Wetlands, Biodiversity and Climate Change

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Wetlands are by far the most productive and dynamic ecosystem on Earth that provide subsistence for people and habitats for a wide range of flora and fauna. They harbor high concentration of birds, mammals, reptiles, amphibians, fishes and invertebrate species. Lying at the interface between land and water, wetlands are of immense value for biodiversity and also for the livelihoods of the local communities. Wetlands are the sources of water.

Wetlands cover roughly 6% of the total earth surface and provide services such as provisioning, regulating, preserving and supporting that in total accounts to 14 trillion US dollar per year globally (MEA report 2005). Despite being important for both ecosystem condition and human well being, wetlands continue to be degraded and lost owing to various reasons; such as conversion, encroachment, pollution, over exploitation, invasion by alien species, nutrient loading etc. Study reports indicate, that over fifty percent of the wetlands across the globe have already been lost and the rate of loss is much pronounced compared to other ecosystems. In Nepal, wetlands occupy approximately 5% of the total area; including paddy fields, high altitude glacial lakes, hot springs, ponds, ox-bow lakes, rivers, flood plains, swamps, and marshes. Nepal is blessed and endowed with a wide variety of wetlands owing to its unique landscape and physiography. In view of the significance of wetlands on various aspects like biodiversity richness, livelihood of wetland dependent people and its contribution to various sectors, Nepal became signatory to the Ramsar Convention on Wetlands on 17th December 1987 by enlisting Koshi Tappu Wildlife Reserve (KTWR). Till date, Nepal has nine wetlands of International Importance that cover all geographic regions.

Nepal's wetland hosts 42 globally threatened species (IUCN Red List 2002). Of the 867 bird species found in Nepal, around 23 % of them are wetland dependent, including several migratory and globally threatened species. Similarly, out of 20 endemic vertebrates, 17 are wetland dependent including nine species of herpeto-fauna and eight fish species. Likewise, it is believed that 25 % of Nepal's estimated 7000 species of vascular plants are wetland dependent. While wetlands benefit all people, they contribute significantly to at least 21

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wetland dependent ethnic communities whose subsistence is totally dependent on wetland resources.

Current status:

Wetlands continue to be degraded and lost and face tremendous pressure from anthropogenic activities such as encroachment, unplanned growth, dredging, siltation, pollution and waste disposal. The threats and issues related to wetlands differ from physiographic regions. High altitudes wetlands and from mid hill face natural threats such as siltation, erosion, where as wetlands of the plains and terai face tremendous pressures from encroachment, conversion,

dredging, fishing, poisoning, eutrophication and overexploitation. Wetlands from the urban areas have faced pressures from over harvesting of water resources, pollution, and conversion. With the increasing pressure exerted on wetlands due to the burgeoning population growth, it is imperative that the efforts to safeguard these valuable resources have become more urgent than ever before.

Root Cause: inadequate knowledge & awareness:

Wetlands have received very little attention primarily due to inadequate knowledge and low level of awareness on the values and importance of wetlands. Wetlands were until recently viewed as wastelands, as these land were perceived to be of no use or less value owing to the unproductive nature. Due to the above reason, wetland areas were undervalued. The failure to account for the full range of wetlands goods and services in decision making has resulted in the degradation and loss across the country.

Cross cutting issue:

Although Nepal has shown its commitment towards wetland conservation, an integrated and wise use approach is yet to be realized at all levels. Since, wetland is a cross cutting sector and multi-disciplinary in nature, its conservation and wise use requires an integrated and a coordinated approach. The existing national wetland committee (NWC) formed under the aegis of MFSC will play an important role towards fostering cooperation and collaboration in the area of wetland management and their wise use in the context of Nepal.

Wetlands in the face of climate change:

Wetlands, biodiversity and climate change are intricately linked. Nepal is a party to CBD and Ramsar convention. Nepal Biodiversity Strategy (2002) has identified wetlands as an important area for conservation and its wise use. Climate change threatens these life supporting ecosystems which in turn provide services to human welfare and biodiversity.

Climate change will make future efforts to restore and manage wetlands more complex. Wetland ecosystemn are more prone and vulnerable to changes in quantity and quality of

their water supply and is expected that climate change will have a pronounced effect on wetlands through alterations in hydrological regimes. Some tell tale events such as the changes in the phenology of plants and the shift in the monsoonal cycle has been witnessed in Nepal and large scale migration of butterflies have been recorded across Canada.

The Himalayas shave already shown the early signs of climate change and with the incidence of increased glacial melt and retreat, landslides, floods and glacial lakes outburst floods events threatening the already fragile mountain ecosystems and livelihoods. Agriculture will become one of the most vulnerable sectors to be affected from climate change. A minor change in the temperature is bound to effect and bring change in the overall agro- ecological system. In the advent of climate change, safeguarding wetlands is the only option to minimize the adverse impact and provide safety net for living creatures since the stress of climate change would largely befall on wetlands.

In fact, the impacts of climate change on the wetlands may be comparatively higher for many reasons. A number of climates induced anomalies including serious and recurrent floods due to glacier melt and increased rainfall intensity, increased intensity and frequency of cyclone, projected sea level rise (SLR), salinity intrusion, temperature and rainfall variation etc may affect wetlands and connected livelihoods in many ways. Conservation and wise use of wetlands and their biodiversity have a major role in the mitigation of climate change effects. Wetlands provide opportunities for ecosystem based adaptation since developing countries like ours cannot afford to have large scale infrastructural investment for resilience, adaptation, and mitigation against the impact of climate change.

Synergies of environment conventions:

The implementation of biodiversity related multilateral environmental agreements (MEAs) at the national level and promoting synergy amongst them reinforces the development of harmonized policies including wetland policies. Apart from the Ramsar convention, both, Convention on Biological Diversity (CBD) and United Nations Framework Convention on Climate Change (UNFCCC) have interconnected and overlapping mission. Realizing, this, coordination and collaboration amongst conventions started in 1996 by signing a MoU between Ramsar Convention and CBD. Similarly, UNFCCC has extended collaboration with Ramsar by requesting Ramsar STRP in 2002 to work on the relationship between wetlands and climate change. Further, In order to enhance coherence and cooperation in implementation, a liaison group has been established among biodiversity-related conventions viz. Convention on Biological Diversity (CBD), Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), Convention on the Conservation of Migratory Species of Wild Animals (CMS), Ramsar Convention, and World Heritage Convention (WHC). The Liaison Group of Biodiversity-related conventions meets regularly to explore opportunities for synergistic activities and increased coordination, and to exchange information. Conserving wetlands therefore, address the major issues and concerns of all the conventions such as; CBD, UNFCCC, CITES, CMS, WHC and UNCCD.

National Scenario:

To address the wetlands issues & concerns, Government of Nepal, Ministry of Forests and Soil Conservation (MFSC) has been implementing the Conservation & Sustainable Use of Wetlands in Nepal (CSUWN) Project with the technical and financial support of Global Environmental Facility (GEF) & the United Nations Development Programme (UNDP). This project is the first of its kind that is dedicated towards addressing the pertinent issues related to the conservation and it's wise of wetlands. The project aims at addressing the root causes of wetland degradation and loss of wetland habitat by integrating wetland management conservation issues into national policies and plans strengthen national and institutional capacity and linking national actions with activities to ensure the maintenance and enhancement of wetland biodiversity and environmental goods and services for improved livelihoods in Nepal. Realizing the need and urgency for intersectoral coordination, a National Wetland Committee with representation from several sectoral Ministries has been formed and operational. This mechanism serves as an important platform to address issues related to wetlands at the highest level.

Similarly, realizing the gap towards harmonizing the issues and concerns across the sectoral policies, review of wetland impacting cross sectoral and economic policies have been undertaken to revise the existing National Wetland Policy 2003 based on the secotral policy review recommendation.

The Government of Nepal has recently endorsed the National Wetland Policy 2012 submitted by MFSC. The new policy envisions formulating a Wetland Act and its Regulations to bolster wetland governance. The policy takes into account the overarching issues of wetlands related to; tenure, ownership, classification, prioritization, collaborative partnership, multistakeholder participation, sustainable financing strategies, promotion of wise use, precautionary and no net loss principles.

Knowledge, capacity and awareness

Wetland being relatively a new and emerging discipline in Nepal, the level of awareness is still very nascent at all levels. Realizing the above need, wetland related technical knowledge base products and tools such as wetland resource book, simsar varnamala, factsheet, frequently asked questions(FAQs), wetland inventory and assessment tools, wetland indigenous documentation methodology, economic valuation tools, training manuals, communication education and participation awareness(CEPA) materials have haven developed and widely used and disseminated through training, sensitization, exposure visits and provided as resource materials for local schools, eco-clubs, teachers network, universities and academic institutions.

Future roadmap

For Nepal, the best option to respond to the effect of climate change is through the application of ecosystem approach for the conservation and management of wetland ecosystem, which addresses responses to both aspects of mitigation and adaptation. Wetlands are both carbon sink and source. Therefore, creation of wetlands through restoration and rehabilitation will create opportunities for more carbon pools. Degradation and loss will contribute to the release of more carbon to the atmosphere. Understanding the ecological, economical and sociocultural values of wetlands provides a powerful tool for convincing people. It also provides a strong economic argument for wetland conservation.

Similarly, at national level, the ecosystem based approach requires integrating working between sectors through national wetland policies and inter sectoral institutional mechanism, thereby supporting actions that take place at the local level. The balance of conservation and development, and the emphasis on maintaining and restoring ecosystem functionality, enabling people to benefit from healthy ecosystems and on taking management beyond the boundaries of Protected Areas and participatory approaches are highly relevant to the conservation of wetlands.

Secondly, wetland conservation is more about managing those human activities that impact upon critical natural resources than about managing the biodiversity itself. The primary focus should also be towards restoring wetlands. Therefore, in our context, wetland based ecosystem management such as; management and wise use of wetlands including Invasive Alien Species, supporting wetland based livelihood interventions for local communities, promotion and use of traditional knowledge base in the conservation and wise use of wetlands, monitoring the effects of local climate change through monitoring of key indicator species, and devising strategies and plans to mechanize PES systems will be the most pragmatic approach towards dealing with the above issues.

References:

IUCN. 2002. Red list of Threatened Species, IUCN- The World Conservation Union, Gland, Switzerland

Nepal Biodiversity Strategy. 2002. Ministry of Forests and Soil Conservation, Kathmandu, Nepal

GoN/MFSC. 2003. National Wetland Policy (2003). Ministry of Forests and Soil Conservation, Kathmandu, Nepal

MEA. 2005. Millennium Ecosystem Assessment (2005). General Synthesis Report, Island Press, Washington D.C.

CSUWN. 2012. Annual Progress Report (2012). CSUWN/MFSC, Kathmandu, Nepal

GoN/MFSC. 2012. National Wetland Policy (2012). Ministry of Forests and Soil Conservation, Kathmandu, Nepal