

Land Use Planning

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Abstract: In the past, decisions made on land use have resulted in the degradation of land resources or an imbalance between supply and demand of those resources. Now land use, it can be used in resources management (forestry, production systems compatible with resources and agro-forestry, pasture management, nature protection and erosion control), rural regional development, community support and village development and government consultation (environmental strategy planning, agricultural sector planning, development planning, assessment of land potential). Land use planning is not only a kind of land use arrangement decision making but also a comprehensive decision for different aspects which has close relationships with or has heavy impacts on different types of land use and relations between different land use activities.

Key words: Land use, planning, impacts of land use, land potential, village development, activities

INTRODUCTION

Land use does not consider production only (Amler *et al.*, 1999) but also land functions such as protected areas, land recreation, road-building, waste disposal sites and use restricted areas such as buffer zones for exhaust gases, areas for regenerating groundwater, buffer zones for traffic noise pollution, etc. Land Use Planning (LUP) is not only practiced when national authorities intervene or as a result of development co-operation projects. LUP happens in every society even if the term is not used. It deals with cases in which an intervention occurs in order to improve land use and to sustain natural resources.

Check list: It is appropriate to apply land use planning if:

- Negotiation is required between short and medium-term economic objectives on the one hand and the interests of land resources management on the other as well if positive economic effects can be expected in the long term run as a result of this negotiation process
- Land use conflicts are to be avoided or settled in connection with competing stakes concerning land use and with an unclear land right situation or if mediation is necessary
- Natural resources are to be protected and rehabilitated (Barker, 2006) by:
 - Planning sustainable land use systems

- Implementing national and regional objectives related to the protection of resources which have priority
- Setting up biological reserves and conservation areas
- Monitoring changes in land use to serve the national resources planning
- Assessment and identifying of the intervention zones and areas for development projects
- Planning infrastructural measures such as road-building or irrigation projects aiming at conserving land resources
- Unexplored land use potential has to be identified and evaluated
- Existing land use has to be optimized
- The objective is to create environmental awareness among the people as well as the authorities
- Sectoral and national development plans have to be harmonized with the plans of the different stakeholder groups also considering the land potential (FAO-UNEP, 1997)
- New settlement areas are to be planned and divided into plots

MATERIALS AND METHODS

Principles of land use planning: On the basis of the central idea, eleven principles are explained below and converted into proposals for practical actions (FAO, 1995).

1st principle: Land use planning is orientated to local conditions in terms of both method and content because it is not a standardized procedure which is uniform in its application world-wide. Its content is based on an initial regional or local situation analysis.

2nd principle: Land use planning considers cultural view points and builds up on local environmental knowledge. Local knowledge should be part of the basis for planning and implementing a sustainable land use.

3rd principle: Land use planning takes into account traditional strategies for solving problems and conflicts. Traditional rural societies have their own way of approaching problems and settling conflicts concerning land use. In the process of land use planning such mechanisms have to be recognized, understood and taken into account.

4th principle: Land use planning assumes a concept which understands rural development to be a bottom-up process based on self-help and self-responsibility. The population should actively participate in the process of LUP. To ensure a feeling of ownership concerning self-help activities, people who are affected have to be involved in the planning process from the early beginning.

5th principle: Land use planning is a dialogue, creating the prerequisites for the successful negotiation and co-operation among stakeholders. The core task of LUP consists of initiating a process of communication and co-operation which allows all participants to formulate their interests and objectives in the dialogue.

6th principle: Land use planning is a process leading to an improvement in the capacity of the participants to plan and take actions. The participatory methods used in all planning steps of LUP promote the technical and organizational capabilities of all participants, thereby extending their capacity to plan and to act. In the medium term, this qualification process leads to an improvement in the capacity of local groups for self-determination.

7th principle: Land use planning requires transparency. Therefore, free access to information for all participants is a prerequisite. Transparency in planning and the extent to which stakeholders are informed, strengthen both their willingness and capacity to participate in planning and decision-making. The dissemination of information in the local language(s) contributes to an

improved transparency. In addition, it strengthens the trust of the population in land use planning activities.

8th principle: The differentiation of stakeholders and the gender approach are core principles in land use planning. A prerequisite for realistic land use planning is the detailed analysis of the various interest groups. The aim is to find out the various interests of the participants in order to create a basis for the negotiation and decision-making process. Men and women often do not have the same access to land and have specific ways of articulating themselves.

9th principle: Land use planning is based on interdisciplinary cooperation. The ecological, economic, technical, financial, social and cultural dimensions of land use make it necessary to study with an interdisciplinary approach.

10th principle: Land use planning is an iterative process; it is the flexible and open reaction based on new findings and changing conditions. LUP is more than the preparation of a planning document; it is an iterative process. Iteration is both the principle and the method simultaneously. New developments and findings are specifically observed and incorporated into the planning process. It may lead to the revision of decision and the repetition of steps already taken.

11th principle: Land use planning is implementation orientated. Land use planning has to consider how the negotiated decisions and the solutions identified are to be implemented. LUP does not end with the land use plan. The implementation of limited measures (e.g., the development of cultivation techniques which conserve land resources) right at the outset or parallel to the LUP process plays an important role in increasing the trust of the people in the village as far as the planning process is concerned (Fig. 1).

Planning levels: A national land-use plan may cover:

Land-use policy: Balancing the competing demands for land among different sectors of the economy food production, export crops, tourism, wildlife conservation, housing and public amenities, roads, industry.

National development plans and budget: Project identification and the allocation of resources for development.

Coordination of sectoral agencies: Involved in land use and legislation on such subjects as land tenure, forest clearance and water rights.

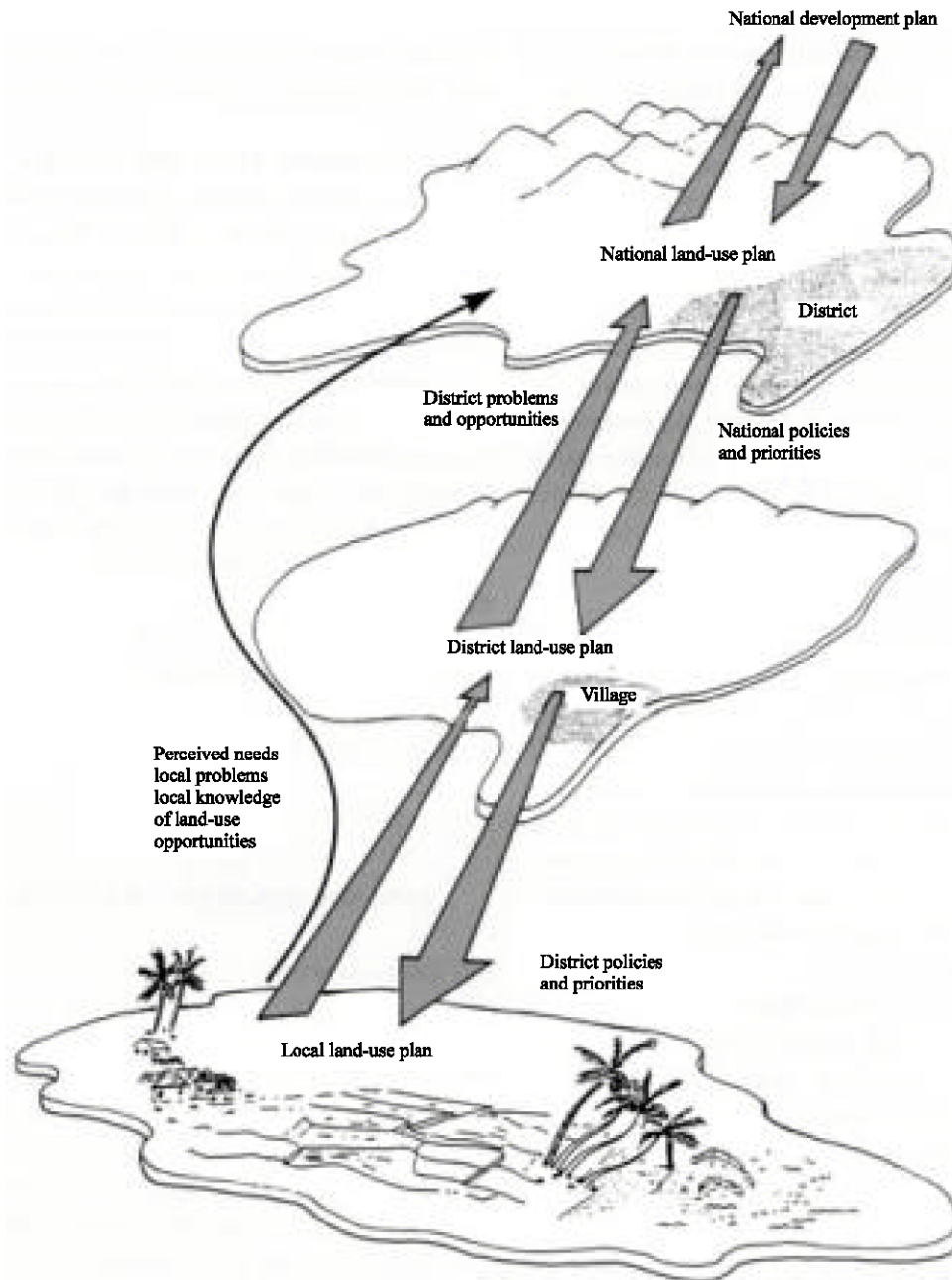


Fig. 1: Shows the conjugate for best utilization of land use (Stephenne and Lambin, 2001)

District level planning: The kinds of issues tackled at this stage include: the siting of developments such as new settlements, forest plantations and irrigation schemes; the need for improved infrastructure such as water supply, roads and marketing facilities and the development of management guidelines for improved kinds of land use on each type of land.

Local level: The local planning unit may be the village a group of villages or a small water catchment.

Steps in land-use planning: There are 10 steps in land use planing.

Step 1: Establish goals and terms of reference, define the planning area, Contact the people involved acquire basic information about the area, establish the goals. Identify the problems and opportunities, Identify constraints to implementation, establish the criteria, Set the scope of the plan.

Set the planning period, Agree on the content and format of the plan, Decide operational questions. The Basic information that may be required are land resources, present land use, present infrastructure, population, land tenure, social structure and traditional practices, government, legislation, Non-Governmental Organizations (NGOs) and commercial organizations.

Step 2: Organize the work it enclose, the following points:

- List the planning tasks and activities
- Decide which tasks need to be completed before others can be commenced
- Draw up a work plan for the project as a whole
- Draw up individual, personal work plans
- Allocate money and equipment
- Arrange administrative matters and logistics

Step 3: Analyze the problems like, In responsibility planning team collect data on the existing situation: population, land resources, employment and income, present land use, production and trends, infrastructure. Identify and map: land units, land use systems. Identify problems of land use: nature and severity, land units and land-use systems affected, analysis of causes.

The recommended methods, interviews with land users, local leaders, extension staff, agencies, field reconnaissance.

Prepare problem statements the land units are delineated: to analyze the present situation it will be necessary to break the area down into land units, areas that are relatively homogeneous with respect to climate, landforms, soils and vegetation. Each land unit presents similar problems and opportunities and will respond in similar ways to management. Appropriate land units at the national level might be agro-climatic regions at the district level, land systems and at the local level, land facets, soil series or other soil mapping units.

Some symptoms of land use problems are as follow: Migration to towns, Low rural incomes, Lack of employment opportunities. Poor health and nutrition, Inadequate subsistence production, Shortage of fuel and timber, shortage of grazing land, low, unreliable crop yields, desertion of farmland, encroachment on forest and wildlife reserves, conflicts among farming, livestock and non-agricultural uses, visible land degradation, e.g., eroded cropland, silted bottomlands, degradation of woodland, salinity in irrigation schemes, flooding.

Underlying causes related to land use social problems:

- Population pressure on land resources, unequal distribution of land, capital and opportunities, Restrictions of land tenure and land ownership

- Natural hazards and limitations, inadequate water supply and distribution, irregular relief, drought prone soils, poor drainage, diseases
- Mismatch between land use and land suitability, inadequate water control, clearance of forest on steep lands, inadequate soil conservation practices, inadequate periods of bush fallow related rural planning problems, inadequate power; lack of fertilizer and pesticides, lack of markets, unsatisfactory price structure, lack of finance, inadequate transport, lack of technical support

Step 4: Identify opportunities for change:

- The people present opportunities in the form of labors, skills and culture and, not least, the ability to adjust to change and to survive adversit
- The land nearly always has the potential for greater or more diverse production given investment in management
- New crops and land uses may be available
- Improved technology can transform the productive potential of the land
- Economic opportunities include new sources of capital, new or improved markets, changes to the price structure, the improvement of transport and communications
- Government action may create opportunities
- Non land use planning options, population policy and food aid are beyond the scope of land use planning
- Allocations of land use: this option is widely applied in new settlement schemes but is more difficult to apply where land is already occupied
- New land uses: a complete change is made by introducing new kinds of land use not previously practiced in the area for example irrigation
- Improvements to land use types: the improvements must be brought about through extension services, often combined with improved infrastructure and services
- Standards: standards may consist of planning guidelines or limits
- Responsibility: planning team: generate a range of options (Amler *et al.*, 1999) in terms of opportunities: the people, land resources, improved technology, economic measures, government action, land use strategies: no change, maximum production, minimum investment, maximum conservation, maximum equity; Kinds of production, the role of conservation, self-reliance versus external investment.
- Develop realistic options that best meet the needs of production, conservation and sustainability and that minimize conflicts of land use

- Prepare outline budgets and time frames for each option
- Present the problem statements and the alternatives for change in terms suitable for public and executive discussion
- Decide if the goals are attainable
- Select the priority problems
- Choose the most promising alternatives for a feasibility study; specify targets
- Specify action needed at other levels of planning
- Present the options and their consequences in a way that is appropriate for review
- In responsibility planning team and decision-makers:
 - Make arrangements for consultations with the communities affected as well as with the implementing agencies, obtain views about feasibility and acceptability
 - Assemble and review the comments received. In the light of these, make any necessary changes to the options

Step 5: Evaluate land suitability:

- Describe promising land use types
- For each land-use type, determine the requirements (Stephenson and Lambin, 2001)
- Conduct the surveys necessary to map land units and to describe their physical properties
- Compare the requirements of the land use types with the properties of the land units to arrive at a land suitability classification

Step 6: Appraise the alternatives:

- Environmental impact assessment: soil and water resources, pasture and forest resources, wildlife conservation, resources for tourism and recreation, off-site effects
- Financial analysis: the proposed land use types profitable for the farmer or other land users
- Economic analysis: what is the value of the proposed changes to the community within and beyond the planning area? Are there areas of land of critical importance (for production or conservation) for certain uses
- Social impact: what effects will the proposed changes have on different sections of the community especially women, minority groups and the poor
- Strategic planning: how do the proposed changes in land use affect wider aspects of rural development planning, including national goals

Step 7: Choose the best option in responsibility planning team:

- Set out a series of options for the allocation or recommendation of land use types to land units. Also state their evaluation in terms of land suitability and environmental, economic and social analysis
- Set out the consequences of these options in terms of the goals and planning objectives

- Responsibility: Decision-makers:
 - Decide if the response to comments is adequate
 - Consider the options in terms of goals and policy criteria
 - Choose the best option
 - Authorize preparation of the plan

Step 8: Prepare the land-use plan:

- Prepare maps the basic or master land-use plan and supporting maps
- Set out the land use allocations and recommendations
- Set targets for achievement by land use type, area and agency
- Draw up logistic preparations, specifying the capital works, recurrent inputs and responsibilities for implementation
- Establish mechanisms for monitoring progress and revising the plan
- Make arrangements for research needed to support the plan
- Determine the finance needed for each operation and determine sources of funds
- Write the report executive summary, main report, maps and appendixes
- Establish mechanisms for communication with and the participation of, all institutions involved
- Prepare public relations material

Step 9: Implement the plan:

- Ensure that the changes recommended in the plan are correctly applied in the plan, be available for technical consultations, discuss with implementing agencies any suggested modifications
- Help to maintain communications between all people and institutions participating in or affected by the plan, i.e., land users, sectoral agencies, government, non-governmental organizations, commercial organization.
- Assist in coordination of the activities of the implementing agencies

- Assist in institution-building by strengthening links between existing institutions, forming new bodies where necessary and strengthening cooperation
- Focus on the participation of the land users, ensure adequate incentives
- Organize research in association with the plan, ensure that results from research are communicated and where appropriate, incorporated into the plan
- Arrange for education and training of project staff and land users

Step 10: Monitor and revise the plan:

- List the goals and criteria achievement
- Gather data relevant to each criterion of attainment physical, economic and social
- Compare what has been achieved with what was planned. Identify elements of success and failure
- Seek explanations for failures were they caused by:
 - Incorrect assumptions of the plan
 - Changed economic or political circumstances
 - Logistic problems of implementation
 - Problems of communication and participation
- Review the goals: Are they still valid?
- Initiate modification or revision of the plan: Minor modifications through action by implementing agencies, larger revisions by the preparation of proposals and reference back to decision-makers

RESULTS AND DISCUSSION

After the analysis phase, the stakeholders have to reach binding agreements and decisions. Therefore, the results of the data analysis have to be presented in a way which is understandable to everyone (FAO, 1995). Land maps, maps of environmental damage, maps depicting landscape units or agro-ecological zones, maps of present land use forms are an important basis for the discussion because they have high visualization content. The guiding principle for the presentation is that the how is just as important as the what. Not only the results are important but also the ways and means by which they have been achieved. The methods and procedures to be applied affect the quality and sustainability of the decisions and results. In this instance, it means that the how of the presentation and the successive planning step are also important for the sustainability of the measures to be implemented.

Land use option: This procedure leads to land use options according to their economic profitability and is certainly a useful scheme in areas of high pressure on land resources (Barker, 2006). Of course, the sequence presented here can vary from location to location, e.g., an intensive pasture can in individual cases, be placed higher than rain fed agriculture in terms of economic factors.

Furthermore, additional land use options can be added and others neglected. If there are land reserves which should not or cannot be developed directly, an option should be implemented or maintained which is ecologically stable (e.g., natural forest). This might also be possible in a location for potential irrigated agriculture.

CONCLUSION

Land use planning is not only a kind of land use arrangement decision making but also a comprehensive decision for different aspects which has close relationships with or has heavy impacts on different types of land use and relations between different land use activities.

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