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Forest Resources Potential for Economic Growth of Nepal

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Abstract

Forest resources are the second largest natural resource in Nepal after water and play a crucial role in the country's economic development. It has a high degree of potential to accelerate economic growth by creating employment opportunities for a large number of people and generating government revenue significantly. In addition to this, it contributes significantly to soil fertility, climate regulation, and the preservation of biodiversity. Forests provide essential resources such as fuel, raw materials, and fodder, and offer recreational benefits. Despite their importance, Nepal faces challenges in sustainable forest management due to political instability, corruption, and heavy dependency on forests for livelihoods. This paper has adopted descriptive and analytical research design. Secondary sources of data have been used to carry out this study. Descriptive statistical tools have been used to interpret results. This paper highlights the need for policy reforms, community participation, and anti-corruption measures to ensure sustainable forest management. It concludes that without these measures, the potential of Nepal's forest resources for economic growth cannot be fully realised.

Keywords : Biodiversity conservation, community participation, economic growth, forest resources potential, policy reforms, sustainable use of forest resources

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Introduction

Forest resources are the second richest natural resources of Nepalese economy. Nepal has 5.96 million hectares of forested area and 0.65 million hectares of other wooded lands (OWL). Combined, forest and OWL account for 44.74% of the total area of the country (FAO, 2020). Forest resources are indispensable elements of life of people in Nepal and their contribution to the economic growth of the country no doubt would be significant as these resources provide a variety of basic products to people with direct and indirect benefits. The direct economic benefits of these resources include various uses such as timber for construction of houses and furniture, firewood for energy, animal fodder, preparation of compost manure, medicinal plants, other non-timber forest products (NFTPs) for generation of employment and income etc. Important ecological services like biodiversity conservation, water regulation, erosion control, clean air provision, wilderness activities, carbon dioxide consumption, and spiritual relaxation are among the indirect advantages of forest resources (Bhatt, Godar Chhetri, Silwal and Poudel, 2021 cited in FAO, 2009). The altitude of the country varies from 67 meters above sea level in Kechana Kalan (Jhapa) in southeast Terai to 8,848 meters at the world's highest peak, Mt. Sagarmatha, at Solukhumbu in the northeastern Himalayas due to which tropical to tundra (alpine) climates are found within an average south to north distance of 193 kilometers (Nepal Outlook, 2022). A large variety of natural vegetations are found because of the variation in land altitude of the country which has made it very rich in biodiversity, being suitable for the natural habitat of different animals and plants. The Nepalese government has declared forest areas as protected regions. There are twelve national parks, three wildlife reserves, one hunting reserve, six conservation areas and thirteen buffer zones in the form of protected areas to conserve natural habitat of rare species of flora and fauna found in the country (DNPWC, 2023). Both environmental preservation and the growth of ecotourism may benefit greatly from these protected places. In addition to offering a source of income, forests may also help rural households escape poverty by acting as safety nets during periods of scarcity (Bhatt, Godar Chhetri, Silwal and Poudel, 2021 cited in Angelsen and Wunder, 2003; de Sherbinin et al., 2008; Ranjit, 2011; Rayamajhi et al., 2012).

Economic contribution of Nepalese forest is insignificant in terms of its value added to gross domestic product (GDP) of Nepal although it has a high degree of economic growth potential. This sector has failed to bring a high degree of policy attention due to its insignificant

contribution to revenue generation in the country (Bhatt, Godar Chhetri, Silwal and Poudel, 2020). Contribution of agriculture, forest and fishery altogether in 15th plan period is 24.1 percent and it is estimated that this sector will grow by 4.1 percent in 16th plan period (NPC, 2024). The contribution of agriculture, forest and fishery is 23.92 percent in fiscal year 2023/24 which is estimated to be 24.09 percent in fiscal year 2024/25 (MoF, 2024). According to Multi-Stakeholder Forest Programme (2016), the forest sector contributes 3.5 percent to GDP of Nepal creating 9 percent employment (2011). Besides this, its potential value of environmental services was estimated at 17.3 percent. Through the provision of ecosystem products and services, forests support Nepal's economy both directly and indirectly. Most forest products, like timber, firewood, and NTFPs, can be valued because they are sold on the market, but services like habitat provisioning, sediment retention, and water and climate regulation are currently undervalued and, as a result, their economic contribution is underestimated. (World Bank, 2018).

Realizing the economic growth potential of the forest sector, this study aims at finding answers to the questions; What is the current status of the forestry sector? What amount of revenue were generated by forestry sector in Nepal in recent years? What were contribution of forestry sector to GDP of Nepal? What are economic and environmental prospects of forest sector in Nepal? What are problems of sustainable forest resources mobilisation in Nepal?

Methodology

This paper adopts analytical and descriptive research design. Quantitative data used in the paper are derived from secondary sources, such as current statistics published by government and non-government agencies, research paper, office records and project reports related to forestry sector of Nepal. Simple statistical tools such as tables and figures have been used to analyse and describe data.

Results and Discussions

Current Status of Forestry Sector in Nepal

Forest Area. In Nepal, the saying "Green Forest is the wealth of Nepal" was widely accepted until the 1980s, when it became clear that the nation had an abundance of forest resources (Khanal, 2012). According to the National Forest Inventory carried out in early 1990s, forest

and shrubs together covered 39.6 percent of the total land area of the country which was (forest alone) 47.6 percent in 1954. It reveals the fact that there was rapid depletion of forest resources till the decade of 1990s (FAO, 2010). The following table shows the area covered by forest in Nepal during different period from 1954 to till date.

Table 1

Area Covered by Forest (1994-2020)

Base Year	Area (In ha)	%	Source
1954	6478000	47.6	FAO, 1954
1964	6402000	45.5	HMG/USAID, 1967/1973
1977	6284629	42.7	LRMP, 1986
1985/86	5828368	39.6	DFRS,1999
1998	4268249	29	DFRS, 1999
2020	6166766	41.69	MoFE

Source*:* Forest Research & Survey Department

Table 1 reveals the fact that the area covered by forest was decreasing continuously till 1998. This continuous decrease in forest area has been leading to environmental degradation causing accelerated soil erosion, damaging hydrological changes in the land due to reduced water infiltration rates and increased run-off, and reduced in the supply of plant nutrients to the croplands (Khanal, 2012). Realizing adverse impacts of deforestation government of Nepal has introduced and implemented the different concepts of forestry policies to make local communities participate in protecting and rehabilitating forestry. These programmes also aim at protecting forestry by the participation of local communities and reducing rural poverty by proper utilization of forest resources, the consequence of which there is an increase in forest area in 2020 as compared to 1998.

Types of Forest. The following are classifications of forest and protected areas for the purpose of conservation and management by The Forestry Sector Policy 2000 AD.

Government Managed Forests. It covers the national forest area managed by Government of Nepal using approved forest management plans.

Community Forests (CF). It includes those forests areas that have been handed over to users' groups as community forests to conserve, manage, and utilize for their basic needs. This policy has been implemented from the early eighties and started to handover all accessible national forests to the local people for their management and use.

Leasehold Forests. This includes those forests on land that have been leased by central or local government agencies to private owners including individuals, co-operatives, institutions and commercial firms. It is an innovative approach introduced in Nepal by IFAD (International Fund for Agricultural Development) in the early 1990s in which forty-year leases are provided to groups of households giving them user rights over plots of degraded forest land.

Religious Forests. Forests belonging to religious groups come under this category.

Partnership Forestry Policy. This policy has been recently implemented in some districts of Nepal as pilot programme. Bara, Parsa, Rautahat, Mahottari and Sarlahi are pilot programme operating districts.

Private Forests. Forests or trees raised and managed on privately owned lands come under this category.

Table 2

Details of Forestry Sector in Nepal till 2023

Forest Management System	Total Forest Area		Out of Protected Forest		Protected Area	
	Number	Area in Hectares	Number	Area in Hectares	Number	Area in Hectares
Community	22682	2490194	22645	2278981	1037	211213
Collaborative	31	75614	31	74614	0	0
Leasehold	7976	45842	7888	45401	88	441
Poverty Oriented Leasehold	7731	44399	7643	43958	88	441
Business Leasehold	245	1443	245	1443	0	0
Religious	186	2897	179	2809	7	87
Private	5460	4451	5460	4451	0	0
Conservation	10	192027	10	192027	0	0

Source: Economic Survey 2022/23, MOF, Nepal cited in MoFE 2023

Protected Areas. It includes national forest declared by government of Nepal as a protected forest pursuant to the Forest Act 1993, which considers it has a special environment or scientific or cultural importance.

Conservation Areas. It includes lands such as national parks, reserves, protected areas or other categories mentioned under the National Parks and Wildlife Conservation Act 1973.

Protected Watershed. Any land under public or private ownership designated as a protected watershed under the soil and watershed Conservation Act 1982 comes under this category.

Table 2 depicts area covered by different types of forest management system and their number in Nepal. It reveals the fact that the community forest has the largest area coverage and commercial leasehold forest management system covers the lowest area in Nepalese forest.

Table 3

National and Provincial Level Community Forest User Groups

Province	No of Community Forest User Groups	Total Community Forest Handed over Area in Hectares	No of Household
Koshi	3683	436442	545828
Madesh Pradesh	522	79157	108102
Bagmati	4491	400905	567591
Gandaki	3925	258876	471266
Lumbini	3996	454106	642743
Karnali	2718	354025	305558
Sudurpashchim	3184	376066	447171
Nepal	22519	2359577	3088259

*Source***:** Statistical Yearbook of Nepal 2023, CBS cited in Ministry of Forest and Environment.

Table 3 shows that there are 22519 community forest user groups that cover 2359577 hectares area involving 3088259 households. Lumbini province has the highest number of community forest user groups, forest area and households whereas Madesh Pradesh has the lowest number of community forest user groups, area of forest and households.

Forest Sector Revenue

Forest sector revenue is the sum of revenue generated from wood, other forest products and revenue generated by protected areas of forest. There is negligible contribution of forest resource in revenue in Nepal. Table 4 reveals the fact that the forest sector in revenue of the country is Rs. 4.86 billion in 2022/23.

Table 4

Revenue Generated by Nepalese Forest (2020/21 to 2022/23)

Fiscal Year	2020/21	2021/22	2022/23
Revenue Generated (Rs. Million) (Revenue from wood, and other forest products including revenue from protected areas)	4600	5560	4860

Source: MoF, Economic Survey 2021/22, 2022/23 & 2023/24

Contribution of Forestry Sector to GDP

There is no separate heading of forestry sector contribution to GDP of Nepal in national income accounting system as value of agriculture, forestry and fishery come together as contribution of agriculture sector. Nepalese forest sector is highly potential to contribute to economic growth and employment in Nepal. A study of Multi-Stakeholder Forest Programme (MSFP, 2014a) reveals the fact that the private sector contributes approximately 99,000 formal full-time jobs annually to the forest sector, while community-based organizations, such as CFUGs, contribute roughly 31,000 jobs, for a total of 130,000 jobs currently (World Bank, 2018). The following table 5 shows pessimistic and optimistic potential of forest sector for economic value and employment in Nepal. Table 5 reveals the fact that timber subsector has the highest potential for economic value and employment generation followed by non-timber forest products (NTFPs).

Table 5

Nepalese Forest Potential for Economic Value and Employment in Nepal

Forest Subsectors	Economic Value (Rs. Millions)		Number of Sustainable Full-time Jobs	
	Pessimistic Situation	Optimistic Situation	Pessimistic Situation	Optimistic Situation
Timber	55127	270697	206725	812090
NTFPs	11635	58173	87259	290865
Forest Carbon	4235	13572	37054	118755
Ecotourism	14572	21567	72860	107833
Forest bioenergy	2126	9107	15633	53571
Total Forest	87695	373116	419531	1383114

Source: World Bank, 2018 citied in MSFP 2014

Table 6 shows forest revenue percentage of GDP of Nepal. It reveals the fact that currently, forest sector revenue is very small compared to GDP of the country.

Table 6

Ratio of Forest Sector Revenue to Nepalese GDP

Fiscal Year	GDP at Current Price (Rs. Million)	Revenue from Forest	
		Value (Rs. Million)	% of GDP
2020/21	3714933	4600	0.12
2021/22	4255985	5560	0.13
2022/23	4738941	4860	0.10

Source: MoF, Economic Survey 2021/22, 2022/23 & 2023/24

Prospects of Forest Resource

Conservation of Biodiversity and Natural Beauty for Tourism Prospect. Nepal has peculiar type of land topography due to variation in altitude of the country from less than 100 meters in Terai region in the south to 8848 meters highest peak Mt. Everest in the north within the distance of 193 Kilometers on average. This variation in altitude has served the country as a boon of nature to make it rich in biodiversity. It has 5000 vascular plants, including over 254

species of endemic plants and 700 species of medicinal plants. In addition, there are over 175 species of mammals, 850 species of birds, 600 species of butterflies, 50 species of moths, 180 species of dragonflies, 170 species of fish, and other animals inhabit this country. With only 0.15% of the world's forest, Nepal has 2.2% of all known plants and 9.3% of all known bird species. Many valuable genetic resources are conserved in protected areas for their potential use in the future (FAO, 2009). Protected areas Nepal covers 34419.75 square kilometers which is 23.39 percent of total area of the country (DNPWC, 2023). The protected areas have been contributing significantly to preserving biodiversity and natural beauty of the country which bear great prospects for the development of tourism.

Major Source of GDP. Tourism, herbal medicine, and NTFPs can be regarded as exportable items with low cost of production. Besides these forests provide timber, serves as watershed protection and source of energy and livelihood to the people dependent on forests. Therefore, there are immense prospects of this sector to increase the value of real GDP and foreign exchange earnings of the country. The combined study of the Department of Forest Resources and Survey (DFRS) and Nepal Foresters' Association's (NFA) concludes that the forest sector may contribute up to 28 percent of the country's GDP (Bhatt, Godar Chhetri, Silwal and Poudel, 2020 citing in DFRS/NFA, 2008). According to Multi-Stakeholders Forest Programme, the Nepalese forest sector can generate Rs. 87695 million economic values in pessimistic situation and Rs. 373116 million in optimistic situation (World Bank, 2018).

Mitigating Measures of Climate Change & Carbon Trade. Forests are among the most productive plant communities whose biological productivity is so great that it is estimated that woody plant cover accomplishes almost half of the world's annual photosynthetic fixation of carbon (Woodwell, 1983). Forests play an important role in absorbing CO_2 from the atmosphere that benefits the livelihood and environment. Therefore, forests, including community managed forests, can meet the dual objectives of 'The Clean Development Management, i.e., sustainable development and emissions reduction. Hence, there is growing interest in linking community-managed forests as a climate change project and there exists potential for more exploration on this linkage that provides local as well as global benefits. Biodiversity protection, preventing soil erosion, and protecting the livelihoods of forest dependent populations are the incremental benefits of carbon trade under avoided deforestation compensation scheme besides the financial flow and the overriding concern of mitigating climate change (Khanal, 2012).

Conservation of Stream & Spring Water Source. Hilly and Mountainous regions cover 83% of Nepal's total area. Hilly region alone covers 68% of Nepal's total land area where spring & stream water plays vital role for meeting the daily need of drinking water (Khanal, 2012). These sources of water are drying up due to rapid deforestation that has made water scarce in this region. People must walk long distances to fetch a small volume of drinking water and their daily demand for water for drinking and other household uses is hardly fulfilled. Thus, people have been facing hardships to meet daily need of water in the Hilly region. Therefore, conservation of spring & stream water is possible by afforestation of depleted forest areas with the participation (with ownership) of local communities.

Employment Generation and Poverty Alleviation. Approximately 7000 species of flowering plants have been identified in Nepal, many of which are significant from a commercial point of view and for maintaining rural livelihoods (Pandey, Subedi and Dhungana, 2010). Nepalese forests can act as a positive catalyst to increase the rate of poverty reduction to achieve the overriding national aspiration of poverty reduction. According to Multi-Stakeholders Forest Programme, the Nepalese forest sector can generate 419531 number of full-time sustainable jobs in pessimistic situations and 1383114 number of full-time sustainable jobs in optimistic situations (World Bank, 2018).

Controlling Natural Calamities. Landslides and floods are very often in rainy season in Hilly, Mountainous and Terai regions of the country. The volume of loss of life and property has been increasing in the country due to deforestation. Therefore, afforestation has great prospects in reducing loss of life and property of people by checking incidents of landslide and floods.

Problems of Sustainable Forest Resource Utilization

Numerous human infrastructure developments, human relocation and forest encroachment, uncontrolled forest fires, excessive grazing, excessive extraction of timber, fuelwood, and non-timber forest products, and illicit extraction forest products all pose serious threats to sustainable utilization of Nepalese forests (WWF, 2024). The following are the main causes of deforestation that are challenging of sustainable forest resource utilization in Nepal.

Forest Fire. It is considered a major problem with forest management systems. In the mixed forest of Terai, Siwalik, mountainous slopes, the fire season starts from mid-March and

the fires burn the forests 1-3 times till the end of May. There are plenty of fallen and standing dry trees in the forest which is the main source of royalty from the forestry sector. The fire burns this national property and destroys the natural beauty.

Political Instability. It is also another major cause of deforestation in Nepal. The country has been suffering from political transition and instability for a long period of time. Political instability and conflicts always accelerate deforestation and forest encroachment in Nepal (FAO 2010). Cutting forest by Ranas to supply woods to British India, Step taken by late king Mahendra to settle people from hills to Terai clearing forest, opening forest for common people during referendum of 2036 BS, weak law and order during a decade long Maoist insurgency, prolonging political transition after political change due to people's movement of 2006 AD etc. have remained as major problems of sustainable use of forest resource in Nepal (Khanal, 2012).

Weak Public Administration. The Nepalese administration has long been weak in development planning and implementation. There are some critical issues, which lead to weak institutional structure in the forest department: lack of team spirit to work as a group, lack of system of merit-based recruitment, non-transparent, system transfer and promotion, limitation or misallocation of resources, lack of sufficient autonomy to local level institutions to make decisions, misappropriation, and increased political lobbying and patronage practices. Promotion of efficient equitable growth through sustainable use of natural resources will require institutional reform at the national level. (Dahal, 2003).

Increasing Corruption. It is remarkably noted that, the basic elements of governance such as: accountability, transparency and legitimacy are weakly established in Nepal. As a result, there is accusation of corruption and increased rampant political patronage and political lobbying within bureaucratic structure of government. The weak public administration is responsible for the poor morale, motivation and commitment of staff toward being accountable to local forest users. Government staff remain accountable to their bureaucratic superiors and when they maintain ties with local elites, the devolution policy leaves the poorest forest users worse off than before (Malla, 2001). Thus, the unethical governance system has developed institutionalization of corruption in the public administration sector which is a major cause of depletion and deforestation of forests. Therefore, illegal logging and trading of the valuable

timber of the plain area has occurred tremendously because of corruption. There are big challenges to the community to safeguarding of forest. A study conducted by parliamentary committee on natural resources and means estimated that 10 million cubic feet of timber have been illegally cut down and smuggled from forest of Terai and Inner Terai, with collecting black money between the range of 16,000 to 20,000 million Nepali currencies during the fiscal year 2066/067 (Khanal, 2012 cited in Devkota, 2010). Besides this, the open market system has gradually developed consumerism in Nepal without bringing opportunities of employment; therefore, misuse forest resource has become the easiest way to earn money.

Firewood. It still serves as main source of fuel for cooking and heating to majority households in rural as well as urban areas of Nepal. Poor people are unable to afford kerosene or liquid petroleum gas for cooking and heating use. Similarly, in the absence of available alternatives (LPG or kerosene), even rich people depend on firewood that also increases the pressure on the accessible forests. The dependency on timber and non-timber forest products exceeds 95% and the procurement of wood fuel for cooking and house heating accounts for 83% of the energy consumption (Gautam, 2006; SOE, 2001; ADB, 2004). Out of total 9909 TOE energy consumption in Nepal in FY 2009/2010 the share of fuel wood alone was 7458 TOE which is 75.26% of total energy consumption (Economic Survey, 2010/2011). These above-mentioned situations reveal the facts that firewood remains as a major problem of sustainable forest resource management in Nepal.

No Income Generative Programme for Ultra Poor People. Majority of illiterate and unskilled ultra poor people still generate income by selling firewood that they cut or collect from the forest nearer to them due to the lack of alternative income generative programmes. This activity caused deforestation to some extent.

High Livestock Density. The major livestock are cattle, buffaloes, goats, sheep, pigs and poultry. The livestock density is highest in Nepal; there are 220 numbers of livestock per square kilometer compared with the human density of 141. The total population of cattle, buffaloes, goats and sheep are 6.8, 3.3, 5.7 and 0.9 million respectively. Every farm family maintains a few heads of livestock. Even the landless farmers keep some livestock (Pande, 2011). Thus, livestock rearing is integral part of people in Nepal. People keep animals like cattle, goats and sheep for dung, milk, meat and cash. Livestock also plays a significant role

in nutrients recycling, draft power, transportation, food and cash income during emergencies (Joshi, 1998). Thus, the high density of livestock population has also acted as an obstacle in sustainable utilization of forest resources, being a major cause of deforestation as almost all people in rural areas still depend on forest for grazing animals and collecting fodder for their livestock.

Deep Rooted Problem of Landless People. The problem of landless people has remained unsolved and deep rooted for a long period of time. More than four decades of implementation of Land Reform Policy government of Nepal has not yet formulated any land use policy though formulation of scientific land reform policy has always remained as a popular slogan of political parties. The issue of landless people has always remained at top priority of election manifestos of political parties though the problem remains the same. Landless people depend on forest resources to earn their livelihood. They have been compelled to clear the forest for making arable land which has also supported deforestation phenomenon. Thus, unsolved deep-rooted problem of landless people has also remained as a problem of sustainable forest utilization in Nepal.

Migration. Migration of people from Hilly and Mountainous regions to the entire inner-Terai and Terai regions is a very common phenomenon in Nepal which is also considered responsible for widespread deforestation in Terai. Environmental degradation, lack of basic facilities and poverty in the hills are pull factors and eradication of Malaria in mid-fifties and better economic opportunities in the Terai are the pull factors of migration of people from Hills to Terai and inner-Terai region in early sixties. Because of uncontrolled migration from Hills to Terai and inner Terai and planned resettlement programme launched by government of Nepal in Terai region, heavy deforestation took place in between 1964 to 1979 that destroyed 4000 (estimated) hectors of forests in these regions (Shrestha, V.P., 1999). Insecurity during the Maoist insurgency period has also compelled people of Hilly regions to migrate to Terai regions. People are still migrating from Hilly and Mountainous regions to Terai regions due to lack of basic amenities in former regions that have adversely affecting forest resource of Terai and Shivalik regions. Thus, Migration is also considered as a major problem of sustainable forest resource utilization in Nepal.

Unplanned Tourism. Nepal has a very high tourism potential. It is highly feasible for mountaineering and trekking as parentage of tourists visiting Nepal for this purpose has almost remained in 2nd position after purpose of pleasure in last decade. Tourists visiting Nepal either for pleasure or for mountaineering and trekking also put pressure on forest resources as restaurants and hotels in touristic areas depend on forest for firewood, construction materials, furniture etc. Thus, serious environmental damages such as deforestation, soil erosion, dumping of Mountaineering garbage etc. have been observed in the excessive tourist concentration places (Khanal, 2010). Thus, unplanned tourism is also a problem of sustainable forest utilization in Nepal.

Conclusion

Nepal's forest resources hold significant potential for contributing to the country's economic growth, employment generation, and poverty reduction. Forests play a crucial role in maintaining ecological balance, conserving biodiversity, and mitigating climate change. They provide essential resources such as timber, fuel, and non-timber forest products, and offer recreational and spiritual benefits. However, the sustainable management of these resources faces several challenges, including political instability, weak public administration, corruption, and heavy dependency on forests for livelihoods. Issues such as forest fires, illegal logging, and unplanned tourism further exacerbate the problem.

To harness the full potential of Nepal's forest resources, the paper emphasizes the need for comprehensive policy reforms, increased community participation, and effective anti-corruption measures. It also highlights the importance of raising awareness about the adverse impacts of climate change and the benefits of carbon trade. Addressing deep-rooted issues like landlessness and high livestock density is crucial for sustainable forest management.

In conclusion, without addressing these challenges and implementing the necessary reforms, the economic and environmental benefits of Nepal's forest resources cannot be fully realized. Sustainable management practices, coupled with political stability and institutional reforms, are essential for leveraging forest resources to drive economic growth and improve the livelihoods of the Nepalese people.

References

Asian Development Bank. (2004). *Country Environment Analysis for Nepal*. https://www.adb.org/sites/default/files/institutional-document/32192/nep-sept-2004.pdf

Baniya, B., Giurco, D., & Kelly, S. (2020). Green growth in Nepal and Bangladesh: Empirical analysis and future prospects. *Energy Policy*, *149*, 112049. https://doi.org/10.1016/j.enpol.2020.112049

Bhatt, B. P., Chhetri, S. G., Silwal, T., & Poudel, M. (2021). Economic Contribution of Forestry Sector to National Economy in Nepal. *Journal of Resources and Ecology*, *12*(5). https://doi.org/10.5814/j.issn.1674-764x.2021.05.005

Chand, L. B. & National Planning Commission. (2002). TENTH PLAN. In *National Planning Commission* [Report]. His Majesty's Government.

Chaudhary, R. P. (2000). Forest conservation and environmental management in Nepal: a review. *Biodiversity and Conservation*, *9*(9), 1235–1260. https://doi.org/10.1023/a:1008900216876

Dahal, G. R. (2003). Devolution in the Context of Poor Governance: Some Learning from Community Forestry in Nepal. *Journal of Forest and Livelihood*, *2*(2), 17–22. https://doi.org/10.3126/jfl.v2i2.59693

Dahal, N., Nepal Water Conservation Foundation for Academic Research (NWCF), Chapagain, N. R., & Kathmandu University. (2004). Prospects and challenges in bringing Nepali Community Forestry under Kyoto Protocol's carbon trading regime. In *Conference Paper* (p. https://www.researchgate.net/publication/280713658). https://www.researchgate.net/publication/280713658

Department of Forest Research and Survey. (2008). *Contribution of forestry sector to gross domestic product in Nepal*. Kathmandu, Nepal: Department of Forest Research and Survey.

Department of National Parks and Wildlife Conservation. (2022). Department of National Parks and Wildlife Conservation. https://dnpwc.gov.np/en/publication/

FAO. (2010). *Global forest resources assessment, 2010: main report*. United Nations Digital Library System. https://digitallibrary.un.org/record/698354

Food and Agriculture Organisation (2020). FRA Report, Nepal. (2020).

Gautam, K. H. (2004). Forestry, politicians and power—perspectives from Nepal's forest policy. *Forest Policy and Economics*, *8*(2), 175–182. https://doi.org/10.1016/j.forpol.2004.07.001

GFM Cadmin. (2017, November 24). *Nepal: Forest Fire in Nepal (IFFN No. 15 – September 1996) – GFMC*. https://gfmc.online/iffn/country/np/np_2.html

JOSHI, A. L. & IGES International Workshop. (n.d.). UNDERLYING CAUSES OF DEFORESTATION AND PARTICIPATORY FOREST MANAGEMENT POLICY IN NEPAL. In *Forest Conservation Strategies for the Asia and Pacific Region* [Journal-article]. https://www.iges.or.jp/en/publication_documents/pub/conferenceproceedings/en/744/1ws-8-Joshi.pdf

Karki, M. (2014). Green Economy for sustainable Development in Nepal: Role of Forestry sector. *The Initiation*, *5*, 96–109. https://doi.org/10.3126/init.v5i0.10259

Khanal, R. K. (2010). Development of tourism in Nepal. *VOICE: A Journal of Autar Dei Chaudharain Research Centre, M. M. Campus, Nepalgunj, 2*(2).

Khanal, R. K. (2012). Glimpses of forest resource in Nepal. *VOICE: A Journal of Autar Dei Chaudharain Research Centre, M. M. Campus, Nepalgunj*, 4(4).

Malla, Y. B. (2001). Changing policies and the persistence of patron-client relations in Nepal. *Environmental History, 8*(2), 287-307.

Ministry Of Finance. (n.d.-a). https://www.mof.gov.np/site/publication-detail/2503

Ministry Of Finance. (n.d.-b). https://mof.gov.np/site/publication-detail/2502

Ministry Of Finance. (n.d.-c). https://mof.gov.np/site/publication-detail/3228

Ministry Of Finance. (n.d.-d). https://www.mof.gov.np/site/publication-detail/3344

Ministry Of Finance. (n.d.-e). https://www.mof.gov.np/site/publication-category/21

Ministry of Forests and Soil Conservation, Food and Agriculture Organization of the United Nations, & Pokhrel, A. R. (2009). *NEPAL FORESTRY OUTLOOK STUDY*. https://www.fao.org/fileadmin/templates/rap/files/APFSOS/2009-05Nepal.pdf

National Planning Commission. (2024). 16th Plan (2081/82 - 2085/86). [PDF file]. Retrieved from https://npc.gov.np/images/ory/240607021743%E0%A4%B8%E0%A5%8B%E0%A4%B9%E0%A5%8D%E0%A4%B0%E0%A5%8B%E0%A4%82%20%E0%A4%AF%E0%A5%8B%E0%A4%9C%E0%A4%A8%E0%A4%BE.pdf

Nepal Overview - Nepal Outlook | Believe in Data. (2022, September 1). Nepal Outlook | Believe in Data. https://nepaloutlook.com/nepal-overview/

Nepal: State of the Environment. (2001). http://www.rrcap.ait.ac.th/Publications/State%20of%20the%20Environment%20report,%20Nepal.pdf

Nuberg, I. K., Shrestha, K. K., & Bartlett, A. G. (2019). Pathways to forest wealth in Nepal. *Australian Forestry*, *82*(sup1), 106–120. https://doi.org/10.1080/00049158.2019.1614805

Outlook, N. (2021, February 2). *Nepal Human Development Report 2020 - Nepal Outlook | Believe in Data*. Nepal Outlook | Believe in Data. https://nepaloutlook.com/nepal-human-development-report-2020-beyond-graduation-productive-transformation-and-prosperity/

Pande, R. S. (2021, May 31). *Rameshwar Singh Pande*. https://rameshwarsinghpande.blogspot.com/search/label/https%3A%2F%2Fwww.blogger.com%2Fblog%2Fearnings%2F1701408029760110146

Pandey, S., Subedi, B., & Dhungana, H. (1970). Economic potential of forest resources of Nepal. *Banko Janakari*, *20*(2), 48–52. https://doi.org/10.3126/banko.v20i2.4803

Poudyal, B. H., Maraseni, T., & Cockfield, G. (2019). An assessment of the policies and practices of selective logging and timber utilisation: A case study from natural forests of Tarai Nepal and Queensland Australia. *Land Use Policy*, *91*, 104422. https://doi.org/10.1016/j.landusepol.2019.104422

Ranjit, Y. (2019). History of Forest Management in Nepal: An Analysis of Political and Economic Perspective. *Economic Journal of Nepal*, *42*(3–4), 12–28. https://doi.org/10.3126/ejon.v42i3-4.36030

Shrestha, V. P. (1999). Forest resources of Nepal: Destruction and environmental implications. *CNAS Journal*, 26(2), July 1999.

Shrestha, P. (2004). Tourism in Nepal: Problems and prospects. In *Nepalese economy: Towards building a strong economic nation-state,* 437-451. Central Department of Economics, T.U. and New Hira Books Enterprises.

The Challenges of Community Participation in Forest Development in Nepal. (2002). [Report]. The World Bank. https://documents1.worldbank.org/curated/en/534551468291689852/pdf/10132027931Nepal.pdf

The World Bank. (2018). *Country Forest note: Nepal*. https://documents1.worldbank.org/curated/pt/301481538110670634/pdf/123966-WP-P166888-REVISED-PUBLIC-27-9-2018-10-18-38-CountryForestNoteNepalMASTER.pdf

Woodwell, G. M., Hobbie, J. E., Houghton, R. A., Melillo, J. M., Moore, B. Peterson, B. J., & Shaver, G. R. (1983). Global deforestation: Contribution to atmospheric carbon dioxide. *Science, 222*(4628), 1081-1086. https://doi.org/10.1126/science.222.4628.1081