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Protecting Nepal's Biodiversity in the Context of Sustainable Development Goal 15

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Abstract

With high elevations and a variety of ecosystem classifications ranging from wetlands to alpine regions, Nepal is one of Earth's most ecologically diverse countries. However, with global trends of declining biodiversity, Nepal's ecological diversity is also at risk. The Sustainable Development Goals (SDGs) are a set of 17 global goals created in the hopes of developing our planet for the betterment of both people and the planet. SDG 15 – Life on Land focuses specifically on protecting the land we live on and the non-human world. Considering Nepal's high biodiversity, it is essential to protect biodiversity for both the Nepali people and the global community at large. Nepal has made a bold commitment to fulfilling SDG 15, including designating vast areas as protected areas and employing community-based conservation strategies and community-based approaches. The following paper is a narrative review of empirical-based literature focused on understanding the complex landscape of biodiversity in Nepal and the implications for achieving SDG 15.

Keywords: sustainable development, biodiversity, Nepal, community development, Canada

Protecting Nepal's Biodiversity in the Context of Sustainable Development Goal 15

Despite accounting for only 0.1% of the total global surface area, Nepal is rich in biodiversity. It holds around 3.2% of the world's known flora and 1.1% of the world's known fauna (Ministry of Forests and Soil Conservation, 2014). However, this biodiversity is declining due to anthropogenic, or human-induced, climate change and other human activity such as land exploitation and degradation, habitat loss due to agricultural pursuits and urbanization, invasive species, reductions in prey and illegal poaching (Bhattacharjee et al., 2017; Bird Conservation Nepal and Department of National Parks and Wildlife Conservation, 2012; Food and Agriculture Organization of the United Nations [FAO], 1998; Jnawali et al., 2011; Ministry of Forests and Soil Conservation 2014). According to a report titled, *The Status of Nepal's Mammals: The National Red List Series*, out of all known mammal species in Nepal, 23% are threatened with extinction. As climate change and human activity persist, biodiversity and ecosystem losses will continue to rise. Unfortunately, losses in biodiversity directly impact human life (Bhattacharjee et al., 2017; Habibullah et al., 2021), as many basic needs, such as water, food, and shelter, are reliant on thriving biodiversity and the health of our ecosystems (United Nations Development Program, n.d.).

The United Nation's 2030 Agenda outlines a set of 17 Sustainable Development Goals (SDGs) aimed at developing society at the country level to ensure the prosperity of both people and the planet (United Nations, n.d.). SDG 15 outlines society's need to protect both the natural world and biodiversity to guarantee the stability and longevity of ecosystems and ecosystem function. Nepal is one of the 193 countries that has agreed to achieve all 17 SDGs, including SDG 15 by 2030 (United Nations, n.d.; Sustainable Development Report, 2021). Nepal's SDG 15 targets are extensive and ambitious with 12 sub-targets discussing goals such as mobilizing resources to aid biodiversity efforts

and focusing on conserving biodiversity at both the national and international levels, suggesting that Nepal is highly committed to helping its struggling biodiversity (United Nations Nepal, n.d.). However, resolving biodiversity challenges in Nepal is complex. According to Sachs et al. (2023), Nepal's overall progress and fulfilment of the SDGs has scored 66.5 out of 100, and on the global stage ranks 99th out of 166 countries. Within the context of SDG 15, Sachs et al. (2023) determined Nepal's progress to be "stagnating" with major issues remaining to fulfilling its SDG 15 targets. Some of these challenges include political instability, climate change, gender and caste derived inequalities, and infrastructural challenges (Eckstein et al., 2017; Poudyal et al., 2019; Bhatt, 2022; Sachs et al., 2023).

Despite local and global dependence on Nepal's biodiversity, there is currently a lack of scholarly literature discussing its biodiversity in the context of SDG 15. The following paper is a narrative review of the empirical literature focused on summarizing the current state of biodiversity and SDG 15 in Nepal (Sukhera, 2022). This paper will first contextualize biodiversity into daily life in Nepal and greater Nepali society, then discuss Nepal's current solutions to declining biodiversity, examine the role of community development, summarize findings, and provide recommendations. This paper emerged from a class assignment from a 2022 Virtual Study Abroad Program to Nepal, facilitated by the University of Calgary (see Walsh et al., 2023). A related publication can be found in Buerkner and Walsh (2023).

Connecting Daily Life in Nepal to Sustainable Development Goal 15 - Life on Land

Biodiversity and life on land are important to human health and wellbeing, food security, freshwater, economic prosperity, culture, and spirituality (Chapin III et al., 2000; Secretariat of the Convention on Biological Diversity, 2010). Essentially, all aspects of human life and experience are related to the flourishing

of the environment because, as a species, our basic needs and resources come from the land. All human society, both past and present, have been built upon the foundation of the Earth's land, biodiversity, and resources. Nepal, as a country, is no different. The well-being of the Nepali people relies on the stability of the environment and the fulfilment of SDG 15. As noted, Nepal is a major region for biodiversity due to its varied climates and landscapes. However, the pressures of ecological loss could greatly detriment life in Nepal by making it difficult for Nepali people to access the resources they need to survive. Many Nepalese are already struggling to acquire their basic needs. For example, only 40% of people live in what can be considered safe housing, and around 25% of Nepal's population have access to safe drinking water (Nepal National Planning Commission, 2020). This challenge of meeting basic needs has been exacerbated by the COVID-19 pandemic (Karna, 2021). Nepal scored 46 out of 100 based on possible indicators of food security according to the Global Food Security Index (Nepal National Planning Commission, 2020). The challenge to meeting basic need are inequitable, Adhikari et al. (2021) for example, found that"wage labourers, indigenous people, and women from marginalized groups and regions already vulnerable in food security and malnutrition" have been most severely impacted by the pandemic (p. 1).

Many Nepalese people are dependent on the land for their economic livelihoods. Agriculture and ecotourism are two major industries in Nepal that generate wealth for many Nepali (Kaini, 2019). According to the FAO (n.d.), 66% of Nepal's population are involved in the agriculture sector. Similarly, ecotourism in Nepal is important for providing employment for rural communities in tourism and hospitality related fields while promoting the protection of their environments (KC, 2017). However, with climate change causing latitudinal and altitudinal shifts to ecosystems many areas previously suitable for diverse agriculture may be deemed unsuitable in coming decades (Chen et al., 2011). Additionally, many

species and ecosystem sub-types in ecotourism hotspots such as high alpine regions are on what Urban (2018), drawing on the work of Marris (2007), terms as the "escalator to extinction" (p. 11871). This situation occurs when species are at the limit of the possible altitudinal habitat and with no other habitat to adapt to, will likely go extinct (Bhattacharjee et al., 2017). According to a report by the Government of Nepal (2016), Nepal is one of the world's most vulnerable countries to climate change due to a combination of geographical and socio-economic factors. Increasing climate change will directly result in ecosystem and biodiversity degradation, leading to both agricultural and freshwater stress (Bhattacharjee et al., 2017). Overall, focusing on achieving SDG 15 in Nepal could prevent deep ecological, social, and economic issues while saving the lives of many species.

Situating Challenges to Biodiversity and the Fulfilment of SDG 15 into Greater Nepali Society

Solutions designed to address biodiversity-related threats must consider the greater socio-economic context of Nepal, especially its political instability and inequalities. In recent years, Nepal has experienced on-going and escalating political instability (Hossain, 2023; Shakya, 2024) which represents a major barrier to fulfilling SDG 15. As a result, progress on issues such as economic growth, poverty, inequality, and ecological protections has been stalled (Ranjan, 2023). Inequality impacts biodiversity loss because often women and those from marginalized castes are less likely to have accurate representation or decision-making power within community forestry committees or environmental leadership (Sapkota et al., 2018; Satyal et al., 2020). Gender and caste-based discrimination are two common forms of inequities in Nepal (Gupta et al., 2021; Subedi, 2011, 2016). Any proposed solutions to biodiversity-related threat should involve marginalized peoples in meaningful ways and work collaboratively with those who are most impacted by policies and are often excluded in decision-

making (Dahal et al., 2013). Unfortunately, there is a lack of scholarly literature analyzing the current relationship between biodiversity and the issues of political instability and inequality. Both issues have a clear impact on the state of biodiversity in Nepal and require further investigation.

How Nepal is Addressing Biodiversity Loss and SDG 15 – Understanding and Analyzing Nepal's Current Solutions

To achieve SDG 15, Nepal is primarily using protected areas. After the 1973 National Parks and Wildlife Conservation Act was passed, the Department of National Parks and Wildlife Conservation was created to begin constructing and managing protected areas in Nepal (Heinen & Kattel, 1992). Protected areas are vital for species survival as they provide habitat that includes ecosystem services and functions like the entire watershed and soil processes. Protected areas cover just over 23.4% of Nepal's surface area (Nepal Department of National Parks and Wildlife Conservation, n.d.). This is significant because having a high percentage of protected area coverage ensures species have enough room to exist and flourish. Since the late 19th century, with the development of the Department of National Parks and Wildlife Conservation, there has been a growing number of protected areas, which now includes 12 National Parks, six Conservation Areas, a single Wildlife Reserve, and a single hunting reserve, along with 13 buffer zones (Department of National Parks and Wildlife Conservation, n.d).

Protected areas in Nepal are not without challenges. Historically, the creation of protected areas has been attributed to the displacement of many communities or has interfered with the daily lives of non-displaced communities (Bajracharya et al., 2006). Likewise, protected areas can be points of conflict for local communities because many interfere with local people's ability to freely utilize the land for resource and cultural needs (Bhusal, 2012). Buffer zones have been employed as a way to combat these issues for many Nepali communities situated near protected areas while involving them in conservation efforts

(Lamichhane et al., 2019). Buffer zones are areas of land that surround existing protected areas and act to create a neutral zone for wildlife and people and as such are key to decreasing the impact of human activity on protected areas (The Nature Conservancy, 2015). With that said, not all villages are satisfied with how the buffer zones in their locations are working. Lamichhane et al. (2019) found that certain communities near the Chitwan National Park in Nepal agreed with wildlife conservation but were dissatisfied with the buffer zone in which they resided due to increased human-wildlife conflict. It is also unclear how 'protective' Nepal's protected areas are. For example, Bhattacharjee et al. (2017) identified several related challenges included a lack of data monitoring for individual species, the negative impact humans may be having on the parks, and effectiveness of the protected areas with a shifting climate. Additionally, it is ambiguous as to how important conservation factors like habitat fragmentation and lack of habitat connectivity due to structures like roads and trails are impacting species national parks (Saura et al., 2018). Of concern, specific information on habitat fragmentation and connectivity in Nepal is lacking. Further, although ecosystem types are dispersed across Nepal, little coverage in the Middle Mountain physiographic region is available specifically and how climatic-related biodiversity loss within the Middle Mountain areas is being addressed. This suggests that additional data collection and monitoring of protected areas, particularly the Middle Mountain areas and key species in Nepal, are warranted.

Ecotourism is another mechanism that Nepal is using to protect natural areas. Ecotourism is a form of tourism that emphasizes low environmental impact travel in a way that benefits local communities (KC, 2017). Generally, ecotourism is seen as a favourable form of biodiversity conservation for many Nepalese communities due to an increased standard of living from economic gain (Metha & Kellert, 1998), as many people in the communities obtain employment as park managers or tour guides or as vendors selling their art and crafts (Acott et al.,

1998). For tourists, ecotourism can also prompt them to care about biodiversity in Nepal and potentially feel a sense of obligation to protect it (Acott et al., 1998). However, ecotourism is also associated with several negative aspects. Ecotourism can be problematic for species as loss of habitat connectivity and habitat fragmentation can occur due to the need to build structures like roads and hotels to accommodate visitors (Diamantis, 1999). It can also increase the likelihood of habitat degradation due to overused tracks or frequent human occupation in key wildlife areas. Ecotourism can also negatively impact daily life and the cultures of communities near the protected areas due to routine shifts to accommodate tourists and excessive exposure to global culture (Yogi, 2010). Moreover, Yogi (2010) indicated that Nepal struggles to implement effective ecotourism due to a lack of commitment to governmental policy and issues incorporating conservation and development into long-term planning. However, it remains unclear as to how the Nepal government and local communities plan to address the problems associated with ecotourism (KC, 2017). Also, further research needs to occur to better understand the entire impact of ecotourism and to inform future ecotourism policies and initiatives.

Community-based conservation (CBC) is another tool that Nepal is using to try to reduce environmental degradation and biodiversity loss (Bajracharya et al., 2006). CBC is a form of conservation whereby the community is heavily involved in the creation of policies and programs to promote conservation (Berkes, 2004). Ultimately the goal of CBC is to develop a form of conservation that works with the community with a focus on long-term conservation. Bajracharya et al. (2006) interviewed 114 respondents in the Annapurna Conservation Area in Nepal to understand CBC efforts and found that the conservation efforts had both positives and negatives. Many people in local communities near the conservation area reported improved socio-economic benefits such as better infrastructure, health, and resource access, while a minority

of respondents indicated an increase in crop damage from wildlife and subsequent economic losses (Bajracharya et al., 2006). Despite the noted challenges, the authors concluded that CBC was an effective form of conservation. Interviews of 21 people residing in buffer zones in the Sagarmatha National Park found positive support for the buffer zones, attributed to improvements to local livelihood and the preservation and promotion of culture (Silwal et al., 2022).

The Role of Community Development

Community development can be defined as the action that individuals or groups take to create the changes they want to see in their communities (Smart, 2017). Within the context of community development, Nepal has much development to experience as a society before everyone is uplifted. Unfortunately, ecological degradation and loss may undermine many community development projects because as humans our societies rely on a stable environment. Achieving SDG 15 is then related to community development because the preservation of our ecosystems allows for the flourishing of communities and opens space for community development. Although community development is still possible in an ecologically degraded world, expansive community development is more difficult in a degraded world as communities may not have the necessary resources to implement effective practices (Cannan, 2000). Similarly, lack of action toward fulfilling SDG 15 could push many Nepali into more unstable social circumstances, potentially requiring greater and more complex community development (Roe, 2019).

There are some ways that Nepal can begin to strengthen community development to help SDG 15. Part of community development in the context of Nepal and SDG 15 could involve increasing efforts toward self-determination and allowing communities in key biodiverse regions to have more autonomy in protecting land in their areas (Smart, 2017). This could be achieved through further supporting CBC efforts in Nepal and potentially expanding community

conservation projects. Ideas related to community development like empowerment and action could also be incorporated (Scottish Community Development Centre, n.d.) for communities to come together and organize themselves to take meaningful action to protect local key species and biodiversity. In essence, communities in Nepal have the right to dwell on their land and tend to it, and community development practices can help Nepalis to effectively practice this.

With the recognition that environmental problems also have a social angle social workers are increasingly including the "attainment of environmental justice and sustainability as part of their social interventions" (Papadimitriou, 2020, p. 139). Termed, green social work, this may prove a promising approach in moving forward (Belchior Rocha, 2018; Cannan, 2000). Understanding this relationship must be viewed as a priority if solutions are to be truly sustainable in the long term.

Conclusion

The following paper has summarized and connected the current existing literature on the state of biodiversity in Nepal. Based on the breadth of literature reviewed in this paper, it is clear Nepal's biodiversity is at risk. Despite the importance of Nepal's biodiversity on a global scale, it is unclear if many of the solutions for protecting Life on Land are succeeding in protecting individual organisms and within the context of the greater Nepali society (Bhattacharjee et al., 2017). Nepal's SDG 15 goals are promising and have been well designed to improve the state of biodiversity through focusing on enhancing conservation and promoting community involvement. However, as of 2023, current actions are falling short of SDG 15 commitments (Sachs et al., 2023). Future studies focused on improving quantitative data collection about key areas and species, the effectiveness of Nepal's current protected areas, and integrated understanding of Nepali issues like political instability would help to strengthen current solutions.

Additionally, expanding solutions to include integrated CBC methods and community development practices, with the insights and decision-making engagement of those most impacted, could help improve biodiversity understanding and outcomes. Fulfilling SDG 15 has the potential to aid in reconstructing Nepal into a nation invested in both its people and biodiversity. Although the current global diversity is on the precipice of collapse, there is still hope for Nepal's biodiversity. Especially if the commitments outlined in Nepal's SDG 15 goals and targets are achieved (United Nations Nepal, n.d.).

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