

Title of the paper:

IMPERATIVES FOR ECO-SUSTAINABILITY-Lessons from a stressed environment in Mumbai

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Introduction:

The importance of environmental sustainability is now well recognized even by the developing countries. However, the economic compulsions that have become even stronger in the face of the globalisation, the cities are facing intense competitions to attract international capital and corporate offices leading to policies where environmental well being gets a lower priority. The current focus of planning in the city of Mumbai on the proposals like creation of new Central Business Districts, Information Technology parks, luxury housing townships, flyovers and freeways, shopping malls, golf clubs, multiplexes and other high-end entertainment centres, all designed to project an upmarket and global image illustrates the point. In the process, the city environment is under strain as never before, but unfortunately that does not figure in any calculation. Assessment of the impact of development projects on the ecosystems is now absolutely critical besides the technical, economic and political factors.

In this regard a study for the conservation of a natural landscape and valuable water resources in a part of Mumbai in the face of the onslaught of the building activities was recently completed by the the Design Cell of Kamla Raheja Institute for Architecture and Environmental Studies and commissioned by the MMR Environment Improvement Society. The paper presents its salient features and the recommendations for promoting eco-sustainability. The concept of environmental planning developed in this paper is natural evolution of a more comprehensive and strategic approach to environmental management. The paper also discusses the outcome of the failure of the environmental policies and the shortcomings of the environmental protection acts that we embrace.

ABSTRACT

Cities have moved to the forefront of global socio-economic change, with half of the world's population now living in urban areas and the other half increasingly dependent upon cities for their economic, social and political progress. Factors such as globalisation and democratisation have increased the importance of cities for sustainable development.

Water is a driving force for sustainable development, vital to all living organisms and ecosystems and essential to human health, food production and social and economic development. Political commitment, education, and community action will be key to more sustainable patterns of water conservation and use.

The almost contiguous lakes of Tulsi, Vihar and Powai and their immediate surroundings constitute the study area. This region, which is about 50 sq. km. in area, serves as the vital lungs of suburban Mumbai. It comprises a rich natural landscape bestowed with sweeping valleys, dense vegetation and an interweaving of streams and rivers evolving into an ecosystem of significant value to the city. The study area is in fact the last link to a larger ecosystem of fresh water lakes of the city. The lakes and their peripheries are

under severe threat due to the rapid and haphazard development aided by the relaxation of developmental restrictions in no-development zones, increasing population density and environmentally detrimental land uses.

Conservation of natural values is usually a function first disrupted by the intensification of human land use. The situation is exacerbated by the fact that social attitudes towards nature are marked by ignorance, negligence and often downright callousness. The result is that despite nature's many warnings, the pollution and destruction of the natural environment continues intensively and extensively.

Nature can be considered as an interactive process, responsive to laws, constituting a value system, and offering both intrinsically variable opportunities and limitations to human uses. Present land use regulations neither recognize natural processes, nor allocate responsibility to the developer. The Environment Impact Assessment (EIA) for projects, today reduced to the simplest terms like height, volume, density, alignment, etc. along with a thorough cost benefit analysis, needs to urgently incorporate resource values, social values and aesthetic values based on natural processes.

Evaluating environmental losses and gains is one important aspect of planning that is increasingly in need of further elaboration. Many of the problems of the natural environment that challenge human society today have to be looked at from a wider perspective than just their immediate situation, for almost all are rooted in the larger eco-system and biodiversity of their region. There is an urgent demand for an informed and long-sighted management of the natural environment and resources, and a need for concerted efforts to radically improve pertinent knowledge, methods and techniques. The science of ecology is broadly defined as the interaction of elements of the landscape. There has been considerable progress in this field in the past decades, all of which should be a valuable aid to the planning of development. A plan purely based on economics is more than likely to undermine a balance between natural principles and manmade interventions.

The problem to be addressed in developing a strategy for biodiversity conservation is that current institutions in society, including markets do not respond to environmental feedbacks. That is many of the most important environmental factors are not recognised in the set of market prices. They are external to the market. The implications of this, is that individual users of biological resources will not take the true cost of their actions into account. Indeed the failure of the markets can be seen as the prime driving force behind the loss of biodiversity.

To do this it is necessary to identify the major social and economic forces that are currently driving the loss of functional diversity and to create incentives to redirect those forces. Forces which result in direct reduction of biodiversity because of land use changes, landscape fragmentation. And also those forces which include inappropriate government policies, the structure of property rights, pressures of human population growth and poverty ,and values of society.

At the same time it is necessary to create economic incentives that reduce the difference between the value of biological diversity to the private individual and its value to society as a whole. So as to motivate the conservation of biodiversity. The recently published works of Ian Mcharg, Lars Nyberg, William Honachefsky, Lyle and Roy Winter continue to demonstrate that there is considerable wisdom in planning our land use around the ecological constraints of the land. Problems of modern landscape management also ask for an ecological resource approach, planning for flows of energy, water nutrients and materials as an integrated part of land use and physical planning¹.

At the same time it is essential for the development of **effective institutions** for biodiversity conservation. **Institutions are the humanly devised constraints that shape human interaction .They structure incentives in human exchange, whether political, social, or economic and shape the way societies evolve through time. Institutions provide the framework for human actions but to be effective they have to be adaptive. That is it is necessary to frame the level of economic activity in a way that minimises the risk of irreversible damage to the systems on which human activity depends.**

This means that science's most effective contributions to sustainable consumption conundrum are likely to come not only from technical and natural science laboratories but also from practical insights of pedagogy, social psychology, and systems thinking. Vocabulary of the conservation professionals needs to be transformed.

Through the study of the lake region a critical review of the existing legal provisions for the environmental protection and conservation and the development control regulations is undertaken too. The paper discusses shortcomings and limitations of the Development Control Rules (DCR) that have made it easy for developers to ignore environmental concerns while not actually violating the law, which in turn has caused catastrophic damage to the lake ecology. **The present approaches to land use planning primarily through zoning ordinances and subdivision regulations have led to a lot of shortcomings and our failure to address these short comings which have been the major causes of the detrimental effects on the environment. The policy framework in place needs to be addressed.**

The study therefore seeks to rectify those omissions, in particular it argues the need for social equity to be seen as an integral component of policies for achieving sustainability and it recommends a new kind of environmental planning that would incorporate such issues as waste management, pollution ,environmental conservation into the development and land use planning processes at all levels and also conscious ,informed engagement of the community in the conservation initiative. The concept of environmental planning developed in this paper is natural evolution of a more comprehensive and strategic approach to environmental management.

In other words, our inability to deal with ecological limits is not determined by insufficient understanding of natural sciences of natural science of sustainability .Solid analysis and

documentation of the challenges is undoubtedly a necessary condition for meaningful action. However, the principal stumbling block for dealing creatively, effectively and humanely with limits are shaped by significant socio-psychological characteristics of our dominant culture. These perceptual stumbling blocks require more attention if we are to learn to live in ways that are compatible with Nature's limited capacity to regenerate itself.

Physiographic determinism was employed as a tool to evaluate the extent of the negative impact on the environment, by superimposing the various physiographic features on the land use plans and simultaneously extracting and de-layering to establish the intrinsic suitability of land for various land uses. The study deals with various issues of ecology on one hand and developmental issues on the other. Extensive use of a Geographical Information System (GIS) is made for the analysis and information envisioning like producing an ecological base map of the area.

The study has established the baseline conditions for conserving the environmental aspects and has further identified mitigation measures, which can be incorporated into the scheme to reduce the adverse impact on the lake ecology. The study recommends a provision of a legislative framework for the conservation initiative to continue and in the long run for the sustainability of the project.

¹ Tjillanji, *Landscape Ecology of a Stressed Environment*, ed. by Claire C vos and Paul Opdam, 1993