

# **Regional Environmental Planning of Semi Arid Region in Context of Climate Change and Water Deficiencies**

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## **Abstract**

Due to the extensive urbanization and industrialization, urban land use change in region has resulted in irreversible disturbances of hydrological systems via reclamation, alteration and pollution. Human activities have significant impacts on water quantity, quality and aquatic ecology but the negative effects of this anthropogenic intervention may not be immediately visible at an early stage. As a consequence, when the final negative results appear (e.g. flooding disaster, serious water pollution) after a long- term accumulation, it is normally impossible or costly to address these problems. Water crises, i.e. too much water (flooding), too little water (drought), and dirty water (pollution), may in turn become major obstacles to sustainable regional development.

**Keywords:** Environmental planning, land use, planning, region, water.

## **INTRODUCTION**

Environmental planning is the process of facilitating decision making to carry out development with due consideration given to the natural environmental, social, political, economic and governance factors and provides a holistic frame work to achieve sustainable outcomes. Environmental planning concerns itself with the decision making processes where they are required for managing relationships that exist within and between natural systems and human systems. Environmental planning endeavours to manage these processes in an effective, orderly, transparent and equitable manner for the benefit of all constituents within such systems for the present and for the future. Present day environmental planning practices are the result of continuous refinement and expansion of the scope of such decision making

processes. Some of the main elements of present day environmental planning aimed for social & economic development, urban development, regional development, natural resource management & integrated land use, infrastructure systems, and appropriate governance frameworks.

### **PHENOMENON OF LAND USE CHANGE AND CLIMATE CHANGE**

All land use change scenarios and climate scenarios that we see are based on socio-economic and technological developments. Land use change scenarios were created using economic and demographic developments, and allocate land use types resulting in land use maps for different years. Land use change and climate change were inter-related with each other. Climate is defined as the “average weather”, where weather consists of surface variables such as precipitation, temperature and wind. The climate is not constant, but is changing constantly.

The deforestation for urban use, industrial exhausts, silting of fresh water bodies influence the climate change. Water shortages in the are the result of multiple stressors, including rapid population growth, economic conditions and energy demands such as agricultural irrigation, climate change, increased hydrological variability in major watersheds. Land development, like water demand, is being driven largely by residential, business, and industrial growth. Climate is expected to continue to change in the future in spite there are still many uncertainties, which will affect natural and human systems such as forestry, fisheries, water resources, human settlements and human health.

### **NEED FOR STUDY**

Need is to plan the region for appropriate management of water to conserve the ecosystem and environment particularly semi arid region. It may be clear that with the global state of the art still very much in evolution and basically no research activities in this field in the region, the research needs are to integrate the knowledge concerning the physical environment and land use change on the one hand and the knowledge concerning socio-economic development and land use change on the other, into one comprehensive dynamic model. Other factors which leads to study are development of region, population growth, developmental activities, technological developments, socio-cultural changes, community demand and life style, climate change phenomena, acute shortage of water in absence of planning for collection, conservation and management. Need to review the existing circumstances, find out the short comings and re-plan for future.

### **RESEARCH CHALLENGES**

Planning covers many different aspects in formulating policies that influence the future distribution of activities in space and time. Planning is essentially used as a tool to create a good quality of life for citizens by harmonizing the development

components in the region. Planning can also play an important role in developing strategies and procedures to integrate the use and management of land and water. The focus of this study is to explore the water-land relationship for planning in theory and practice and to emphasize the need for cooperation between planning and water management in rapidly urbanizing regions. The main goal is to examine and develop a planning methodology that would enhance the sustainability of urban development by integrating the surface water system in the regional planning process. It is also hoped that the results will contribute to the definition of new values and methods in the current planning system for sustainable development. The main challenges are to develop common concepts and definitions about the implications of water issues in existing planning policies of region, to identify the gap causing integration and coordination between land use planning and surface water management so that the problems are recognized, solutions are arrived and the negative impacts are avoided as early as possible and to review and modification at water related problems due to existing planning policies.

#### **WHAT IS REGIONAL PLANNING**

There is bound to be conflict over land use. The demands for different types of land uses are greater than the land resources available. Land-use planning is the systematic assessment of land and water potential, alternatives for land use and economic and social conditions in order to select and adopt the best land-use options. Its purpose is to select and put into practice those land uses that will best meet the needs of the people while safeguarding resources for the future. The driving force in planning is the need for change, the need for improved management or the need for a quite different pattern of land use dictated by changing circumstances.

#### **WHEN IS REGIONAL PLANNING USEFUL**

Two conditions must be met if planning is to be useful when the need for changes in land use, or action to prevent some unwanted change, must be accepted by the people involved and there must be the political will and ability to put the plan into effect. Where these conditions are not met, and yet problems are pressing, it may be appropriate to build up an awareness campaign or set up demonstration areas with the aim of creating the conditions necessary for effective planning.

#### **MAKING THE BEST USE OF LIMITED RESOURCES**

Land must change to meet new demands yet change brings new conflicts between competing uses of the land and between the interests of individual land users and the common good. Land taken for towns and industry is no longer available for farming; likewise, the development of new farmland competes with forestry, water supplies and wildlife. As the size of the area, the number of people involved and the complexity of the problems increase, so does the need for information and rigorous methods of analysis and planning. However, land-use planning is not just region

planning on a different scale; it has a further dimension, namely the interest of the whole community. Regional Planning involves expectation of the need for change as well as reactions to it. Its objectives are set by social or political necessity and must take account of the existing situation.

### **NEED FOR REGIONAL PLANNING**

For semi arid region and water deficiency due to land use plan in context of climate change when regional planning aims to make the best use of limited resources by assessing present and future needs and systematically evaluating the land's ability to supply them identifying and resolving conflicts between competing uses, between the needs of individuals and those of the community and between the needs of the present generation and those of future generations, seeking sustainable options and choosing those that best meet identified needs, planning to bring about desired changes, learning from experience. There can be no blueprint for change. The whole process of planning is to provide solution and is continuous. At every stage as better information is obtained a plan may have to be changed to take account of it.

### **GOALS**

Goals define what is meant by the best use of the land. They should be specified at the outset of a particular planning project. Goals may be grouped under the three headings of efficiency, equity and acceptability and sustainability. Land use must be economically viable so one goal of development planning is to make efficient and productive use of the land. For any particular land use, certain areas are better suited than others. Efficiency is achieved by matching different land uses with the areas that will yield the greatest benefits at the least cost. Efficiency means different things to different people. Land use must also be socially acceptable. Sustainable land use is that which meets the needs of the present while at the same time conserving resources for future generations. Land use has to be planned for the community as a whole because the conservation of soil, water and other land resources is often beyond the means of individual land users.

### **CONCLUSION**

Land use planning can be expressed in the various questions like what is the present situation, is change desirable if so what needs to be changed, land-use problems and opportunities are identified by discussions with the people involved and by the study of their needs and the resources of the area, how can the changes be made, planners seek a range of ways to make use of the opportunities and solve the problems, which is the best option, decision-makers choose the best option, based on forecasts of the results of implementing each alternative, how far is the plan succeeding, once a land-use plan is put into effect, planners monitor progress made towards its goals and change the plan if necessary, the focus of regional planning.

## REFERENCES

- [1] Avramoski, O. (2004). The role of public participation and citizen involvement in Lake Basin management. Thematic Paper, Lake Basin Management Initiative, Thematic Paper, 16.
- [2] Costanza, R., Norton, B. G., & Haskell, B. D. (1992). Toward an operational definition of ecosystem health. In R. Costanza, B. G. Norton, & B. D. Haskell (Eds.), *Ecosystem health: New goals for environmental management* (pp. 239–256). Washington DC: Island Press.
- [3] Cude, C. G. (2001). Oregon Water Quality Index: A tool for evaluating water quality management effectiveness. *Journal of the American Water Resources Association*, 37(1), 125–137.
- [4] DeFries, R., & Eshleman, K. N. (2004). Land-use change and hydrologic processes: A major focus for the future. *Hydrological Processes*, 18(11), 2183–2186.
- [5] Ouyang, Y. (2005). Evaluation of water quality monitoring stations by principal component analysis. *Water Research*, 39(12), 2621–2635.
- [6] Pichyakorn, B. (2002). Sustainable development and international watercourse agreements: The Mekong and the Rhine. International Union for the Conservation of Nature (Draft 30 June 2002).
- [7] Sullivan, C. A., & Meigh, J. R. (2006). Application of the water poverty index at different scales: A cautionary tale. *Water International*, 31(3), 412–416.

