable development. There is a need for viable solutions for optimal utilization of land resources that are footed on sound guiding principles. There is a need to support the developmental sectors to achieve their targets, such as those of urban and industrial development, mining, tourism, and infrastructure development (transportation, ports, harbours, airports etc.) through properly planned and guided development in a sustainable manner so as not to have land use conflicts or negative environmental impacts. There is a need to preserve and conserve lands that are under

important environmental functions such as those declared as national parks, wild life sanctuaries, reserved forests etc. and regulating & controlling land uses around such preserved and conserved land uses including the eco sensitive zones, so as not to have land use conflicts or negative environmental impacts.

Further, there is a need to support social development, particularly of the rural communities, and the tribal and backward communities by securing lands that are required for addressing the issues of livelihood, poverty eradication, inclusiveness and gender. There is a need to protect agricultural areas that are essential for food security including the prime agricultural lands, command areas of irrigation projects, double cropped land and lands that are essential for livelihood of rural population. Also, there is a need to protect cultural, historic and tourism areas including religious places of importance, scenic areas, heritage areas, archaeological sites etc.

Some of the major challenges related to land resource utilization are summarized below:

- Land is a limited resource and has pressure from social, economic and environmental needs, including urbanization, industrialization, mining, transportation, rural development, protection of environmentally sensitive zones and resource areas etc.
- There are competing land uses for the same parcel of land for their location, for example agriculture use versus industrial or commercial or residential use, mining versus other land uses.
- There are conflicting land uses, for example an eco sensitive zone adjoining a chemical industrial park.
- There are negative impacts from improper or lack of land use planning causing social conflicts and protests against land acquisition, pollution and negative environmental impacts, over exploitation of resources, climate change and disaster risks.

There is a need for a scientific and orderly disposition of land resource. The claims and counter-claims of various sectors, such as agriculture, industry, commerce, forests, mining, infrastructure and urban settlements for the same parcel of land need to be settled. The issues of land use conflicts must be addressed.

Solutions must be evolved, capitalizing on the already available existing experiences and expertise so as to systematically deal with land use issues, trends and threats that are being faced and to ensure optimal utilization of the land resource.

3. LAND USE PLANNING AS A SOLUTION

Land resource is put to different uses and some land uses attract other uses. For example, an industrial estate attracts other land uses such as transportation, housing areas, trade & commercial areas, waste wastewater treatment installations etc. These different uses interact and may compete or conflict with one another. For example, air pollution and disaster risks from industries can potentially pose threats to the housing areas. Therefore, all such uses are required to be planned and managed in an integrated manner.

The Agenda 21 resulting from the United Nations Conference on Environment and Development (UNCED) in 1992 in Rio de Janeiro highlighted the importance of land use planning and management for achieving sustainable development. Land use planning as a strategy has been advocated for decades now. Land use planning, as defined by the United Nation's Food and Agriculture Organization and the United Nations Environment Programme published in 1999, reflects consensus among the international organizations. Land use planning is understood as, "Systematic and iterative procedure carried out in order to create an enabling environment for sustainable development of land resources which meets people's needs and demands. It assesses the physical, socio-economic, institutional and legal potentials and constraints with respect to optimal and sustainable use of natural resources and land, and empowers people to make decisions about how to allocate those resources".

A properly prepared land use plan based on sound scientific, and technical procedures, and land utilisation strategies can summarize rationally the future demands. This accompanied by a strong planning process, where communities and various stakeholders are involved, can strengthen the decision making process on allocation and utilisation of land resources. Land use planning may be undertaken at State, district, watershed, city, village or other local levels.

However, in the countries which lack comprehensive and integrated land use planning, or where the instruments of land use planning are used only to a limited extent, enabling of a rationale and optimal utilisation of land would be a core issue. The lack of uniform policy framework, institutional structures as well as organisational capacities and human capacities, and financial resources will pose constraints in undertaking systematic land use planning and management.

4. CUSTOMISED SOLUTION FOR INDIA'S LAND USE PLANNING AND MANAGEMENT

As per the Indian Constitution, land and its management is the State subject. Also, pertaining to planning

of rural areas, the responsibility of preparation of plans for economic development and social justice is entrusted to the Panchayat³. Further, at the district level in every State, a District Planning Committee is required to be constituted to consolidate the plans prepared by the Panchayats and the Municipalities in the district and to prepare a draft development plan for the district as a whole.

Though India currently lacks a comprehensive and integrated land use planning system, land use planning is prevalent in various forms, including:

- Urban area planning - master plans and development plans are prepared for towns, cities and metropolitan regions. The system of planning advocated includes preparation of perspective plans, regional plans, development plans and local area plans.
- Industrial investment zones planning - for the large industrial investment zones that include human habitat areas, agricultural areas and industrial areas, development plans are being prepared.
- Eco sensitive zones planning - the development in the identified buffer zones around the eco sensitive zones (*e.g.*, National Parks, Wildlife Sanctuaries, Conservation Reserves and Community Reserves) require preparation of Zonal Master Plans or Zonal Development Plans that guide further development in the areas.
- Coastal zone planning - the Integrated Coastal Zone Management (ICZM) project taken up by the Government of India in the States of Gujarat, Orissa and West Bengal, has an important element of preparation of land use plans for the coastal zones.

Also, India has very advanced remote sensing and space application centres that have already undertaken mapping covering the whole country. For improved land administration, a National Land Records Modernization Programme is ongoing. The existing planning institutions include the town & country planning organisations, urban development authorities, urban local bodies, State industrial infrastructure corporations, State land use boards etc.

Despite India having various planning institutions, planning legislation for town and country planning and professional urban and regional planners, undertaking a comprehensive and integrated land use planning for the entire country of about 330 million hectares is not going to be an easy task. Particularly, the dynamics of development and the social and environmental objectives to be achieved on one hand, and

³ A village council with elected members that functions as governing body in the rural areas.

limited existence of integrated land use planning and availability of capacities on the other pose a greater challenge. Hence, introducing an integrated land use planning for the whole country would require considerable time, efforts and resources.

For countries such as India that lack comprehensive and integrated land use planning system, there is a need for a customised approach. For an integrated approach to the planning and management of land resources, Chapter 10 of Agenda 21⁴ identifies the following specific needs:

- development of policies, which will result in the best use and sustainable management of land;
- improvement and strengthening of planning, management, monitoring and evaluation systems;
- strengthening of institutions and coordinating mechanisms; and
- creation of mechanisms to facilitate the active involvement and participation of communities and people at local level.

The solution for India for proper land use planning and management, which is based on the above lines, is detailed below.

a) POLICY DEVELOPMENT

The Government of India has announced that a National Land Use Policy would be adopted with emphasis on scientific identification of uncultivable land and its strategic development. A draft National Land Use Policy has been already developed by the technical teams incorporating the strategy approach of planning of Land Utilization Zones. In India, land is a State subject and hence the National Land Use Policy is being developed to act as a guiding framework for the States to formulate their respective land use policies incorporating State-specific concerns and priorities. The draft policy has looked into socio, economic and environmental aspects of sustainability. These include:

- **Economic:** sustainable development of all developmental sectors including agriculture, urban, industrial, infrastructure and mining.
- **Social:** Protection of agricultural land resources by suitable means from land use conversions. Protection of lands required to secure livelihood for tribal communities and poor. Protection of places/sites of religious, archaeological, scenic and tourist importance.

⁴ Agenda 21, derived from the UN Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil, in 1992, is a non-binding, voluntarily implemented action plan of the United Nations with regard to sustainable development.

- **Environmental:** Conserve lands with environmental functions, viz. National Parks, Wild Life Sanctuaries, Reserved Forests, Eco Sensitive Zones etc. and areas with ecosystem services. Address the issues of climate change through appropriate land use planning.

The draft policy has included a strategy for improvement and strengthening of planning and management of land resource and strengthening of institutions and coordinating mechanisms. Eventually, it is foreseen to develop guidelines for plan preparation and implementation, including defining planning processes involving active involvement and participation of communities and people. The draft policy is currently undergoing further revisions and will undergo consultation process. Several States have land use policies in draft and outline forms, which eventually could be finalised within the framework of the national land use policy.

b) STRATEGY FOR IMPROVEMENT AND STRENGTHENING OF PLANNING

Overall purpose: The overall purpose of improving and strengthening land use planning should aim at optimal utilisation of the limited land resources for achieving sustainable development that is devoid of conflicts and is sustainable addressing social, economic and environmental considerations. In particular, the land use planning is required to address:

- Meeting the urbanisation demands.
- Meeting the industrialisation demands.
- Meeting the demands of rural and agriculture sectors.
- Protection of the lands under natural resources and ecosystem services.
- Meeting the mining sector demands.
- Meeting the transport sector demands.
- Protection of the social interests and livelihood aspects.
- Protection of the heritage sites.
- Regulating land use shifts from one use to the other.

Key considerations: The approach for improvement and strengthening of planning in India is derived giving due consideration priority to the above aspects related to the developmental requirements or protection and conservation requirements. In addition, the strategic planning approach takes into consideration the following:

- A system of land use planning already exists in India, though to a limited extent. Hence, these existing experiences and expertise can be utilised.
- India is a large country and to cover land use planning with an integrated approach covering various sectors and planning levels would be a gigantic task that requires time, resources and competencies. A customised approach is hence essential.
- Demands of development of rural and agricultural areas, industrialisation, urbanisation, mining and infrastructure development have to be met without having conflict with social interests at large, or with protection of lands under environmentally sensitive zones and ecosystem service areas, or with protection of lands under the country's natural, cultural and historic heritage areas.
- Reforms and fast track planned development agenda of the country have to be met, including development of industrial corridors, 'Smart Cities' programme, 'Make in India' programme, river rejuvenation programme etc.
- Lands under environmentally sensitive zones and ecosystem service areas, and lands under the country's natural, cultural and historic heritage areas are to be protected from land use conversions and land use conflicts.
- Inclusive growth, poverty eradication, gender equality, livelihood and wellbeing of all its population of the country has to be ensured.

Lands under pressure/priority: The additional land requirements in India for urban, industrial, mining and transport/infrastructure demands all put together could be about 5% of land (\approx 16 million hectares) for the next 20 years, as compared to 8.67% of land being used at present. These land requirements could to some extent be taken out of the uncultivable lands and wastelands, without resorting to agricultural and forests or eco sensitive lands. The barren & un-culturable lands, uncultivated lands and fallow lands are presently available to the extent of about 68 million hectares (22.17% of the country's land), of which suitable lands could cater to the new land use requirements.

The most important eco sensitive zones to be protected on priority would cover about 5 to 10% of land, and the priority rural and agricultural zones would cover about 20% of land.

All the above lands would need land use planning on priority.

Land Utilisation Zones: The suggested strategic approach for India focuses on land use planning and management of the lands that cater to the above requirements. Since, the extent of such lands would be much smaller as compared to the total land of the country, undertaking land use planning for such zones would become viable and serve the purpose of dealing with land use related issues and conflicts that are of concern on priority. The extents of such land or zones may be called as “Land Utilisation Zones” for which a system of planning is required to be undertaken on priority through preparation of regional plans, development plans etc. that define legally binding land use.

The “Land Utilisation Zone” (LUZ) includes land extent clearly demarcated as a functional zone or a region extending over a larger geographical area with atleast one predominant use of land, i.e. land use. Depending on the predominance of a land use, the LUZ is named after that use. For example, a LUZ of “Rural/Agricultural Area” caters mainly to rural population and includes prime agricultural lands devoted for food security and rural livelihood. However, such an LUZ, in addition to rural and agricultural land uses, will also have other land uses such as water bodies, forestry, roads, agro-based industry, transportation etc. Each of the LUZs is required to be subjected to land use planning to coherently plan and integrate different land uses.

The suggested types of Land Utilisation Zones (LUZs) catering to the strategic development of the country is:

- **LUZ - 1: Strategic Development Areas of National Importance** – includes zones with the projects of national importance and the projects of strategic importance that are to be taken up on a fast track to cater to strategic development of the country.
- **LUZ - 2: Urban Areas/Metropolitan Regions/ Areas under transformation** – includes zones that cater to urban population and are essential for meeting with the ongoing urbanisation demands of the country.
- **LUZ - 3: Industrial Areas** - includes areas where industrial activity is taking place or is likely to take place in future, and the development in the area is characterized by industrial estates, housing areas/townships, transportation networks, trade & commercial areas, and waste/effluent treatment and disposal.

- **LUZ - 4: Rural/Agricultural Areas** – includes agricultural areas devoted for food security and rural livelihood, high productivity soils (e.g., soils classifications of Class I, II III and IV), command areas of irrigation projects, areas where major share of population of the area is dependent on agriculture as the major source of livelihood and rural development zones.
- **LUZ - 5: Transportation Corridors** – includes linear tracts of land that contain highways and railways, and also include areas with ports, harbours, shipyards, airports etc.
- **LUZ - 6: Mining and Mineral Bearing Areas** – includes the areas rich in valuable minerals or other geological materials from the earth, which forms mineralized package of economic interest for mining.
- **LUZ - 7: Ecological Areas** – includes environmentally sensitive/fragile areas such as reserved/protected forests, biosphere reserves, national parks, wild life sanctuaries and coastal regulation zones etc. that are protected by various environments and forest laws.
- **LUZ - 8: Tourism Areas, Heritage Areas** - areas predominantly with high share of attractive landscapes and scenic beauty, historic areas, places of religious importance, areas with monuments (both protected and un-protected) of national/State/local level importance, areas declared as world heritage sites and other areas of touristic and heritage importance.
- **LUZ - 9: Major Hazard Vulnerable Areas** - areas that are vulnerable to natural and manmade hazards, including areas prone to high-risks of floods, tsunami and earthquakes, and risks of industrial disaster.

These LUZs and any additional LUZs that may be locally relevant could be identified by the national/State Governments and land use planning undertaken.

System of planning:

The system of planning for ensuring optimal use of land resources includes preparation of (ref. Fig. 1 below):

- State Perspective Plans specifying the requirements of LUZs.
- State level Spatial Planning.
- Regional Perspective Plans for LUZs.
- Regional Development Plans for LUZs.
- Development Plans for specific portions or nodes (urban centres) or zones, derived from the Regional Plan of the LUZs.

- Layout Plans for specific areas or zones derived from the Development Plans.

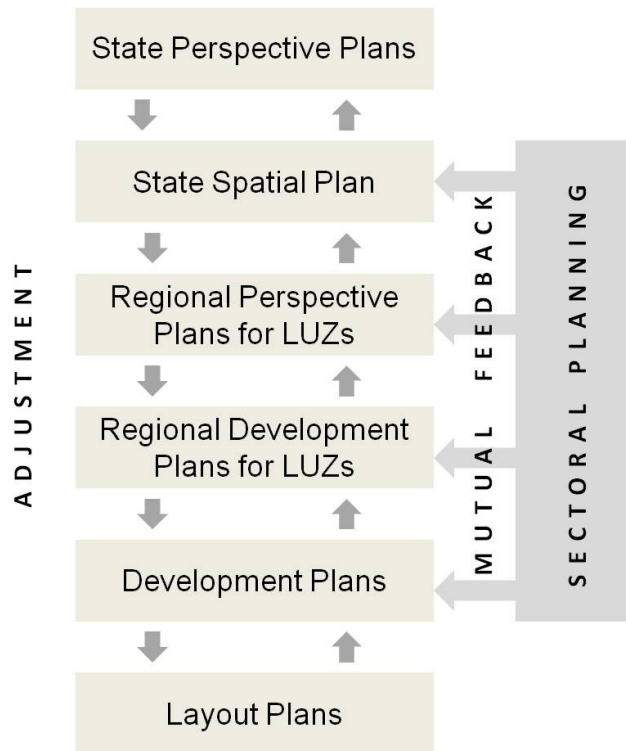


Fig. 1: System of planning for ensuring optimal use of land resources

The sectoral plans for all key sectors should be prepared and integrated at various levels through participatory process, negotiation and adjustment.

The State Perspective Plan should be prepared with a 20-25 years time horizon clearly specifying the LUZs required in the State in accordance with the requirements of the State or national level. The State Spatial Plans should be preparing geographical locations of various LUZs, settlements, transportation networks etc. This will help bring in clarity and transparency on which geographical locations and extents would be majorly put to land use changes or protection or conservation. To cope with the dynamics and pace of development envisioned in the States and the country, these Perspective Plans and Spatial Plans should be reviewed every 5 years.

The Land Utilisation Zones should be subject to land use planning taking into consideration the best utilisation of land and designate the use of land required for various purposes. The Regional Perspective Plan of LUZ should be prepared for a period of 20-25 years so as to reflect to long-term vision and aligned to the Five Year Plans and other plan schemes and programmes of Central and State Governments. The Regional Development Plan for the entire LUZ and Development Plans for individual nodes or sub-zones of the regional plan should be prepared with 5 year time horizon. The 5-year Development Plan should be conceived as a rolling plan to cope with the fast track changes and dynamics of development that the zone may witness. Accordingly, the process of its review, revision, further planning next phase and its approval should start at the third year and kept ready by the end of the 5th year. The Local Area Plans are to be prepared to achieve development or re-development of land for zones within the Development Plan. The implementation details should be specified in these plans.

Technical requirements:

For undertaking land use planning of LUZs uniformly across the country, the technical requirements include:

- Standardised land use classification system.
- Standardised mapping scales.
- Planning procedures be followed for plan preparation, plan approval, plan amendments etc.
- Planning processes to be followed for involving stakeholders in plan preparation and plan approval.
- GIS based spatial and attribute database.
- Land use change monitoring system.

For local area plans that guide the development, mapping in the scales of 1:5,000 or higher would be required. For regional development plans, a scale of 1:25,000 and for Development Plans, a scale of 1:10,000 is recommended. For land use change monitoring, the potential scales of mapping for India are:
a) national level: 1:500,000; State level: 1:250,000 scale; District level: 1:50,000.

There is a need for technical staff for undertaking plan preparation and planning processes, and for issuing approvals during plan implementation.

Planning steps:

The key planning steps to be followed for preparation of land use plans for the LUZs are (ref. Fig 2):

- Data and information gathering, review and evaluation, including land information and associated attribute data.
- Identification of targets, goals and needs catering to development requirements, protection or conservation requirements, and socio economic and environmental requirements.
- Land suitability assessments and preparation of sectoral plans for all key sectors including rural, agriculture, urban, industrial, environmental and transportation.
- Appraisal of sectoral plans, negotiation and integration.
- Plan approval.
- Plan implementation.
- Monitoring and evaluation.
- Assessment of plan revision requirements.

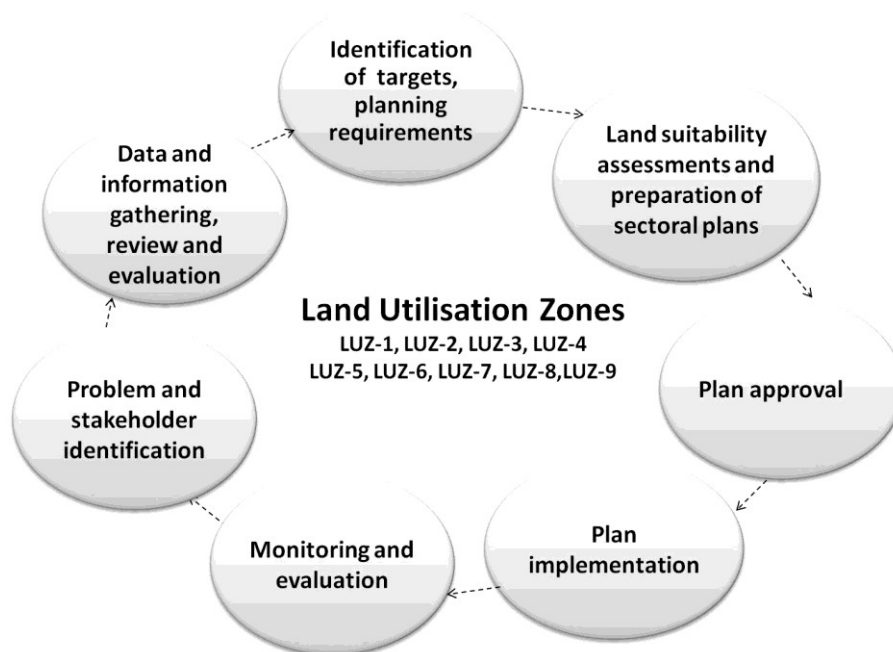


Fig. 2: Key planning steps for Land Utilisation Zones

[LUZ - 1: Strategic Development Areas of National Importance; LUZ - 2: Urban Areas/Metropolitan Regions/ Areas under transformation; LUZ - 3: Industrial Areas; LUZ - 4: Rural/Agricultural Areas; LUZ - 5: Transportation Corridors; LUZ - 6: Mining and Mineral Bearing Areas; LUZ - 7: Ecological Areas; LUZ - 8: Tourism Areas, Heritage Areas; LUZ - 9: Major Hazard Vulnerable Areas]

Planning principles:

Some important guiding principles to be followed for preparation of land use plans are given below:

- Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature.
- Inclusive growth, poverty eradication and gender equality are indispensable requirements for sustainable development of India, and must be addressed.
- Developmental sectors and activities must be planned in a balanced and integrated manner to meet economic, social and environmental needs of present and future generations to ensure inter generational justice, and should aim to minimize displacement of population.
- Long-term planning for optimum utilisation of land and conservation of scarce land resource is essential and as far as possible, developmental projects should be set up on uncultivable lands, recycled lands, wastelands, degraded lands or un-irrigated lands provided these are not performing any other important function like bio-diversity, water resources etc.
- Development planning must be comprehensive, sustainable, and integrated at various levels (national, State, regional and local levels) taking into consideration the interest of all sectors and stakeholders, including people concerned.
- Apply uniform planning procedures and standards.
- Sound planning processes should be applied so as to contribute to empowering communities and women in planning and decision-making.
- Ensure that lands that have important functions are preferably not altered in their land use.
- Preferably conserve agricultural lands from land use conversions so as to ensure food security to meet consumption needs of the growing population and to meet livelihood needs of the dependent population.
- Protect lands that are required to promote and support social development. Land use should be linked to livelihood of rural and tribal populations. The rural employment programmes should be taken into consideration. Also, rights of tribes and poorer sections on common land should be protected.
- Conserve historic and cultural heritage by protecting places/sites of religious, archaeological, scenic and tourist importance.
- The natural resource areas including the biodiversity areas, forests areas etc. and ecosystem service areas should be protected.

- Land use shifts from one use to other use should be purely regulated by a land use plan (Development Plan or a Master Plan). While preparing Development Plans, the amount of land use changes from one use to another should be minimised. Once the Plan is prepared, the land use shifts should be monitored through a sound monitoring system. There should be long-term targets on the extent of land use changes that may be permitted from one use to other.
- To cope with growing urbanisation needs, regional approaches should be adopted covering the zones of spatial influence of the city, including lower order settlements. Regional planning should be undertaken to establish proper hierarchy of settlements with the required infrastructure and services.
- The transportation networks should be preferably integrated with State/regional/district plans. The transportation corridors should be planned taking into consideration the other planned land uses and the major upcoming new infrastructure.

c) Strengthening of Institutions and Coordinating Mechanisms

Land resource planning and management involves adjustment and negotiation to balance demands of various sectors and various planning levels. Hence, the institutional mechanisms should include both political and technical structures at national as well as state levels. The political structures should include political heads of key sectoral ministries and representatives of States.

The technical structures are required at the national level for:

- being a repository of spatial database;
- developing methods, tools and techniques, as well as standardised planning procedures and processes;
- setting targets and monitoring of land use change; and
- providing training and advisory support to planning institutions.

Technical structures are required at State and level levels for plan preparation, plan approval and plan implementation.

Further, mechanisms are required to facilitate the active involvement and participation of communities and people at local level.

5. Benefits of the Strategic Approach

The strategic approach detailed above would have multiple benefits as given below.

- Helps in visualisation and translation of long-term social, economic and environmental goals into physical plans that guide sustainable development.
- Helps minimise land use conflicts and competition among sectors through orderly disposition.
- Helps minimise negative impacts of pollution, climate change, social conflicts and disaster risks.
- Helps achieve the developmental targets, as well as reforms and fast-track growth targets in line with the agenda of the government and the people's needs.
- Contributes to food security and improved livelihood of rural population by proper planning of rural and agricultural lands.
- Contributes to protecting environmental sensitive zones and ecosystem services areas through proper planning of such zones and the lands around them.
- With well defined planning processes, contributes to empowering communities and women in planning and decision-making.

6. Conclusion

A comprehensive and integrated land use planning system is a known solution to cope with the dynamics of development and to ensure optimal utilization of land resources. However, in the absence of such an elaborate planning system such as in India, a strategic and viable approach is required to be developed and adopted. The suggested strategic approach is in line with the integrated land use planning and management approach suggested in Agenda 21.

The approach for achieving integrated land use planning and management should have the key elements of a) development of policies for optimal utilisation of land resources, b) improvement and strengthening of planning, management, monitoring and evaluation systems, c) strengthening of institutions, coordination and implementation mechanisms; and d) creation of mechanisms to facilitate empowering communities and women in planning and decision-making.

The strategic approach suggested for India takes into consideration the existing constraints in strengthening and improving such a planning for the entire country. At the same time, the approach also takes into consideration the problems being faced due to pressure on land resources and the negative

impacts. The viable approach is to focus on identifying and planning of the Land Utilisation Zones that are identified based on long-term perspective plans. The Land Utilisation Zones cover the land areas that are or will be under pressure to undergo land use changes. These zones would cover a) lands for urban development, industrial development, infrastructure development and mining, b) land zones that are to be protected and regulated because of environmental sensitivity or cultural or historic heritage or touristic importance, c) land zones for rural and agricultural development, and d) zones prone to natural or manmade disaster risks.

The planning of the Land Utilisation Zones should be based on sound planning procedures and planning principles integrating socio, economic and environmental demands, as well as the sectoral demands and participatory processes so as to ensure sustainable development.

Such a strategic approach would support sustainable land use for an emerging country like India to achieve its socio, economic and environmental goals and targets.

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