

WETLAND BASED ECOTOURISM FOR SUSTAINABLE DEVELOPMENT IN NEPAL

Aryal, Chandramani¹

Abstract

Wetlands despite being rich in biodiversity and associated ecosystem services, they are often poorly acknowledged by the concerned stakeholders. This lack of affirmation exposes wetlands to different anthropogenic disturbances, driving towards their loss and degradation. Population growth and enhanced purchasing power are exacerbating the problems. Non-consumptive value of wetlands for sustainable development are poorly explored in case of Nepal. This article aims to identify the prospects of ecotourism as tools for sustainable management of ecotourism in Nepal by synthesizing finding of available literatures on ecotourism and wetland. Nepal is home to 5000 lakes and many more wetlands but they are poorly managed and thus fail to make significant contribution to the local livelihood. Wise use of these valuable resources could turn wetlands into panacea. Ecotourism is one of the potential tool for wise use of wetlands. This sustainable alternative of mass tourism generates funds for conservation of wetland, generate economic opportunity and helps to address the issue of poverty and other social problems. Wetlands are home to wide variety of wild mammals, birds and other plants and animals thus are potential sites for ecotourism. Properly planned and executed ecotourism plans can this ecotourism potential into tools of sustainable development for Nepal.

Keywords: Ecotourism, Sustainable Development, Wetland

Introduction

International convention on Wetlands of International Importance Especially as Waterfowl Habitat, which is commonly known as Ramsar convention, defines wetlands as: "areas of marsh, fen, peatland 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". This is the broadest definition possible and encompass wide variety of inland habitats ranging from river, floodplains, ponds, lakes, marshes and peatlands, and coastal areas such as saltmarshes, mangroves, intertidal mudflats and seagrass beds, and also coral reefs and including other marine areas no deeper than six meters at low tide. This also includes cultural wetlands such as dams, reservoirs, rice paddies and wastewater treatment ponds and lagoons (Ramsar Convention Secretariat, 2016). Wetlands are mostly the ecotone

¹ Mr. Aryal is associated in Tri-Chandra Multiple Campus, Tribhuvan University and Environment, Conservation & Training Centre, may be contacted at Aryal.mani@gmail.com

zone, where the interaction between the terrestrial and aquatic ecosystems takes place, with high species diversity as is a common feature of most if not all ecotone including wetland (Secretariat of the Ramsar Convention on Wetlands, 2012; Walker et al., 2003). Many considered wetlands as the wasteland, but it has great economic and environmental significance but, high biodiversity is often associated with wide range of ecosystem functions and accompanying ecosystem services. Wide range of Ecosystem services provided by wetlands make crucial contribution to human well-being. Wetlands are considered as the kidney of the earth owing to their functionality to purify the water resources. Besides wetlands are the sites which act as an important sink of carbon dioxide and are one of the effective measures to tackle with climate change (Erwin, 2009). Food, fiber, water and other materials provided, climate and flood regulation services offered and recreational opportunities including tourism that are linked to wetland make significant contribution to human well-being in most part of the globe (Millennium Ecosystem Assessment, 2005).

Despite their wide range of importance, they are often ignored by concerned stakeholders. As of result of which wetlands are poorly governed and are subject to tremendous amount of pressure from anthropogenic and natural disturbances. Both anthropogenic and natural factors induced by human interface are responsible to result in degradation of wetlands. In majority part of history of mankind, wetlands have been the sites of unsustainable harvest and they are often drained and converted into the landforms for more obvious use especially agricultural land (Matthews, 1993). They are experiencing the problem of degradation and loss through wetland pollution, wetland reclamation and land use change including other (Bai, Cui, Cao, Li, & Zhang, 2013). The problems are exacerbated by urban expansion, irrational land use and along with adverse natural eco-environmental impacts such as climate change, all of which are primarily resulted from population growth and increased per capita expansion (Khatri, 2014; Zhang & Sun, 2007).

Discussion

Status of wetlands in Nepal

Wetlands are often undervalued by the stakeholders in Nepal including the people from academic arena. Thus, the studies on the aspects of wetlands in Nepal are limited on scope with regard to coverage and issues explored (Bhandari, 2009). Based on the study of topographical map, 5358 lakes were identified within Nepal (Bhujju et al. 2009). Since, the definition of wetland encompasses more than lakes and ponds, the area coverage would be high if all forms of wetlands are considered. According to another study, wetland covers 743,756 ha area of Nepal which equivalent nearly 5 % of the total area of the country (CSUWN, 2009). This includes lakes, ponds, riverine areas and other natural and artificially created wetlands and may not represent all wetland types acknowledged by Ramsar convention. Protected area system though cover nearly

quarter of the total area within the country, majority of the lakes are yet to receive privileges of protection. Only 278 lakes from more than 5000 pieces i.e. less than five percent of total were reported from protected areas (Bhujju et al. 2012). In case of Nepal, where wetlands within protected areas networks are exploited unsustainable due to lack of adequate protection measures, the wetlands which are sites of unprecedented resources without proper conservation attention are subject of hefty exploitation (Aryal, Dhamala, Bhurtel, Suwal, & Rijal, 2010). The problems are exacerbated by growing population, poverty and conflicts related to ownership (Bhandari, 2009).

Significance of Wetland in Nepal

Wetlands support 48 of the globally threatened species of Nepal and 23% of all birds species reported from Nepal (Khatri, 2014). With further research works, this number might increase significantly. They serve as habitat for endangered species such as Asiatic Wild Buffalo (*Bubalus arnee*), Greater one horned rhinoceros (*Rhinoceros unicornis*), Asiatic Gangetic Dolphin (*Platanista gangetica*), Swamp Deer (*Rucervus duvaucelli*), Gharial (*Gavialis gangeticus*), Fishing cat (*Prionailurus viverrinus*) including others (Bhandari, 2009; S. N. Jha, 2007). Nearly 200 species of birds are found to be associated with wetlands in Nepal. Majority of them are migratory species, serve as rest place for migratory birds (Baral, 2009; S. N. Jha, 2007). Cinereous vulture (*Aegypius monachus*), Common Greenshank (*Tringa nebularia*), Common teal (*Anas crecca*), Eurasian curlew (*Numenius arquata*), Gadwall (*Mareca strepera*), Great cormorant (*Phalacrocorax carbo*), Bar headed goose (*Anser indicus*) are some of the birds that use wetlands in Nepal as the breeding or resting sites (Bhandari, 2009). Beside above mentioned importance, wetlands of Nepal have other ecological, social and economic importance relevant to local to international community. They serve as the potential source of fish which is significant to the livelihood of many indigenous community and are potential sites of touristic attraction (Poudel, 2009).

Wetlands of International Importance in Nepal

Ramsar convention was rectified by Nepal in 1987. Each member of the convention are obliged to list at least one wetlands as wetlands of international importance. To fulfill this obligation, Koshi tappu was listed as wetlands of international importance/ Ramsar site on December 17, 1987 and was ratified on August 13, 2003. At present, ten wetland site of Nepal encompassing total area of 60,561 hectares are listed as Ramsar sites (table 1). Among this, lake clusters of Pokhara Valley, is the youngest and the largest wetland sites of Nepal which includes nine lakes namely Phewa, Begnas, Rupa, Dipang, Madi, Gunde, Khaste, Neureni and Kamal Pokhari (IUCN, 2016). All these Ramsar sites have high ecotourism potential.

Wetlands of International Importance (Ramsar sites) of Nepal

SN	Name	Districts	Location	Designation	Area (in ha)	Geographic Location
1.	Koshi Tappu	Sunsari, Udayapur & Saptari	26°39` N 086°59` E	13/08/03	17500	Terai
2.	Jagadishpur Reservoir	Kapilvastu	27°35` N 083°05` E	13/08/03	225	Terai
3.	Ghodaghodi Lake Area	Kailali	28°41` N 080°57` E	13/08/03	2,563	Terai
4.	Beeshazari and Associated Lakes	Chitwan	27°37` N 084°26` E	13/08/03	3,200	Terai
5.	Rara Lake	Mugu	29°30` N 082°05` E	23/09/07	1,583	Himal
6.	Phoksundo Lake	Dolpa	29°12` N 082°57` E	23/09/07	494	Himal
7.	Gosaikunda and Associated Lakes	Rasuwa	28°05` N 085°25` E	23/09/07	1,030	Himal
8.	Gokyo and Associated Lakes	Solukhumbu	27°52` N 080°42` E	23/09/07	7,770	Himal
9.	Mai Pokhari	Ilam	27°00`N 87°55`E	20-10-2008	90	Mid-hill
10.	Pokhara Lake Cluster	Kaski	28°12`N 83°59`E	02-02-2016	26,106	Mid-hill

Source: National Lake Conservation Development Committee (NLCDC), 2016

Threats to wetland in Nepal

Threats to wetlands are site specific yet majority of wetlands share common problems. Destruction and degradation of wetland habitats, loss of wetland integrity and depletion of species abundance and diversity are the major threats to wetlands in Nepal (CSUWN, 2009). Destruction and deterioration of the forest in the periphery and other catchment areas are threatening presence

of migratory and resident birds in many wetlands of Nepal (Diwakar et al., 2009). Beside this, siltation, invasive species and overexploitation of fishes and other resources are threats to conservation of wetlands (Diwakar et al., 2009; S. Jha, 2008; Kafle et al., 2008; Kafle & Savillo, 2009). Economic benefits from wetlands are essential to motivate people for wetland conservation. Otherwise, the problems of wetland degradation and deterioration are expected to be exacerbated in the future if conservation issues are reconciled into livelihood of local people.

Wetland and tourism

Wetlands are important tourism destinations because of their aesthetic value and the high diversity of the animal and plant life they contain. They are used as the sites for recreational fishing, coral reef areas are highly used as recreational diving sites (Millennium Ecosystem Assessment, 2005). Mangroves, seagrass beds and other areas such as temperate bays, semi enclosed seas, and estuaries which rich in biodiversity have high potential to be developed as ecotourism destination. Tourism plays a significant role in supporting rural economies, although there are often great disparities of visitation based on access and involvement of people in tourism related activities (Nyaupane & Thapa, 2006). The negative effects of recreation and tourism are particularly noticeable when they introduce inequities and do not support and develop local economies, and especially where the resources that support the recreation and tourism are degraded (Secretariat of the Ramsar Convention on Wetlands, 2012).

Sustainable tourism in wetland

World tourism organization defines sustainable tourism as “Tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities” (UNEP-WTO, 2005). This is achieved through appropriate planning, execution and monitoring of tourism related activities. Sustainable tourism is an outcome of Rio Declaration on environment and development agenda 21 (WECD, 1987). Which is however conceptualized between sustainable development and ecotourism, which contributes to local livelihood and generates incentives for conservation of wetland (Thompson, Gillen, & Friess, 2018). In many cases, it also facilitates the acceptance and enforcement of environmental regulation by local populations and businesses essential for conservation of wetlands. Ecotourism is one of the components of sustainable development which could be achieved through integrating the social, economic and environmental resources (Bhuiyan et al., 2012).

Ecotourism

Tourism, in a sustainable form, more precisely ecotourism can be one of the effective approach

for sustainable utilization of wetlands in Nepal. Travel and tourism are human-resource intensive, employing 230 million people or 8% of the global workforce and it is estimated that one job in the core tourism industry creates about one and a half additional or indirect jobs in the tourism-related economy. The greening of the sector is expected to reinforce the employment potential of the sector with increased local hiring and sourcing. Greening the tourism sector through enhanced local community participation especially poor and pro-poor in the tourism value chain is essential to utilize ecotourism as tool of sustainable development. That will help in developing local economy and reduce poverty. Wetland of Nepal have high prospects to be developed as ecotourism destination.

Nepal is rich in terms of wetland dependent birds. In Nepal 886 species of birds have been described of which nearly 200 birds i.e. nearly 25% of the birds in Nepal are wetland dependent (Baral, 2009). Beside these, charismatic species of mammals and other vertebrates visit to wetland compelled by their ecological requirements offering the potential for wildlife based ecotourism. In the scenario where wetland conservation are kept in the lower order of priority owing the compulsion of governments to invest elsewhere including education, poverty alleviation and infrastructure, more resources and initiatives are essential to conserve them (Poudel, 2009). Policy documents of governments such as national wetland policy and other legislations related to wetland in Nepal have prioritized the role of local people in conservation of wetlands (Poudel, 2009). Ecotourism can contribute to all three aspects of sustainable development i.e. environmental, social and economic sectors. The activities can motivate local participation in wetland conservation and contribute to sustainable development (Poudel, 2009).

Impacts on Sustainable Development

Ecological Impacts

Wetland based ecotourism are identified as potential source of funding for their conservation in Nepal (Ministry of Forest and Environment, 2018). Beside their role as potential funding source, ecotourism also provide extra motivation for the restoration and conservation of wetland as evident in Betana and other wetland areas of Nepal (GoN/MoFE, 2018). Wetland have high ecological significance. For example Ghodaghodi area is home to nearly 140 species of birds representing the both migrant and resident, which accounts nearly 16% of the avifaunal diversity of country (Diwakar, Barjracharya, & Yadav, 2009). Reducing the anthropogenic pressure in the wetlands and prioritizing non-use value such as tourism will contribute to conservation of water.

Social Impacts

Wise use of wetland, where sustainable utilization of wetland for the benefit of mankind in

compatible with nature is made, is often considered as a tool for poverty alleviation and bring economic prosperity within nation (Millennium Ecosystem Assessment, 2005). Tourism in wetlands depends on the water-related ecosystem services delivered by healthy wetlands e.g. freshwater, flood protection), and also on other ecosystem services (e.g. beautiful landscapes), and therefore constitutes an additional motivation for restoration and conservation (Secretariat of the Ramsar Convention on Wetlands, 2012).

Economic impacts

While evaluating the ecological services provided by Koshi Tappu Wildlife Reserve (KTWR), the estimated income generated from ecotourism was found to be US \$ 211 per tourists, and total contribution from ecotourism was nearly 8% of total value assigned for the park (Sharma, Rasul, & Chettri, 2015) using a combination of market-based and value transfer methods. The results showed that economic benefit generated from the reserve was worth USD 16 million per year, equivalent to USD 982 per household. The economic benefit generated from provisioning services accounted for about 85%. Although non-use values and some components of regulatory services were not considered in the study, our findings clearly highlight the vital importance of the economic benefit generated from the reserve for wellbeing of the local people. This has significant policy implications for balancing development and conservation efforts. Given the high levels of poverty in the buffer zone communities and the limited alternative livelihood options, pressure on the reserve is increasing and the management investment is insufficient, which has accelerated the degradation of vital services thereby imposing further constraints on conservation goals. We recommend that the ecosystem services provided by the reserve should be recognized as an integral part of a strategy and ensure sound policy and institutional mechanisms exist to empower and provide local communities to act on the options for minimizing trade-offs and promoting synergies using a holistic approach.

,"author":[{"dropping-particle":"","family":"Sharma","given":"Bikash","non-dropping-particle":"","parse-names":false,"suffix":""},{dropping-particle":"","family":"Rasul","given":"Golam","non-dropping-particle":"","parse-names":false,"suffix":""},{dropping-particle":"","family":"Chettri","given":"Nakul","non-dropping-particle":"","parse-names":false,"suffix":""}],container-title":"Ecosystem Services","id":"ITEM-1","issued":{"date-parts":[["2015"]]},page":"84-93",publisher":"Elsevier",title":"The economic value of wetland ecosystem services: Evidence from the Koshi Tappu Wildlife Reserve, Nepal","type":"article-journal","volume":"12"},uris":["http://www.mendeley.com/documents/?uud=b added 194c-61d8-46b3-a18c-516bc8212cf1"]}],mendeley":{"formattedCitation":"(Sharma, Rasul, & Chettri, 2015. As wetlands and associated biodiversity are the important attractions within KTWR, benefits from ecotourism can be ascribed to them (Aryal & Maharjan, 2018) different alternative

forms of tourism are practiced with aim of enhancing positive externalities while keeping check and balance to negative externalities. Ecotourism is one such approach which is often highlighted as one of the most effective tool to reconcile the conservation and development aspiration. Ecotourism in its different localized version and their impacts on environment are studied in Nepal. Despite this, ecotourism potential of protected areas is less explored dimension in ecotourism studies. This holds true for the eastern region of the lowland Nepal. Location of destination, features of that destination along with the facilities and uniqueness offered by the place is different which are vital in defining the ecotourism potential of different locations. The study forms the basis for promotion of ecotourism in an area. This paper aims to explore the ecotourism potential of Koshi Tappu Wildlife Reserve. There are different tools and approach used to assess the ecotourism potential. This paper contains information collected from field observation, scheduled interview and key informant interview. Wild Water Buffalo, migratory birds along with the presence of other wildlife species make a place attractive destination for ecotourism. Satisfaction shown by the respondents for food, accommodation and hospitality offered adds value to the ecotourism potential. Areas with high scenic and cultural attraction in the vicinity of the park can be considered as positive additionally to attract tourist with diverse interest. As it is considered mandatory to include the component of education and interpretation to qualify as ecotourism, development and execution of the curriculum are essential. Beside this, exploration and marketing of other potential destination and enabling the local communities are equally vital.

"author": [{"dropping-particle": "", "family": "Aryal", "given": "Chandramani", "non-dropping-particle": "", "parse-names": false, "suffix": ""}, {"dropping-particle": "", "family": "Maharjan", "given": "Kishor Kumar", "non-dropping-particle": "", "parse-names": false, "suffix": ""}], "container-title": "Journal of Tourism & Adventure", "id": "ITEM-1", "issue": "1", "issued": {"date-parts": [{"2018"}]}, "page": "52-71", "title": "Assessment of Ecotourism Potential of Koshi Tappu Wildlife Reserve, Eastern Nepal", "type": "article-journal", "volume": "1", "uris": [{"http://www.mendeley.com/documents/?uuid=14bdc87f-34e6-4d41-b426-c0eb671528d1"}], "mendeley": {"formattedCitation": "(C. Aryal & Maharjan, 2018. Beeshazari and associated Lake, Lake Clusters of Pokhara Valley, Rara Lake, Phoskundo Lake, Gosaikunda including other are wetlands which serve as major tourist destinations of Nepal attracting internal and international tourist. Beside these, many wetlands in Nepal can be promoted as ecotourism destination and they can generate significant amount of income through entry fee and tourism associated business. Income from wetland based tourism are vital to inspire local people for participation in wetland conservation. Meaningful local participation are vital for both wetland conservation and ecotourism development (Secretariat of the Ramsar Convention on Wetlands, 2012)."}]}

Government role

National, regional and local planning and policies are key to reconciling the conservation and development through wetland based ecotourism (Secretariat of the Ramsar Convention on Wetlands, 2012). Government of Nepal prioritized wetland based ecotourism as a potential contributor for economic prosperity. As per the recent national report submitted by Government of Nepal to Secretariat of Ramsar convention wetland based ecotourism is one of the five priority for the implementation of Ramsar convention in the country (MoFSC, 2018). National Ramsar Strategy and Action Plan of Nepal have identified ecotourism related activities as one of the potential funding source for implementation of that strategy in country Nepal (Aryal, Ghimire, & Niraula, 2019; Ministry of Forest and Environment, 2018) Nepal", "title": "National Ramsar Strategy and Action Plan, Nepal (2018-2024. Beside these, other wetland policies and strategies of Nepal have acknowledged ecotourism as one of important components for wise use of wetlands in Nepal (Aryal et al., 2019) Nepal with high cultural and environmental diversity is prime destinations for ecotourism and other forms of nature-based tourism. Ecotourism contributes to the conservation of biodiversity as a primary source of internal funding in the protected areas. Researches on the aspects of ecotourism in Nepal were focused towards potentiality evaluation, impact assessment and the impact of climate change including others. Despite the significance of ecotourism in the Nepalese economy, research on governance aspects of ecotourism is limited. This article aims to analyze the role of government in ecotourism development in Nepal through policy-based approach. Beside this, data of visitation in the protected areas was evaluated. Tourist number in the protected area was observed to increase in a gradual fashion in response to the growing number of tourists visiting Nepal. Tourism policies of government primarily focus to increase the number of tourists in the country and fail to recognize tourism carrying capacity and environmental implication. Different tourism and other sectoral policies attempt to cover the issues of ecotourism, but, ecotourism specific policy is yet to be drafted. In addition to this, the tourism aspect is addressed by the species conservation action plan for species-level conservation within the country. In all, nine action plans reviewed, the provisions relating to tourism were found to be too general, most of them acknowledging ecotourism as a source of conservation funding but failed to define species-specific policy. A similar trend can be observed in the protected area management plan excluding the Chitwan and Banke National Park. Further study on the implementation status and formulation of new policy to address the holistic issues of ecotourism is an urgent requirement.", "author": [{"dropping-particle": "", "family": "Aryal", "given": "Chandramani", "non-dropping-particle": "", "parse-names": false, "suffix": ""}, {"dropping-particle": "", "family": "Ghimire", "given": "Bina", "non-dropping-particle": "", "parse-names": false, "suffix": ""}, {"dropping-particle": "", "family": "Niraula", "given": "Narayan", "non-dropping-particle": "", "parse-names": false, "suffix": ""}], "container-title": "Journal of Tourism & Hospitality Education", "id": "ITEM-

1", "issued": {"date-parts": [[2019]]}, "page": "41-76", "title": "Tourism in Protected Areas and Appraisal of Ecotourism in Nepalese Policies", "type": "article-journal", "volume": "9"}, {"uris": ["http://www.mendeley.com/documents/?uuid=fe209493-2767-4346-bcd9-81a4a56f8939"]}], "mendeley": {"formattedCitation": "(C. Aryal et al., 2019).

Conclusion

Wetlands are one of the prime destination of tourist in Nepal, as evident by number of tourists in Ramsar sites such as Beeshazari and associated lakes, Rara Lake, Tilicho Lake, Phewa and associated lakes including other. Beside ten Ramsar site, there are more than 5000 wetlands in Nepal of which, only few are offering the benefits from touristic activities while rest have unexplored potentiality for generating economic benefits to local community. This potentiality can change into reality through proper planning and execution of wetland based ecotourism activities and diversification of source of income through initiation of home stay, souvenir shop including other. The benefits of wetland based ecotourism are not limited to economic benefits rather they can serve as the driver of sustainable development. For this, government should realize this potentiality and formulate policy to develop wetland based ecotourism. This will prove vibrant in initiation and development of ecotourism in other wetland areas of Nepal and embrace all concerned stakeholder for their sustainable management.

References

- Aryal, C., Ghimire, B., & Niraula, N. (2019). Tourism in Protected Areas and Appraisal of Ecotourism in Nepalese Policies. *Journal of Tourism & Hospitality Education*, 9, 41–76.
- Aryal, C., & Maharjan, K. K. (2018). Assessment of Ecotourism Potential of Koshi Tappu Wildlife Reserve , Eastern Nepal. *Journal of Tourism & Adventure*, 1(1), 52–71. <https://doi.org/10.3126/jota.v1i1.22750>
- Aryal, P. C., Dhamala, M. K., Bhurtel, B. P., Suwal, M. K., & Rijal, B. (2010). *Turtles of Nepal: A Field Guide for Species Accounts and Distribution*. Environmental Graduates in Himalaya (EGH), Resources Himalaya Foundation and Companions for Amphibians and Reptiles of Nepal (CARON).Kathmandu, Nepal.
- Bai, J., Cui, B., Cao, H., Li, A., & Zhang, B. (2013). Wetland Degradation and Ecological Restoration. *The Scientific World Journal*, 1–2. <https://doi.org/10.1155/2013/523632>
- Baral, H. (2009). Updated status of Nepal’s wetland birds. *Banko Janakari*, 30–35. <https://doi.org/10.3126/banko.v19i3.2209>

- Bhandari, B. (2009). Wise use of Wetlands in Nepal. *Banko Janakari*, (December), 10–17. <https://doi.org/10.3126/banko.v19i3.2206>
- Bhujju, D. R., Sharma, S., Jha, P. K., & Gaire, N. P. (2012). Scientific Discourse of Lakes in Nepal. *Nepal Journal of Science and Technology*, 13(2), 147–158.
- Bhujju, U. R., Khadka, M., Neupane, P. K., & Adhikari, R. (2009). *Lakes of Nepal : 5358 - A Map Based Inventory*. Dillibazar, Kathmandu.
- CSUWN. (2009). Conservation and sustainable use of wetlands in Nepal (CSUWN - NEP/05/G01). *Banko Janakari*, pp. 40–42. <https://doi.org/10.3126/banko.v19i3.2211>
- Diwakar, J., Barjracharya, S., & Yadav, U. (2009). Ecological study of Ghodaghodi lake. *Banko Janakari*, 18–23. <https://doi.org/10.3126/banko.v19i3.2207>
- Erwin, K. L. (2009). *Wetlands and global climate change : the role of wetland restoration in a changing world*. 71–84. <https://doi.org/10.1007/s11273-008-9119-1>
- GoN/MoFE. (2018). *Nepal's Sixth National Report to the Convention on Biological Diversity*. Kathmandu, Nepal.
- IUCN. (2016). Lake Cluster of Pokhara Valley: a new Ramsar Site of Nepal | IUCN. Retrieved April 19, 2019, from <https://www.iucn.org/content/lake-cluster-pokhara-valley-new-ramsar-site-nepal>
- Jha, S. (2008). Status and Conservation of Lowland Terai Wetlands in Nepal. *Our Nature*, 2008(6), 67–77. <https://doi.org/10.3126/on.v6i1.1657>
- Jha, S. N. (2007). The Wetland Ecology. *Our Nature*, 2(1), 47–52. <https://doi.org/10.3126/on.v2i1.326>
- Kafle, G., Cotton, M., Chaudhary, J. R., Pariyar, H., Adhikari, H., Bohora, S. B., ... Regmi, B. (2008). Status of and Threats to waterbirds of Rupa Lake, Pokhara, Nepal. *Journal of Wetland Ecology*, 1(1/2), 2003–2006.
- Kafle, G., & Savillo, I. (2009). Present status of Ramsar sites in Nepal. *International Journal of Biodiversity and Conservation*, 1(5), 146–150. Retrieved from [http://www.acadjourn.org/IJBC/PDF/PDF2009/September/Kafle and Savillo.pdf](http://www.acadjourn.org/IJBC/PDF/PDF2009/September/Kafle%20and%20Savillo.pdf)
- Khatri, T. B. (2014). Wetlands, Biodiversity and Climate Change. *The Initiation*, 5, 138–142. <https://doi.org/10.3126/init.v5i0.10263>
- Matthews, G. V. T. (1993). The Ramsar Convention on Wetlands : its History and Development Development. In *The Ramsar Convention on Wetlands: history and development*.

- Millennium Ecosystem Assessment. (2005). *Ecosystems and Human Well Being: Wetlands and Water Synthesis*. World Resources Institute, Washington, DC.
- Ministry of Forest and Environment. (2018). *National Ramsar Strategy and Action Plan, Nepal (2018-2024)*. Kathamandu, Nepal: Ministry of Forest and Environment, Government of Nepal.
- MoFSC. (2018). National Report on the Implementation of the Ramsar Convention on Wetlands. In *National Reports to be Submitted to the 13th Meeting of the Conference of Parties, Dubai, United Arab Emirates*. Kathmandu, Nepal.
- National Lake Conservation Development Committee (NLCDC). (2016). Ramsar Sites. Retrieved April 19, 2019, from <http://nepallake.gov.np/2017/05/01/ramsar-sites-of-nepal/>
- Nyaupane, G. P., & Thapa, B. (2006). Perceptions of environmental impacts of tourism: A case study at ACAP, Nepal. *International Journal of Sustainable Development and World Ecology*, 13(1), 51–61. <https://doi.org/10.1080/13504500609469661>
- Poudel, B. (2009). Wetland conservation in Nepal: policies, practices, problems and possibilities. *Banko Janakari*, (1989), 5–9. <https://doi.org/10.3126/banko.v19i3.2205>
- Ramsar Convention Secretariat. (2016). *An Introduction to the Convention on Wetlands* (Fifth). Retrieved from www.larissab.fr
- Secretariat of the Ramsar Convention on Wetlands. (2012). *Destination Wetland: Supporting sustainable tourism*.
- Sharma, B., Rasul, G., & Chettri, N. (2015). The economic value of wetland ecosystem services: Evidence from the Koshi Tappu Wildlife Reserve, Nepal. *Ecosystem Services*, 12, 84–93. <https://doi.org/10.1016/j.ecoser.2015.02.007>
- UNEP-WTO. (2005). Making tourism more sustainable: A guide for policy makers. In *UNEP-WTO* (Vol. 54). <https://doi.org/92-807-2507-6>
- Walker, S., Wilson, B. J., Steel, J. B., Rapson, G. L., Smith, B., King, W. M., & Cottam, Y. H. (2003). *Properties of ecotones : Evidence from five ecotones objectively determined from a coastal vegetation gradient*. 14, 579–590.
- Zhang, J., & Sun, Q. (2007). Causes of wetland degradation and ecological restoration in the Yellow River Delta Region. *Forestry Studies in China*, 7(2), 15–18. <https://doi.org/10.1007/s11632-005-0015-y>