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Paradoxes of Aggravated Vulnerability, Marginalization, and Peril of Forest-Based Communities after Increasing Conservative Forest and Protected Areas in Nepal: A Policy Lesson on Land-Based Climate Change Mitigation

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Abstract: Many measures of international policies and support have dictated developing countries to upscale land areas of intact forestry, special biodiversity conservation site, and other wild reserves to half the land territory of the nation by 2050 for resulting environmental, and other benefits to global societies. The international initiations and work urged scholars to assess the potential impacts of the aggressive policy on forest-based communities and especially those living in institutionally and geo ecologically vulnerable areas. This study compiled the impacts of such international policy interventions on diverse affairs of the local community and national economies in Nepal and drew some conclusions on the well-being future of such forest-based communities. It explained that the international interventions in managing community-based resources induced serious disturbances in many local systems and resulted in vicious circles of emigration, income losses, social problems, psychological stresses, and food insecurities. The interventions have placed some communities and especially indigenous ethnic groups in the position either to be displaced from their ancestors' homelands or suffer for generations. This study also explained some reinforcing phenomena that emerged from the external interventions which have placed situations of the resource impacting local communities adversely for years. It also investigated whether support of international agencies in policy formation and implementation for resource management safeguards the well-being of the resource-based communities. The agencies resulted in the best environmental and other benefits to foreign societies which have aggravated the misery of local communities, particularly the poor people, women, and indigenous ethnic communities. The adverse impacts on the local societies are not repercussions (accidentally or unknowingly happened). All these findings infer that the international policies of upscaling forests and wilderness areas or making conservation areas in half of their land territory, especially in developing societies for the global benefit, may place the lives of the forest-based communities in peril of suffering for generations or extirpating.

Keywords: curse; carbon-forestry; indigenous-community; intervention-effect; land-use; tradeoff; life-security

1. Introduction

International environmentalists have campaigned and worked actively to upscale intact forestlands, protected areas, and wild reserves to half of the earth's territory by 2050 for climate change mitigation, biodiversity conservation, and other global benefits [1–5]. They targeted and worked in establishing protected areas alone to 10% of earth territory by 1992, and 17% by 2020 [6–9]. The current target is 30% land territory by 2030. Many other policies and programs are also introduced to expand and protect forests wherever possible, especially to offset the greenhouse gas (GHG) emissions that are mainly produced by developed nations and other highly industrialized countries [10–13]. Popular policies and programs to increase the forest areas and their conditions include community forestry development, carbon forestry or Reduced Emission from Forest Degradation and Deforestation (REDD), landscape-scale decarbonization, and the UN policy of upscaling forests and ecological restoration. Strong sociopolitical and economic forces have made developed countries costly to change their GHG emission-intensive practices or offset the national emissions by afforesting their vast private land areas [13]. Environmental policy analysts pursued international communities for considering global approaches and overseas sources to address the emission offsetting and economic protection problems of the developed countries [10–13]. Forest carbon sequestration in public lands especially protected areas and other natural forests in developing countries are considered a reliable and cheaper strategic approach to offset the GHG emission of developed countries [11,14]. Many incentive policies including payment for carbon sequestration are offered and followed to increase forestlands with an intact management system to offset the carbon emissions [10,13,15–17]. Commitments to adequately safeguarding the well-being of local communities while managing the land resources for environmental conservation are well highlighted in policy documents of most conservation organizations [18–23]. Many international agencies are also actively involved in formulating and implementing resources management policies. They have focused on addressing institutional capacity and bad governance-related problems for safeguarding well-being of the local communities especially in institutionally weak countries [24]. However, tradeoffs occur naturally between the production of many goods or services that require meeting the need of local communities and contributing to global environmental conservation [23,25,26]. The guidelines and agencies can be hardly helpful in addressing the tradeoffs. The changes in land resource management, therefore, can result in pervasive adverse impacts on local community wellbeing and various national security affairs in institutionally weak countries. The impacts may be on many affairs of forest-based communities and especially of indigenous ethnic groups who have lived in marginal private lands by complementing resources from public forestlands [27,28]. A deeper understanding of the adverse impacts of the aggressive international environmental policies on land uses on local systems and other affairs of the forest-based communities might be helpful to decide on modalities of future policies to upscale forestry and protected areas.

Some studies explained the potential adverse impacts of the conservation-oriented aggressive land use policies and practices on local communities. Bushcher et al. (2016) argued that the policy of expanding protected areas to a half part of the earth is a radical and unsustainable idea [1]. The policy occupies lands mostly of poor communities which escalates poverty, social inequality, and public unrest. It leaves the societies who are the real culprits of creating current environmental problems. Pimm et al. (2018) also argued the use of half part of the earth for biodiversity conservation is an illogical and socially harmful idea because over 85% of plant species occur in one-third of the earth's land surface [3]. Ellis and Mehrabi (2019) argued that current global initiatives of excessive land use for environmental conservation hampered communities to practice nature-based solutions for sustainable living and adapting to climate change [2]. Duffy (2014) and many other studies cited cases of militarization and social violence or conflicts in Africa and South American countries when local people lost their livelihoods after establishing or expanding protected areas [18,20,29–31]. Studies also explained the passively suffering of African

people from food scarcity and poverty after land dispossession by European countries for biofuel and plantation [32,33]. These findings are based on theories or scholarly arguments and are limited to common problems. Adverse impacts could occur in many other affairs of forest-based communities. They could be also different than what the literature explained.

Such adverse impacts could be better identified in Nepal where communities, especially in the mountain region, require using forest products and services to complement private resources for sustaining their livelihoods and other affairs of life. Mountainous factors especially geo-ecological sensitive systems and physical barriers have constrained the communities to practice modern technologies and other facilities and have no adequate access to private lands for basic livelihoods [34,35]. The disadvantaged communities have followed the forest resource-based unique livelihood systems with millennium-long practices and experiences for adapting to harsh geo-ecological conditions [34,36–38]. Nowadays, forests and other public lands traditionally used by local communities are primarily managed for environmental conservation and other benefits of outsiders. The government has managed the resources by following policy guidance, technical support, and financial assistance from international agencies since the 1970s [39–43]. The forests and protected areas have now covered over half the areas of the nation's territory [24,44]. A substantial period has lapsed from the time of the excessive conservative land uses. The land use practices might have resulted in some critical adverse impacts on local communities and the national level. Studies investigating impacts of the excessive land use in protected areas discussed only livelihood issues of local communities [45,46]. Studies on potential impacts of forest carbon sequestration and trading policies pointed to the issue of community deprivation of rights to access and control over the local forest resources [47,48]. Most other studies in Nepal investigated direct and immediate effects (availability of products and services and disparity in benefit distribution) of prevailing conservation policies at the household level [27,28,39–41,49–54]. A few studies, however, reported increasing in conservative forest and protected areas resulted in more household income and less community income inequalities [55,56]. The findings are highly contestable and probably caused by methodological flaw or spurious relationship. The conservative land use policies and practices have rather dispossessed many poor communities to use the resources for meeting products and services of their daily and other needs [51,52,57]. The above facts motivated the authors to investigate the adverse impacts of the aggressively conservative land use policies and practices on local communities and national securities in Nepal.

This study attempted to contribute additional knowledge by answering the following questions. What are the main social, psychological, economic, and environmental impacts on the forest-based communities resulting from deliberate changes in public land resource management for increasing environmental and other benefits to global societies? What is the prospect of lasting the adverse impacts on forest-based communities for the long term? Whether supports of international development agencies safeguard the well-being of the forest-based communities while managing the land resources for global environmental conservation and other benefits to outsiders?

The remaining parts of this paper are organized as follows. The next section provides a brief review of the literature and a snapshot of a conceptual model to answer these questions. Then, the study methods and materials are explained. Another section described the achievements of the intervention objectives, dimensions of community marginalization, and prospects of persisting the marginalization. The results are discussed and concluded in the last section.

2. Theories and Models for the Study

2.1. Institutional Theory of Marginalization

Social science literature considered marginalization as a process of depriving people of full participation in social, economic, and political affairs relative to other members of the society [58]. It is also an institutional process of denying access to the resources or other opportunities that the victims deserve based on natural, human, legal, and cultural rights.

The denial can place an individual, family, or society in both vulnerable and disadvantaged positions. The vulnerable subject consists of a critically low capability to tolerate, cope with, and recover from shocks. They get a serious degree of sufferings from an elementary change in social, economic, or environmental systems [59]. Most people have been vulnerable or suffered more from institutional (humanly devised) phenomena than naturally occurring phenomena [60,61].

Institutions are social structures that regulate the behavior of people and determine the production and distribution of goods and services in society [60,61]. The institutional change with a legitimate scientific process and benevolent intention modify social, economic, and environmental systems which result in better outcomes for society [62]. The principle of development intervention is to enrich or re-strengthen the existing state of environmental, physical, economic, institutional, organizational, behavioral, mental, and emotion-related asset(s) for reducing the vulnerability and suffering of the targeted individual or society [63]. However, the institution-change agents with antagonistic interests generally shape the institutions to result in the best outcome of resources for meeting their vested interests. The induced institutions can destroy or weaken the assets or opportunities of the other societies sharing the resources [24,27,34,36,64].

The literature also explains that induced institutions alter social and economic phenomena and incentives. The alteration makes the institutional reformation costly for addressing new social, economic, and environmental problems [62]. Some secondary institutions can be evolved in response to deliberate institutional changes which can play reinforcing roles [61].

Studies well explained that institutional changes to manage land resources result in substantial tradeoffs in production between goods and services in time and space. The impacts of the changes in production benefit some groups or systems or disadvantage others [23,25,26]. Many studies stated that global environmental politics changed the production states of the resources and exacerbated peripheral marginalization [64]. Politics has changed management practices, social-ecological systems, stocks and flows, and regulative institutions of land resources [24,27,41,53,65]. The changes marginalize local communities in different pathways and dimensions [27,64,66–72]. Studies explained marginalization pathways and dimensions specific to their study contexts. Popular marginalization can be grouped into psychological, social, cultural, political, economic, and environmental dimensions.

2.2. The Phenomena of Tradeoffs Outcomes: The Investigation Model

Following the above literature, potential relationships or phenomena of marginalizing local communities associated with external interventions in land resources management are depicted in Figure 1. The arrows with blue color indicate direct effects whereas the arrows with red color indicate indirect effects from the feedback loop. The two directional arrows show potential trade-off outcomes for local and global beneficiaries from changes in the management of land resources. The inputs include interventions and reinforcement from feedback. The interventions are international and national policies and supports. These inputs are assumed to alter management, social-ecological systems, regulative institutions, and other conditions of the land resources as depicted in the inputs box. The alterations can enhance the products and services of global environmental and other gains for distance beneficiaries. In turn, they result in declining production and availability of products and services of the resources essential for functioning social, economic, and ecological systems and activities vital for local community wellbeing. The interventions are proactive activities of international and national agencies responsible for resource management. International aid agencies are one of the actors to facilitate resource management for resulting in fair local and global outcomes. The agencies have also inherited some risks to lead to inappropriate management of the resource. It is hypothesized that inappropriate management of the resources distorts the local systems and results in knock-on effects in the economically and geo-ecologically vulnerable systems. Local communities, thus, can be marginalized in multiple dimensions.

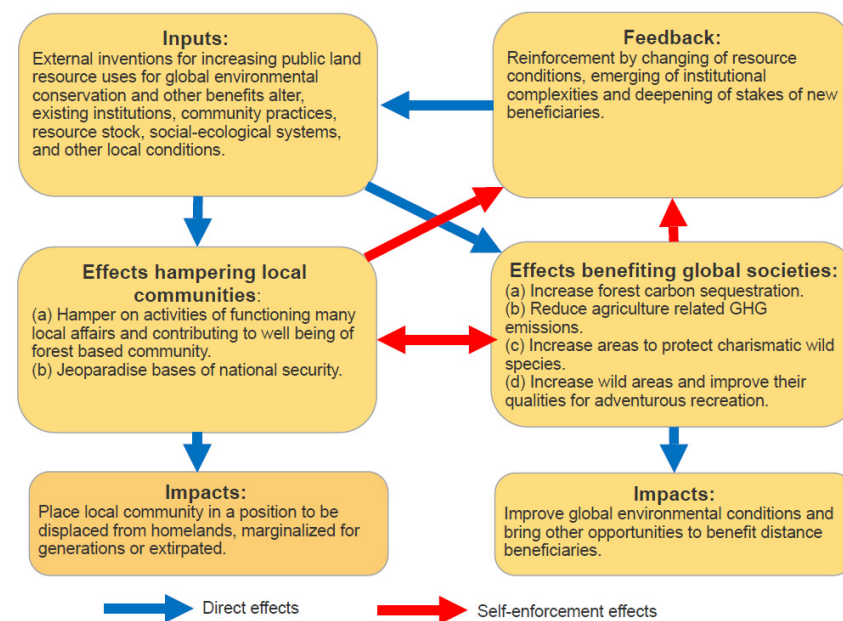


Figure 1. Phenomena and tradeoff outcomes resulted from external interventions in the management of local land resources for global benefits.

Figure 1 also shows potential elements for reinforcing resource management in the current path. The elements are changes in resource conditions, the emergence of complex institutional conditions, and the intensification of new beneficiaries' stakes on the resources. The reinforcement may put back the resource management on the current path and place the communities persisting in the disadvantaged or marginalized position.

Our study has considered that community lands including forests are communal orchards to produce many goods and services for meeting daily household and other needs of local people and especially during farm resource scarcity seasons. The resource-based communities require multipurpose goods and services from the lands which complement resources from private land and sustain their livelihoods. The products and services make many local systems functional which vitalizes livelihood opportunities and other affairs of local communities.

3. Study Data and Methods

This study is based mostly on qualitative and secondary data. The main sources of the data are as follows.

- Major policy documents including national plans, laws statistics, acts, and maps;
- Fieldwork based on published materials of concerned authorities;
- Work progress reports;
- Materials published in journals and other authentic sources;
- Knowledge acquired by the authors while working in the community for forestry and other environmental fields in Nepal and abroad.

The main sources of the materials are global statistical databases, the central bureau of statistics in Nepal, government official documents, and public websites [22,24,73–84]. The relevant materials were purposefully searched and collected from the internet, library, or personal contact based on easier access. Combinations of thematic words and phrases related to the subject matter of the study were used to get relevant materials and collect the information from websites and digital library sources. The thematic keywords and phrases were taken mainly related to economic, social, and mental wellbeing and stresses from the forest, climate change, and wildlife management. The main keywords were forest, benefit-sharing, exclusion, forest product availability, use, and indigenous ethnic communities. Others were emigration, damage or harm, bureaucratic hassle, forest management plan,

and user group. The terms Nepal, community forest, and protected areas or national park were combined in most searches.

Some official online maps are used to provide support for arguments. The photos with no courtesy acknowledgments are taken from the field by the authors. The information of historical officials' documents and published literature were followed for case studies. In addition, information that the authors observed or experienced in community and professional worksites is used to justify the statement and data of the literature. Previous studies well followed such mixed data-based analysis to assess high-level policy problems [85].

This study followed qualitative data and methods. It presented a statement followed by evidence and scholarly arguments. The literature often called the approach a common evidence synthesis approach. Impact assessment studies measure the impacts at the outcome, effect (intermediate), and impact (end) stages [85]. The distinction of vulnerability or marginalization measurement attributes between effect and impact levels is often bluer or more complex. Therefore, this study used convenient measures commonly followed in similar previous studies.

4. Outcomes of Conservation Interventions

4.1. Environment Conservation Outcomes

4.1.1. Forest Carbon Sequestration and GHG Emission Reduction

Community forest policy contributed to the formation of 22,266 forest user groups with 2,907,871 households from 1990 to 2016 [44]. The groups have taken responsibility to develop and protect about 34% of the national forest area. As targeted in the national forestry plans, the policy has reduced forest-based livestock holding by doing afforestation in community pasturelands and restricting grazing in the forests [39]. Figure 2 provides an example of the establishment of planted forests in community pasturelands with excellent conservation status. The community forests are also well protected. Trees in many forests have been overstocked and underutilized [52,86]. Based on theories in the scientific literature [87,88], tree accumulation has naturally resulted in more forest carbon sequestration whereas reduction of livestock holding has reduced GHG emissions in the communities. According to the government record for 2017 and 2018, about 1,066,251 m³ of logged woods usable for construction activities were decaying on the forest floor [50]. The woods have served forest carbon sequestration which can be considered a voluntary contribution of the country to climate change mitigation. Conservative forest policies have increased the trend of timber import for domestic uses from overseas including the USA, New Zealand, Myanmar, Malaysia, and India [50,86,89]. The import has further increased the forest carbon pool in the country. The forests are now well managed to trade the forest carbon credits with overseas agencies. The forestry program for forest carbon sequestration and trading is extended in almost all districts which is well reported in the progress report of Forest 2016 of the Carbon Facility Fund (FCF): "... wide-sweeping and transformative policy reforms were carried out in Ethiopia, Mozambique, and Nepal" ([73], p. 15). "... "In Nepal, REDD+ desks are being established at the district level in a phased manner. In the first phase, 43 districts were provided government financing to establish rudimentary institutional structures for REDD+, mirroring existing structures at the national level. Twenty districts have already established these institutional setups. More robust REDD+ implementation structures are being established in the 12 districts participating in the emission reductions program in the Terai Arc Landscape." [73], p. 43. The government has done the forest carbon credits selling agreements with the World Bank and LEAF and brought foreign currency [27]. The trade may have offset GHG emissions of developed countries and protected their emission-intensive industries as intended by international policies on global environmental conservation [10].



Figure 2. An overstocked and underutilized forest (Khorthali Charikot). An international aid agency provided technical and financial support to establish it in the community pastureland with hidden interest for dumping GHG emissions and reducing livestock (a source of GHG emissions).

Protected areas are established and extended over 24% of the national territory [44,52,90,91]. The wildlife population is substantially increased. The population of tigers, for example, is nearly tripled from 2010 to 2022 despite the target of doubling [90]. The government is still working to occupy community forests in many districts and make the protected areas over 30% of national areas by 2030 [27]. The protected areas represent many statuses of biodiversity areas including the IUCN categories [92]. Some of the areas are considered global biodiversity hotspots [93]. The forest resources in the protected areas are being strictly conserved. Livestock populations in and around the protected areas are also substantially reduced with the conservation actions. The protected areas policies and programs have also increased carbon sequestration as well as reduced local GHG emissions. In addition, the government has followed the international policy of landscape-scale decarbonization and developed its implementation national plan as advised by international agencies [16,76,94]. Figure 3 shows the national wide zoning to implement the policy. Some international agencies have already developed such programs and started the plan implementation. The programs are designed to reduce forest-based livestock holding and abolish indigenous livestock breeds of communities [22]. The plan and program have contributed to forest carbon sequestration and GHG emission reduction. In addition, positive feedback effects of establishing and expanding the protected areas resulted in the displacement of the population which increased land areas more forests and the status of forest conservation.

4.1.2. Protected Area Expansion and Recreation Site Development

Nepal started establishing special areas for wildlife protection in the late 1970s [92,95]. The country increased the protected areas according to the international targets. It established the conservation areas in 11% of the national territory in 1993 to 23.67% in 2019 [13,96]. The global targets of the protected area were 10% global land territory by 1992 and 17% by 2020. The current global average is under 14.6% [13]. Although the neighboring country, India, started establishing protected areas in 1936 (British colonial period), it increased the protected areas from 4% land territory in 1993 to hardly 6% in 2019. Following a recent plan of the UN Secretariat of the Convention on Biological Diversity (SCBD), ex-Prime Minister Khadga Prasad Sharma Oli declared to expand it to 30% of national by 2030. Many policy works are undergoing to make the protected areas 30% by then. People have protected all wild animal species in their forests and farms outside the protected areas even if they are abundant in number and have harmed crops and animals.

Most of the protected areas are established in areas with special recreational values as illustrated in the locations in Figure 4. They are established mostly in higher altitude regions which are special interest sites of adventurous groups, particularly western tourists [92,95,97,98]. According to Shrestha et al. (2010), the high mountain region shares only about 24% of the national territory but covers two-thirds of protected areas [92]. The lower hill shares nearly 30%

of national areas and possesses higher threats of human activities for wild species extinction but the area has less than 2% of areas [92]. Forest biodiversity including wild animals in the region is in a less endangered position relative to other regions due to difficult terrains for walking, low modern development facilities, and sparse human population. The natural barriers have also placed the wild species easier to be escaped from threat activities or situations. In addition, most inhabitants of the area are indigenous ethnic communities who have much more wildlife and friendlier cultural and land-use practices than those of other communities.

The hidden interest to establish the protected areas there is to manage the mountain forests in an intact condition which makes them incredible and dream sites for tourists' recreation [83]. The adventurous people hold strong desires to wander, explore, experience, and indulge in the fascinating and tranquil forest environment with stunning snowing mountains in the surroundings. The recreation helps them to recover from cognitive overload and other mental stresses resulting from their strong desire, work, and lifestyles [99]. Hiking in a challenging mountain environment builds confidence to cope with physical stresses and provides joyfulness and glory. Visits to natural forests also fulfill the visitors' strong craving and curiosity of sighting wild creatures in their natural habitat [99–101]. The visitors get adventurous experiences visiting parks and other protected areas. The foods and cultures of indigenous and other local communities are also mostly uniquely different from their daily luxurious or other affluent lifestyles. The visits to the communities provide them the opportunities of experiencing tastes of the foods tastes and cultures of the societies. Therefore, people with affluent and luxurious lifestyles come to visit national parks, climb the Himalayas, and live in indigenous communities, despite having life-threatening challenges or some uncomfortable living environments there. With the assurance of development grants from international agencies, the government agencies have worked for extending protected areas further and especially in community forests around a day recreational trip distance from the capital and other urban areas [27]. Establishing protected areas in community forest also make the forest carbon sequestration more secure.

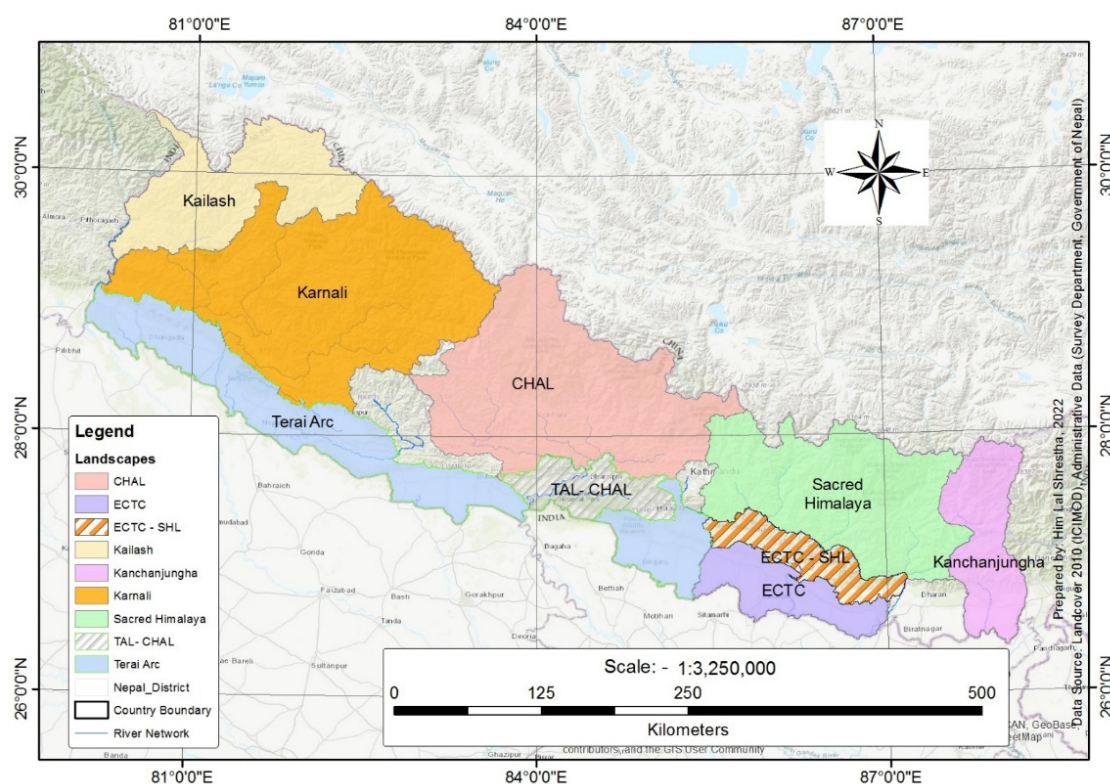


Figure 3. Landscapes scaled decarbonization and wildlife conservation plan in Nepal [Source: [76]].

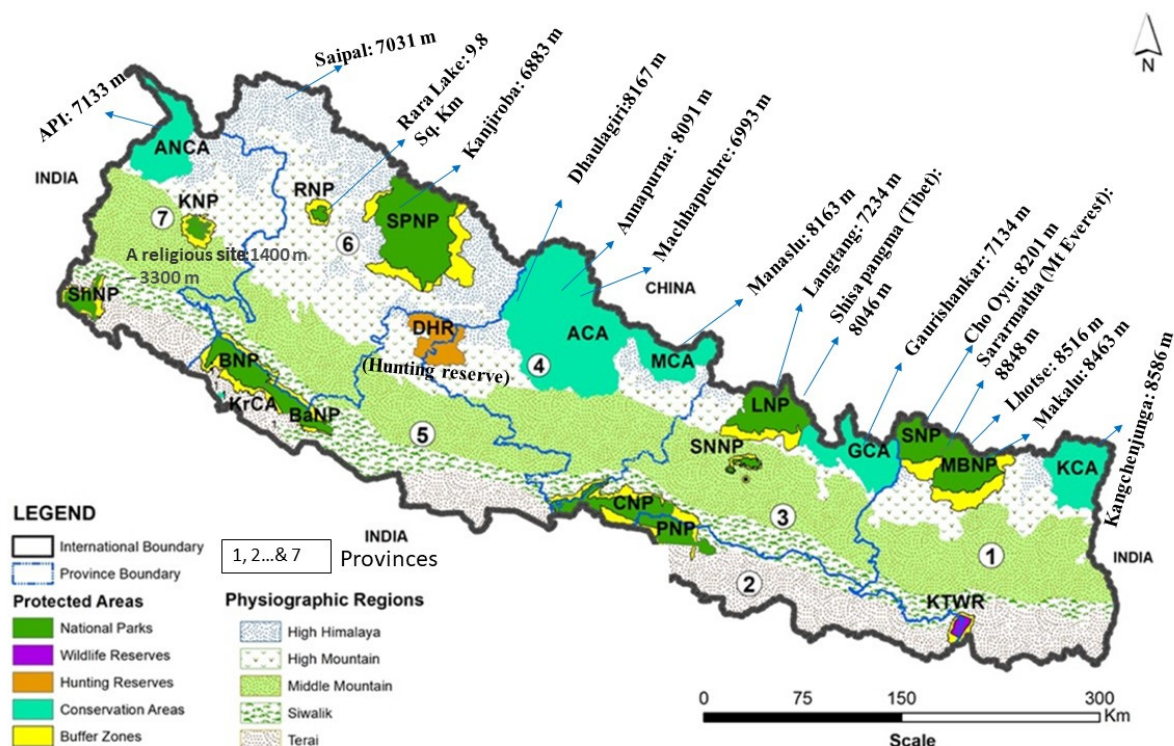


Figure 4. Protected areas are established mostly in the areas with the highest mountains [Source: Department of Wildlife Conservation [44]].

5. Adverse Local Impacts

5.1. Natural Capital Dimension

5.1.1. Harm to Indigenous Species and Social-Ecological Systems

The interventions in land resource management practices of the local communities have drastically changed the human-developed ecosystems. They dictated the resource management in natural intact conditions. The management spoiled the millenniums' old human-modified ecosystems in the mountain forest landscapes that were characterized by moderately open tree cover forest conditions. The forest with the traditional management system had provided considerable space and light for growing many species with biodiversity conservation, foods, and other economic use-values [102]. The degradation of the indigenous social-ecological systems has reduced the availability of multiple products and services and hampered the forest resource environment to coexist community need products, wildlife, and multiple plant species in overlapping space. Human activities in the forest and community practices of using forest products are hugely declined in most forests [103]. The changes in the forestry practices have substantially eroded indigenous knowledge systems of forestry due to restricting regular visits and decreasing the products and services availability [104]. The knowledge systems are vital for many communities, especially in institutionally disadvantaged localities to alleviate their farming, health, and other problems by practicing the products and services locally. Forest resource-based farming and other household activities are also a part of the cultural lifestyle of many indigenous ethnic communities. The foreign interventions in the forest resource management have hampered systems of the indigenous forestry knowledge and skill updating and their intergenerational transfer. The forest-based communities are deprived not only by the loss of opportunity for cultural lifestyles. It has also eroded the local knowledge and skills that the community would use to hedge their lives and livelihoods during the market and environmental crisis seasons and other harsh conditions [104].

Current conservation-oriented forest management has resulted in a full tree canopy which has reduced light essential conditions for biodiversity richness in the mountain [105].

It has fostered undesirable aggressive species, reduced spaces for sustaining locally important forest biodiversity, and hampered the environment for growing economically valuable non-timber forest products [42]. Loss of open space for light and adequate food resulted in decreasing forest plant species diversity and compelled many wild animals to go into forest margins, crop fields, and human residences. The species have made big problems for the local farmers. For example, many local governments have received complaints from farmers that the incidence of monkeys in their field crops and houses intolerably increased. The destructive species of the monkey in Nepal prefer to live on tree fruits and play in open spaces of forests. Current forest conservation policies have degraded the forest conditions that the monkeys prefer. Despite foreign agencies' support, the problems of bad governance and institutional capacity are still in a critically bad stage to recognize and address the growing problems of the forest ecological conditions. The looming global climate change undoubtedly aggravates the aggressive forest species and further degrades the locally beneficial forest conditions.

The external intervention dictated the management of the forest in the naturally intact management system and the multiplication of wild mammals in full carrying capacity in the community-based forests [27,90]. The spilling over of the wild animals from forests into farm crops and human residences is increasing with the increase in their number. These animals have not only destroyed crops and preyed on animals but also attacked farmers. The annual rate of animal attack-related deaths of people is increasing in trend. The animals attacked the people while working on farms, grazing livestock, and collecting wild foods from rivers and forest margins. People have increased unsecured feeling to do their daily living activities. The conservation activities, thus, have hampered the local communities' freedom of working and living in their homelands and kept them suffering from wild animals for generations. The victims are mostly people from indigenous communities. The human casualties and loss of social freedoms or community sovereignty are not subject to financial compensation [27]. The alternative income generation activities so far suggested and practiced by the conservation agencies are little reliable. The programs are proven window dressing for calming the gullible communities which are discussed in the following sections.

5.1.2. Loss of Invaluable Indigenous Farming Assets

The biggest adverse impact of excessive land use in conservation, directly and indirectly, resulted from harming livestock farming. The land use has hugely destructed community practices of livestock farming. Many households would increase livestock holding especially of indigenous breeds if they had convenient access to adequate forage products in their forests. The indigenous breeds are developed with millennium older community practices and have been well adaptable to low-nutrition foods, steep terrains of mountains, and wild beasts. Poor households and disadvantaged communities prefer them because the breeds can be managed at low cost: sustain on forest fodder and low quantity and require low care including modern veterinary services. Although the business running involves soily and hectic activities with low profit, it provides the forest-based communities income and food security directly and indirectly. It is also a crucial means of livelihood, lifestyle, and farming culture. The conservation interventions have introduced tactical programs to displace the forest-based livestock farming practices and the indigenous breeds to increase forest carbon sequestration and wildlife [27]. Social-ecological environment to keep the indigenous breeds is spoiled in many localities. Sadly, the business supporting the basic living of the disadvantaged communities is destroyed to protect the economies and luxurious lifestyle of an affluent society overseas. The forest resource uses focusing on global environmental conservation can be considered an inexcusable attack on the cultures and life-supporting resources of disadvantaged social groups and indigenous ethnic communities.

The externally induced forest resource management has also contributed to destroying indigenous crop varieties that could reasonably thrive in poor quality soil, withstand

abiotic and biotic stress events, and easily regenerate with local practices. The important varieties were sustained in farmyard manure and mainly of forest-based livestock. Some varieties had special medical and cultural values. Many of them had properties of growing in marginal lands and specific geo-ecological systems of the mountain regions. Dhakal et al. (2022) provided detailed accounts of the harm and destruction processes of the intervening agencies [27]. The destruction of them has made farmers dependent on multinational companies or other import sources for farming inputs. Many communities even in urban proximity also regretted the loss of the indigenous resources during the resource crisis of the COVID-19 pandemic when they could not get modern agricultural inputs (exotic crop seed and chemical fertilizer) from the market. The indigenous resources conserved in their gene banks, museums, urban veranda, or digital libraries could not be available for farmers during critical need times [104].

5.1.3. Aggravated Fire Risk

The forestland managed for carbon sequestration and wild species conservation has increased plant stocks or fuel load on forest floors which has increased the risk of a serious degree of forest fire harm. The chances of catching fire in the mountain forests are also high due to the location of most of the forest areas around human settlements (Figures 2 and 5). Public activities in and around the forest areas cannot be prohibited. The land gradients have also advantaged the fires to spread quickly and fiercely. Over 5000 forest fire incidents occurred in 2016 alone [106]. NASA recorded more than 479 forest fires on 27 March 2021 alone and mostly in carbon forestry program areas. There were over 2000 uncontrolled forest fire events that occurred from mid-November 2020 to 25 March 2021 in such a small country. The government required a declaration of environmental emergency and shutting down schools nationwide for 4 days in the last week of March 2021. The forest fire affected school activities for many weeks in forest-rich regions. The regulated fire-based management of forests is essential for users' working security in some forests (e.g., pine species dominated community forests, especially in the far western part of the country) and increasing productivity of some products (grasses and some other species). Controlling a large blaze of forest fire and serious destruction of forest and biodiversity resources is little possible without allowing local communities optimal uses of forages and other residual tree products. The risk of fire ignition and spread has increased with global climate change. However, the fire used for community forest management is criminalized to retain forest carbon. Once a fire ignites in such fuel-load-rich forests, the fire lasts a longer period (over a couple of months in some areas) and causes serious harm to wild animals and other biodiversity resources during severe drought years. It has placed human life, crop, livestock, and property securities around the forests under threat. Facilities of advanced technologies to control fire are not available and have limited uses in the mountain. The traditional practice of controlling the forest fire in community collective effort has been dysfunctional due to the living of only the elderly, children, and child-caring mothers in the mountain communities [107,108]. The fire controlling cases in the USA and Australia proved the limited success of advanced techniques and tools to control forest fires [109]. In addition, the factors of forest distribution, institutional capacity, and geophysical conditions have made an extremely low prospect of applicability and success of the advanced tools and techniques in Nepal.

5.2. Marginalization in the Economic Dimension

5.2.1. Loss of Land Space for Livelihood Security

The land use policies for global environmental conservation have also aggravated the scarcity of private land that has only a small share of total national land. Table 1 shows the comparative private land access position of Nepal relative to neighboring countries and forest conservation aid-providing countries. Nepal has 0.08 ha per capita arable landholding which is the third least per capita land-holding country. Moreover, many land areas of the country lie in the mountain and have marginal productivity. The statistics

show the share of arable land is 14% of national territory but a significant proportion of the land is increasingly used in development activities, urban development, and other residential uses. Of the 28% cropland figure, above 10% account for the public lands with herbaceous and sparse tree cover areas in residential localities and managed for communal uses. Most permanent pasturelands are located in alpine regions which are inaccessible or seasonal in use. In addition, a significant portion of the arable land areas is abandoned for farming due to negative externalities from forest conservation and other associated problems [107,110]. The land areas occupied for global environmental conservation are less likely to be available for farming and other economic uses due to the growing enforcement of national and international policies and social pressures.

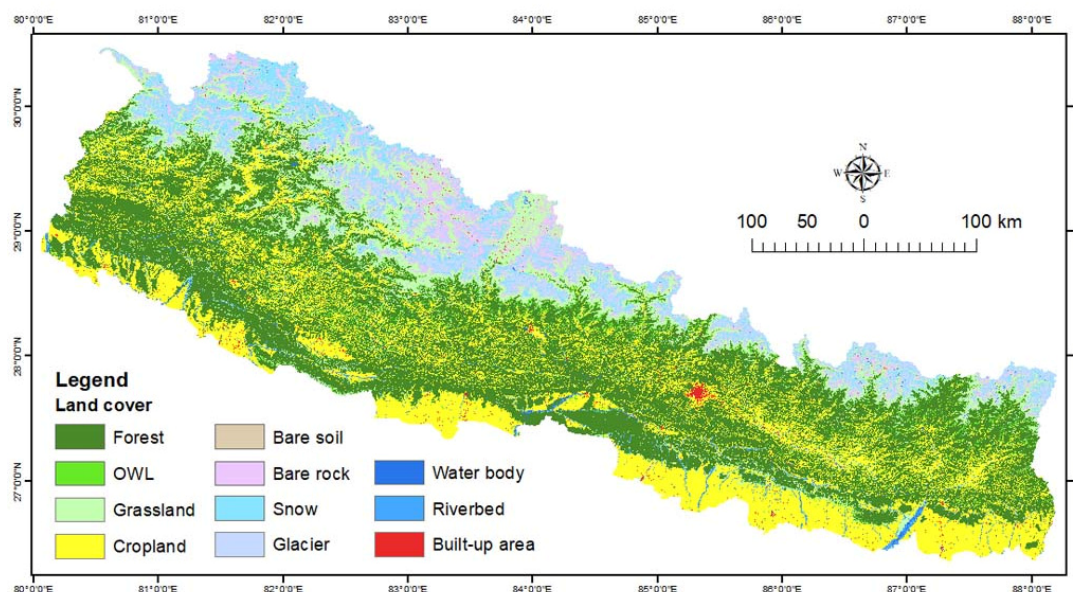


Figure 5. The landscapes indicate more risk to communities from fire events of carbon forestry (Source: DLUS 2022).

Table 1. Comparative resource access position of Nepalese people relative to neighboring countries and some developed countries [Source: [13,44,111]].

Country	Rural Population %	Per Capita (ha)	Percentage of the Total Land of the Nation			
			Agricultural Land Total ^	Arable Land	Forest Area	Protected Area
Bhutan	59.8	0.14	13.8	2.6	72.5	48.0
Nepal #	80.7	0.08	28.8 #	14.8 #	45.3	>23.6 α
Sri Lanka *	81.6	0.06	43.7	20.7	32.9	29.9
Pakistan *	63.3	0.15	47.0	40.3	1.9	12.3
China *	42.0	0.09	56.2	12.7	22.4	17.1
India *	66.4	0.12	60.5	52.6	23.8	6.0
Bangladesh *	64.1	0.05	70.4	59.4	11.0	4.6
Norway *	18.1	0.16	2.7	2.2	33.2	17.0
Finland *	14.7	0.41	7.5	7.4	73.1	14.9
Switzerland	26.2	0.05	38.4	10.1	31.8	9.7
USA *	17.8	0.47	44.4	16.7	33.9	13.0
Australia *	14.1	1.90	47.6	6.0	16.3	17.0
Germany *	22.7	0.15	48.0	34.0	37.7	23.7
Denmark *	12.2	0.41	62.2	56.0	14.7	17.6
UK *	30.8	0.09	70.8	24.9	13.1	28.2
New Zealand *	13.5	0.10	40.5	2.2	38.6	32.6

Note: * = Countries with access to ocean resources for livelihoods of people and national economies. ^ = Agricultural land comprises mainly arable lands, permanent pasturelands, and other permanent croplands. # = Studies reported a wide variation figure (7.9% to 29.8%) of the agricultural land use in Nepal despite deriving from the same satellite maps [112,113]. α = The protected area figure does not account for the areas that the government has recently declared protected areas to make it 30% of the national territory by 2030.

5.2.2. National Economic Security Problem

Despite increasing the forest land areas to almost 45% of the national territory, communities have experienced forest product shortages for livelihoods and other household uses. The environment conservation-oriented forest management has resulted in overstocking and decaying (wasted many folds of domestic need amount) in the forest floors but the country imports timber over 40% of its national demands for domestic uses [50,52,114]. The imported woods often share 80% of domestic consumption in some years. Nepal's spending on importing 830,941 m³ of wood for domestic consumption is estimated to be about the US \$75 million in equivalent foreign currency in 2017 and 2018. The country spent the US \$1.19 billion to import 3,681,190 m³ of wood to rebuild infrastructures and house damages from the mega earthquake in 2015 which killed about 8800 people [86]. The government authority followed the environmental conservation forest policies and norms and blocked the desperate communities to utilize the overstocked woods even after such a mega-crisis in the nation. On one side, some international agencies including the World Bank advised and funded occupying the forests providing food and other livelihood securities locally for marginalized and indigenous people, and managing them for forest carbon sequestration and wild animal protection [22,27,84]. On the other, they offered government loans for green, resilient, and inclusive development in the communities especially for adapting to adverse effects of climate change. The government has got financial pressure to pay the past foreign loans due to requiring paying them with an annually increasing share of the government budget. Some of the loans were taken for forestation in community pasturelands and the development of the national park for increasing wild animals [65,81]. The decline of foreign currency reserves has compelled the government to practice import restrictions on many goods and follow hard economic measures for minimizing economic bankrupt risk [115]. Even if the country gets forest carbon income, the payment for the carbon credits is not annual or repetitive. The credits get retired after a one-off payment despite requiring saving the carbon in the forest for years. The conservative forest policy already slashed forestry's contribution to GDP from 4.4% in the early 1990s to 3.5% in the early 2000s [116]. The GDP contribution may have further decreased due to the increasing of strict conservation policies and reduction uses with the high exodus of the rural population [117]. The income contributes to GDP only for a few years. According to the forest carbon trading agreement, Nepal requires increasing tree plantation in more land areas including private lands [118].

Expansion of protected areas also makes little difference in tourism earnings in the mountain regions because the tourists are attracted mostly by extraordinarily natural gifts, little by the human-constructed quality of the forests. Most visitors do not go beyond common routes or off-track communities for security reasons, resource and time limitations, and selective activity of visiting interests. But the government agency expanded the protected areas with the advice of vested interest foreign agencies, irrespective of considering holistic national cost and benefit.

5.2.3. Exacerbated Food Security Problem

Declining local food security is one of the critical consequences of excessive land use in conservation. Most of the mountain households own less than 0.5 ha of land with multiple parcels (average 0.2 ha) and marginal productivity which is not adequate for managing livestock enough to sustain a family living [119]. When the forest conservation policies and programs banned forest fodder collection and grazing, the community gave up the forest resource-based business and downsized their livestock holding to the level sustained by private land resources [39]. The household labor force has left their farms to get income for family needs from cities or overseas.

The exodus of farm labor resulted in farming labor force shortages and increased food production costs in the mountain communities. The physical barrier has a limited scope of practicing farm mechanization and other technologies. Mountain farming is still a livelihood option for people who are frustrated with community jobs and retired from other

jobs. They used to return to the community for doing lifestyle farming with small-scale livestock businesses. The restriction of forest products and services used for livestock has diverted the people to other areas or businesses or keep suffering from existing problems. In addition, the reduction of livestock holdings resulted in the loss of farm manure production which was a vital resource for restoring organic matters and other nutrients washed away from farming terrains. The harm in farm manure production cannot be compensated by payment for ecosystem services or subsidies on chemical fertilizer prices. The forestry protection also reduced human activities in the forest and increased incidences of wildlife population on crops [110]. These problems have increased the farming costs of the other farmers. Consequently, most farming land pockets surrounded by forests have been abandoned from farming and especially maize crops. The interventions in indigenous forestry have resulted in a vicious circle of farming problems: organic manure scarcity, farm labor shortage, crop harm by wild animals, underutilization and abandonment of arable lands, and food security problems [107,110,120]. Livestock and cereal crop imports are skyrocketed in the agriculture-based country [39,114]. Over 64% of households are estimated to have been actively involved in farming, but the country has been import-dependent on foods and other agricultural products. The forest development activities have affected agricultural production and import-dependency directly and indirectly.

5.3. *Marginalization in a Social Dimension*

5.3.1. Emigration Exodus

Population distribution imbalances associated with land use changes are getting to be a serious problem. In the old days, the population was distributed reasonably well in most parts of the country. Easier access to forest resources made them sustain their livelihoods with scanty and marginal quality private lands. Figure 6 shows that population growth is still higher in the regions with low activities of land uses for global environmental conservation. The northeast part of the country has the highest exodus. The recent population census also supports this [121]. The forest areas of the high migration region are dominated by broadleaves species where the activities of the conservation agencies are much higher. The population growth in the north-western part of the country is positive even though the region is much more remote from development centers, geologically harsh, and dominated by poor communities. The forests in the north-western part are also dominated by pine species where conservation agencies have done low interventions. The low interventions provided opportunities for the forests to remain in moderately mixed space conditions and to be used in indigenous systems by local communities. The effect of armed conflict on the emigration in those areas was less as the activities targeted major towns and surrounding areas.

Seasonal emigration of males by leaving families in the community for cash earning was a common practice in the past. The families used to engage in the farm by getting resources from the forest and other public lands. Most of the emigrants are low-skill workers who have received much less income in other areas than what they could earn locally and living with families. The male household head used to resume farming jobs after 40 years or so (active working life after retiring from other jobs). However, the conservation policies and practices have created many direct and indirect problems to make the income working in the farming sector. The external interventions in the forestry sector have seized the opportunities of using the forest products and services and made it for the families difficult to be sustained themselves in the communities. The trend of many seasonal immigrants to resume farming after retiring from other jobs is hugely declined. The people have rather emigrate with whole families for good.

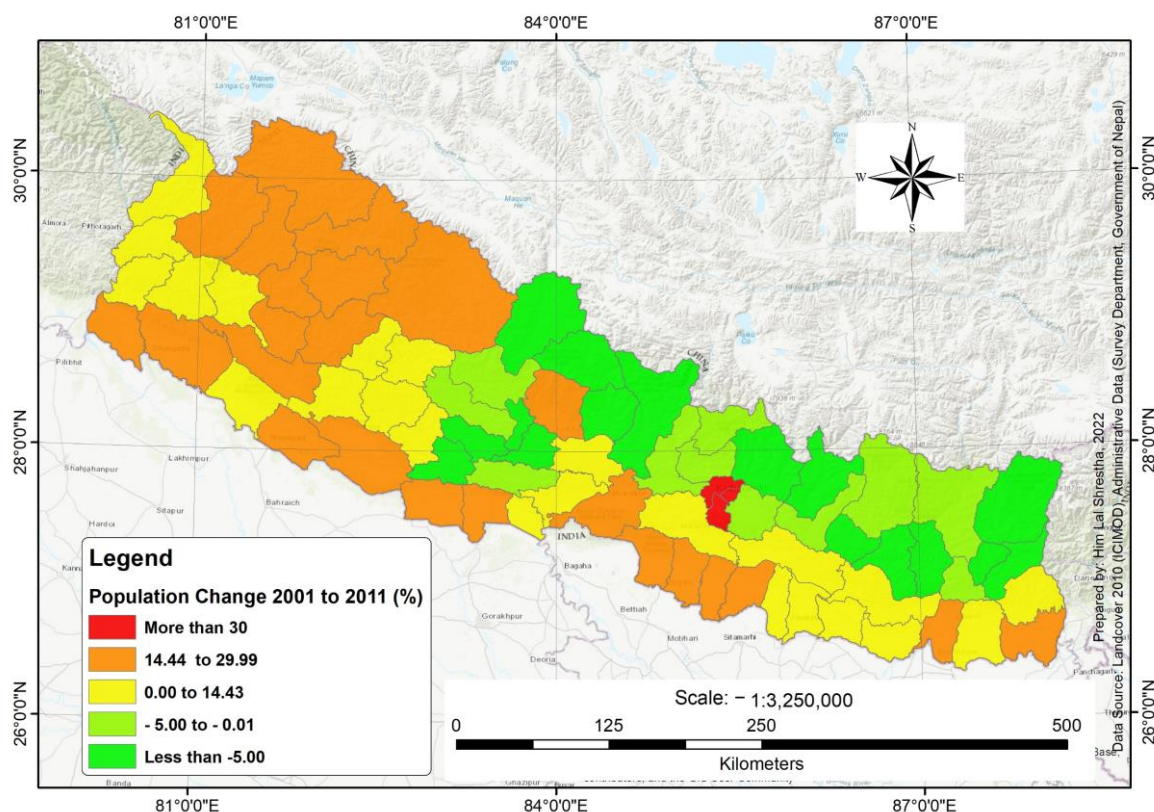


Figure 6. Nepal's regional human population changed between 2001 and 2011 census times [Source: [122]].

Emigration has also a big adverse impact on local development activities. Community support including the labor force has special importance to sustain farming and other development activities in the mountain region due to constraints of using machinery. The emigration problem has created a shortage of community labor force for securities of human life, crop, livestock, and property for the remaining households [107,110]. The growing number of historical residential localities is getting devoid of humans [123]. The government has given low priorities to providing development support in the region with lower populations or declining populations in the declining region. It has also withdrawn some development service centers including schools and health posts from the areas due to high costs based on the number of beneficiaries. Once displaced, the households do not tend to return to the disadvantaged areas due to the loss of indigenous knowledge for adapting, and psychosocial, social, and economic ties there. Some authors visited some communities with high emigration and found that the people unable to emigrate have a growing feeling of isolation, poorness, laggardness, and helplessness. Studies showed that immigration also affected the reproduction loss of reproductive capability of remaining members [123,124]. The settlement of many in-country migrants is concentrated in development centers (towns) that are established in narrow strip ridges or foothills. It has increased high-pressure resource extraction in the development center and their resource supply areas.

5.3.2. Institutionalized External Control and Exploitation

Increasing external control including the militarization of local resources has eroded communities' control over local resources. New forestry policies and laws are developed or amended giving priority to addressing international agreements and directives. The policies have made the resources, traditionally used by local communities, as defacto international properties. The Sagarmatha and Chitawan National Parks are, for example, declared UNESCO heritage sites where local communities have little say on resource

management and use. Local communities have lost the property rights on the forests of all protected areas and have been placed in the position of suffering for generations or being displaced for goods [27,35]. Under the international climate forestry policy, the government must retain the traded quantity of forest carbon in the forest site indefinitely, otherwise, the trading makes no sense in climate change mitigation. The policy has compelled local communities to give up using the forest resources that the community needs for basic survival purposes [41,43]. Using the forests for trading forest carbon with foreign agencies and protected areas can be considered a compromise of national sovereignty [125].

Extension of protected areas has bound local communities to follow international policies and procedures of biodiversity conservation for their daily business and local development [126]. The government, for example, has introduced laws to enforce the guidelines of the Convention on International Trade In Endangered Species (CITES). It has increased legal processes and checking of farm products transportation to market. Regulating agencies very often hold the vehicles carrying the products in the checking posts for weeks unless they get bribes or pressures from politically powerful people [127]. The conservation policy has made environmental impact assessment (EIA) mandatory for carrying out any local development activities [126]. Completing the EIA is a big hurdle for communities for local development due to the difficulty in dealing with conservative and corrupt forestry bureaucrats. International agencies intervene in national policy decisions if the procedures are not properly followed and managed the resources for alternative uses including for local community benefits. Biodiversity resources with international agencies' interests are present in almost all localities in the highly mountainous country. The international policies, therefore, have been disadvantaged in most parts of the country. It has the hardest hit in remote communities due a lack of many development facilities and no alternative livelihood opportunities. The policies have hindered the country to compromise the national freedom of managing the land resources for national security including the well-being of the citizens.

The institutions introduced for managing community forests have controlled and exploited the local communities. Under the new forest policies, local people must be organized under legally registered community forest user group institutions to get rights on using products of local forests. They require forest management plans prepared under the guidance of forest technicians and approved by government agencies to use products and services, even residual ones of their forest. The government introduced the institutions by following the technical advice of international agencies. The institutions have been legal vehicles or tools of government bureaucrats for controlling and exploiting local communities [128]. The government agencies and supporting technicians do not approve the plans unless their hidden interests and terms are incorporated well into the plans [129]. Government bureaucrats take action or make other troubles for the executive bodies of the forest user groups if the executive body does not address the conditions in the plan and officials' interests. The institutions have also bound or forced local people to make a contribution to the activities of the forest management and participate in regular meetings for reporting the forest conservation progress to the government agencies even if they little use forest resources [130]. The users often require paying the cost of absence or fines. The bureaucrats have used the institutions to block local communities from utilizing overstocked resources for household uses even in a serious natural disaster such as in the 2015 earthquake [131].

5.3.3. Suffering for Generations or Being Displaced for Good

Institutionally marginalization and humanitarian suffering of local communities are increasing as their livelihood supporting resources are managed to address the interest of foreign and national agencies. The impacts of the conservation forest policies are extreme in some communities and especially in indigenous communities. Figure 7 shows the regional distribution of indigenous ethnic communities in Nepal. Indigenous ethnic communities are mostly lived in the upper parts which marginal land areas. Most of them

were squeezed up into the marginal lands when Indo-Nepali ethnic groups (e.g., Bahun and Chhetri) arrived and settled in warmer parts with more plain and fertile lands of the mountain [132]. Indigenous groups accepted living in marginal lands and small private holdings due to their naturally happy and pleasant social behavior. Some indigenous ethnic communities squeezed in marginal land areas of lower belts and lived on forest resources with environment-friendly practices. Attachment of their life, livelihoods, and social identities of the communities intensified with the common property of forest resources [34]. Unlike the other ethnic groups, the indigenous communities did not destroy primary forests and privatized lands for affluent living. They used local forest resources to complement their private land resource and sustained lives in the harsh region. The credit for the current existence of wildlife mammals and natural forests around the human settlement in the mountain areas goes to the indigenous communities [37,38]. Otherwise, most land areas in the communities would be now devoid of natural forests and wild animals as we see in large parts of the US and Australia or farming land in Terai Nepal [18]. Combined information displayed in Figures 6 and 7 indicates that the outmigration of people is very high in the regions with indigenous ethnic community. This is based on fact that the forestlands areas of the regions are intensively managed for forest carbon sequestration, protected areas, and adventurous recreation. The information displayed in Figure 4 also indicate the case.

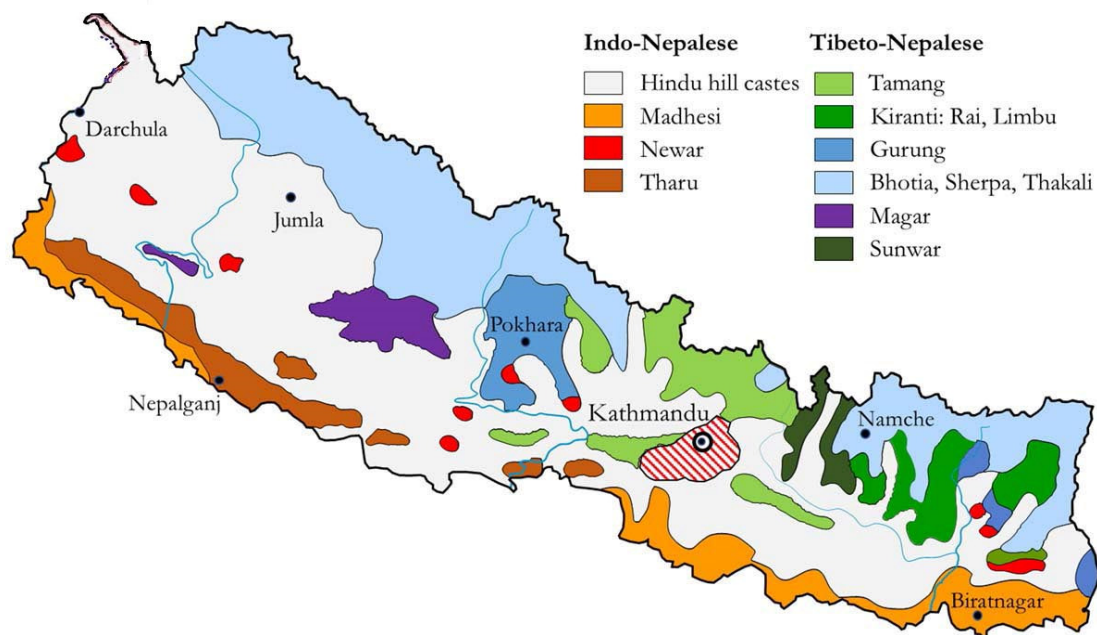


Figure 7. Agro-ecological belt-wise distribution of main ethnic groups in Nepal [Source: [133]].

Government bureaucrats have intensified their presence and officials' interventions in the communities where forest resources and wild animals are enriched. Military posts are established to control and restrict the community to use forest resources that the people had used traditionally in the protected areas. The government officials and military or paramilitary personnel that monitor the conservation activities in the community areas behave mostly in wild and rogue manners with a self-superiority feeling [27,75,134]. They treat the forest-based people, as pests and culprits of natural heritage destruction. They have often tortured, sexually abused, raped, and killed forest-based people [75,134]. Now the disproportionately higher proportion of indigenous ethnic groups is immigrated, prisoned, and worked in jobs with life-threatening stigma [53,133,135,136]. Many incentives are provisioned for the government officials and community spies for discouraging, restricting, or punishing the local communities to use the forest resources [75,137]. By natural behaviors, the ethnic communities can little resist maltreatment or oppressive behaviors of the cunning

officials or personnel [75]. They have rather tolerated inhumane treatments on them and sought alternatives in other areas [27,134]. The communities will suffer from such harsh treatments for many years or generations due to the declaration of their forests as protected areas.

The invasion of their livelihood resources has critically disturbed the social and economic environments of the ethnic minorities for married couples and couples living together. The national agricultural development policies have stressed agricultural growth in the super zone (means large scale) commercial farming and roadside areas with chemical fertilizer, exotic animal breeds, and hybrid crop varieties [138,139]. These agricultural policies are inappropriate in the areas of most of the indigenous communities who are living in disadvantaged localities or with meager land. Consequently, the social and economic changes resulted in a declining population. Despite the large population and positive growth of mainstream ethnic groups, the net national population of almost all the indigenous ethnic communities has declined with the intensification of adverse effects of the conservative land-use policies. The population of some ethnic communities and especially of recent nomadic people are many folds smaller than the population of the wild animals that IUCN declared extinction threats [122]. The population of some indigenous ethnic minorities has been declining to extinction. The historical variation in private land possession between ethnic communities has resulted in a difference in generational suffering, population dwindling to extinction, personal capital (education and skill achievements development), access to political power, and participation in non-farming or high-income sectors until now.

The restriction on forest resource uses has contributed to sacrificing even some social identity. For instance, Chepang is one of the ethnic communities which had a nomadic lifestyle until very recent times. The government has occupied forest areas of their original living community for wildlife conservation. Some part was distributed to mainstream ethnic communities. Now, some of the Chepang families have lived on a meager marginal quality of private lands. The others have been landless and work in farming labor. The people very often get maltreated and killed by officials of conservation agencies [75,137,140]. Christian missionaries have taken advantage of the measurable life of the ethnic group and converted the ethnic group into a Christian religious group. The missionary had changed the religion of only a few households of the ethnic group until the 1991 census, but the followers of the religion reached 8.6% in the 2001 census and 25.6 out of 69,000 population in the 2011 census [122]. Many indigenous ethnic communities migrated due to land resource scarcity problems that have changed the religious faiths and many other cultural practices.

Promotion of the conservative land uses has also hampered the daily living and social environment of the forest-based communities. Some authors very often observed in the communities that the naive communities cannot resist or deny the misleading or socially harmful programs tactically introduced by politically or socially powerful people with cunning behaviors. The most common alternative livelihood program of the agencies are promoting homestays and lodges in their house for tourists and other economically risky businesses. Every household has no resources or a favorable household environment to run such a business. Tourists especially from western countries get recreation by spending nights with families of indigenous and watching their cultural activities. All households cannot get visitors enough to make their living. Some households have practiced it. The people have lived in primary communities. Visitors with different interests and behaviors or addictions come to stay there. Host family or local government cannot monitor and filter out visitors with ill intentions or behaviors. Running the homestay business requires serving the visitors at home and in residential areas every day and 24 h. The visitors with holiday moods seek communities to show some unseasonal cultural activities. The activities and presence of the visitors all the time have hampered the family privacy of not only the service hosting household but also social environments for all households in the local community. The presence of various interested people all days and hours in the institutionally

vulnerable and primary communities has spoiled indigenous cultures, norms, and knowledge in a slow poison nature. Local young girls are frequently abused in an institutionalized way. But international environmental conservation experts and policies have recognized or suggested the concept of the homestay practice as an alternative livelihood solution and manage their land resources for environmental conservation. But the life, cultures, and lifestyle of the communities are attached to a peaceful and natural environment. They deserve to exercise their natural rights. The policy and practice of promoting homestay in the vulnerable primary communities to manage their land resources for global benefits have hampered the indigenous people to exercise their natural rights and live peacefully in their homelands. They have also resulted in social harm and abuse in the poor and gullible communities.

5.4. *Psychological Dimension*

5.4.1. Mental and Emotional Stresses

Many people, especially indigenous ethnic communities and women got psychological, social, economic, and environmental stresses and other problems from the policies and practices of excessive land use for environmental conservation. Traditionally the land resources were a means and safety net for vulnerable people and especially women. Loss of access to products and services of the land resources has hampered local livelihood and other safety-net opportunities for them. The women and especially of indigenous ethnic groups are under-skilled and have insufficient financial assets to run other business for livelihoods. The loss of land resource-based opportunities has compelled them to go overseas or to urban areas, for making a living [135,136]. The common job destinations are the Middle East and Malaysia where the people are not allowed to take spouses or any other member of their family. The social environments of the women are not safe in most of those workplaces. Most low-skilled women seasonally migrated for work have obtained jobs with mentally, emotionally, and physically unsafe or risky conditions. Some of them are involved in the jobs of social stigma [135,136]. The women have suffered a lifetime (at work and after retirement). Even the women who live in communities by sending husbands to work overseas have been severely mentally sick by family isolation and unfulfilled emotional needs for many years [141,142]. The family tragedies have aggravated social fragmentations (marriage and divorce) and contributed to the declining population of indigenous ethnic communities. The quality of social and emotional development of their children is also hampered due to isolation from parents and knowing the measurable lives of their parents. The structures of the environmental policies have hampered people in managing the resources in favor of the oppressed and marginalized people even if women have got opportunities of working as executive directors and other influential decision-making positions to prepare the land management policies and programs [22].

5.4.2. Intensified Socially Oppressed State

Addressing many problems of development including food security is not possible without the change in forestland management and revitalization of some indigenous assets in the mountain geo-ecological systems contexts. The external interventions for using the land resources for foreign benefits have meddled with or spoiled the thinking and behaviors of local communities, government officials, and other stakeholders for managing the resources for local community benefits and national securities. Some forest products are overstocked and wastage in forests, but communities are experiencing a shortage of other products. The country imports the products that are wasted in the forest even existed in accessible localities. A large number of households would benefit directly and indirectly better off by using the forests for daily household and other local uses [52]. The national actors have rather followed the guidance of the international development agencies to further destroy the mountain systems including indigenous resources, institutions, and social-ecological systems, creating the situation not possible to use the forest resources for farming and other economic purposes [27]. Policy analysts and other stakeholders

suggested that the traditional uses of the forest resources are no longer profitable for the community [143]. The global environmental policies and practices have also overpowered bureaucrats and environmentalists to exaggerate environmental problems in media, public forums, and government decision-making. These activities have further oppressed the forest-based communities to receive genuine benefits from their forests. No one has dared to voice against the inappropriate suggestions, practices, and use of the resources for the luxury of powerful societies at the cost of local community livelihood loss and miseries.

6. Reinforcing Factors and Further Marginalization

The changes in the institutions and other conditions related to the land resource have intensified or consolidated some phenomena reinforcing the adverse impacts as explained by the literature on the feedback and path dependency theories [144]. New situations have emerged and evolved in response to the external interventions in the forestry field. The external interventions have meddled in community thinking and values which have actuated the forest users to manage their forest product consumption on the limit of residual products such as fodder from grasses and other annual vegetation naturally grown in tree margins and private lands. The community people have got the perception that they should use only residual products from weeding, thinning or pruning of trees, and offcuts of log harvesting for firewood. The communities are convinced to meet their construction and other wood need from dried, diseased, or decayed trees of the forests [86,145]. The practice enriches tree canopy and stock which have reduced growing space for or suppressed production of other goods and services for daily household and reproduction (investment) uses. Despite local demand, communities have been unable to use some wood products (e.g., stakes and poles) and leaf fodders even if available due to institutional complexities [52]. Selling log or sawn timber in the market requires a costly endeavor for communities. It requires permission from government authorities that make many administrative and bureaucratic hurdles [129]. They issue permits mostly either by getting bribes or under the pressure of political leaders [127]. Many other agencies including vested interest groups have created many hassles for forest user groups to receive harvesting permission. Some other groups or persons also often intervene in the permission-giving due to the bribery tradition of the government bureaucrats. The hassles have discouraged community leaders to harvest and sell the wood from the community forests [52,127]. In addition, many forest user groups have a small size of forest holding (national average 74 ha) which generate only a small amount of fund. The forest policy has made it mandatory to use 50% of the income in managing forests and providing support for extremely poor households [79]. The policy does not allow the distribution of income for individual households. The rest of the fund is supposed to be used in community and capacity development activities. That was another disincentive of forest user groups not to harvest and sell wood products from their forests. Now, all the community forests are managed under carbon sequestration policy which restricts the conversion of the forests for addressing multiple product needs of the local communities [73]. The restriction of uses and declining of daily need products will increase the abandoning of agricultural lands from farming due to decreasing farm manure production and increasing incidences of wild animals.

New laws and other policies are built on the current regressive forest and other environmental conservation policies. The forests developed by afforestation or enrichment plantation in community pasturelands are occupied as protected areas. The government has done an agreement to sell carbon credits for many forests to foreign agencies. The agencies may have used the carbon credits to upgrade their GHG emission-intensive business. The credits, thus, must be retained in the forest to meet international obligations and political and business credits. A radical change in management with policy change is essential to produce forest produce goods and services for alleviating the local community problems. The changes in the resource management in public forests and reducing protected areas are not allowed by national forest laws and international policies as they emphasized

greater areas for forest carbon sequestration for climate change mitigation. Current climate change motive forest acts and other policies have also dictated to retain the existing state of forest carbon, biodiversity, sceneries, and other ecosystem services of the forests to utilize community forest products [79]. The utilization of forest products is technically impossible by fulfilling the conditions. These are technical and institutional reasons that drove the government agency to restrict the community use of wood from their local forests even rebuilding homes after the mega earthquake of 2015. Even with generous government policy and favorable market conditions, the income from the sale of wood or carbon in the small forest areas (average 0.74 ha) can make little difference in household income and social security [44,52]. The carbon payment little compensates for the pervasive social, economic, socio-ecological, and agrobiodiversity harms that result from locking the land resource for mitigating global climate change in the mountain communities.

Increasing conservative and reckless behavior of bureaucrats associated with the international conservation policies is another reinforcing factor. Recently, the government agency has rather worked out policies to convert production forests into sustainable (conservation) forests by following the action plan of the national biodiversity strategy that the government endorsed by following the advice of international agencies. The plan dictated that “[A]t least 50 percent of the production forests come under sustainable management by 2020” ([77], p. 104). Here, the production forests were used mainly to meet the daily needs of the community with traditional regenerative practices. The sustainable management policy directives have added many complex conditions which have dictated following conservative management and residual product use. International agencies advised the policy with the hidden interest of placing more forestland under protected conditions [77]. Experts have advised to make protected areas in whole parts east to west of high altitude regions in the countries and develop corridors to connect the protected areas of the north and south including of India. The areas are more likely to be managed as protected areas because of the prevalence of Yarchagumba (*Cordyceps Sinensis*) which IUCN declared as a declining species. The forest bureaucrats have very conservative values and little apathy to avoid such suffering of local communities. They have little willingness to change the regressive laws and other policies. The extension of the protected area undoubtedly hampers the life of the local communities who have lived in remote mountain localities on the forest resources for years. The forest schools have also increasingly followed curriculums founded on problems, social values, and policies of developed countries to train human resources. The officials and technicians who graduated from the schools naturally impose forest policies and practices to address the problems of developed countries and work against the well-being of the forest-based local communities.

The prospect of alleviating the adverse impacts with radical institutional changes is pessimistic. Powerful actors in international organizations and environmental policy decision forums are people from developed countries [73,146]. They are committed to up-scaling the regressive land use policies that have benefited their societies and economies. Some countries have made substantial investments to develop the forests and establish protected areas in Nepal [27]. The investing agencies undoubtedly hinder any initiatives of the government to change the management of resources developed in their investment and resulting in reasonably more benefits for local communities. The complex institutional change by the community alone is little possible due to the persistently serious degree of bad governance of the government forest agency in Nepal. The international agencies have offered funds to lure the corrupt bureaucrats for developing and reinforcing laws and other regression institutions that control and regulate communities on land management [74].

The conservative policies of managing forests and protected areas further hamper production and access to forest products and services for farming and increase wildlife incidences on farm crops, especially in the areas with small patches of land in the middle of forests. Reduction of forest-based livestock holding naturally hampers farm manure production essential for restoring organic matter and soil nutrients of sloppy lands. The hardship of life in communities increases the exodus of male adults and leaves mostly

children, the elderly, and women in the mountain community. The women require bearing additional responsibilities that were traditionally managed by their male counterparts. The women cannot manage their farming with life threats and crop and livestock loss from wild beasts [147]. Monetary compensation does not resolve the problems of mental stress and the life security of the local communities. Compounding the farming problems with life threats makes mountain farming further costly and motivates farmers to abandon arable lands from farming and emigrate from their homelands.

7. Discussion

This study explained the impacts of forest and other land-based environment conservation policies on the well-being of forest-based communities and national security in Nepal. It showed that excessive land uses in forestry and protected areas increased trees, forest carbon stock, habitats for some wild species, and quality sites for adventurous recreation. The increasing land resources management for environmental services and other benefits of distance communities hampered the production of goods or services for local community needs. Many studies explained such natural tradeoff phenomena [23,25,26,148,149]. But the resource management aggravated the vulnerability or marginalization of forest-based communities. The communities have been marginalized in social, economic, and ecological dimensions. Duffs (2014) and many other studies also reported similar outcomes in African and South American countries [18,20,29–31]. However, our findings contested the findings of den Braber et al. (2018) and Oldekop et al. (2019). Those studies showed increasing in household income and reducing in community income inequalities after the enrichment of forest areas and expansion of protected areas in Nepal [55,56]. The people have been dispossessed of the livelihood supporting resources. The resource dispossession does not increase household incomes, especially in Nepal's community context. The findings of those studies, therefore, are either spurious or misleading. Many studies with a vested interest in land resources in Nepal used such spurious data and interpreted local realities misleadingly [34,36].

The excessive land uses for conservation created many environmental, economic, and social paradoxes. Food import is increasing on one side and abandoning arable lands for farming is increasing on the other side. Similarly, the communities have farm labor shortages on one side and an emigration exodus on the other side. Despite having over 45% land use in forestry Nepal requires importing of timber for domestic consumption. Communities have also suffered from shortages of daily needs products and services. The increase in forest stock has also reduced agricultural and forest biodiversity. The land uses for global benefits not only created a critical shortage of forest products to complement private resources and makes the local economy and other affairs functional. Despite the increase in forest areas and tree stocks, the management from the external intervention critically reduced the availability of the forest products and services that are essential for functioning local systems and activities. The inappropriate management of the land resources resulted in paradoxes.

This study also showed intensifications of some reinforcing phenomena that have placed the communities persistently marginalized. Here the main elements to reinforce the phenomena are international policies, increasing complexities of local institutions, laws and other policies, land resource conditions, and stakes of new beneficiaries. Nelson (1995) cited some similar cases in the world and explained the theory of institutional reinforcement or path dependence [144]. The reinforcing factors have made the institutions and resource conditions too complex to work and too costly to change.

Support of international development agencies did not safeguard the well-being of the local community though they were involved actively in formulating and implementing the policies of local community-based land resource management. The agencies worked there to provide professional scientific and intellectual expertise lacking in the country and to safeguard the well-being of the local community. They could not resolve tradeoff phenomena that naturally occur between the production of services to contribute to global environ-

mental conservation and the production of goods and services to meet local needs. Many studies have explained the naturally occurring tradeoff phenomena [23,25,26,148,149]. The agencies also hold limited capacity and mandate to manage many problems including bad governance and social complexities. Many problems hampering safeguarding the wellbeing of local communities are also inherited in these organizations themselves. The sources or pathways inheriting the problems include working policies, programs' modalities, financing conditions, progress monitoring practices, and the interests of program managers of the organizations. The agencies with bad governance, rather induced policies and practices of land resource management to result in the best benefits to the environment and other benefits to foreign societies. The external benefit-oriented policies and practices reduced products and services for local needs and hampered the well-being of local communities. Instead of providing safeguarding, the agencies have been serving as vehicles to control the community land use policies and practices and sources to keep the communities suffering for generations or years [22]. The international environmental policies have dictated the government bureaucrats to prioritize resource management for global benefits and ignore the problems of citizens and the nation.

The results also showed that some adverse impacts of the international policies and interventions for global benefits are intolerably serious to some societies, especially the indigenous ethnic communities. The policies and interventions strategically destroyed the indigenous forestry practices of the community that had produced multipurpose products and services and kept local social, economic, and ecological systems functional, and vital. They also hampered opportunities for the community practices of complementing private resources with forest resources to manage their livelihoods. It also destroyed the indigenous practices that the communities followed to sustain in limited natural resources and enjoy their traditional nature-based cultures and lifestyles. The policies and interventions have spoiled the social-ecological situation that contributed to retaining natural forests and the coexistence of wild mammals and humans. The environmentally friendly behaviors, lifestyles, and livelihood practices of the communities were a blessing to nature-kind including humans. But vested interest works of the conservation agencies have now made them curses especially to the communities. The strategic interventions on local land resources for benefiting other societies have compelled the communities to give up social identity including religious beliefs and nature-based culture, lifestyle, and livelihoods. The external agencies purposefully destroyed natural assets (indigenous livestock breeds and crop varieties) and indigenous practices. The institutions and biophysical conditions that the external agencies induced are reinforcing the adverse impacts or results in slow poison effects on the lives and livelihoods of the communities. The harm to living conditions of the ethnic groups has hampered reproduction and resulted in population decline. The communities, therefore, are institutionally and biophysically placed not only in a vulnerable or marginalized position but also to be suffered for generations or extirpating. Literature noted local communities in colonial countries had got similar impacts and treatment during the Europeans' colonization era [20,150].

Current environmental policies and practices at both national and international levels are advocated and clutched by environmental experts, scientists, and other high-profile personalities with a decent standard of living [5,11,12,94]. They strategically endorsed and introduced the policies and practices of excessive use of lands of the poor communities for addressing problems created by the societies or people with a politically powerful and decent standard of living. But the personalities have produced incomparably more GHG emissions than the forest-based communities. The excessive land use is done primarily for dumping excess (GHG emissions) and quenching the wild thirst of people with a decent and luxurious standard of living. The works are scientifically and morally illogical. More importantly, they have resulted in seriously inexcusable harm, especially in ethnic minorities and disadvantaged communities. In our study case, these inexcusable harms in the victimized communities resulted from strategic interventions of some agencies to result in more benefits to politically powerful and materially well-off countries [27]. In addition,

most people making the government policy decisions about land resource management are socio-politically most powerful ethnic communities of Nepali society. They have received most benefits directly and indirectly from international agencies due to making the decision of increasing land uses for environmental and other benefits for foreign societies. But the land use policies and practices have harmed mostly ethnic minorities and other indigenous ethnic groups and made them suffer for generations. This infers that land grabbing and critical harm in many affairs of the indigenous ethnic communities are done in partnership and for the mutual benefit of historically cunning and powerful ethnic communities of the host country and developed countries. Studies explained that such degrees of serious harm by deliberated activities of mainstream or powerful societies for the sake of their long-term benefit is a genocide [151]. Cox (2017) studied 17 extreme genocide cases and concluded that no perpetrator declared monovalent intentions formally and in advance. The study concluded that the main criteria determining the monovalent work of any agency are the processes and outcomes of the interventions. Based on the work process and outcomes, the current international environmental policies of land uses, can be considered abuse, exploitation, and genocide of ethnic minorities and other weak ethnic communities. These phenomena indicate that international environmental conservation policies and practices are becoming criminal activities.

The inexcusable outcomes are not repercussions because many studies have well explained the phenomena of the tradeoff in the production of goods for local needs and marginalization of local communities from excessive land uses for global environmental conservation [23,25,26]. The inhuman policies and practices are formally endorsed in many international policy decision forums and official documents and mainstreamed in many policies and practices of government and international organizations. The policy actors were aware of the tradeoff phenomena and potential harms to institutionally vulnerable groups [23]. These crimes are incomparably more serious than the cases in that some countries politically expressed concern for some ethnic groups overseas [152,153]. But the countries, for the sake of self-benefit, have provided funds and other support in the land use activities that have placed Nepali indigenous ethnic communities suffering for generations or extirpating.

8. Conclusions and Limitations of the Study

The results of this study provide many lessons for land use policy decisions. The cases in Nepal indicate that excessive land use for global environmental conservation can exacerbate many critical psychological, social, economic, and ecological problems. It can hamper indigenous resources and knowledge systems, social-ecological systems which are vital assets to practicing a nature-based farming lifestyle, and sustainable livelihoods for the forest-based communities. The conservative land use can make the communities more dependent on external and artificially produced inputs. It can increase the risk of people to be legally punished and maltreated also increases due to growing restrictions on using forest products for livelihood and increasing monitoring and controlling activities of conservation officials in their localities. The life hardship associated with little access to their land resources may compel the communities to change religious faith and give up traditional cultural practices. The institutions introduced to control local communities and manage the land for environmental conservation may oppress and exploit the local communities. The lands used for benefiting global society are likely to lose their freedom to manage the resources for the local community or national benefits. The excessive land uses for global environmental conservation can be a subject of not only harming local communities but also compromising national security and sovereignty.

This study proved that excessive land uses for global benefits can bring many financial implications to national economies. The government requires borrowing foreign loans and using other sources of resources to increase conservation areas and manage the resources. This study also proved that the inappropriate or excessive investment of resources can affect not only the well-being of local communities and national securities but also carry

financial pressures on future governments for maintaining foreign currency reserves, paying the loans, and providing other development services. Shifting land resource using from economic purposes to environmental conservation naturally reduces the forestry contribution to GDP and hampered other fairs of the communities.

The excessive land uses for environmental conservation and other benefits of global societies are found resulting inexcusable harm to local communities and especially indigenous ethnic groups or minorities. The finding infers that current international policy initiatives of protecting 50% of earth territory for global environmental conservation or increasing land use for mitigating climate change fosters social crimes in the world. These illogical land use policies and practices are driven by environmental policy experts, scientists, and government authorities. The inexcusable harm to socially marginally and environmentally friendly people implies that the symbolically high-profile personalities are monovalent people. Environment conservation is an altruistic or benevolent work. But the symbolically high profile personalities have misused the land resources with their social power and made environmental conservation benevolent to monovalent work. They have made the international organizations channels for doing the social crimes and shelter for the monovalent people. These works can be bad for both victims and perpetrating social groups in the future.

The study also proved that support of international agencies may not minimize adverse impacts of international policies of conservative land use for global environment conservation on local communities. They can rather exacerbate local social, economic, and environmental problems. The finding implies that the Nepal government requires restricting involvement or any support of all international agencies that are involved in land resource-related policy development and their implementation. Otherwise, they keep harming forest-based communities and many aspects of national security in institutionally weak societies.

The use of excessive land including forests for environmental conservation and other benefits of distance societies is found adversely affect most indigenous ethnic communities in Nepal. The adverse impacts on the communities are very critical from a humanitarian perspective and lasting for generations. The finding implies that excessive land uses for global environmental conservation may result in many serious impacts on local communities and national security in institutionally and ecologically vulnerable societies. Land use also institutionalized social crimes and abuses. The findings infer that using a half earth land territory for global environment conservation or implementing the current UN policy of upscaling forest and wilderness areas for ecological restoration may result in serious degrees of marginalization and exacerbate the threat of extinction of some indigenous ethnic groups in the countries such as Nepal where many affairs of lives of communities are strongly attached with moderately opened or mixed canopy-based forest resources. This study urges that civil societies and other public require to take proactive actions to halt the inhuman land use policies which are practiced by the government agency in support of international policies and development agencies. The works of the leaders and intellectuals from indigenous ethnic communities are also against their own social groups [74,143,154]. The elites and intellectuals have advocated or worked in the best interest of donor agencies and developed countries which has made people of other communities awkward for voicing against oppression, abuse, and exploitation to the indigenous communities by the conservation agencies and other beneficiaries. Some knowledge to work better for the indigenous communities can be learned from the Maori community and the government in New Zealand.

The best solution for sustainable living and adapting to climate changes and other critical problems for the forest-based communities is the best use of the land resources by optimizing social-ecological systems. But some phenomena reinforcing the adverse impacts on the community or nation may occur when structural changes are made for managing the extensive land resources for global environment conservation. The phenomena make changes in institutions and resources management too costly and time-consuming. The

phenomena ultimately place the community or nation suffering for years. Nepal, therefore, requires some urgent policy actions to make radical reforms in land resource management for the benefit of the forest-based communities. The solution can be downscaling protected areas and managing the forests resources for multipurpose including economic uses.

This study used some data that only insiders of the study community can feel or observe and express and contributed some noble knowledge in literature. It explained the extreme impacts of the externally motivated harsh land use policy on the resource-based communities that lived on meager lands and in very sensitive geo-ecological systems of the mountain. Community situations in other regions can be different. Region-specific future studies may further increase the horizon of knowledge in the land use field. The paper explaining the approach the foreign agencies succeeded to grab the extent of land resources of Nepal is under publication process.

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