Biodiversity Conservation through Impact Assessment

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Human societies and their associated species have expanded across the face of the Earth at the cost of a diversity decline reducing the number of living species and their spaces. It took over 200,000 years to build the first billion of human population on this planet. Another billion was added in just 100 years following that the global population during the Earth Summit 1992 was accounted for 5 billion. In 10 years time it has reached 6 billion. Over past ten thousand years the history of human development process has been closely linked with a global conversion process. Most conversion took place in the north, in industrialized part of the world. Biological assets of the globe now lie in developing world that retains unconverted natural areas and that are inhabited by poverty-stricken people needing a rapid pace of development. Therefore developing countries like Nepal need to pursue development in a manner that is a consistent with biodiversity endowments. Therefore EIA has been adopted as a tool not only to safeguard human health and wellbeing of the community but also to safeguard biodiversity from development impacts and other human actions.

Understanding biodiversity

Biodiversity is generally understood as the variability among living organisms and the ecological complexes of which they are a part, including diversity within and between species and ecosystems. Various effects of human actions such as adoption of a new policy, implementation of a programmme, executing engineering projects and other operations bring about impacts (positive/negative) on biodiversity. Therefore EIA processes are designed to identify, predict, interpret and communicate information on effects of human actions. It is being gradually adopted as an integral part of planning for both public and private actions that impact upon the environment. For countries like Nepal impact upon biodiversity causes changes upon the lifeline of people. Biological resources remain vital as sources of food, fuel, clothes, shelter and natural medicine. They also help to control and stabilize ecosystems.

Nepal may be regarded as a country with exceptional levels of biodiversity due to the complex mountain ecosystem lying between the 4000 m elevated flat plains of Tibetan plateau on the north and the less than 400 m Indo-Gangetic flat plains on the south that merge with the sea-level. Biodiversity assessments have recognized “east Himalaya” as one of the global “hot spots” while the Tarai Arc of western Himalaya is known as a last refuge for a number of Asian mammals like the Tigers, the Elephants, the Rhinoceros and the Dolphins. Biodiversity Impact Assessments (BIA) has been proposed as means of supporting their conservation through effectively integrating biodiversity into EIA processes (Bagri and Vorhies, 1997).

International initiatives in EIA Process

The United Nations created the World Commission on Environment and Development (WECD) in 1983. Four years later the Commission, known as Brundtland Commission produced the landmark report, Our Common Future. It called for “a new era of environmentally sound economic development”. It was supported by the Global Biodiversity Strategy (1992) and ultimately a historic commitment by the nations of the world was made during the Earth Summit (19920 when the Convention on Biological Diversity was formally adopted. Other earlier initiative specially the World Conservation Strategy (1980) gave impetus to Nepal to

come up with National Conservation Strategy (1988) which envisaged EIA for large scale projects. The NCS objectives dwelt heavily on biodiversity conservation. The National Planning Commission of Nepal entrusted IUCN to implement NCS soon after its adoption in 1989. The first phase of NCS Implementation (1991-93) focused on three major elements.

- Environmental Planning and Assessment
- Environmental Education and
- Public Information

The 2nd phase (1994-96) expanded biodiversity and EIA as separate programmes. The NCS Implementation Project of the National Planning Commission was thus the keystone to make EIA a national process of development and conservation. The national EIA guidelines prepared by NPC/IUCN were endorsed in the umbrella Act on 18 Sept 1992 and were gazetted for enforcement in July 1993. Subsequent to that sectoral guidelines were developed for industry, forestry, hydropower, irrigation, road, mining, and drinking water supply and landfill site selection. Mean while the Heritage and Biodiversity Programme provided knowledge base to the NCS Implementation Project and the IUCN-Nepal office as well. It has been assisting the government to implement CBD in its various facets. As such the Article 14 of the CBD in conjunction with other provisions such as Article 7 on identification and monitoring, Article 8 on in situ Conservation, Article 11 on incentive measures, and Article 18 on technical and scientific co-operation, has been used as guiding principles in integrating biodiversity with EIA processes. Impacts on biodiversity are specially viewed in terms of habitat loss /modification, exploitation of biological resources, pressures on protected areas, and protected species, endemic species, specialized land-races, wild relatives of cultivated species, and loss of ethno-biological knowledge and practices (Shrestha, T.B. 1999; Pallewatte, N. 1999).

Constraints to Biodiversity Assessment

Very often biodiversity is merely treated as a list of species from project sites based upon limited field surveys. These are prepared by consultants without adequate support from accredited institutions. The National Biodiversity Strategy for Nepal (2002) does not prescribe any explicit measures to conserve biodiversity through EIA mechanisms. However it recognizes "inadequate data and information management" as one of the basic origins of threat to Nepal's biodiversity. Biodiversity Assessment and Conservation planning for Kanchenjunga mountain complex identified five contributing factors for analysis –(i) land-use pattern (agriculture, forests and others), (ii) elevation (iii) forests (iv) bird diversity and (v) Red Panda (indicator species) habitat (WWF Nepal Programme, 2000). Proponents for EIA would neither have resources nor time to conduct such detailed study and analysis. The EIA for Melamche Diversion Scheme, for example, focused on vegetation pattern, occurrence of butterflies, birds, fishes, mammals and flowering plants to come up for impact analysis (EIA final Report IUCN/METCON 1999). The report made special reference to protected areas and their buffer zones. The report asks for further studies for definitive answers. Therefore lack of sufficient information is a hindrance in biodiversity assessment. A rapid method for Biodiversity Impact Assessment has to be developed for differing ecosystems of Nepal i.e. Tarai, Churea, Mid hills, Himal and Bhot (trans-Himalayan) region. National efforts are required to generate data sets for assessments in potential sites of development from the planning stage. "As and when required "approach of biodiversity assessment would not lead into desired consequences.

Assessment Criteria

Most countries in develop0ing world derive assessment criteria based upon CBD provisions of Article 7 (identification and monitoring), Article 8 (in situ conservation) and Article 10 (sustainable use). Other criteria are developed on the basis of protected areas (national parks etc.), protected species, CITE, IUCN Red List, Ram Sar sites, World Heritage sites and endemism of species. The importance of habitats /ecosystems/landscapes are gradually being regarded for their significance with special reference to water-shed functions, breeding or spawning sites, migratory pathways for birds and fishes, and so on,. The following criteria are generally considered to identify significant areas of biodiversity that need special measures for protection, conservation, mitigation or avoidance.

- high degree of species diversity (old growth area)
- occurrence of endemic /threatened/rare and endangered/keystone species
- high ecological function value (drinking water source, critical catchments, breeding /spawning site of endangered species)
- ecologically unique area,
- protected area (national parks/conservation sites)
- area with high heritage value

Conclusions and recommendations

Nepal's biological diversity has attracted global significance, and their local relevance in the socio-economic millue stands quite high. The role of journalist to keep informed occupies a significant position. Biodiversity Conservation therefore should not be limited to parks and protected areas. Development projects outside protected areas exert pressure on biodiversity with varying magnitude. Therefore biodiversity impacts, mitigation measures, and monitoring should be part and parcel of EIA process in Nepal. Besides there is a dearth of research works, analysis and baseline information available to practitioners and decision makers. There is a need to build institutional mechanism to develop time series data on biodiversity and competent institutions should be accredited to examine the finding of assessments. National Biodiversity Action Plan should not loose sight to view EIA as a tool to safeguard national wealth of biological diversity.