

Lowland Wetlands in Nepal

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Abstract

Wetlands are considered to be one of the most threatened of all major natural ecosystems and are claimed to deserve a high priority for conservation and sustainable use. The conservation of wetlands is important because it provides a multitude of benefits i.e. ecological, economic, aesthetic, religious and socio-cultural benefits. This paper attempts to gather information about significance and classification of wetlands on the one hand and current status of lowland wetlands of Nepal and their threats on the other. Wetland dependent communities account for more than 17% of the country's population out of which more than 90% are of Terai origin. As a result, a close interaction takes place between local community and biological resources of the wetlands. It with increase in population causes a number of threats to wetland ecosystem and associated biodiversity. These threats can be broadly categorized as habitat destruction and degradation, loss of ecosystem integrity, and depletion of species abundance and diversity. The importance of wetlands and their threats has been recognized in Nepal and different legislations have been formulated regarding Nepal Wetland Policy 2069 recently. But the policies itself cannot manage the wetlands without its appropriate implementation. Current status of wetlands is decreasing which shows a greater need of review and strong implementation of the existing policies.

Key Words: Lowland Wetlands, Classification, Current Status, Policies, Threat

Introduction

Wetlands are considered to be one of the most threatened of all major natural ecosystems and are claimed to deserve a high priority for conservation and sustainable use. Wetlands of Nepal range from the torpid ponds of the subtropical Terai to the glacial lakes of the High Himalayas which indicates the diverse wildlife species supported by them. Wetlands of Nepal constitute an important ecosystem that harbours a large number of endemic wildlife

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species, many of which are on the brink of extinction. It is estimated that about 750,000 ha of wetlands exist in Nepal that is 5 % of the total surface area of the country. It is believed that 190 species of water fowl - including resident species, migratory species and uncommon and rare resident species - inhabit these wetlands. In addition to this, numerous other mammals, fishes, reptiles, and birds are found in these habitats. At least two crocodile species found in the wetlands of Nepal have now become threatened.

Four wetland sites namely Koshi Tappu, Beeshazar and Associated Lakes, Ghodaghodi Lake Area and Jagadishpur Reservoir have been designated as 'Ramsar Sites' considering their biological significance in the Terai region. IUCN has identified 89 globally threatened and 74 near threatened animal species in Nepal of which at least 59 (66 percent) and 35 (47 percent) respectively are dependent on Terai wetlands for all or part of the year. Of 20 endemic vertebrate animals found in Nepal, 17 are wetland dependent and 10 of these are present in Terai wetlands. There is high dependency of local people on wetland resources. More than 60 ethnic communities are found in Nepal, of which about 21 are traditionally dependent either directly or indirectly on wetland resources. These communities account for more than 17 % of the country's population out of which more than 90 % are of Terai origin.

Wetlands and their importance

National Wetlands Policy of Nepal (HMGN/MFSC 2003) has defined wetlands as: *“Perennial water bodies that originate from underground sources of water or rains. It means swampy areas with flowing or stagnant fresh or salt water that are natural or man-made, or permanent or temporary. Wetlands also mean marshy lands, riverine floodplains, lakes, ponds, water storage areas and agricultural lands.”*

The Ramsar Convention (Ramsar Convention Secretariat 2006) has defined wetlands as: *“Areas of marsh, fen, peat land or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water, the depth of which at low tide does not exceed six meters.”*

Wetlands offer a multitude of ecological, economic and social benefits. They are the habitat of fish, wildlife and a variety of plants. Wetlands as nurseries for many saltwater and freshwater fishes are also important landscape features since they hold and unhurriedly release flood water and snow melt, recharge groundwater, recycle nutrients, and provide recreation and wildlife viewing opportunities for millions of people.

Wetlands hold high levels of biological diversity after tropical rainforests, as they are amongst the richest ecosystems on the world, providing crucial life support for much of humanity, as well as for other organisms. Wetlands offer sanctuary to a wide variety of plants, invertebrates, fishes, amphibians, reptiles and mammals, as well as to millions of both migratory and sedentary water birds. It has been estimated that freshwater wetlands, though covering only 1% of the Earth's surface, hold more than 40% of the entire world's

species and 12% of all animal species. On the marine front, coral reefs are among the most biologically diverse ecosystems on the planet, containing 25% of all marine species. Of the 20,000 species of fish in the world, more than 8500 species live in freshwater. One of the most impressive concentrations of wetland fauna is the number of migrating waterfowl that visit these sites during annual migrations to and from feeding and breeding grounds. Wetlands are also important reservoirs of genes. For example rice, a common wetland plant, is the staple diet of more than half of humanity. Wild rice continues to be an invaluable source of new genetic materials for developing disease resistance in new varieties of rice. Although Nepal possesses rather few wetlands, the ecological diversity of the wetland ecosystems is very great. Nepal's wetlands support significant species diversity and populations of globally threatened fauna and flora.

Major policies guiding the conservation of the wetlands in Nepal are:

- Soil and Watershed Conservation Act 1982
- National Wetland Policy 2003
- Nepal Policy and Action Plan 1993 and 1998
- Environmental Protection Act and Rules 1997
- Nepal Biodiversity Strategy 2002
- Ramsar Convention 1997
- National Parks and Wildlife Conservation Act 1973 (2029 BS)
- National Wetland Policy 2069

Classification of Wetlands

Recently, Nepal Wetland Policy 2069 has been developed to conserve wetland resources through sustainable and wise use. The policy has classified wetlands based on the following criteria:

A. Based on ownership

1. Inside Protected Area (PA) wetlands
2. Inside Forest wetlands
3. Outside Forest wetlands other than located in private land
4. Wetlands located in private land

B. Based on vulnerability

1. Critically Endangered wetlands
2. Nearly Extinct wetlands
3. Extinct wetlands

C. Based on management

1. Inside Government managed Forest
2. Inside Protected Area
3. Inside Community managed forest
4. Inside Leasehold forest
5. Inside Religious forest
6. Wetlands managed by local body
7. Wetlands located in agricultural land
8. Wetlands located in other areas

D. Based on Importance

1. Local: Small wetlands which are in use or going to be used and managed by private or local bodies.
2. National: Nationally important wetlands which have the opportunity to be enlisted in Ramsar list.
3. International: Wetlands enlisted in Ramsar site.

Lowland Ramsar sites

Ramsar Convention on Wetlands came into force for Nepal on 17 April 1988. Nepal presently has nine sites designated as Wetland of International Importance. The Koshi Tappu wetland is considered of international significance and was added to the Ramsar list of wetlands of global importance on December 17, 1987. The Ramsar Bureau has designated and listed the Beeshazar Tal (Lake) of Chitwan District, Ghodaghodi Tal of Kailali District and the Jagadishpur Reservoir of Kapilvastu District of Nepal as Ramsar Sites in August 13, 2003.

Table 1: Wetlands of Internation Importance in Lowland

S.N.	Ramsar Site No.	Name	District	Ratification date	Area (ha)	Altitude (m)
1.	380	Koshi Tappu	Sunsari, Saptari and Udaypur	17/12/1987	17500	75-81
2.	1313	Beeshazari and Associated Lakes	Chitwan	13/08/2003	3,200	286
3.	1314	Ghodaghodi Lake	Kailali	13/08/2003	2,563	205
4.	1315	Jagadishpur Reservoir	Kapilvastu	13/08/2003	225	197

Beeshazar and Associated Lakes

The Beeshazar and associated lakes lies in Chitwan district encompassing two municipalities, Bharatpur and Ratnanagar, and two VDCs, Gitanagar and Bachhauli. It was declared as Ramsar site on 13 August 2003. It provides excellent habitat as a waterhole and corridor for numerous endangered wildlife species (Nepal Biodiversity Resource Book, 2007). It is an extensive typical oxbow lake system of the inner Terai inside the buffer zone of Chitwan National Park, providing excellent habitat for endangered wildlife species. The catchment area of the Lake helps to control flooding in the Khageri River, and recharges the ground water and streams.

Biodiversity values

- Flora

The area records 37 vascular plants: one pteridophyte, 26 dicots, and 10 monocots. The tropical Sal (*Shorea robusta*) dominates Tikauli forest surrounding the wetlands and prominent associated species include the Myrobalan (*Terminalia alata*), Silk cotton (*Bombax ceiba*) and Bot dhainyaro (*Lagerstroemia parviflora*). Wetland vegetation of the area includes sedge (*Cyperus* spp.), Common reed (*Phragmites karka*), and Morning glory (*Ipomea carnea*).

The aquatic vegetation is represented by water hyacinth (*Eichhornia crassipes*), water chestnut (*Trapa quadrispinosa*), Evening primrose (*Ludwigia adscendens*), Water velvet (*Azolla imbricate*), duckweed (*Lemna* spp.), Hornwort (*Ceratophyllum demersum*), Hydrilla (*Hydrilla verticillata*), and water nymph (*Najas minor*) (Nepal Biodiversity Resource Book, 2007).

- Fauna

A total of 26 mammals, 18 species of herpetofauna, and 271 species of birds have been reported from the area, of which 60 bird species are wetland dependent. Bird species found in this area include the Grey heron (*Ardea cinerea*), Large cormorant (*Phalacrocorax carbo*), Darter (*Anhinga melanogaster*), Storkbilled kingfisher (*Halcyon capensis*), Ferruginous duck (*Aythya nyroca*), Painted stork (*Mycteria leucocephala*), Black-necked stork (*Ephippiorhynchus asiaticus*), Indian black vulture (*Sarcogyps calvus*), Black vulture (*Aegypius monachus*), Grey-headed fishing eagle (*Ichthyophaga ichthyaetus*), Blackbellied tern (*Sterna acuticauda*), and Great hornbill (*Buceros bicornis*). The site supports an estimated 20 Marsh crocodiles (*Crocodylus palustris*). It supports fish species such as the threatened *Puntius chola*, and the endemic Asian knifefish, and Common water fish (*Oxygaster bacaila*). It is an important waterhole for wildlife species such as the tiger and rhinoceros (*Rhinoceros unicornis*) (Nepal Biodiversity Resource Book, 2007).

Social importance

The surrounding forest area is home to an estimated 100,000 people who farm and fish in the lake and surrounding areas through a grant of annual fishing contracts (Nepal Biodiversity Resource Book, 2007). A buffer zone management committee has been formed for participatory management of the area. It was selected as a priority learning site for the Protected Areas Learning Network (PALNet) promoted by DNPWC, IUCN, WWF and other organizations.

Ghodaghodi Lake

The Ghodaghodi lake area lies in Kailali district encompassing Darakhnidi, Ramshikharjhala and Sandepani VDCs. It was declared a Ramsar site in 2003. It consists of a large and shallow oxbow lake system with associated marshes and meadows surrounded by tropical deciduous mixed forest in the lower slopes of Siwalik hills (Nepal Biodiversity Resource Book, 2007). There are about 13 associated small lakes and ponds in the area. The forest and the wetland acts as a wildlife corridor between the low land and the Swaliks (NBRB, 2007). The wetland area harbors 473 species of plants and about 16% avifauna (140 spp.) of the country. It supports a number of rare and vulnerable species.

Biodiversity values

• Flora

The Lake has records of 388 vascular plants: five pteridophytes, 253 dicots, and 130 monocots. Native aquatic plants adaptatable to the unique physiological conditions of the area include the Water primrose (*Ludwigia adscendens*) and Bladderwort (*Utricularia australis*). Sal (*Shorea robusta*) and Myrobalan (*Terminalia alata*) represent the Indo Malayan realm. Threatened plant species include the endangered Orchid (*Aerides odorata*), religiously important and threatened Lotus (*Nelumbonucifera*), rare wild rice (*Hygrohiza aristata*) and critically endangered *Pterocarpus marsupium* (Nepal Biodiversity Resource Book, 2007).

• Fauna

It supports over 16% of the national avifauna including critically endangered White rumped Vulture (*Gyps bengalensis*), Slender-billed Vulture (*G. tenuirostris*), endangered Ferruginous Duck (*Aythya nyroca*), Lesser Adjutant Stork (*Leptotilos javanicus*) and nearly 1% population of Cotton Pygmy-goose (*Nettapus coromadelianus*). Records reflect 29 fish species in the area, including the threatened *Puntius chola*, and the locally endemic Asian knifefish (*Notopterus notopterus*), and cold water fish (*Oxygaster bacaila*). It also supports several species vulnerable animals such as Smoothcoated Otter (*Lutra perpscillata*), Common Otter (*Lutra lutra*), Marsh Crocodile (*Crocodylus palustris*), Golden Monitor Lizard (*Varanus flavescens*) and lower risk species such as the Ferruginous duck (*Aythya*

nyroca), Grey-headed fish eagle (*Ichthyophaga ichthyaetus*) and Asiatic rock python (*Python molurus*). Bird species symbolic of the area include the Grey hornbill (*Ocyeros birostris*), Eurasian eagle owl (*Bubo bubo*), Brown fish owl (*Ketupa zeylonensis*), and Osprey (*Pandio haliaetus*). The area supports numerous globally threatened species (IUCN 2002) including the critically endangered Red-crowned roofed turtle (*Kachuga kachuga*), Bengal tiger (*Panthera tigris*), leopard (*Panthera pardus*), Three-striped and roof turtle (*Kachuga dhongka*) (Nepal Biodiversity Resource Book, 2007).

Socio-cultural and religious values

The people's occupation is predominantly farming with traditional use of natural resources. They depend on the wetland area for fishing, livestock grazing, and collection of fodder, firewood and various non-timber forest products (NTFPs). Tharus comprises 51.3% of the total population of the area. The Lake is an important religious shrine dedicated to the Ghodaghodi deity. The indigenous Tharu community celebrates a traditional festival, 'Agan Panchami', in December with a cleansing dip in this holy lake (Siwakoti, 2009).

Jagdishpur Reservoir

Jagdishpur Reservoir lies in Kapilvastu district encompassing Jagdishpur VDC. It was declared as Ramsar site on 13 August 2003, and is also highlighted in the Directory of Asian Wetlands. The site has been proposed as a designated bird sanctuary (NBRB, 2007). The Reservoir was impounded in 1972 by diverting the Banganga River for irrigation purpose and it is the largest reservoir in the country constructed for irrigation. The site provides shelter for an assembly of rare and endangered species.

Biodiversity values

- Flora

The area has record of 16 vascular plants: one pteridophyte, seven dicots, and eight monocots. The major aquatic plant species are *Ageratum conyzoides*, *Ceratophyllum demersum*, *Cyperus spp.*, *Hygrorhiza aristata*, *Typha elephantina*, *Ipomoea carnea ssp. fistulosa*, *Leersia hexandra*, *Nelumbo nucifera*, *Nymphoides hydrophyllum*, *Oryza rufipogon*, *Ottelia alismoides*, *Paspalum distichum*, *Polygonum hydropiper*, *Vetiveria zizanioides*, etc. Plantation of *Dalbergia sissoo* is common along the embankment. The associated species in the plantation areas mainly consist of alien taxa, such as *Cassia occidentalis*, *C. tora*, *Chromolaena odorata*, *Croton bonplandianum*, *Hyptis suaveolens*, *Parthenium hysterophorus*, *Xanthium strumarium*, etc. (Nepal Biodiversity Resource Book, 2007).

- Fauna

It provides shelter to at least 18 species of mammals, 8 species of reptiles, 42 species of indigenous and migratory birds and 25 species of fishes. The site provides habitats for bird species such as Grebes (*Podiceps cristatus*), *Tachybaptus ruficollis*), Cormorants

(*Phalacrocorax carbo*, *Phalacrocorax niger*), Herons (*Ardea* species), and Egrets including the rare Bittern (*Ixobrychus cinensis*), Storks (*Ciconia* species), Ducks (*Aythya* species), and Geese, Terns and Gulls, birds of prey; Rails, Coot and Waterhens, Jacanas, as well as Ascanes and Kingfishers. Resident Sarus Cranes (*Grus antigone antigone*), the regionally endangered and the tallest flying bird species in the world, utilize this habitat. It also supports 1% of the regional population of Lesser Whistling Duck (*Dendrocygna javanica*). Bird species symbolic of the area are the Falcated duck, Mallard, Tufted duck, and Red-crested pochard. Twenty-five fish species belonging to 12 families and seven orders including the lowland Terai endemics such as *Notopterus notopterus* and *Oxygaster bacaila*, threatened species such as the *Puntius chola* as well as common species are recorded. Nine species of reptiles are presumed to be residents in the area; the Marsh mugger (*Crocodylus palustris*) is nonresident, entering the reservoir only during the monsoon (Nepal Biodiversity Resource Book, 2007).

Social values

Current uses of the reservoir and adjacent areas include fishing, grazing, fuel wood and fodder collection, domestic use of the Reservoir such as for laundry, and harvesting of wetland products. The area is also popular for picnics, swimming, boating, bathing, and other forms of recreation and supplies water for irrigation in 6,200 ha of surrounding cultivated land. The water body has great potential for commercial stocking and production of fish. Surrounding areas are primarily used for farming (NBRB, 2007).

Koshi Tappu Wildlife Reserve

Koshi Tappu wetland is a freshwater, natural and permanent river system located on the flood plains of Sapta Koshi River. This lies inside the boundary of Koshi Tappu Wildlife Reserve. It is the first Ramsar site of Nepal and designated as a Ramsar site on 17 December 1987. The Reserve is a section of the Sapta Koshi River and floodplain. It offers an important habitat for a large variety of wildlife. The site is surrounded by a buffer zone of 173 km². It was gazetted in 1976 as the only remaining site for the globally threatened Asiatic Wild Water Buffalo (*Bubalus arnee arnee*) (Siwakoti, 2009).

Biodiversity values

- Flora

The existing vegetation consists of diverse physiognomic types as submerged and floating aquatic plants, tall reed stands, seasonally flooded grassland/ savannah and structurally complex forest communities in various conditions of spatial arrangements. Among 514 species of plants, *Dalbergia sissoo*, *Bombyx ceiba*, *Saccharum* sp., *Phragmites* sp., *Typha* sp., *Imperata* sp., *Valisneria* sp., *Eichornia* sp., *Hydrilla* sp., *Azolla* sp., *Lotus* sp. are common species found in the wetlands. Six species of plants found in this area, *Rauwolfia serpentina*, *Alstonia scholaris*, *Oroxylum indicum*, *Acacia catechu*, *Butea monosperma* and

Dalbergia latifolia, are listed in the different threat categories and appendices of IUCN and CITES respectively. Except *Acacia catechu*, other 5 species are sparse in the area (Nepal Biodiversity Resource Book, 2007).

- Fauna

It holds more than 20,725 water birds of 44-80 species (1994-1996 Asian Waterfowl census). Koshitappu is the only area in Nepal where the Water cock (*Gallicrex cinerea*) and Abbott's babbler (*Malacocincla abbotti*) can be found. Dusky eagle owl (*Bubo coromandus*), Black-headed cuckooshrike (*Coracina melanoptera*), Whitetailed stonechat (*Saxicola leucura*) Striated grassbird (*Megalurus palustris*), Large adjutant stork (*Leptoptilos dubius*), Pallas's fish eagle (*Haliaeetus leucoryphus*), Common golden-eye (*Bucephala clangula*), and Gullbilled tern (*Gelochelidon nilotica*) can be found in this wetland. It supports more than 1% population of globally threatened Swamp Francolin *Francolinus gularis*, 100% population of the recently described subspecies of Nepal Rufous-vented Prinia *Prinia burnesii nepalicola* (Baral *et al.*, 2007). It supports the last remaining population of Asiatic Wild Water Buffalo in Nepal, the Ganges River Dolphin, Gharial and eight species of globally threatened wetland birds. A total of 13 species of mammals found in Koshitappu are protected by CITES. Six species of mammals, five species of birds, and three species of reptiles are protected under Appendix I of NPWC Act 1973. There is a record of 77 butterfly species in the area (Nepal Biodiversity Resource Book, 2007).

Social values

Over 87% of the total population is involved in agricultural activities. Fishing is also another important occupation for the wetland-dependent community.

Nationally Important Wetlands in Terai:

Gaindahawa Tal: Oxbow lake supporting small resident and wintering populations of several species of waterfowl.

Area: Water body 11 ha; Watershed area 26 ha

Location: Ward no. 1 of Bishnupura VDC

Districts: Rupandehi encompassing 1 VDC (Bishnupura)

Badahiya Tal: It consists of large marshy natural depression, supporting a large number of resident and wintering populations of several species of waterfowl.

Area: Water body 100 ha during rainy season, watershed covers 100 ha in rainy season confined to 25 ha in dry season.

Location: 5 km south of E-W highway (Bansgadhi) in Wards # 1 and 3 of Soraha VDC. About 1800 ha of land is irrigated from this tal annually

Districts: Bardia encompassing 1 VDC (Soraha VDC)

Nakhrodi Tal: Large complex of oxbow lakes set in a very scenic environment, surrounded by dense Sal forest of major importance as a good example of an oxbow ecosystem supporting an appreciable assemblage of rare, vulnerable and endangered wildlife species.

Area: Water body 100 ha during dry season and 125 ha in rainy season; watershed 130 ha.

Location: 600 m north of Ghodaghodi Tal and 500 km north of E-W Highway in Ward # 8 of Sandepani VDC.

Districts: Kailali encompassing 1 VDC (Sandepani)

Rampur Tal: Medium-sized complex of oxbow lakes set in a very scenic environment, surrounded by dense Sal forest. Of major importance as a particularly good representative of an oxbow ecosystem supporting an appreciable assemblage of rare, vulnerable and endangered wildlife species.

Area: Water body 22 ha; Watershed area is 28 ha

Location: 7 km south east of E-W highway in Urma VDC.

Districts: Kailali encompassing 1 VDC (Urma)

Deukhuria Tal: Large lake set in a very scenic environment. Of major importance as a particularly good example of an oxbow ecosystem supporting an appreciable assemblage of rare (*Sarkidiornis melanotos*), vulnerable and endangered wildlife species.

Area: Water body 22 ha; Watershed area is 24 ha

Location: 3 km north east of Dhangadhi town

Districts: Kailali encompassing ward no.7 of the Dhangadhi Municipality

Patriyani Tal: Large oxbow lake of major importance as a particularly good representative of an oxbow ecosystem supporting an appreciable assemblage of rare, vulnerable and endangered wildlife species.

Area: Water body 35 ha; Watershed area is 200 ha

Location: half km south of E-W highway in Ward # 2 of Krishnapur VDC

Districts: Kanchanpur encompassing 1VDC (Krishnapur)

Betkot Tal: Large complex of oxbow lakes set in a very scenic environment, surrounded by dense Sal forest. Of major importance as a good example of an oxbow ecosystem supporting an appreciable assemblage of rare, vulnerable and endangered wildlife species.

Area: Water body 4 ha; Watershed area is 4.5 ha

Location: 11 km north of E-W highway from Daiji village

Districts: Kanchanpur encompassing one ward of the Daiji VDC

Threats

There are a number of threats to lowland wetlands in Nepal. These can be broadly categorized as habitat destruction and degradation, loss of ecosystem integrity, and depletion of species abundance and diversity. The population of Nepal is increasing rapidly and this has increased the pressure on the wetlands. Demand of converting the wetlands into agricultural field especially paddy fields will continue to rise with the increasing population. A study carried out by IUCN Nepal (IUCN 1998) in Terai wetlands reported that there are 94% of total wetlands used for fishing, 70% for grazing, 69% for irrigation and 59% for plant harvesting (Siwakoti, 2009). Some natural processes such as sedimentation, habitat loss, discharge of industrial and agricultural runoff, unsustainable harvesting of resources, alternation of species composition due to heavy grazing and colonization of alien invasive plant species are also threatening the wetlands.

Some of the major threats to lowland wetlands

- High powered pumping for irrigation
- Rapid population growth and pollution
- Disposal of untreated industrial effluents and domestic sewage
- Illegal poaching and fishing
- Deforestation
- Overgrazing
- Ineffective law enforcement and insufficient conservation awareness
- Unmanaged and unsustainable harvesting of NTFPs

Conclusion

Terai wetlands support several endemic and globally threatened species. There are about 21 indigenous ethnic communities traditionally dependent on wetland products or services. However, these are in vulnerable and degrading state due to human activities and some natural processes. Recognizing the importance of wetlands, different legislations have been formulated to restore the degraded condition of wetlands and to promote the wise use. But the policies itself cannot manage the wetlands without its appropriate implementation. Current status of wetlands is decreasing which shows a greater need of review and strong implementation of the existing policies.

However legislation with the definition of wetlands in the line with Ramsar Convention hasn't been formulated yet. Existing sectoral laws, policies, authorities, jurisdictions over the wetlands needs to be improved and effectively implemented. The dependency of the poor people on wetlands for their livelihood is a major challenge for wetland conservation. Wetlands have many stakeholders at the community level with diverse interests, and lack of policies and programmes to support community empowerment for their management means wetlands are often exploited. The unstable political condition of the country is also an issue

for the protection of wetland biodiversity. In order to make the conservation efforts more fruitful and sustainable, the support and participation of the wetland dependent community is crucial. There is an emerging need to promote the wetland conservation in Terai to reduce the degradation of wetlands and conserve the native species from being extinct.

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