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Editorial

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Bridging Research and Policy: Advancing the Nepal Public Policy Review's Role in Policy-Relevant Scholarship

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Abstract

The Nepal Public Policy Review was launched as a multidisciplinary journal to provide an academic platform for research relevant to public policy. It has published three volumes, including a special issue arising from a symposium. Following a critical review of the journal's policies, we identified the need for better alignment between academic research and public policy. In response, we redefined the journal's purpose to bridge research with policy, updating the Aims and Scope to encourage collaboration between researchers and the policy community. This shift emphasizes the importance of clear and accessible communication for policymakers. To facilitate this, we introduced new manuscript requirements, including sections for *Policy Recommendations* and *Suggested Course of Action* to translate research findings into actionable policy steps. We also introduced an initial formative editorial assessment for manuscripts before peer review. This aimed to enrich the research and ensure its alignment with relevant policies. Piloted in Volume 4, the manuscript improvement initiative successfully enhanced five articles by translating their conclusions into detailed policy recommendations. Positive feedback from authors and reviewers affirmed the success of this approach. We consider the manuscript improvement a success and will expand it in future volumes, along with exploring broader mentoring for both academics and policy professionals.

Keywords: Policy research, Research-policy interface, Manuscript improvement support, Actionable policy recommendation

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Volume 4, 2024
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Editorial

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अनुसन्धान र नीति जोड्ने सेतुः नीति-सान्दर्भिक प्राज्ञिक अध्ययनमा नेपाल पब्लिक पोलिसी रिभ्यू जर्नलको विस्तारित भूमिका

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सार

नेपाल पब्लिक पोलिसी रिभ्यू जर्नल सार्वजनिक नीतिसँग सम्बन्धित अनुसन्धान प्रकाशित गर्ने एक प्राज्ञिक मञ्चको रूपमा बहु-विधात्मक जर्नलको रूपमा आरम्भ गरिएको हो । यसले हालसम्म संगोष्ठीम आधारित एक विशेष अङ्कसहित तीन नियमित अङ्कहरू प्रकाशित गरिसकेको छ । यस यता हामीले जर्नलको नीतिहरूको गहिरो समीक्षा गर्‍यौं र के पायौं भने प्राज्ञिक अनुसन्धान र सार्वजनिक नीतिबिचको सम्बन्धलाई अझ मजबुत बनाउने आवश्यकता रहेछ । यस कुरालाई ध्यानमा राख्दै हामीले जर्नलको उद्देश्य पुनर्परिभाषित गर्दै जर्नललाई अनुसन्धान र नीतिबिचको सेतुको रूपमा पुनर्संरचना गर्नुका साथै अनुसन्धानकर्ताहरू र नीति पेशाकर्मीहरूबिचको सहकार्यलाई प्रोत्साहन गर्ने गरी जर्नलको उद्देश्य र दायरा अद्यावधिक गरेका छौं । यस परिवर्तनले नीति निर्माताका लागि स्पष्ट र सहज भाषामा अनुसन्धान सञ्चारको महत्त्वलाई ध्यान दिएको छ । यसै पक्षलाई सहज बनाउन हामीले शोधलेखमा *नीति सिफारिस* र *सुझावित मार्ग* भन्ने नयाँ खण्डहरू अनिवार्य रूपमा समावेश गर्नुपर्ने व्यवस्था गर्दै पाण्डुलिपिको ढाँचा परिवर्तन गरेका छौं । यसले अनुसन्धानका निष्कर्षलाई कार्यान्वयनयोग्य नीतिमा रूपान्तरण गर्न मद्दत पुऱ्याउँछ । अर्को परिवर्तनको रूपमा विज्ञसमीक्षाको प्रक्रियाअघि प्रारम्भिक सम्पादकीय मूल्याङ्कन र पाण्डुलिपि सुधार सहयोग गर्ने काम सुरु गरिएको छ । यस पहलको उद्देश्य अनुसन्धानलाई अझ समृद्ध बनाउनु र सम्बन्धित नीतिसँग बलियोसँग जोड्नु हो । चौथो अङ्कमा परीक्षण गरिएको यस पाण्डुलिपि सुधार पहल अन्तर्गत पाँच लेखहरूलाई विस्तृत नीतिगत सिफारिसमा रूपान्तरण गर्दै प्रकाशन गरिएको छ । यस सम्बन्धमा लेखक र समीक्षकहरूबाट सकारात्मक प्रतिक्रिया पाएका छौं । हामी यो नयाँ पहललाई सफल मान्दै भविष्यका अङ्कहरूमा समेत विस्तार गर्नेछौं । साथै, अनुसन्धानकर्ता र नीति पेशाकर्मीहरूका लागि व्यापक मार्गदर्शनको सम्भावना पनि खोज्नेछौं ।

शब्दकुञ्जी: नीति अनुसन्धान, अनुसन्धान-नीति सन्धिस्थल, पाण्डुलिपि सुधार सहयोग, कार्यान्वयनयोग्य नीति सिफारिश

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The Nepal Public Policy Review was launched as a multidisciplinary journal to serve as an academic platform for researchers contributing knowledge relevant to public policy. We have published two regular volumes along with a special issue dedicated to agricultural policy and practice. The special issue stemmed from the symposium "Agricultural Policies and Practices in Nepal: Pathways for Transformation," organized in January 2023 by the Policy Research Institute and the Nepalese Agricultural Professionals of America (NAPA). The first volume included nine research articles and six policy commentaries, while the second volume featured thirteen research articles and four policy commentaries. The special issue of the third volume produced twelve research articles. However, the next issue of this volume contains only two articles due to low submissions.

Following the publication of the third volume, we critically reviewed the journal's policies and publications to assess how well it fulfilled its mission and explored opportunities for stronger alignment with public policy.

Based on this review and drawing from the policy research conducted within the Policy Research Institute and disseminated in formats such as research reports and policy briefs, we identified a pressing need to better align academic research outputs with public policy. Achieving this alignment would require revising the journal's policies and, in the case of manuscript submissions, assisting authors in improving their work to make it more policy-relevant. Consequently, we redefined the journal's purpose to focus on bridging research with public policy. Additionally, we updated the Aims and Scope to encourage the creation and co-creation of policy-relevant and policy-ready knowledge, fostering collaboration between researchers and policy professionals while expanding the intersection of research and policy.

The philosophy underlying this shift is that communication must be accessible to policymakers. It is widely recognized that policy research should be communicated using clear and accessible language (Aiyede, 2023; Barreto et al., 2024). To facilitate this, we introduced a new manuscript format, which includes mandatory sections for *Policy Recommendations* and *Suggested Course of Action*. These components are designed to transform the objective conclusions of research into actionable policy recommendations, which are further elaborated by specifying the responsible agencies and the actions they should undertake.

As part of our journal policy improvements, we also implemented an initial formative editorial assessment of submitted manuscripts before peer review. This assessment serves two purposes: to enrich the research with as much relevant data as possible and to ensure its connection to appropriate policies. While providing

this kind of assistance is a complex task, the Policy Research Institute, with its ongoing multisectoral policy reviews and multidisciplinary research, is uniquely positioned to offer valuable insights at the research-policy interface. We have leveraged this strength to assist authors with manuscript improvement when deemed appropriate by the editorial team.

Starting with Volume 4, we piloted the manuscript improvement service. We provided varying levels of assistance for all submissions. The revised manuscripts underwent peer review, and those recommended for acceptance—whether with minor or major revisions—were revised again by the authors in collaboration with the journal's editorial team. As a result, out of 11 submissions, we successfully published five articles in Volume 4. The key distinction between these articles and those in previous volumes lies in the conclusion section, which has been meticulously translated into policy recommendations. These recommendations were then elaborated on in the Suggested Course of Action, which typically includes specific recommendations, responsible agencies, and proposed actions.

The feedback we received from authors and reviewers has been overwhelmingly positive. Reviewers have praised the research's clarity and enhanced policy relevance, while authors have appreciated the additional policy data and perspectives integrated into their work.

Supporting academic writing and mentoring has been shown to improve research productivity and quality in resource-limited communities (Sharma, 2025). Similarly, providing support to bureaucrats has demonstrated potential to enhance the impact of policy research (NASC, 2025; Shrestha et al., 2019; Šimić et al., 2021). This suggests that expanding our support model could be an important journal policy agenda for us to move forward. Achieving this would require broader collaboration between scholars, bureaucrats, and the policy research community, desirably as part of a larger research collaboration and community engagement effort. Engaging with the community and fostering partnerships is essential in contexts with limited knowledge resources, including funding, knowledge creators, and knowledge brokers. With growing demand for research-based evidence for public policy (Tiwari, 2021; Vagoni, 2021), the emergence of a cooperative policy research ecosystem looks inevitable.

In conclusion, we consider the manuscript improvement initiative a successful experiment and plan to continue and further strengthen this support in future volumes of the journal. We also aim to explore the possibility of expanding the

mentoring model, which, as discussed above, has been successfully implemented in the academic community and attempted for policy professionals as well.

Editor

Deepak Kumar Khadka

He is a Senior Research Fellow at the Policy Research Institute and the Executive Editor of Volume 4 of the Nepal Public Policy Review.

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Research Article

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Disparity in the Use of Mass Media among Youth Population in Nepal

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Abstract

This paper assesses disparities in the use of mass media among the youth population in Nepal. Data for this cross-sectional analysis were extracted from the Nepal Demographic and Health Survey undertaken in 2016. The total sample of 8,010 included four population sub-groups – single and married males, and single and married females, ages 15-24. The forms of mass media assessed included reading the newspaper, watching TV, listening to the radio, or using the internet. Binary logistic multiple regression was applied to assess the net effects of covariates on the use of specific forms of mass media. Of the four types of mass media, TV was the most commonly used (52%), and newspaper and internet were the least used (14%). Radio was used by 34%. Any of the four types of mass media was used by 72%, while only 1% of youth used all four types. Household wealth status, followed by the educational background of the youth and their region of residence, were the main factors significantly and strongly correlated with the disparity in mass media use. Compared to single or married males or single females, married females were the least likely to use any of the forms of mass media. The results show that despite rapid growth in mass media over the last 25 years in Nepal, great disparities still persist in the current use of mass media among the youth population, particularly based on gender and marital status. The findings underscore the need for media-based interventions to be sensitive to both the gaps related to gender and marital status among the youth population in Nepal.

Keywords: Nepal, Demographic and Health Survey, Youth, Mass Media, Gender Disparity

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1. Introduction

It has been well established, both theoretically and empirically, that the availability of a given product or service in a community and its eventual habitual use by consumers, involves several steps (Rogers, 2010; Tsui, 1985). More specific to mass media, the availability of newspapers, radio, TV, or internet is an essential first step, but the availability itself does not guarantee use, or determine who uses which type of media, and how often. Yet for any technology, service, or product, in order to determine the ultimate impact, it is imperative to ascertain the level of access and usage among consumers. At a higher level, the availability of specific types of services and products are expected to be affected by state policies, laws/regulations, business potential, and market prospects; while at the individual level, access and use are also affected by a host of factors that include education, language, income, perception/preference, and convenience.

In Nepal, mass media has proliferated across the country in recent decades mainly due to the liberalization of the economy, along with the political change that expanded the role of the private sector, and the proliferation of digital technology globally. The youth population is expected to be at the forefront of the use of mass media. Still, youth may not have equal access to mass media; and the usage may be affected across socio-economic strata and geographical contexts. This paper aims to assess disparities in the use of mass media in Nepal.

1.1 Growth of Mass Media in Nepal

During the early 1990s, Nepal witnessed the beginning of growth and rapid development of mass media. This expansion of mass media was associated with changes in Nepal's political system, which experienced a titanic shift from a strictly state-controlled system to full political liberalization with a multiparty system of governance (Hutt, 1994; Lawoti & Pahari, 2010; Muni, 2003; Thapa & Sijapati, 2005). This was followed by the increasing role of the private and commercial sectors in providing broad access to mass media, including the internet (UNESCO, 2013). Commercial FM radio stations were established, something that was inconceivable prior to 1991. The private sector began to telecast several dozen (mostly foreign) television channels. Movie halls and telephones, which until 1990 were under strict state control, were also deregulated. Households were then free to set up their own dish antennas to receive any domestic or foreign satellite channels on television. Internet servers started to pop up in large numbers in many parts of the country.

Over the last three decades, the establishment of infrastructure and expansion of mass media has, thus, proliferated in the country. In 1990, Nepal had one TV station, one radio station, and 456 newspapers (UNESCO, 2013), but these numbers expanded by many folds by the mid-2000s. For instance, a study conducted in 2015 in the far-western region of Nepal, often known as comparatively less developed than other regions, reported 50 radio stations, 18 cable services, and 79 newspapers functioning on a regular basis (CMR, 2016).

Despite the deregulation and privatization policies, availability of and access to all forms of mass media still remains uneven in the country. The geographical terrain, transportation challenges, and population density affect both the supply of and demand for mass media. Furthermore, the infrequent supply of electricity still remains a major constraint limiting regular and timely access to mass media. The availability of newspapers varies greatly by region and similarly, internet access is a relatively recent phenomenon in the country, and access still remains limited.

The disparities in geographic regional development and human development has long been recognized and well documented in Nepal (Thapa, 1995; CBS & ICIMOD, 2003; NPC & UNDP, 2004, 2014; NPC & UO, 2018), and the growth and development of mass media in the country is also closely associated with these disparities. Beyond the physical, geographic, and human capital disparities and diversities, various social inequities have also existed for decades. Being a patriarchal and patrilocal society, in Nepali society women generally have traditionally had a lower status and lack of autonomy (e.g., Niraula & Lawoti, 1998; Agarwal, 1994). With the purpose of addressing some of these gender-based social, cultural, and legal inequities in particular, many reforms have been introduced and undertaken in recent decades (MWCSC, 2020; NWC, 2021). To the extent these efforts have been effective, the gender-based inequities in particular are expected to improve over the years.

1.2 Disparity in the Access and Use of Mass Media in Nepal

Aside from basic data tabulations on mass media usage (e.g., CMR, 2016), there is a dearth of systematically collected data and analysis referring to the full cohort of the youth population – male, female, single, married – on access to and use of the various forms of mass media in Nepal.

A study undertaken in 2000 among single and married males and females (in ages 14-22) in urban areas in Nepal found significant disparities based on gender and marital status, net of the influence of other factors (Thapa & Mishra, 2003). Between male and female youths, males were generally likely to have significantly more

daily exposure to the various forms of mass media than females (including TV, radio, or newspaper). But within the same gender, married females were likely to have less exposure than single females. Overall, the study found that married youths were the most disadvantaged in terms of the viewership/readership of mass media. The nationally representative cross-sectional data collected in 2016 provide the opportunity to assess the changes and achievements made with regards to the gender disparity in access and use among the youth over the years.

2. Data Source, Definitions and Methods

The data for this analysis are extracted from a national cross-sectional survey, referred to as the Nepal Demographic and Health Survey (NDHS), that was carried out in 2016 (MoH, New ERA, & ICFI, 2017). The NDHS included data on 11,040 households, 12,862 women and 4,063 men in the age group 15-49. The data were collected during a seven-month period, between June 2016 and January 2017. The data sets are also accessible in the public domain with registration (www.measuredhs.com).

The present analysis is limited to those in ages 10 to 24 at the time of the survey. The total sample (weighted) representing this age group in the survey was 8,010. It included four population sub-groups, male and female aged 15-24, categorized by their marital status. The World Health Organization (WHO) has defined the population in the age group 10-24 as 'young people,' those in the 10-19 age group as 'adolescents,' and those in the age group 15-24 as 'youth' (WHO, 1989). Throughout this chapter, the same definitions are used to refer to people in specific age groups. According to the projected estimates made by the Census Bureau of Statistics (CBS, 2014), in 2016 the young population (male and female) in Nepal stood at 9.4 million, representing 33% of the country's total population. The 2016 NDHS showed the corresponding total percentage to be 31% (MoH, New ERA & ICFI, 2017).

For this analysis, mass media is defined to refer to four types: TV, radio, newspaper, and internet. Current use of any of these media types refers to the youth population who watched TV, listened to the radio, read a newspaper, and/or used the internet at least once a week. For convenience, TV viewership, newspaper readership, radio listenership, and internet usage are collectively referred to as the use/usage; and the terms use and exposure are used interchangeably.

The youth population's current exposure to mass media are analyzed by individual and contextual factors. These factors include gender, age, current marital status, current employment status, ethnicity, household wealth/asset status, ecological region, and development region.

The wealth variable is a composite measure of the cumulative living standard of a household (including asset items such as water and sanitation facilities, televisions, and the type of material used for flooring). The construction of the index is described in detail elsewhere (Rutstein & Johnson, 2004; Johnson & Bradley, 2008). The ethnic identification of respondents is consolidated into four broad groups: Brahmin and Chhetri (traditionally known as the most advantaged group), Janajati (indigenous group), Dalit (known as the most disadvantaged group), and all others. These various groups are a mosaic of caste, ethnicity, and tribe, intertwined with religion and shaped by the geographic regions in the country (Bennett, Dahal & Govindasamy, 2008; Gurung, 1998; TU CDSA, 2014).

The ecological region refers to the three major topographical belts in Nepal: Mountain, Hill, and the Terai, the sub-tropical belt in the south. As noted above, the regions also feature a mix of ethnic compositions. In order to assess the influence of varying levels of overall development, the vertical broad geographic division into the conventional five regions – Eastern, Central, Western, Mid-western, and Far-western – is also used. These regions have long been shown to vary widely in terms of their development indicators (CBS & ICIMOD, 2003; UNDP, 2004, 2014).

The primary objective of the analysis is to assess the influence of the gender and marital status of the youth population on their current exposure to mass media, net of the influence of ecological and development regions, household wealth status, educational attainment, age, ethnicity, and employment status. The secondary objective is to assess the net influence of each of these variables. For the analysis, binary logistic multiple regression (Retherford & Choe, 1993) is used to assess the net effect of each factor on the odds of having been exposed to each or any of the four types of mass media. In order to avoid bias towards the over-sampled subpopulations, sample weights were applied for all estimates (means, percentages and odds ratios).

3. Results

Table 1 shows the distribution of the sample by seven variables representing contextual, household, and personal characteristics of the study population. The Central (where the federal capital is located) and Far-western regions have the largest and smallest share (37% and 9%) of the population, respectively. The Terai, the southern plains belt, has half of the total population; while only about 6% live in the Mountain region. Among the household wealth groups, the fourth quintile has the highest (24%) and the first quintile has the lowest (17%) of the population subgroups. About two in five possess an education which includes a secondary

level of schooling, and only 7% have no education. The 15 to 19 age group accounted for 56% of the total population. The Janajati (indigenous) population comprised the largest group (37%) and Dalit, the most disadvantaged group, comprises 13% of the total sample. Just half of the total population was employed in the 12 months preceding the survey.

Table 1. Distribution of the sample of single/married male and female, ages 15-24, by selected background characteristics, Nepal, 2016

Background Characteristic	%	Number
Development region		
Eastern	21.7	1,741
Central	36.6	2,929
Western	20.2	1,620
Mid-western	12.7	1,021
Far-western	8.7	699
Ecological region		
Mountain	6.2	495
Hill	43.2	3,462
Terai	50.6	4,053
Household wealth (quintile)		
First	16.5	1,322
Second	19.1	1,606
Third	20.0	1,606
Fourth	24.2	1,942
Fifth	20.1	1,613
Education		
None	7.2	573
Some primary (1-5 grades)	13.5	1,083
Secondary (6-9 grades)	41.4	3,317
10th grade or higher	37.9	3,038
Age		
15-19	55.7	4,461
20-24	44.3	3,549
Ethnicity		
Brahmin/Chhetri	29.1	2,330
Janajati (including Newar)	36.5	2,942

Background Characteristic	%	Number
Dalit	13.1	1,048
All other	21.3	1,710
Employment status (current)		
Employed	50.1	4,015
Unemployed	49.9	3,995
Total (%, sample size)	100.0	8,010

Note: Total percent distribution and sample size for each variable adds up to 100 and 8,010 unless affected by rounding. The samples in this and subsequent tables are weighted.

The distribution of the sample by male and female population sub-groups was also analyzed (not shown in the table). The differences between male and female were not large for any of the variables except for education, age, and employment. There were proportionately more females in the 'no education' and less in the '10+ grades' levels as compared to their male counterparts. Similarly, there were proportionally less males in the 20-24 age group than their female counterparts (41% v. 46%). Proportionately, more males in the age-group 15-19 were employed than females in the same age group (58% v 45%).

Table 2 shows the use of the specific types of mass media among the study population, by gender and marital status. For any or all four types of mass media, single males and married females represented the two extreme groups of users. Overall, 78% of single males and 62% of married females used any of the four types of mass media, but those using all four ranged from only 0.4% for married females to 2% among single males. TV watching was the most commonly used type of mass media across all marital and gender groups (ranging from 43% to 59%). Internet use was the least common among married females (8.5%) and was much higher among males (20%), either single or married. Similarly, only 4% of the married females read a newspaper, while 23% of single males reported reading a newspaper. Use of radio was highest (39%) among married males and lowest among married females.

Table 2. Percentage of single/married male and female youth (ages 15-24) currently using specific types of mass media, Nepal, 2016

Type of Mass Media	Male, 15-24		Female, 15-24		Both, 15-24
	Single	Married	Single	Married	Single/Married
Watches TV	55.1	42.5	59.2	45.7	52.4
Listens to radio	33.5	38.5	36.8	28.8	33.5

Type of Mass Media	Male, 15-24		Female, 15-24		Both, 15-24
	Single	Married	Single	Married	Single/Married
Reads newspaper	22.9	14.5	14.7	3.6	13.8
Uses Internet	20.2	20.4	12.6	8.5	14.4
Any one of four	77.6	70.2	77.1	61.8	72.0
All four	1.8	2.5	0.9	0.4	1.2
Sample size (*n*)	(2,451)	(710)	(2,433)	(2,416)	(8,010)

Note: Usage refers to at least once a week.

Table 3 shows differentials in media usage by selected background characteristics. TV viewing, the most commonly used of the four types of media (used by 52%), also has large differentials within and between many of the variables. Household wealth shows the largest differential – 66-points between the poorest and richest groups. In the latter, 81% reported viewing TV. The educational attainment variable shows a differential of 35-points between the groups with no education and 10+ grade education. Development region shows a TV viewing differential of about 25-points (in the Central and Western regions). Gender and marital status had 17-point differentials between married males and single females.

Table 3. Percentage of youth, ages 15-24, using specific types of mass media, by selected background characteristics, Nepal, 2016

Background Characteristics	TV	Radio	Newspaper	Internet	Any
Gender and Marital Status					
Male, Single	55.1	33.5	22.9	20.2	77.6
Female, Single	59.2	36.8	14.7	12.6	77.1
Male, Married	42.5	38.5	14.5	20.4	70.2
Female, Married	45.7	28.8	3.6	8.5	61.8
Development region					
Eastern	55.5	35.8	10.9	16.8	74.9
Central	58.7	30.4	20.8	14.8	74.9
Western	59.7	28.4	13.3	17.7	74.6
Mid-western	29.6	39.7	3.9	7.8	59.8
Far-western	34.4	44.1	7.4	8.5	64.8
Ecological region					
Mountain	34.7	47.6	4.8	9.7	67.1
Hill	52.9	37.6	19.4	17.0	76.7
Terai	54.1	28.3	10.1	12.8	68.7

Background Characteristics	TV	Radio	Newspaper	Internet	Any
Household wealth (quintile)					
First	14.8	44.8	2.0	8.9	55.1
Second	37.6	39.5	4.2	11.6	63.2
Third	52.2	29.5	6.1	14.6	68.0
Fourth	65.9	30.8	18.0	17.9	80.0
Fifth	81.2	26.1	35.2	17.2	88.6
Education					
None	30.7	12.8	0.5	3.5	40.8
Some primary (1-5 grades)	35.5	23.5	0.9	8.1	53.4
Secondary (6-9 grades)	49.7	34.0	7.8	13.3	70.7
10^{th} grade or higher	65.4	40.5	27.5	19.8	86.0
Age					
15-19	52.8	33.2	13.1	14.6	72.9
20-24	51.8	33.9	14.7	14.2	70.9
Ethnicity					
Brahmin/Chhetri	56.2	40.3	21.1	16.6	78.1
Janajati (inc. Newar)	56.2	34.7	12.8	16.1	77.0
Dalit	43.8	32.9	10.3	12.6	65.8
All other	45.9	22.7	7.8	9.6	59.1
Employment (current)					
Employed	47.6	38.7	12.6	13.8	71.1
Unemployed	57.2	28.4	15.0	15.0	73.0
All	52.4	33.5	13.8	14.4	72.0
Sample size (*n*)	(4,195)	(2,686)	(1,107)	(1,153)	(5,770)

The differential in radio listening was the largest (28-points) in terms of the education variable; whereas only 13% of those with no education listened to radio, 41% in the most educated group did so. Household wealth, ecological region, and gender/marital status variables have about the same level of differential – about 19-points – between groups within each variable.

As regards newspaper reading, the differential between the groups is the largest (33-points) within the household wealth variable. This is followed by education (a difference of 27-points). Gender/marital status had a 19-point difference between married females and single males. Similarly, the development region variable has about 17-points differential between Mid-western and Central regions.

For many of the variables, the differentials in access and use of the internet are not as large as for the other three types of mass media. Still education shows the highest differential – a 16-point difference between the sub-groups with no education and 10+ grade education (the latter has 20% users). Similarly, the differential between married males and married females was 12-points. Development region was another variable with a 10-point difference.

Regarding the use of any of the four types of media, education followed by household wealth variables showed the largest differentials. Of all the variables, the age and employment status of respondents had the least differentials between categories within each variable. The differential in the ethnicity variable is also relatively small across the media types. At the other extreme, education and wealth status show the largest differentials within each. As noted, the simple correlation between these two variables for the entire study sample was .301 ($p<.001$).

The results (odds ratio) based on binary multivariate logistic regression are shown in Table 4. For the purposes of assessing the relative importance of the covariates we also performed a similar analysis using step-wise logistic regression. Essentially, the step-wise results showed that out of all the covariates household wealth and educational attainment were comparatively the two most influential factors associated with all the outcome variables, except for internet use. For the latter, gender/marital status and development region were the top two most influential covariates. However, the results presented in Table 4 are based on all the covariates included simultaneously.

Compared to the medium wealth household group, the richer and richest groups were significantly more likely to be viewing TV and reading newspapers. This relationship was just the reverse for radio listeners: the poorer and poorest groups were considerably more likely to listen to the radio than the richer and richest groups. In terms of internet usage, the poorer and poorest groups and the richest groups were significantly less likely to use it than the medium and richer group.

Table 4. Effects (odds ratios based on binary multivariate logistic regression) of gender, marital status, and other factors on use of mass media among youth population, ages 15-24, Nepal, 2016

Co-factor	TV	Radio	Newspaper	Internet	Any
Gender and Marital Status					
Single male	0.88	1.08	5.21**	2.10**	1.33**
Single female	1.26**	1.21**	2.99**	1.19	1.36**
Married male	0.85	1.27*	5.46**	3.01**	1.34**
Married female	1.0	1.0	1.0	1.0	1.0

Co-factor	TV	Radio	Newspaper	Internet	Any
Development region					
Eastern	2.57**	1.04	2.21**	2.56**	1.99**
Central	2.25**	0.98	2.54**	1.96**	1.81**
Western	2.33**	0.77**	1.54**	2.32**	1.52**
Mid-western & Far-western	1.0	1.0	1.0	1.0	1.0
Ecological region					
Mountain	1.08	1.17	0.48**	0.71*	0.98
Hill	1.0	1.0	1.0	1.0	1.0
Terai	1.08	0.98	0.63**	0.84*	0.87
Household wealth (quintile)					
First	0.13**	1.71**	0.31**	0.55**	0.42**
Second	0.44**	1.41**	0.56**	0.67**	0.59**
Third	1.0	1.0	1.0	1.0	1.0
Fourth	1.57**	0.90	2.21**	0.98	1.51**
Fifth	2.70**	0.55**	3.34**	0.67**	1.80**
Education					
None	0.76*	0.55**	0.67	0.51**	0.69**
Some primary (1-5 grades)	1.0	1.0	1.0	1.0	1.0
Secondary (6-9 grades)	1.47**	1.83**	6.05**	1.47**	1.67**
10th grade or higher	1.49**	3.03**	14.09**	2.15**	2.79**
Age					
15-19	1.07	0.95	0.83*	1.02	1.05
20-24	1.0	1.0	1.0	1.0	1.0
Ethnicity					
Brahmin/Chhetri	1.38**	1.09	1.18	1.24	1.28*
Janajati (including Newar)	1.27**	0.91	0.69**	1.14	1.20*
Dalit	1.0	1.0	1.0	1.0	1.0
All other	0.52**	0.82*	0.60**	0.65**	0.49**
Employment status (current)					
Employed	0.95	1.35**	0.95	0.82**	1.02
Unemployed	1.0	1.0	1.0	1.0	1.0
Log-likelihood	8,949.15	9,576.67	4,637.17	6,125.25	8,208.83
Sample size (*n*)	(4,195)	(2,686)	(1,107)	(1,153)	(5,770)

*$p \leq .05$; **$p \leq .01$. The denominator for each media type is 8,010.*

Compared to the group with some level of primary educational attainment, those with some secondary and higher levels of education were significantly more likely to be using each of the four types of mass media. The OR was particularly high for newspaper readership. Similarly, compared to those in the far and mid-western regions, those residing in other regions (Central, Western or Eastern) were significantly more likely to use TV, newspaper or the internet. However, the relationship for radio was the reverse.

Compared to married females, single females or married males were more likely to be using radio or newspaper. Similarly, single females were more likely to be using TV, and married males and single males were more likely to be using the internet. As regards ethnicity, Brahmin/Chhetri and Janajati were significantly more likely to be using TV, but this was not the case for other mass media. The effects of age or employment were generally not very strong or consistent.

4. Discussion and Conclusion

The dataset used for this analysis is unique in many respects. First, the dataset includes four full cohorts of the youth population (in ages 15-24) – male and female, and also single and married – and not just one particular group, which is common in many surveys. Second, the dataset represents the whole of Nepal, not just one particular geographic region or population subgroup. Further, the data refer to a recent period in the country's history, and more importantly, the two-and-half decades following the change in the political system that ushered in a fully-democratic form of governance, and liberalized the availability of and access to various forms of mass media, both through public and private sectors of the economy. Recent decades have also witnessed many legal and social reforms aimed at particularly addressing gender inequity and disparity across the various spheres (MWCSC, 2020; NWC, 2021)). Similarly, recent decades have seen remarkable achievements in access to schooling and educational attainment by both male and female youths in the country (Thapa, 2020). Educational attainment has most likely been the main agent of social, cultural and economic change in the country. Thus, the study findings would need to be seen in the larger societal context that has been undergoing changes in recent decades. Despite these factors, the data analyzed here unequivocally show that great disparities still exist in the current use of TV, radio, newspaper, and internet among the youth population in Nepal. Of the four types of mass media, TV was the most commonly used (by 52%), and newspaper and internet were the least used (14%) by the youth population. Radio was used by 34%. Any of the four types was used by 72% of the youth, while only 1% of youth used all four types of mass media.

Household wealth status, followed by the educational background of the youth, were the two main factors significantly and strongly correlated with the disparity in mass media use. The region of residence was also significantly associated with the disparity in use of mass media. Compared to single or married males or single females, married females were the least likely to use any of the forms of mass media.

In terms of the research design and data on all four full cohorts of the youth population, the previous research results that are most comparable are those based on a survey conducted in 2000 among the youth population (in ages 14-22) residing in urban areas in Nepal. When compared to the broad patterns from 15 years ago, the present results suggest both continuity and change.

One of the main patterns of continuity is that the married females are still (as of 2016) disadvantaged as compared to other youth sub-groups across all four forms of mass media included in the analysis – TV, radio, newspaper, and internet. At the other extreme, single females seem more advantaged in terms of media viewership/ listenership. The reasons for the generally lower media exposure among the married female youths in particular are not clear from the survey data. It may be due to differences in lifestyle between married and single female youths. It could be hypothesized that single youth have a larger social network and may be more familiar with mass-media technology than married youth. Furthermore, married youth may have less time to spend on mass media than their single counterparts. This remains yet to be explored with qualitative research methodologies, and the insights gained can eventually be incorporated in survey tools as well.

The finding based on the current study is that 72% of the youths (ranging from 62% among married females to 78% among single males) reported current exposure to any of the four forms of mass media. This suggests tremendous opportunities for mass-media apparatus aimed at promoting youth awareness about important social and health issues and any other related factors. Of the four media forms, internet is still limited in Nepal, but use has grown steadily. The results also make clear that of the various co-factors – household wealth status followed by the educational background of the youth – are the two main factors significantly and strongly correlated with the disparity in mass media usage. The results imply that reducing the disparities in mass media use may not be achieved without addressing disparities in household economic status and enhancing the educational attainment of the youth population.

The data analyzed here lack information regarding the preference of the youth population for a particular type of mass media, or the specific type of information sought and obtained from mass media. This would warrant a mass media focused study, which was not the aim of the survey data analyzed in this paper. Despite this limitation, the findings underscore the need for media-based interventions to be sensitive to both the gaps related to gender and marital status among the youth population in Nepal. These efforts should also be monitored and evaluated for their effectiveness towards closing the divides that currently exist in the usage of the mass media. These remain the challenges now and for the future.

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Ethics Approval

The present study represents a secondary analysis of the Nepal Demographic and Health Survey 2016. As part of the global survey program funded by the US Agency for International Development (USAID), the survey adapted the ethical clearance as required in the US and Nepal. The details are provided in the main survey report cited in the references.

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Data Availability

The dataset can be accessed by registering and submitting a request to the DHS Program (www.DHSprogram.com).

Conflict of Interest

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Revisiting India's Neighborhood First Policy in the Context of Growing US China Engagement in Nepal

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Abstract

Where does India's Neighborhood First policy stand in the context of U.S.-China's growing strategic engagement in Nepal? It has been realized that Indian Prime Minister Narendra Modi's Neighborhood First Policy was unable to deliver on its economic and developmental promises in a multifaceted manner. Mr. Modi's initial engagements with Nepal were perceived as accommodating policies, and it was believed that they would bring about a "paradigm shift" that would replace the "Nehru Doctrine." However, going against the spirit of the speech delivered by Mr. Modi in Nepal's Constituent Assembly, India imposed an unofficial blockade that pulled down Nepal-India relations. Further, Kalapani border disputes and Mr. Modi's unwillingness to receive the EPG report also added to the trust deficit. The EPG report was expected to reactivate the trust. However, this vacuum gives the U.S. and China an opportunity to increase their strong presence in Nepal. China's interest in getting access to South Asia via the BRI project overlaps with the MCC. So, their rivalry to create strategic space in Nepal is going on. On the one hand, India has not joined BRI and believes it String of Pearls strategy. Further, the country perceives any development in the Himalayan region as a security threat. On the other hand, India and the U.S. are global allies since China's takeover of Tibet and they have held similar views on Nepal. Considering the growing bipolar strategic rivalry between China and the U.S., this paper examines where India's Neighborhood First policy stands and what the state of its implementation will be. This study uses qualitative, exploratory research techniques to analyze the geopolitical relation and diplomacy.

Keywords: Eminent Persons Group, Indo-US Partnership, Kalapani-Lipulekh, Neighborhood First Policy, Zone of Peace

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1. Introduction

The Indian Prime Minister enunciated the Neighborhood First policy when he assumed office in 2014. There are three significant dimensions of this policy: security, economics, and culture, with an emphasis on people-to-people contact (Gambhir, 2020). The election manifesto of Bharatiya Janata Party (BJP), 2014 articulates that political stability, progress, and peace in the region are essential for South Asia's growth and development (Khobragade, 2016). Thus, also emphasizing the Neighborhood First policy, Prime Minister Modi invited the heads of state and government of all South Asian countries to his swearing-in ceremony. Further, he had chosen to make his first foreign visits to India's neighboring countries (Lok Saba Secretariat, 2022). As part of his Neighborhood First policy, Mr. Modi visited Nepal in August 2014 as the Indian prime minister to visit the country during 17 years (Wani, 2015). He was warmly welcomed by the Nepali people and had huge media coverage. While addressing Nepal's parliament, Mr. Modi stated that since the day he entered the Prime Minister's Office, strengthening relationships with Nepal had been one of the top priorities of his government (Bhattarai, 2018).

However, India failed to welcome Nepal's constitution promulgated in September 2015, and Nepal-India ties suffered a blow after an unofficial blockade of Nepal in the immediate aftermath of the promulgation of the Constitution. On top of that, Indian authorities constructed a road in Kalapani, a disputed region between Nepal and India triggering "unprecedented defiance" by Nepal. Later on, the country's parliament unanimously passed an upgraded map that included Kalapani as Nepali territory (Yhome, 2019). On the other hand, Indian Prime Minister Modi seems reluctant to receive the Eminent Persons' Group (EPG) report. The formation of the EPG was one of several damage-control measures after the backlash created by the blockade of Nepal in 2015, which severely damaged India's image in Nepal. The EPG members from Nepal view that the report is important for Nepal because it "not only reviews the previous status of relations but also perceives the new dynamics of the future" (Maharjan, 2023).

In the meantime, the U.S. and China have been competing to create strategic space in Nepal. Their rivalry became more visible due to the efforts of the U.S. to have the The Millennium Challenge Corporation (MCC) Compact Agreement ratified by Nepal's parliament compounded with the China's overall response to the efforts (Sapkota, 2020). There has been an increasingly high-level exchange from U.S. and China concerning the Belt and Road Initiative (BRI), Indo-Pacific Strategy, MCC, State Partnership Program (SPP), and different aid programs. Thus, India's engagement with Nepal has overlapped with the growing U.S.-China strategic

competition in its backyard, traditionally considered its sphere of influence (Faisal & Khan, 2022). In this situation, the question arises: where does India's policy stand in the context of the U.S. strategic entry into Nepal and the intense bipolar rivalry over the MCC and BRI projects?

The objective of this study is firstly to identify where India's Neighborhood First policy stands while the U.S. and China are increasingly engaged in Nepal. Secondly, it analyzes the way India's Neighborhood First policy perceives Nepal-China connectivity in the Himalaya region under the BRI framework. Thirdly, the study discusses whether or not India's Neighborhood First policy and the changing Nepal policy of the U.S. have any strategic convergence as the global allies.

2. Methods

This study has used qualitative method to analyze the secondary data, which were gathered from reliable books, journal articles, and some authentic websites. Furthermore, deductive methods and explorative research techniques have been used. The major variables are Indian Prime Minister Modi's Neighborhood First policy, the India-China rivalry, the U.S.-India strategic alliance, MCC and BRI. The data and phenomena are analyzed best from a realist perspective, with a particular focus on geopolitical theory. The paper is organized into five sub-topics besides the abstract, introduction, and conclusion.

3. Literature Review

This paper has examined key literature on the evolving nature of India's Nepal policy to comprehend Neighborhood First policy. As New Delhi aspires to be a great power, it has always considered itself a "hegemon" in the immediate neighborhood (Sahoo, 2016). Thus, India doesn't tolerate the presence of other powers in its backyard. India's foreign policy began with Nehru's Himalayan frontier security concept, then the Indira Doctrine, the Gujral Doctrine, and Modi's Neighborhood First policy (Kumar, 2011). The existing literature has indicated that India's policy in Nepal appears inconsistent, but its objective has remained the same, i.e., securitization. Indira Gandhi, Neharu's successor, focused on political realism and her son, Rajiv Gandhi, continued to use coercive action against Nepal in 1989 through an "economic blockade" (Bhattarai, 2022).

The Inder Kumar Gujral government pursued an accommodative policy towards Nepal (Muni, 2009). Except that, almost all governments have given the Himalayas a central place in India's foreign policy. Because they want to keep the neighborhood

free from external influence, particularly the increasing Chinese presence (Mishra, 2020), New Delhi has securitized its relations with the Himalayan countries in South Asia (Bhattarai, 2022). India inherited such a disposition from its colonial legacy. The Sugauli Treaty, signed in 1816 between Nepal and the British East India Company, was used in colonial India. Thus, existing literature also hints that, in today's context, too, India's perception of Nepal-China relations is largely shaped by the Himalayan frontier security concept (ibid., 2022). During King Tribhuvan's regime, India treated Nepal-India relations as special. This was intended to portray Nepal-China ties as not as important and indispensable in comparison to Nepal-India relations.

When Nepal and India signed the Treaty of Peace and Friendship in July 1950, Indian Prime Minister Nehru presented this treaty as evidence of the "special relationship" between Nepal and India (Karki & Paudel, 2015). As a result, India not only proposed coordinating Nepal's foreign policy, but also took steps to modernize Nepal's defense capabilities and protect the country's northern border. The rise of communist China in Nepal's neighborhood, particularly with China's annexation of Tibet in 1951 and Mao Zedong's remark that Tibet is China's palm, with Nepal, Ladakh, Bhutan, Sikkim, and the North-East Frontier Agency (NEFA) as its five fingers (Rowland, 1967; Schram, 1963). Thus, post-colonial and independent India reinvigorated its security concerns in Nepal by resurrecting the colonial policy on the Himalayan frontiers. However, King Mahendra concurrently diversified its foreign relations, and Kathmandu couldn't circumscribe its foreign policy behavior to the attribute of "special relations" with India. Following the withdrawal of Indian military missions from Nepal, the Mahendra government reiterated the principle of "relationships on the basis of sovereign equality" over the Indian interest in preserving the component of "special relations" (Baral, 2018).

During the reign of King Mahendra (1955–1972), diplomatic relations with China quickly gained new significance (Rose, 1971). Nepal and China signed a historic peace and friendship agreement in 1960. Similarly, both countries signed the border agreement. Furthermore, they agreed to construct the Kodari Road, the first road linking Nepal to China (Rose & Scholz, 1980). Jawaharlal Nehru, in his statement delivered in the Indian parliament on December 6, 1950, viewed that from time immemorial the Himalayas provided India with magnificent frontiers therefore India cannot allow the barrier to be penetrated (Sing, 2004). Mr. Nehru also stated that, India appreciates the independence of Nepal, India cannot allow anything to go wrong in Nepal or permit that barrier to be crossed or weakened, because that would be a risk to Indian security (Rose, 1971). For New Delhi, consolidating ties

with Kathmandu would prevent China's influence in the Himalayan region, which India has traditionally perceived as its sphere of influence (Feer, 1953).

After the deaths of King Mahendra in 1972, King Birendra continued to diversify Nepal's foreign policy, particularly his proposal to establish Nepal as a Zone of Peace, was interpreted by New Delhi as Kathmandu's next step toward reducing its reliance on India for security. The proposal by King Birendra was supported by 116 nations around the world (Dharamdasani, 1979). However, India refused to accept it. This eventually led to a declaration of non-alignment in the Sino-Indian dispute—that is, the "formal neutralization" of Nepal (Rose, 1971). Although King Birendra continued Mahendra's policy of "equidistance" between India and China, he didn't accept the traditional lens of perceiving Nepal as a "buffer state." Considering the concept of a buffer as "outmoded," he redefined the geostrategic situation of Nepal. Birendra stated, "Nepal is not a part of the subcontinent. It is really that part of Asia that touches both China and India" (Shah, 1973). King Birendra's policy options were widely influenced by external and domestic obligations (Bhattarai, 2022).

The emergence of Bangladesh as an independent state and Sikkim's merger with the India altered the regional security dynamics. Kathmandu feared that India's support for the rebel Nepali Congress may destabilize the Panchayat regime (Ganguly & Shoup, 2005). One of such examples was the hijack of a Royal Nepal Airlines plane by the Nepali Congress, ferrying three million Indian rupees from the Nepal State Bank, which was reported to have been done in close collaboration with the Nepali Congress leaders in India. This was interpreted as a major example of insecurity in Nepal (Gyawali, 1989). Kathmandu was looking for ways to assert its strategic autonomy by converting itself into a Zone of Peace (Bhattarai, 2022). The proposal became Nepal's major foreign policy objective, when it was accommodated in Nepal's constitution through the third amendment on December 15, 1980. India was irritated when King Birendra decided to purchase anti-aircraft guns from China, which spurred India to impose an economic blockade on Nepal, accusing Kathmandu of violating the 1950 Treaty of Peace and Friendship between India and Nepal (Garver, 1991). After the restoration of multiparty democracy in Nepal in 1990, New Delhi adopted the "Twin Pillar" policy (engaging with the constitutional monarchy and democratic parties) until the fall of the monarchy in Nepal in 2008.

Similarly, "The Delhi agreement, which is known as the 12-point agreement between Nepal's Seven Party Alliance (SPA) and the warring Maoists, was signed in New Delhi on November 22, 2005." The 12 point agreement is understood as having replaced the first Delhi agreement. At that time, India was even engaged in the micromanagement of domestic politics (Destradi, 2012; Ghimire 2007). The

available literature shows that during Mr. Narendra Modi's tenure, the initial engagements with neighboring countries were perceived by Kathmandu as an accommodating policy. However, following the blockade of Nepal in 2015, Mr. Modi's policy was compared with Rajiv Gandhi's. Furthermore, in 2019, India published a new map that allegedly included Nepali territory (Bhattarai, 2022). At that time, although Kathmandu sought a diplomatic resolution, New Delhi paid no attention to Nepal's diplomatic moves. Rather, New Delhi went on to construct and inaugurate the road to China through Lipulekh. Indian army chief General MM Naravane directly stated that Nepal was acting at "the behest of someone else" when Nepal objected to India's action, a clear allusion to China (Pathak & Bastola, 2022). Thus, the policy of securitization still finds expression in Mr. Modi's foreign policy when China's rise and its increasing presence in the Himalayas regions. However, such securitization dismisses an accommodative approach towards the neighbors.

3.1 Mr. Modi's Nepal Visits: Revisiting the Neighborhood First Policy

The Indian of Prime Minister Narendra Modi introduces"Neighborhood First Policy'. The main objectives of this policy was to address the evolving regional dynamics and balance China's increased financial and political engagement with India's neighbors, especially under the Belt and Road Initiative (BRI) (Aryal, 2022). The neighborhood has been central to Prime Minister Modi's foreign policy since his first term, and he has continued it in his second term. Thus, India-Nepal relations have gotten a new thrust under PM Modi, and there have been regular high-level exchanges between the two countries. Mr. Modi visited Kathmandu on August 3–4, 2014, the first Indian prime minister to visit in 17 years. Since then, he has visited Nepal five times on different occasions, which has expanded the areas of cooperation and led to an improvement in bilateral ties (Lamichhane, 2023).

Mr. Modi chose Nepal as one of the first few countries to visit since he assumed office, which signifies the importance of Nepal in India's overall neighborhood policy. He is the first foreign leader to address the Constituent Assembly of Nepal (Karki, 2022). Where he pledged a USD 1 billion line of credit to Nepal to support the infrastructure projects and said, "Nepal can free India's darkness from its electricity." "Just by selling electricity to India, Nepal can find a place in the developed countries of the world" (Roychoudhury et al., 2015). He also stated that borders must be bridges rather than barriers, as they are ultimately the gateways to free trade and commerce. He also participated in *puja* at the Pashupatinath temple and offered 2,500 kg of white Indian sandalwood to the Pashupatinath temple. Similarly, to attend his first SAARC summit, Modi visited Nepal for the second time in 2014, where he inaugurated an India funded high tech trauma care center as

part of a goodwill measure and also flagged off the Kathmandu-Delhi bus service (Pyakuryal & Chaturvedi, 2016). In order to deepen ties Mr. Modi presented a HAL Dhruv advanced helicopter to the Nepali armed forces (Jain, 2014). During that visit, Mr. Modi also urged Nepali lawmakers to meet the January 2015 deadline for writing a constitution based on consensus in order to accommodate the views of all sections (Bhattarai, 2018).

In the same way, Indian Prime Minister Modi paid a state visit to Nepal from May 11 to 12, 2018, at the invitation of Prime Minister KP Sharma Oli. That was his third visit to Nepal Mr. Modi came to Nepal a month after he rolled out the red carpet for his Nepali counterpart, Mr. Oli, in New Delhi from April 6 to 8, 2018. The main purpose of Modi's visit was to restore his image and goodwill, which had dwindled in Nepal mainly after the unofficial Indian economic blockade in 2015 (Dahal, 2017). During this time, he also visited Janakpur and Muktinath and attended civic receptions in Kathmandu and Janakpur (Kaura & Rani, 2020). With a view to further strengthening the close religious and cultural ties between the two countries and peoples, the two Prime Ministers launched the Nepal-India Ramayana Circuit, connecting Janakpur, the birthplace of Sita, with Ayodhya and other sites associated with the epic Ramayana. In Janakpur, the two Prime Ministers flagged off the inaugural of direct bus service between Janakpur and Ayodhya (Chaturvedy, 2019). They laid the groundwork for the 900 MW Arun-III hydroelectric project in Nepal. Further, they emphasized the need for regular convening of bilateral mechanisms, including the Nepal-India Joint Commission at the level of Foreign and External Affairs Ministers, to review the overall state of bilateral relations and for the expeditious implementation of economic and development cooperation projects (Mishra, 2020). They expressed hope that the operationalization of the project would help enhance cooperation in the generation and trade of power between the two countries.

Similarly, the Indian Prime Minister was in Nepal to attend the 4th BIMSTEC Summit; this is his fourth visit to Nepal since he assumed office. He met Prime Minister Oli on the sidelines, and they held a detailed review of all aspects of the bilateral relationship, including ways to further deepen economic and trade ties (Nga & Thuong, 2021). Nepal and India signed an agreement to study the feasibility of a rail line linking Raxaul (Bihar) with Kathmandu. Therefore the joint statement issued by the two governments in April 2013 on expanding rail linkages, the pact comes hot on the heels of an agreement with China (Subedi, 1994). On June 22, Nepal and China signed a memorandum of understanding (MoU) on cooperation for railway connectivity. It paves the way to extend the Chinese railway network that is expected to reach Kerung soon and reach Kathmandu via Rasuwagadhi

(Chand, 2020). Prime Minister Narendra Modi and his Nepalese counterpart K P Sharma Oli jointly inaugurated a 400-bed Nepal-Bharat Maitri Pashupati Dharamshala—a rest house for pilgrims—built with Indian assistance in Kathmandu. Prime Minister Modi concluded his visit after prayers at the Pashupatinath temple (Times Now Digital, 2018).

After his re-election in 2019, Indian Prime Minister Modi made his fifth visit to Nepal on the occasion of Buddha Purnima, the celebration of the birth of Gautam Buddha, on May 16, 2022 (Oxford Analytica, 2022). It can be inferred that New Delhi has recognized the need for better bilateral ties with Nepal, which in the recent past had soured due to border disputes induced by territorial claims and counterclaims, resulting in months of diplomatic non-communication (Ghimire, & Pathak, 2022). During this visit, Mr. Modi also laid the foundation stone of the India International Centre for Buddhist Culture and Heritage in the Lumbini Monastic Zone. Further, six memorandums of understanding were signed by Indian and Nepali counterparts (My Republica, 2022). Interestingly, earlier on the same morning of Mr. Modi's visit, Nepal's Prime Minister Mr. Sher Bahadur Dueba inaugurated the Gautam Buddha International Airport in Bhairahawa, the second international airport in Nepal, built with Chinese assistance just 18 kilometers away from Lumbini. However, Modi's choice to land via helicopter on a helipad in Lumbini and not at the newly constructed airport signaled India's hesitance to endorse China's infrastructural development in Nepal (Ghimire & Pathak, 2022). It is clear that India is not happy with the Chinese infrastructure and development presence in the Terai region of Nepal (ibid., 2022). Though, Modi's religio-cultural diplomacy attracts the Hindu religious forces in Nepal.

3.2 India's Response to Nepal's New Constitutions, EPG Report and Kalapani Border

India played a crucial role in the aftermath of the 2015 Nepal earthquake by helping Nepal in rescue and relief operations as well as reconstruction activities. However, perhaps the biggest highlight of India-Nepal relations in recent years has been the unofficial blockade of 2015. Possibly, it was because Nepal could not address the issue of Madhesi political representation and rights in the new constitution (Vindegg, 2022). The blockade had a significantly adverse impact on India's image in Nepal and South Asia at large. Nepal-India ties suffered a blow after India failed to welcome Nepal's constitution. During that time, Indian opposition parties criticized Mr. Modi's foreign policy, claiming that China was increasing its influence in Nepal as a result of its failure. When Mr. Modi visited Nepal in August 2014 first time he was warmly welcomed by the Nepali people. While addressing Nepal's parliament,

Modi stated that, since the day he entered the Prime Minister's office, strengthening relationships with Nepal had been one of the top priorities of his government (Bhattarai, 2018). However, the blockade period saw several large scale protests in Nepal against India as the masses were impacted by critical shortages of medicines, fuel, and other necessities (Gambhir, 2020). The blockade of 2015 was believed to be primarily a result of Nepal's growing proximity to China and new constitution was promulgated without consulting New Delhi (Gurung, 2017). Because of Indian blockade Nepal turned to China to build cross-border rail, upgrade the nine road links between Nepal and Tibet, and build a dry port at Timure to facilitate trade (Murton, 2020). Not only this, in 2018, Nepal and China held their first joint military exercise, and in the same year, Nepal decided to skip the Bay of Bengal Initiative for Multi-Sectoral and Technical Cooperation (BIMSTEC) military drill that was to be held in India (Gambhir, 2020).

The next important issue in Nepal-India relations is the EPG report. The EPG, which was formed in January 2016, had the mandate to review various aspects of bilateral relations, including the Nepal-India Friendship Treaty of 1950. There were four members each from the Nepali and the Indian sides in the group (Timalsina, 2019). The report of the eight-member Eminent Persons' Group on Nepal-India Relations (EPG-NIR) was finalized in mid-2018, at the end of its two-year term in June. According to an EPG member from Nepal, the EPG has done a notable and meticulous job of analyzing each aspect of the bilateral relationship, including the treaty of 1950 (Suwedy, 2022). The report is confidential until it is presented to the prime ministers of both countries. However, Indian Prime Minister Modi seems reluctant to receive the report. The delay in receiving the report has raised suspicion and concern over India's intentions to implement it. Prime Minister of Nepal will receive the report only after it is presented to the Indian Prime Minister (Sharma, 2023). The formation of the EPG was not in the interest of India, the strong opposition in Nepal regarding the Treaty of Peace and Friendship of 1950 was a reason for its formation.

Nepal's Prime Minister, Man Mohan Adhikary, during his New Delhi visit in April 1995, insisted on a major review of the 1950 peace and friendship treaty. Nepal has big concerns over some articles of the 1950 treaty with India, such as the unregulated open border, the provision regarding the import of ammunitions from/through India, and equal national treatment for people of both countries (Shah, 2017). Neither the 1950 treaty nor any other treaty between the two countries has any measures for the regulation of the Nepal-India border. Citizens of both countries have been freely moving into each other's territory from any point. If Indians come to Nepal in droves, the country could find itself inundated by Indian immigrants (Sagar, 2020). Thus,

the EPG report is very important for Nepal because "it not only reviews the previous status of bilateral relations, but also perceives the new dynamics of the future." Further, the report has called for widening the scope of a replacement treaty, so there are probably many suggestions that will be acceptable to both sides (Mitra, 2019).

Similarly, the Nepal-India border dispute in the Kalapani region has been another significant issue of Nepal-India relations in recent days. India and China agreed on a trade and transit route via Lipu Lekh, as revealed on May 15, 2015, during the official visit of the Indian Prime Minister to China (Aryal & Pulami, 2023). Nepal immediately protested to this agreement by sending diplomatic notes to China and India. This incident makes the Kalapani border dispute quite complicated (ibid, 2023). Furthermore, in November 2019, India unilaterally issued a new political map that included the Kalapani area, and on May 8, the Indian Defense Minister inaugurated an 80-kilometer link road from Pithoragath district to Kailash Mansarovar, near the India-Nepal-China tri-junction, ignoring Nepal's diplomatic notes (Bhusal, 2020).

These all-unilateral actions by India forced Nepal to issue a diplomatic note to the Indian government and summon the Indian ambassador to Nepal. However, India adopted a strategy of 'avoidance" (MoFA, 2020). This is why, on May 18, 2020, the cabinet approved a new political map showing Limpiadhura, Kalapani, and Lipulek as parts of Nepal's territory (Sagar, 2020). In June 1952, 18 Indian military check posts were installed on the Nepal-China border during the premiership of Matrika Prasad Koirala. However, Prime Minister Kirti Nidhi Bista got 17 of the 18 checkpoints removed on April 20, 1969, but the one in Kalapani remained (Aryal & Pulami, 2023). The Kalapani area had been controlled by the Indian forces since the 1962 Indo-China War, which Nepal was not able to remove. Since then, India has controlled these areas and prevented Nepal's access (Cowan, 2015). The region has strategic importance, and the new road is now one of the quickest links between Delhi and the Tibetan plateau. This is also an important route for thousands of Hindus who trek across the border with China every year to visit the sacred Mount Kailash and the Mansarovar (Chakrabarty & Sadhukhan, 2020). Nepal has consistently requested that this dispute be settled through diplomatic dialogue between the two countries. Diplomatic dialogue is the only way to resolve boundary issues, in the global history of border disputes shows that they are settled through mutual negotiation based on evidence and pragmatism.

3.3 US-China Growing Engagement with Nepal and India's Position

The offensive realist John J. Mearsheimer presents a theory of offensive realism; he uses theory to predict the future of great power politics in the 21st century. The

theory shows pessimistic scenario emerging with China's rise and the likelihood of an inevitable clash between the U.S. and China (Khan, 2023). Similarly, according to the power transition theory, the rise of great powers is often violent, leading to cold wars, major wars, or even world wars (Yang, 2013). AFK Organski, in his 1958 book, World Politics, predicted the potential rise of China and its impact on the international security order. Thus, the rise of China has become a popular topic of discourse in scholarship about whether this development means that China is on a collision course with the United States. Thus, western powers find that the most serious threat to their supremacy comes from China (Tammen, 2008).

In this scenario, over the last few years, the rivalry between the U.S. and China has become more visible in Nepal. The two countries' growing competition in world politics is reflected in Nepal too. Their rivalry became more visible while the U.S. tried to get the MCC Compact Agreement ratified through Nepal's parliament and China's overall response. These expressions amply reflect the attempts at "geopolitical maneuvering and counter-maneuvering." The United States' increasing active engagement can be seen through different policy programs, economic assistance, and high-level visits. Nepal was added to the Indo-Pacific Strategy report in June 2019 by the United States Department of Defense. U.S. officials believe that due to Nepal's presence in SAARC and BIMSTEC, it has connected itself to the Indian Ocean (Sapkota, 2020). On the other hand, a Nepal-US agreement on MCC, the Nepal Compact, also contributes to enhancing U.S. engagement with Nepal by building a 400 KV high-voltage transmission line and upgrading roads. On September 14, 2017, at the completion of four months of signing BRI, Nepal signed an agreement on the U.S' MCC project. However, the MCC-funded project in Nepal had created a great political divide during that time those who were in favor of the MCC used to say an economic grant, while those were opposing it used to say as a part of the "Indo-Pacific Strategy" to counter China's economic and strategic influence (Ranjan & Gurung, 2021).

Thus, on September 3, 2021, to seek further clarifications from Nepal, a letter with questions regarding the MCC Nepal Compact was sent by the Nepal's Ministry of Finance to the MCC's headquarters. The MCC sent an 11-page response. In its response to the questions and queries, the MCC dismissed Nepal's' doubts (Ranjan & Gurung, 2021). Further, to convince the Nepali political leadership, the MCC's Vice President, Fatema Z. Sumar, arrived in Kathmandu on September 9, 2021, and held meetings with leaders from both the ruling coalition and the opposition. Similarly, United States Assistant Secretary of State for South and Central Asian Affairs Donald Lu was visiting on November 17, 2021. Finally, the MCC Nepal

Compact was approved by parliament after the introduction of the 12-point interpretative declaration (Pathak, 2022).

Besides that, the U.S. is constantly requesting that Nepal participate in SPP programs. In July 2022, U.S. Assistant Secretary of State for South and Central Asia Affairs Donald Lu visited Nepal. This was his second visit to Nepal his visit came at a time when another American program, the State Partnership Program, had become a highly debated issue in Nepal. Due to controversy over the SPP, the government on June 21, 2022, decided not to be part of it, and on July 25, 2022, the Ministry of Foreign Affairs sent a letter to the U.S. government saying that Nepal has decided not to proceed with the SPP (Bhattarai & Pulami, 2022). Further high-level exchanges through U.S. official visits and their statements related to IPS, MCC, and SPP also increased the U.S.-Nepal engagements. The commander of the U.S. Indo-Pacific Command, Admiral Philip Davidson, visited Nepal and reiterated how Nepal has a crucial role to play in "stabilizing the Indo-Pacific region" (My Republica, 2019). Additionally, the U.S. Assistant Secretary of Defense for Indo-Pacific Security Affairs, Randall Schriver, visited Nepal in December 2019 and stated that the U.S. Indo-Pacific Strategy vision is to make Nepal strong, independent, sovereign, and prosperous. Likewise, David J Ranz, a U.S. State Department official, during his visit to Nepal in May 2019, stated that the MCC was a crucial part of the Indo-Pacific Strategy (Sapkota, 2020). On the next high-level visit, held on May 20, Uzra Zeya, the U.S. Under-Secretary for Civilian Security, Democracy, and Human Rights, who is also the Joe Biden administration's Special Coordinator for Tibetan Issues, visited Nepal. She has been an American official since Nepal's ratification of the $500 million Millennium Challenge Compact, in February 2022. She visited two Tibetan refugee camps in Kathmandu, which caught the most media attention. En route to Nepal, Zeya stopped in India, where she met with the Dalai Lama, the spiritual leader of Tibetan Buddhists (My Republica, 2022).

Similarly, Victoria Nuland, the U.S. Undersecretary of State for Political Affairs, arrived in Kathmandu to "engage with the new government". This visit came at a time when Kathmandu had a new government and the MCC project was just getting started, with more initiatives in the works (The Kathmandu Post, 2023). The key purpose of this visit is to read the mind of the new government regarding its policy toward America. Because, the U.S. still suspects that the project's development could face hindrances (The Annapurna Express, 2023). The United States also wants a commitment to democracy from the communist-led government. In addition to that, during a press conference, Deputy Minister Nuland delivered three main messages on transitional justice, American economic support, and targeting China (The Kathmandu Post, 2023).

Dean Thompson, the U.S. ambassador to Nepal, also mentioned to the media that the U.S. is interested in transitional justice. Similarly, Deputy Minister Nuland also conveyed the message of Nepal's sovereignty, saying, "Economic cooperation with neighbors, focus on protecting sovereignty," by referring to the issues addressed to China. There should be no corruption in economic cooperation with neighbors, everything should be transparent (The Kathmandu Post, 2023). After the MCC agreement, the United States increased its assistance through the American Aid Project (USAID). Deputy Minister Nuland said that America will continue to support Nepal to make it a strong economic power. She also said that America wants to invest more than one billion dollars in Nepal for the next five years (Foreign Policy, 2023).

On the other hand, five years after the agreement was signed, China has become suspicious that projects under the BRI have not progressed as desired. China believes that the failure of the projects to move forward, even after five years of the agreement, may have had a "geopolitical" effect (Jaiswal, 2023). The Chinese understand that U.S. influence in Nepal has increased with the approval of the MCC agreement. That is why, like the U.S., China is making a series of high-level visits to Nepal. Thus, China wants to convey the message of its strong presence in Nepal and its desire to make the environment conducive to implementing multifaceted BRI projects (Neupane, 2022).

Therefore, Chinese Foreign Minister Wang Yi made a three-day visit to Nepal after the MCC was ratified by the Nepali Parliament on February 27, 2022. During the visit, Mr. Wang stated that China opposed any attempt to undermine Nepal's sovereignty and engage in geopolitical games (The Diplomat, 2022). It can be believed that President Xi Jinping sent Wang Yi to Nepal as an envoy to understand Nepal's attitude toward China after the MCC approval. Similarly, on July 10, 2022, the Foreign Department chief of the Communist Party of China (CPC), Liu Jianchao, arrived in Kathmandu and held talks with all major political stakeholders (Shivamurthy et al., 2022). Likewise, on September 12, 2022, Li Zhanshu, the third-ranking member of the CPC Standing Committee, head of the Standing Committee of the Chinese National People's Congress, arrived in Kathmandu. During this visit, a six-point Memorandum of Understanding on inter-parliamentary cooperation was signed. China gives emphasis to the importance of implementing connectivity under the BRI (My Republica, 2022).

On the other hand, during the visit of Nepal's foreign minister, Narayan Khadka, to China on August 10, 2022, China announced that it would provide 800 million RMB to Nepal for the year 2022. The Chinese side assured the Nepali delegation

that the grant assistance included construction work for the second phase of the Kathmandu Ring Road and a feasibility study for the Keyrung-Kathmandu Railway, as well as support for the pre-feasibility study of the Nepal-China cross-border transmission line (MoFA, 2022). Similarly, China is constantly tying Nepal into the GSI. The Chinese have always been concerned that an Indo-US alliance and the strong diplomatic presence of Western diplomats and aid organizations in Nepal would be perceived as a threat (Ali, 2023). Through the Silk Road Initiative, China seeks to secure its strategic space in the region through increased diplomatic, economic, and political engagement, as well as countering western countries' intentions to "encircle China". China believes its ambitions for global hegemony cannot be realized without first establishing its own regional supremacy (Shah & Karki, 2023). All of this indicates that Nepal's strategic importance has increased. That is why, the U.S. and China want to create a strong strategic space in Nepal through economic and political engagements. However, their intense and growing rivalry makes Nepal's response odd. That's why Nepal has to develop its own set of strategies and policies to manage its increasing strategic implications. Leaders should convey the clear message that Nepal wants to stay away from the U.S.-China geo-strategic rivalry further, Nepal need to be frank and candid about its priorities.

3.4 Where Does India's Neighborhood First Policy Stand towards Nepal?

India's engagement with Nepal has overlapped with the United States' and China's growing engagement with Nepal. In this situation, the question arises: where does India's Neighborhood First policy stand in Nepal? How does India perceive the U.S.-China's growing engagement with Nepal and their bipolar rivalry? During the Indian governments led by the Indian National Congress, Nepal affairs used to be handled at the bureaucratic level; the Indian Embassy in Kathmandu and the Ambassador were assigned to look after Nepal, and they used to do micromanagement (Aryal, 2019). Since 1990, there were 18 bilateral visits from Nepal to India, but there were only 6 such visits from New Delhi to Nepal. However, when Mr. Modi became Indian Prime Minister, he visited Nepal to become the first Indian Prime Minister to visit Nepal after Inder Kumar Gujral in 1997.

In the last nine years, the 'Neighborhood First Policy' has been given priority in India's foreign policy (Tandon, 2016). The Prime Minister Modi has been saying that he would emphasize peaceful relations and collective economic development with South Asian neighbors (Hue, 2022). He invited the executive heads of neighboring countries to his swearing-in ceremony and visited his first south Asian country, Bhutan, and then Nepal. Similarly, while addressing the Nepali parliament,

he said that he would continue to work to make Nepal-India relations as high as the Himalayas. He further said he wanted to develop Nepal-India relations with the HIT formula-highways, information technology, and transmission lines for electricity (Bhattarai, 2022). Thus, Mr. Modi's speech in Nepal's parliament won the hearts of Nepali politicians, the general public, and the diplomatic community. It was believed that the announcement of a 'paradigm shift" in neighborhood policy and the replacement of the 'Nehru Doctrine' would bring about a transformation in India's foreign policy (Kaura & Rani, 2020). In the same way, Nepal-India bilateral relations are believed to be pursued at the political level.

Nepal and India have exchanged several bilateral visits and completed several important projects, such as an integrated check post, a cross-border petroleum pipeline, a cross border railway line, and Nepal-India cross-border transmission line, etc. (Sinha, 2021). However, some scholars argue Prime Minister Modi seems more rhetorical than realistic on the statements such as *Nepal-India relations as high as the Himalayas*, *Rotibati ka rista,* and Nepal-India relations as "*Superhit*". In contrast, the reality is different; the Modi administration imposed an unofficial blockade after promulgating the new constitution. Furthermore, India published a new political map that included Nepali territory in the Kalapani region and the construction of the road leading to Kailash Mansarovar by forcibly encroaching Nepali land in Lipulek. The Indian government has not given any reply to repeated letters for negotiations (Nayak, 2020). Additionally, the Modi government refused to accept the report of the EPG, which included experts from both countries. Because of that, trust in Nepal-India relations couldn't improve as expected. Even when Prime Minister Prachanda visited India from May 31 to June 3, 2023, India was indifferent towards most contentious issues such as the EPG report, border problems, *Agnibir,* and Gurkha recruitment.

During the state visit of Prime Minister Pushpa Kamal Dahal to India, Nepal was expected to sign a 25-year agreement for power trade; selling Nepali excess electricity to Bangladesh through Indian land; the further development of the Pancheshwor project; and the Mahakali water distribution and additional air routes. But, India wasn't generous on these issues (The Kathmandu Post, 2023). The long-term energy trade deal was a big mess for Nepal, but India postponed the signing of the agreement. This has affected Nepal's power trade expectation with Bangladesh despite Bangladeshi Prime Minister Sheikh Hasina's request to grant permission for electricity purchase from Nepal during her visit in September 2022 using Indian territory (Colley, 2023). In August 2022, a joint meeting of the Nepal and Bangladesh Energy Ministers reached an agreement to purchase 50 megawatts of electricity (The Center for Bangladesh and Global Affairs, 2023). Similarly, the 26-year-old Mahakali treaty has become uncertain again because there has not been a fresh

endeavor. The DPR of the Pancheshwar project and deciding the investment modality were also discussed during the visit of Sher Bahadur Deuba as PM.

In addition to that, the foreign secretary-level system was given responsibility for resolving the existing border problems between Nepal and India in the Susta and Lipulekh-Kalapani areas but no progress has been made (Aryal, 2022). Additionally, as flights enter into Nepal only via Simara, the route is much more crowded. Thus, Nepal has sought India's agreement to add additional routes to Bhairahwa, Nepalgunj, and Mahendranagar, but the country has failed to achieve this due to India's security concerns. India wants Nepal to fly from Nepalgunj at 15,000 feet (low altitude), which facilitates the flight of small aircrafts. However, Nepal seeks a route above 30,000 feet (high altitude). Though, Mr. Modi had made a verbal announcement to import ten thousand megawatts of electricity form Nepal in 10 years (Giri, 2023). However, the critics argue, how do Nepal-India relations become "*Superhit*" by keeping these agenda pending? They further argue, India couldn't understand the psychology of small neighbors. Thus, there is no essential distinction between the Indian Congress' Nepal policy and Mr. Modi's Neighborhood First Policy. As a result, it cannot be considered natural for an emerging power like India, whose rise needs to be more responsible and accommodative to the legitimate interests and rights of neighboring countries.

In the meantime, the U.S. and China are increasing their engagements with Nepal through MCC and BRI. Similarly, their strategic rivalry has been demonstrated in many ways. However, the India-U.S. relationship has been characterized as a global strategic partnership. The India-US strategic partnership is based on shared values, a commitment to democracy, and a rules-based international order (Duggal, 2023). Thus, India views the U.S. as a counterbalancing force towards China; therefore, Delhi is letting the U.S. keep the pressure on China (Yhome, 2019). In addition, India has always considered itself a "hegemon" in this region and believes that the entire subcontinent is one entity. As a result, India perceives any development in the region as impacting its security interests (Sahoo, 2016). Further, India believes that the rise of China will change the status quo in the Himalayan regions. So, when the Nepali government signed the Trade and Transit Agreement (TTA) with China as a result, India immediately signed an agreement with Nepal for the feasibility study of a rail line linking Raxaul, Bihar, to Kathmandu (Subedi, 1994). Thus, India seems not happy with China's presence in the Himalayan and Terai regions of Nepal (Ghimire & Pathak, 2022).

As a consequence, in today's context, too, India perceives Nepal-China's strong relations and any development in Himalaya region as problems. In conclusion, to

make Nepal-India relations *"Superhit"* as Modi said during Dahal's visit both sides should take past weaknesses as a lesson and past successes as a foundation and move forward. Further, they should create effective mechanisms to implement pending issues, which helps to build Nepal-India relations with mutual trust.

4. Conclusion

Over the past year, the U.S. and China have been competing to create strategic space in Nepal through different aid programs, security cooperation, and regular high-level visits. Thus, strategic bipolarity over America's MCC compact and China's BRI initiative overlaps India's engagement with Nepal, traditionally called a sphere of influence. During this time, India's Neighborhood First policy was unable to deliver on its economic and developmental promises in a multifaceted manner. Initially, Indian Prime Minister Modi initiated his neighborhood policy by engaging with neighboring countries and making numerous economic and developmental promises. As a result, Nepal had expected Mr. Modi's Neighborhood First policy to be accommodating. The neighborhood's first policy is a commitment to South Asia for common prosperity. But no proper mechanism was put in place to adequately respond to the region's political and security concerns. In his first tenure, Prime Minister Modi largely failed to accommodate the permissible interests of neighboring states. During his second term, his swearing-in was attended mostly by Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) leaders in 2019, which swiftly sent the message that India's priority was BIMSTEC over SAARC. As a result, the expectations and aspirations, particularly of the small South Asian countries in SAARC, have been clearly shattered. In such an unfavorable situation, India's South Asian neighbors are also lured by China's Belt and Road Initiatives. Thus, China and the U.S. have taken advantage of the deteriorating relations between India and its neighbors.

In the case of Nepal, most of the Indian governments follow the Nehru Doctrine; however, the Gujral Doctrine displays an accommodating policy. The same expectation was from Mr. Modi's Neighborhood First policy. At the beginning, Indian Prime Minister Modi was able to send a positive message towards Nepal; however, during the promulgation of the new constitution, Modi expressed his displeasure and even imposed an unofficial blockade. Because of his coercive policy, Nepal-India relations went down and are still suffering from a lack of trust. On the other hand, sensitive issues such as the unequal treaty of 1950, Gurkha recruitment, the Eminent Persons' Group (EPG) report, the Kalapani border dispute, and the mural of an unbroken India with some parts of Nepal painted in India's new parliament are still unresolved issues. The EPG was formed for damage control

after its unofficial blockade severely damaged India's image. Thus, over the last nine years, the Neighborhoods First policy not only failed to attract Nepal, but also allowed China and the U.S. strategic space in its backyard. India is the largest and most populous country in South Asia; it should inspire South Asian countries to walk together and share prosperity in order to achieve their goal of becoming global powers. Instead of securitizing its neighbors, it is best to build a web of "dense interdependencies." Thus, mutual trust and cooperation are the only ways to improve relations. To make the Neighborhood First Policy effective, the spirit of Prime Minister Narendra Modi's speech to Nepal's Constituent Assembly and his predecessor Atal Bihari Vajpayee's popular statement that "relations between Nepal and India are higher than the Himalayas and deeper than the ocean," should be realised.

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Conflict of Interest

The author's declared no conflict of interest.

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Technologies and Innovations for Production System in Agriculture: National Policy Provisions and Implementation in Nepal

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Abstract

Nepal's Agriculture has rapidly embraced the concept of development and assessment since the 1960s. However, the intricacies of the sector present an ongoing challenge in identifying the necessary policy actions to foster the evolution of agricultural innovation and technologies. This study aims to review policy provisions concerning agrarian technologies and innovations that stimulate the production system. Additionally, it identifies issues and gaps, formulating potential policy solutions. The research followed a comprehensive three-step process: firstly, listing and reviewing 54 agricultural policies, and 32 acts of Nepal using a set of thirteen indicators. After that, an assessment of implementation status was done. Then consultation and validation of findings were conducted with the experts in the workshops. The findings contribute to a better understanding of policy implementation and the promotion of sustainable agricultural practices. The study found that while many policies aimed to improve agricultural production and productivity, they lacked actual measures to support increased production, such as assisting with essential inputs like labour, capital, and complementary materials. Additionally, it revealed that approximately 9% of agricultural acts and 54% of policies included provisions for production and management system technologies and innovations. However, no policy provisions for developing production technologies were found for "source seed production" and "to conserve and utilize local resources". The study identifies that the current resource allocations for innovative production systems and management technologies are inadequate, particularly in areas like climate change, food safety, nutrition, conservation, biotechnology, and mechanization.

Keywords: Crop management, Indicators, Innovation, Resource Allocation

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कृषिमा उत्पादन प्रणालीको लागि प्रविधि तथा नवप्रवर्तनः नेपालका राष्ट्रिय नीतिका प्रावधानहरू र कार्यान्वयनको अवस्था

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सार

नेपालको कृषि क्षेत्रले सन् १९६० को दशकदेखि नै विकास र मूल्याङ्कनको अवधारणालाई द्रुत गतिमा अङ्गीकार गरेको छ। परन्तु, यस क्षेत्रका जटिलताहरूले कृषि क्षेत्रमा नवीनता र प्रविधिहरूको विकासलाई बढावा दिने आवश्यक नीतिगत कार्यहरूलाई पहिचान गर्न निरन्तर रूपमा चुनौती प्रस्तुत गरेका छन्। यस अध्ययनको उद्देश्य भनेको कृषि प्रविधि र नवप्रवर्तनसम्बन्धी नीतिगत प्रावधानहरूको समीक्षा गर्नु हो । साथै, यसले नीतिगत समाधान पत्ता लगाउनका निम्ति नीति खाडल र अन्य समस्याहरूको पहिचान पनि गरेको छ। यस अनुसन्धान तीन बृहत् चरणमा गरिएको थियो । पहिलो चरणमा, १३ विभिन्न सूचकहरूको प्रयोग गरी ५४ वटा कृषिसम्बन्धी नीति र ३२ कृषिसम्बन्धी ऐनको समीक्षा गरिएको थियो भने त्यसपछि नीतिहरूको कार्यान्वयनको अवस्थाको मूल्याङ्कन गरिएको थियो । यसबाट प्राप्त नतिजाहरूलाई प्रमाणीकरण गर्नका लागि विज्ञहरूसँगको कार्यशाला आयोजना गरिएको थियो । यस अध्ययनले नीति कार्यान्वयनलाई बुझ्न मद्दत गर्नुका साथै, दिगो कृषि अभ्यासलाई प्रवर्धन गर्नेछ । अध्ययनले के पत्ता लगायो भने धेरै नीतिहरूले कृषि उत्पादन र उत्पादकत्व सुधार गर्ने लक्ष्य राखेका थिए, तर ती नीतिहरूमा उत्पादन वृद्धि गर्न अत्यावश्यक हुने श्रम, पुँजी र पूरक सामग्री जस्ता निवेशहरूमा सहयोग गर्ने प्रावधानहरू थिएनन्। यस अध्ययनले ९ प्रतिशत कृषि ऐनहरूमा र ५४ प्रतिशत कृषि नीतिहरूमा उत्पादन र व्यवस्थापन प्रविधि र नवप्रवर्तनबारे उल्लेख गरिएको भेटेको छ। तर कुनै पनि नीति र ऐनमा स्रोत बिउ उत्पादन र रैथाने स्रोतहरूको संरक्षण र उपयोग सम्बन्धमा उल्लेख गरिएको भेटिएन । समग्रमा, यस अध्ययनले खास गरी जलवायु परिवर्तन, खाद्य सुरक्षा, पोषण, संरक्षण, जैविक प्रविधि र यान्त्रिकीकरण जस्ता क्षेत्रमा नवप्रवर्तनकारी उत्पादन तथा व्यवस्थापन प्रणालीका प्रविधिहरू अपर्याप्त रहेको देखाएको छ।

Keywords: Crop management, Indicators, Innovation, Resource Allocation

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1. Introduction

In Nepal, a wide array of policies, strategies, and acts has come into action to enhance the agricultural sector. The past several years has witnessed flare-up evidence of the formation of agriculture and related policies and acts; as the nation has emphasized agriculture since the 1960s (NPC, 1956). The diversity of these policies is notable, covering a broad spectrum of areas ranging from foreign investment and agribusiness promotion to food security, climate change, irrigation, seed development, mechanization, land use, agro-biodiversity, and livestock breeding, among others. For instance, some policies like the Agricultural Development Strategy, 2015-2035 and the Fifteenth Plan, 2019-2024 are instrumental policies that currently guide Nepal's agricultural sector and provide a framework to guide agricultural development efforts. ADS, is a comprehensive plan to promote sustainable and commercial agriculture in Nepal, aiming to increase productivity and farmers' income. The Fifteenth Plan, outlines the government's priorities, including strategies to enhance agricultural productivity, ensure food security, and address challenges in the agriculture sector. Understanding these wide arrays of policies is vital in comprehending the comprehensive framework for agricultural development in Nepal and identifying opportunities for further improvement and effective implementation. While Nepal's policies cover a broad spectrum of areas related to agriculture, there is a need to assess how effectively they address and implement production management technologies to enhance agricultural productivity which largely depends on the successful integration and adoption of efficient production management technologies.

Therefore, production systems and crop management technologies are pivotal drivers of increased agricultural productivity, profitability, and enhanced crop quality while ensuring efficient utilisation of critical farm resources such as labour, soil, water, energy, and costs. These technologies encompass a wide range of strategies, including crop, soil, pest, and water management approaches, contributing to sustainable agriculture by promoting resource conservation, minimising environmental impacts, and fostering resilience to changing climate. Notable examples of these technologies include precision and protected technologies, conservation tillage, integrated soil fertility management, integrated pest management, water harvesting, and management techniques, as well as mechanization technology for planting, weeding, and harvesting. Although some agricultural policies in Nepal briefly mention these technologies and acknowledge their importance, there is a need for a more robust and inclusive approach to incorporate them effectively into the agricultural development framework.

As agriculture has traditionally been the most significant source of food, improvements in technology and infrastructure have brought the evolvement of contemporary industries; from manufacturing to services, which are now more frequently traded across international borders. Nepal has observed an unusual pattern of structural transformation in recent decades in which agriculture contracts and manufacturing peaks prematurely before declining. Poudel & Wagle, (2019) claim that this is due to the drawback of policy discontinuity and armed conflict after the introduction of liberal economic policy in 1990. In a recent study, Khanal et al. (2020) emphasise that most policies and legislation implemented in Nepal have followed a top-down and supply-driven approach, prioritising the relationship between technological inputs and outputs. This approach lacks active involvement from local communities and stakeholders, neglecting the benefits of a bottom-up strategy that considers the comparative advantage and unique characteristics of different ecological zones, particularly in terms of land management. It is evident that policy factors significantly impact the dynamics of productivity growth, and a more inclusive approach involving local communities and stakeholders could lead to improved outcomes in agricultural sectors.

According to Joshi & Joshi (2021), understanding the governance structure and processes, governing policy formulation and implementation is of utmost importance. However, the available information suggests that existing policies in Nepal often face challenges in meeting their targets and provisions during project design and implementation (Timsina et al., 2023). To enhance production system technologies and innovation, examining the relationship between community-based institutions for agriculture governance become vital, which can provide valuable insights for decision-making. In Nepal, the close association between agriculture and the national economy underscores the significance of integrating research and innovation into policies, as it plays a crucial role in supporting and guiding adaptation efforts within the sector.

Hence, the main objective of this paper was to identify and analyse key agricultural policies about production and management research and innovations in Nepal. Additionally, we evaluate the extent to which these policies align with priority, needs, and targeted goals. Furthermore, we aim to examine the formulation and effectiveness of the implementation of production system-related policy provisions in Nepal's agriculture. Ultimately, we aim to provide recommendations to enhance policy outcomes and promote sustainable agricultural development practices.

2. Methodology

An incremental strategy was used to assess agricultural policies and acts. A list of different national agricultural policies documents (54) was taken from related ministries and acts (32) were collected from the official website of the Nepal Law Commission. The study mainly focused on production and management technologies generated by the Nepal Agricultural Research Council (NARC) because NARC is primarily mandated for conducting agricultural research in Nepal and most of the agricultural technologies are developed by NARC. Likewise, the study covered only the federal-level policies not the provincial or local government. The details of the policy documents reviewed are given in Annex 1 and 2.

Secondly, policy documents were chosen for review and assessment through an interactive conversation with policy experts (policies, strategies, and visions, as well as acts relevant to R&D and Innovations in production system technology and management). The expert consultation was used to identify a total of 13 indicators (which are listed in Annex 3) to define the policy provisions for production system technologies and innovation in agriculture. Further, the information was also collected from the 29th National Summer Crop Workshop, and different provincial review workshops organised by NARC in 2023 with the participation of different stakeholders where production management-related technologies were validated.

Finally, the third step involved evaluating the implementation's performance, considering many factors, including organisational, investment, legal, and human resource considerations.

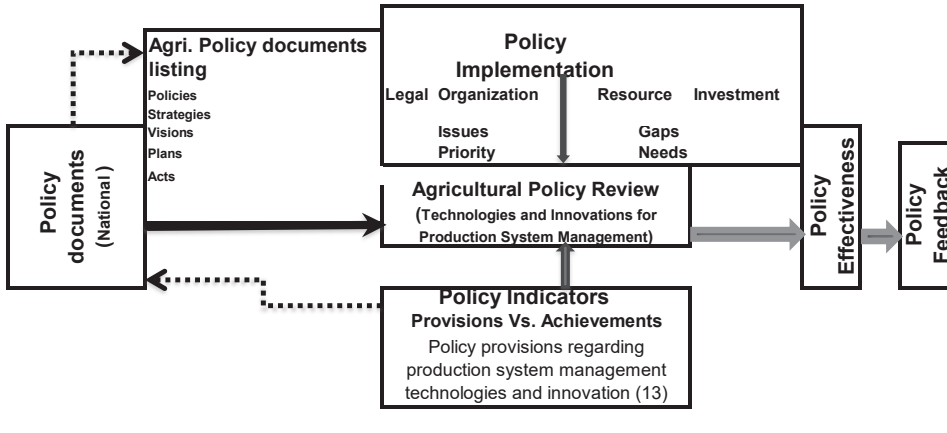

Figure 1: Conceptual framework for policy listing, review, and assessment (adapted from Timsina et al., 2023)

3. Results and Discussion

Based on the indicator (Annex 3) created to review the study, out of the selected, 54 agriculture-related policies (Annex 1), only 54% of them made provisions on production system management, technologies, and innovations. Similarly, among the 32 acts (Annex 2) that were analysed, only 9% of them included provisions related to production management technologies and innovations.

Table 1: Detail analysis of production management system technologies and innovations in different policy documents

Reviewed Documents	Overall provisions of policies on production system technologies		
	Excellent	Good	Fair
Policies: (54)	0	0	30
Acts: (32)	0	0	3

Note: Excellent: clearly explained with indicators; Good: specifically explained; Fair: broadly explained; Out of 54 policies and 32 acts, only 30 policies and 3 acts were reported about production management technologies respectively

Based on the evaluation of the study, it was found that most of the policies and acts were explained in a "fair" manner. They mentioned the topic of production system technologies, but the explanations were broad and lacked specific detail according to the criteria set by the indicator in the study. Among the 54 policies and 32 acts, 24 policies and 29 acts did not include provisions related to production system technologies as specified in the indicators. Table 2 comprehensively overviews of various agricultural indicators, their corresponding frequencies, and quartile classifications.

Table 2: Policy provisions and their priority for indicators related to production and management technologies

Indicators	Frequencies	Quartiles
Productivity and production improvement	18	4
Farm mechanisation and modernisation	11	4
Pesticides and soil health	7	4
Quality improvement technologies (nutrition and food safety)	5	3
Climate resilience, adaptation, risk reduction and mitigation	5	3
Supplementary technology development and management	4	2
Application of biotechnology, and nano-technology for the promotion of agricultural technology and management	4	2

Indicators	Frequencies	Quartiles
Precision agriculture technologies	4	2
Public-private partnership for improvement of agricultural technologies	4	2
Protected agriculture technologies	3	1
Tissue culture	2	1
Production of sources seeds breeds and other planting materials	0	0
Conservation and utilisation of Indigenous/local resources/ materials through both participatory and conventional breeding	0	0

The fourth quartile contains indicators with the highest frequencies, including "productivity and production improvement", "farm mechanisation" and "pesticides and soil health", indicating their highest prevalence in the policy documents, while, indicators such as "production of sources seeds breeds and other planting materials" and "conservation and utilization of indigenous/local resources" have the least policy alignment with zero frequency, implying they were not reported in the documents that were reviewed. The detailed provisions of policies and acts regarding policy indicators are provided in Annex 4 and 5.

3.1 Policy Provisions, Implementation, and Gaps

3.1.1 Production, Productivity, and Quality Improvement Technologies

Out of the 54 policies examined, approximately 22 have acknowledged measures to improve agricultural production and productivity. However, the majority of these policies have only scratched the surface, offering limited details concerning the measures to increase production. These measures include authorising assistance for labour, capital, and material inputs. As, productivity growth in agriculture can be attributed to the adoption of technology and changes such as farm exit and consolidation, which lead to the reallocation of resources towards more productive farms (Thi & Kimura, 2013; Kimura & Sauer, 2015). In the context of Nepal, it was found that different policy documents have shown a recognition of the importance of utilising technologies to enhance agricultural production. For example, the National Coffee Policy (2003) has acknowledged the development of modern and improved technologies for the promotion of coffee production. Similarly, National Science, Technology and Innovation Policy, 2019 briefly mentions technology development to enhance productivity and support economic growth. Among the 32 acts reviewed, only 3 made mention of crop management technologies and innovations. Notably, The Right to Food and Food Sovereignty Act, of 2018 vaguely refers to expanding the sustainable use of and access to improved technology in

food production. Similarly, the NARC Vision, 2011-2030 outlines a comprehensive plan to develop appropriate technologies for various agricultural aspects, such as low-cost solutions, climate resilience, water conservation, and resistance to drought and pests. Additionally, it aims to capitalise on indigenous technology and knowledge originating from farmers, agro-veterinarians, and others involved in agriculture-related economic activities. The vision emphasises the development of technologies for early and full-season pollinated varieties (OPV) of maize to enhance maize productivity. It also aims to create proper moisture conservation technologies applicable to both upland and lowland rain-fed cropping systems. Overall, the NARC Vision, focuses on utilizing diverse technologies to enhance agricultural production effectively.

In Nepal, the Nepal Agricultural Research Council (NARC) plays a pivotal role as the central institution for the development of agricultural technologies. A substantial portion of technology development has been observed to be carried out through NARC, leading to significant progress in implementing various production and management technologies which are grouped into three categories: yield-enhancing technologies, cost and resources-saving technologies, and quality-enhancing technologies. Where yield-enhancing technologies include the successful development of crop varieties tolerant to drought, floods, extreme heat, colds, pests, and diseases, some of the important examples include drought-tolerant rice varieties (e.g. Sukha-1, 2, 3), flood-tolerant rice (e.g. Swarna Sub-1, Shamba Sub-1), disease-resistant wheat, and high-temperature-tolerant maize hybrids. Likewise, the cost and resources-saving technologies comprise zero/minimum tillage, surface seeding, crop residue management, nutrient management, and precision maize transplanters. Similarly, quality-enhancing technologies encompass micronutrients-rich crop varieties (e.g. Zinc rich wheat, lentil), a low-cost solar dryer for drying high-value vegetables, fruits, meat, and fish products, as well as a millet thresher for reducing the drudgery of women and promoting traditional nutrient-dense crops (Gauchan et al., 2022).

Furthermore, NARC has developed other crop and natural resource management (NRM) technologies. These include digital soil mapping (DSM) for efficient nutrient application based on soil attributes, disease and pest management technologies applied in crops such as fall army-worm management in maize, and *Tuta* management in tomato. Additionally, NARC has contributed to the advancement of inter-cropping, multi-cropping, crop rotation, and agro-forestry technologies, tissue culture technologies for disease-free seeds and seedlings, and the application of biotechnology and nuclear technology in agriculture (Timsina, 2023). Similarly, Gairhe & Paudel (2019) reported about 19 major production technologies in the

fisheries sector and 26 major such technologies in the livestock sector was developed by NARC until 2018.

However, farmers' ability to adopt new technologies is often constrained by factors like limited access to information, finance, and labour, especially among smallholders in tropical regions (Barrett et al., 2004). Policies should be developed considering farmers' adoption capability to effectively distribute technologies in Nepal's farming. Project and policy interventions are essential to encourage the adoption of high-return technologies.

3.1.2 Climate Adaptation and Risk Reduction Integration in Agricultural Policies

The policies formulated over the last decade show a growing awareness of climate change in agriculture but only a few have acknowledged tactics for both adaptation and mitigation of climate-resilient agriculture and risk reduction technology. The first Climate Change Policy for Nepal was formulated in 2011. Before these specific climate change policies, sectoral policies hardly ever addressed climate change and resource usage issues. With climate adaptation considered a bigger problem than climate mitigation, most of the climate change policies focus more on climate adaptation rather than mitigation (Baniya et al., 2021). NARC Vision (2011-2030) has emphasised the promotion of climate-friendly agricultural technologies to adapt to climate change and contribute to sustainable agriculture development. Likewise, the Agriculture Development Strategy (2015-2035) has highlighted building resilience for farmers to climate change as well as the adoption of good agricultural practices (GAPs) for food safety and risk in agriculture and nutrition security. It further mentions establishing climate information and weather indexation systems designed to provide information to farmers and build capacity for crop yield forecasting based on weather indexation. The strategy also emphasizes promoting campaigns to farmers on agricultural insurance products which include the Weather Based Crop Insurance Scheme (WBCIS).

Similarly, the Fifteenth Plan (2019-2024) acknowledges the introduction of resilient technology to combat climate change, including the use of an early warning system, for preparation and adoption of the climate adaptation process. In addition, the revised Climate Change Policy, 2019 highlights the development of technologies to protect crops from climate-induced disasters and improve agricultural productivity. It has further mentioned making preparedness and response effective by developing monitoring, forecasting, and early warning systems for various disasters. Similarly, the National Science, Technology and Innovation Policy, 2019 has conceded the inclusion of scientific research and technology development for climate change

adaptation, and disaster risk reduction. As mentioned by Timsina et al. (2023) even though the policy provisions have resulted in minimal or limited development of crop management technologies to combat the negative effects of climate change, the main focus of NARC (Nepal Agricultural Research Council) is primarily on the development of climate resilient varieties.

3.1.3 Precision Farming (PF)

Precision agriculture is a management system based on information and technology that analyses the spatial and temporal variability within the field to maximize production, profitability, and environmental sustainability. The relevance of PF will rely on the co-evolution of technological, economic, and policy-related elements only with the availability of affordable tools to the farmers can they make informed management decisions and reap the potential for significant economic and environmental advantages. In contrast, the current usage of PF is moderate and (for the most part) is practised at larger, highly capitalized farms in developed nations (Griffin et al., 2018; Finger et al., 2019; Shrestha & Khanal, 2020).

In Nepal, there are some precision agriculture technologies used by government institutes and smart farmers. The technologies include; greenhouse monitoring systems, sensor-based temperature and relative humidity management by the use of mobile apps for greenhouse, soil-less farming (hydro and aero-ponics, the use of drones for spraying micro-nutrients and pesticides, vegetable and flower seedling production using hi-tech structures, apps controlled hydroponics systems (Atrya et al., 2020). Poudel et al. (2023) while examining one of the precision agriculture technologies: Laser-assisted Land Levelling (LLL), suggests that, based on the heterogeneous demand seen across different farm size quantiles, different policy instruments and rural development strategies needed for small and large farms. However, policy analyses showed that approximately 7% of the total policies mentioned PF, with the Irrigation Policy (2004) acknowledging updating Geographical and Managerial Information Systems (GMIS) at every level of implementation for the irrigation program. The National Agricultural Policy, 2004 has provision to establish a survey/surveillance system to assess the impact of excessive rains, droughts, diseases, insects, and other natural calamities and mobilize agricultural reliefs. Spatial mapping of soil has already been developed by NARC, likewise, spatial and temporal mapping of disease and pests or the field moisture could be a valuable policy instrument for early diagnosis and management strategies. Land pooling has also been a priority of the National Agricultural Policy, 2004 as well as the Agriculture Development Strategy 2015-2035, implemented through the Prime Minister Modernization Project (PMAMP), which could be

considered as precision farming targeting efficient utilization of resources. Although PF is profitable and cost-effective, it has some issues in implementation in the context of Nepal, which include lack of technical manpower and advanced technology, higher initial investments and maintenance costs, blanket approach for structure design and construction in terai and hills may not be appropriate (Atreya et al., 2020).

Similarly, ADS has explicitly focused on launching agricultural market information and ICT products for market intelligence, it has also acknowledged the promotion of Information Communication Technology (ICT) in agricultural extension. Likewise, the Fifteenth Plan, 2019-2024 has highlighted the inclusion of integrated and advanced ICTs in the expansion of agricultural technologies. The plan further emphasises promoting ICTs in agricultural extension services to provide information about crop forecasting, and weather information.

Kritikos (2017) traces the significant impact of agricultural policies on whether and how PF benefits the agricultural sector. The study further reveals that policymakers have recently shown an increased interest in PF because of its potential to address current issues faced by the agricultural sector. However, in the context of Nepal, we can find limited acknowledgement of PF in the policy document. Perhaps it would be safe to say that Nepal's policies should also reflect more of the involvement of PF in the agriculture sector. Implementing precision agriculture in Nepal has the potential to enhance agricultural productivity, optimise resource utilisation, and improve farmers' livelihoods. For its widespread adoption and successful implementation, a multiple-stakeholder approach, technological infrastructure, capacity development, research based on different geographical regions, and a supportive policy are necessary.

3.1.4 Supplementary Production System and Protected Agriculture Technologies

The year-round availability of water is frequently constrained in Nepal, leading to significant reliance on rainfall for the majority of crops like rice and wheat. This situation could potentially result in conflict over water resources (International Center for Tropical Agriculture et al., 2017). Given this situation, implementing supplementary technology like rainwater harvest for irrigation appears to be the most suitable approach. This paper defines supplementary production system technology as the practice of rainwater harvesting to effectively harness and manage water resources to sustain farming operations in a sustainable and resilient manner to mitigate water scarcity or drought. Our review found that only a few agricultural policies demonstrate an understanding of the importance of rainwater harvesting as

a supplement to conventional irrigation methods. The Irrigation Policy (2004) has acknowledged about development of year-round irrigation water reservoirs, rainwater harvests, and groundwater resources. Likewise, the National Agricultural Policy (2004) highlights the provision of special facilities to the target groups to build and install infrastructures of small irrigation as pedal pumps, rower pumps, sprinklers, drips, and water harvesting ponds. Also, the Agriculture Development Strategy (2015-2035) has mentioned the development of gravity piped, water harvesting, and small-scale pumped systems based on drip or sprinkler irrigation. Whereas, Climate Change Policy (2019) has an explicit provision that aims to construct rainwater harvesting ponds for groundwater recharge and their multiple uses. Technologies for storage, multiple uses, and efficient use of water will be developed and promoted in risk-prone areas and settlements considering the effects of climate change on the availability of, and access to, water. The policy also promises to protect water sources besides the development and expansion of rainwater harvesting and storage. It further emphasizes on development of water-efficient technologies to increase access and easy availability of drinking water.

Furthermore, similar to supplementary production system technology, protected agriculture technology also entails very few spaces on policy provisions. In this paper, the term 'protected agriculture technology' is used to describe the practice of establishing nurseries for plants under controlled environmental conditions (e.g. polyhouse, greenhouse). Biotechnology Policy (2006) has recognition about protected agriculture technology through private entrepreneurs, to set up laboratories, greenhouses, and nurseries with a view to producing quality and disease-free plants through biotechnology. Likewise, the Floriculture Promotion Policy, of 2013 has highlighted the establishment of flower nurseries to expand flower cultivation in different parts of Nepal.

While both supplementary production systems and protected agriculture technology offer numerous benefits, their widespread adoption in agricultural policies seems to be very limited. As a supplementary production system technology, it not only acts as an additional water conservation /management source for a consistent water supply for crops throughout the year, but it also minimizes reliance on freshwater management. Protected agriculture technology can optimise various environmental factors like extreme weather events, pests, and diseases, and improve the overall yield and quality of the crop in addition to minimising risks of farming. Hence by including such innovative approaches in policies, the government can play a crucial role in facilitating their implementation.

3.1.5 Biotechnology and Tissue Culture in Management Technologies

The significance of biotechnology and tissue culture in agriculture is paramount. These innovative approaches have opened up new possibilities for productivity improvement, disease resistance, and sustainable farming practices. The Biotechnology Policy (2006) emphasises the application of biotechnology in various areas such as bio-pesticides, bio-fertilizers, and other biotech aspects. Whereas, the NARC Vision (2011-2030) includes enhancing the screening process for quality protein maize (QPM) genotypes to improve their resistance against diseases, insects, and abiotic stresses. Marker Assisted Selection (MAS) is used in crop improvement to increase resistance to both biotic and abiotic stresses. Molecular markers are employed to enhance the characteristics of maize varieties, particularly in terms of hybrid vigour. Effective Microorganisms (EM) Technology and EM compositing are utilised to improve soil quality and overall health. Similarly, the National Science, Technology and Innovation Policy (2019) emphasizes providing support for the development and utilization of biotechnology, nanotechnology, and nuclear technology to drive agricultural sector development.

The National Seed Policy (1999) highlights the importance of conducting studies and research on biotechnology or genetic engineering specifically for genetically modified organisms (GMOs), transgenic plants, and tissue culture. The Biotechnology Policy (2006) emphasizes the use of technologies related to genetic engineering, cell culture, microbiology, biochemistry, molecular biology, and tissue culture. It encourages research on utilizing biotechnology in tissue culture for various sectors including forestry, agriculture, food grains, herbs, mushroom production, and processing systems, as well as animal and human health systems. The NARC Vision (2011-2030) promises the development of technologies using tissue and embryo culture to enhance crop productivity

3.1.6 Integration of Mechanization in Agricultural Policies

Seven of the fifty-five agricultural policies have indicated a moderate acknowledgement of mechanisation for the promotion of agricultural production. Agriculture Development Strategy (2015-2035) is the most coherent report to recognize the importance of farm mechanization, where the policy has not only promised to provide a range of mechanization options but has also assured the availability of equipment leasing services to farmers. This policy has also pledged to increase the accessibility of mechanization through awareness creation, demand stimulation, concessionary financing arrangements, capacity building, revision of regulation, tax support, pilot vouchers, and establishment of agricultural mechanisation centres in three regions of Nepal. The Fifteenth Plan (2019-2024)

also addresses the importance of mechanisation through the statement of improving and expanding agricultural mechanization through collaboration with the private sector and cooperatives based on the feasibility and need of agroecological zones.

Policies like the Agribusiness Policy (2006), National Employment Policy (2014), and National Agro-Forestry Policy (2019) have mentioned provisions of mechanisation service through modern technology, tools, and equipment. Similarly, NARC Vision has also focused on strengthening farm mechanisation operations, particularly in a rice-wheat system. The Agriculture Mechanization Policy (2014) is explicitly formulated to promote mechanisation services in Nepal. As mentioned by Shrestha (2022) almost all the policy and annual budget programs were silent on agricultural mechanisation before the declaration of the Agricultural Mechanisation Promotion Policy (2014). The finding highlights that sustainable agricultural mechanisation can be achieved only through the systematic transfer of technology to targeted farming communities and the development of human resources at all levels to address mechanisation functions, regulation, and standardisation (Shrestha 2022). The National Agriculture Engineering Research Centre (NAERC) has tested and developed dozens of agri. machinery-related production and management technologies. However, several issues have been reported due to the absence of legal documents (Timsina et al., 2022). But, the guidelines (legal document) to support agri. mechanization policy is yet to be approved.

3.1.7 The Agricultural Input-Production-Policy Nexus

Crop productivity increases with the use of improved inputs where the incentives to increase their use and adaptation are influenced by the policy (Mbithi and Huylenbroeck 2000). As previously mentioned, approximately 22 agricultural policies have emphasized improving production, including some provisions related to the management and supply of agricultural inputs like seed, fertilizer, pesticides, and farm machinery to enhance productivity. National Seed Policy (1999) emphasizes the supply of improved quality seeds for increased productivity, while the National Fertilizer Policy (2002) and Agriculture Mechanization Policy (2014) emphasize the efficient supply of fertilizer and farm machinery respectively. The Land Use Policy (2015) has provisions for the protection of arable lands and demarcation of agricultural land and the Irrigation Policy (2004) ensures year-round irrigation to the country. However, pesticides are a controversial aspect of growing food, which can contaminate soil, soil organisms, water, and food chains. Therefore, sustainable production should integrate consideration for soil health, water, food, and whole ecosystems while using inputs like pesticides, as agricultural inputs have a role in determining the soil quality on smallholder farms (Li et al., 2022). Some

recent policies, like the Agriculture Development Strategy (2015-2035), have also emphasised the adoption of an Integrated Pest Management (IPM) approach to reduce the loss of beneficial organisms and chemical contamination in soils, water, and food products. Agrobiodiversity Policy (2006), its revised version published in 2014, also supports ecological and organic production systems for the conservation and promotion of agrobiodiversity in soil, water, and ecosystems. Hence, it would be appropriate to formulate policies assessing soil, water, and food quality at the field scale and in the market and evaluate the contributions of agricultural inputs in sustainable production systems and food chains.

As per the study, the Agriculture Development Strategy (2015-2035) has addressed a pragmatic solution to fertiliser supply with soil testing and improvement services that aim to boost productivity. Similarly, the National Agricultural Policy (2004) has emphasised promoting the sale and distribution of manure, insecticides, and pesticides. Whereas policies like; the National Tea Policy (2000) and Floriculture Promotion Policy (2013) have precisely acknowledged importing chemical fertilisers, organic fertilisers, insecticides, herbicides, and pesticides from another country. Also, the National Fertilizer Policy (2002) has encouraged the use of chemical fertiliser in a balanced manner concerning required nutrients based on the soil test. On the other hand, the National Tea and Coffee Development Board Act (1999) has promised to arrange the supply of chemical fertilisers and pesticides for the farmers involved in tea and coffee farming on a small scale. Similarly, the Right to Food and Food Sovereignty Act (2018) has mentioned expanding the sustainable use of and access to environmentally friendly fertilisers, and pesticides in food production.

The Land Use Policy (2015) and National Science, Technology and Innovation Policy (2019) have mentioned the protection and management of soil, while the NARC Vision (2011-2030) has taken a step further to promote soil through- green manure/cover crops/mulching to improve or restore fertility and soil texture. It has also promised to identify and advance biological nitrogen-fixing (BNF) species to maintain soil fertility in agroforestry systems and develop conservation tillage practices to maintain soil health. However, the concern about soil improvement is still narrow among agricultural policies.

Thus, the above analysis highlights that even though increasing productivity remained one of the priorities in most of the policies, the provision of inputs like fertiliser and pesticides (which play a significant role in increasing productivity) is limited. Also, the reference to maintaining soil health in agriculture has an utmost gap across policies. In 2023, NARC has recommended balanced fertiliser doses

[Nitrogen (N), Phosphorous (P), Potassium (K), Zinc (Zn), Boron (B), and Compost] of major crops like rice, maize, and wheat to increase crop productivity and maintain soil fertility (Nepal Agricultural Research Council [NARC], 2023).

3.2 Infrastructure and Institutional Framework

To successfully promote demand-driven technology and services the Agriculture Development Strategy (ADS), (2015-2035) strives to change the structure, procedure, application, and coordination of research and extension, as well as other associated programs and institutions and also acknowledges to establish National Agriculture Research Fund (NARF), integrated with NARC: (NARF will fund action research projects to be conducted by public, private, and nongovernmental organisations to meet the demand of farmers and Agro-enterprises) to initiate in finalising the NARC Vision (2011–2030), ADS has envisioned establishment of several flagship programs like Food and Nutrition Security Plan (FANUSEP), Value Chain Development Program (VADEP), Prime Minister Modernization Project (PMAMP) to support modernisation of agriculture in Nepal (Babu & Sah, 2019). It has also commenced with the establishment of agriculture mechanisation centres in different regions of Nepal. However, the concept of functioning NARF has not been institutionalised or started yet.

On this basis, The Fifteenth Plan (2019-2024) also anticipates a substantial increase in agricultural production and productivity by introducing agricultural policies, laws, and plans in coordination and collaboration with federal, provincial, and local levels and other stakeholders. It also suggests to implement The Right to Food and Food Sovereignty Act. The Right to Food and Food Sovereignty Act (2018) has acknowledged the involvement of the Federal Provincial and Local Governments in the research and development of scientific technology for the sustainable development of agriculture.

However, government bodies (NARC, DOA, DOLS) operating under MOALD, with their national, regional, and local level networks lack the capacity and resources to meet the diversified technology and service. Despite the support of the government for encouraging the private sector to participate in research and development in Nepal, not much has been accomplished consequently leading to ineffective coordination and connections to strengthen public-private partnerships (Babu & Sah, 2019). Additionally, agriculture and forestry universities have been mandated to generate management-related technologies in Nepal.

3.3 Investment and Budget

In Nepal, about 300 million Nepalese Rupees has been directly allocated for agricultural research: to develop 15 new technologies for crops, livestock, and fisheries by the fiscal year 2022/23 (Sapkota, 2021). As NARC is a major institution in developing production system technologies, it has developed 133 projects related to the production management components which is about 34% of the total approved projects in NARC in 2022/23. This component has a sharing of 36% of the total operational budget of NARC, where operational budget comes to around 24% of the total budget in 2022/23 (NARC, 2023a) . If it is looked at the sharing of this component on the total budget, it comes to around 8.5%, including the source based seed production, which has a major share (5% of the total budget). So, the real investment on this component is very low which comes around 3.5% of the total budget (Figure 2). It is found that NARC has given priority to developing production management technologies considering pesticide and soil health, climate change, and nutrition. Conservation, biotechnology, and mechanisation are the current demands in production. However, the investment and the priority needs are not much aligned to meet the recent challenges. Timsina et al. (2023) reported that the major share of the total budget of NARC goes to breeding which comes to around 14% of the total budget that is still underfunded as envisioned in National Seed Vision (NSV) 2013-2030.

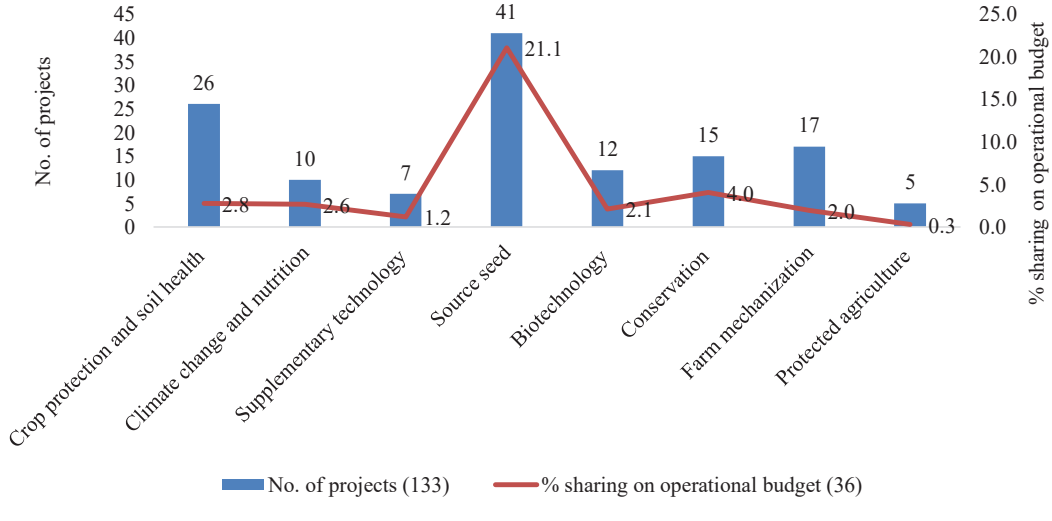

Figure 2: Number of projects and operational budget sharing regarding production management of NARC in FY 2022/23

Policies and strategies formulated to address agricultural progress in the nation through the formulation of specific budgets and incentives targeted toward the

growth of agricultural production are vital to checking the entire country's economy. Agriculture Development Strategy (ADS) closely collaborates with the Ministry of Industry (MoI) and Nepal Investment Board to enhance the investment climate, facilitate and regulate Foreign Direct Investment (FDI), and attract foreign investment in the agricultural sector. Private investment has a crucial role in the adoption of new technology. However, the investment in the agricultural sector is not sufficient and does not promote private investment, which results in low productivity, less commercialisation, and a decreasing contribution to GDP (Lamichhane, 2022). Further, FDI is important for agricultural infrastructure development, technology generation, capacity building of human resources, and increased efficiency but it must not harm small and marginalised farmers (Pant et al., 2022). Therefore, FDI in agriculture is requisite for the processing industry, technology generation, and marketing but government needs to be aware to protect the rights of the smallholder farmers. It has further ensured the integration of long-term plans with annual work and budget through amending the National Planning Commission Formation and Operation Order (2010), and promoting the formulation of the Rights to Food and Food Sovereignty legislation. Even though much of an investment has been planned there is limited private sector investment in agriculture; partially because of an unstable political scenario and the other half because of risk and lack of a conducive environment for investment. As the nation moves towards a federal political system, agricultural productivity can be accelerated through ownership of public investments by provincial and local governments (Thapa et al., 2019; Poudel & Wagle, 2019). It has been seen from the review, that most of the policy documents lack participation in decision-making related to technology development to enhance crop production. Dhungel & Shrestha (2019) describe the reason for poor technologies as the result of low investment in agriculture which has continuously affected agriculture research, degraded human resources, and lowered access of farmers to extension creating limited technologies to meet the needs of diverse clients. In contrast, through demonstration from several studies, it was found that financial and social remittances earned by migrants from rural areas have been a huge asset in financing technologcal development in Nepal (Thapa et al., 2019).

3.4 Human Resources Development

Nepal exhibits a peculiar pattern that defies the contribution of agriculture production through the development of improved technologies and trained human resources. Among the few policies that acknowledge the improvement of manpower, the National Seed Policy, (1999) has addressed preparing human resources and physical infrastructure for the development of sophisticated technologies. Floriculture

Promotion Policy, (2013) promises to provide skilled manpower and physical infrastructure to government agencies involved in technology development and technology dissemination in the flower sector. Whereas the Bee-Keeping Promotion Policy (2016) has remotely acknowledged the development of skilled manpower in NARC.

NARC is a major technology-generating organisation working in Nepal which has less than 50% scientific manpower working for research. In NARC, 239 scientific staff have been working currently and about 75% of these scientific staff have been working to develop production management technologies. The main priority of the projects (based on the involvement of the staff) in this component goes to production and productivity enhancement, and source seed production. However, other themes such as pesticide and soil health, climate change and nutritional areas, biotechnology, farm mechanisation, conversation, and protected agriculture have been gaining importance (Figure 3). The availability and allocation of scientific manpower is also not qualified enough to meet the demand.

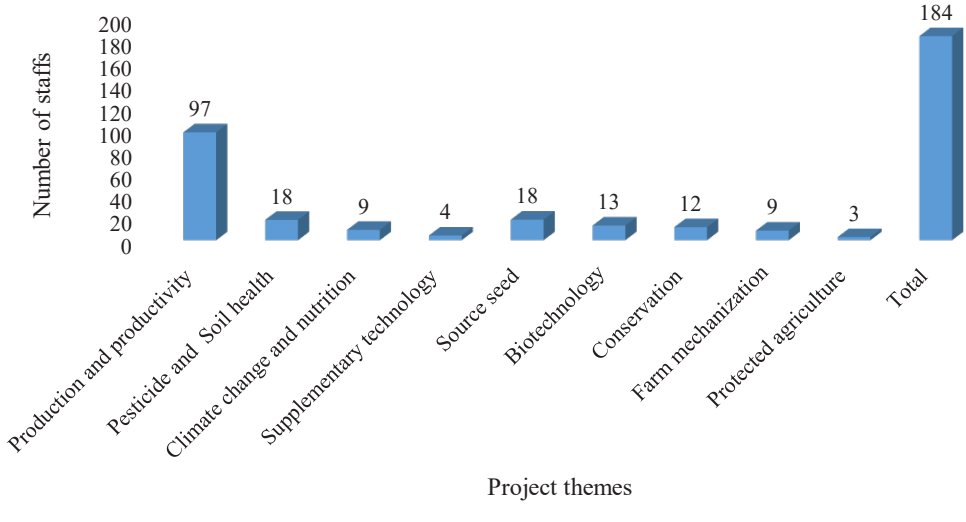

Figure 3: Number of scientific manpower engaged in different production management projects in NARC in 2022/23

4. Conclusions

The study examines how agricultural policies and acts contribute to promoting agriculture in Nepal, particularly concerning production and management technologies. It highlights existing provisions made for the promotion of agricultural

technologies, innovations, and management. It was found that most of the policies have recognised the need to enhance agricultural productivity, but lack comprehensive strategies for technology adoption and implementation. Policy revisions should integrate agricultural technologies to improve farmers' income through quality food production. Policy provisions related to the technologies for production, maintenance, and delivery of sources seeds/stocks, particularly for native and indigenous crops, livestock, and fisheries, are weak, which are critical for increasing production and productivity.

While NARC played a crucial role in developing agricultural technologies, farmers still struggle with limited resources and information access. Likewise, climate change adaptation is recognised, but greater emphasis on mitigation is needed. Also, precision agriculture has potential, but adoption remains limited. The importance of rainwater harvesting and protected agriculture technologies is understated in policies. While biotechnology and tissue culture need better integration into agricultural policies. Mechanisation is moderately addressed, requiring improved technology transfer and human resource development. The study found that the current resource allocations for innovative production systems and management technologies are inadequate to address emerging needs for increasing agricultural productivity, ensuring food security, and adapting to a changing climate. Particularly, it is the right time to focus on climate-smart technologies which are the major challenges in the present context. Recognizing the importance of human resources, institutions, and financial contributions is essential for improving production and management system technologies. Encouraging collaboration between government agencies, private sectors, and research institutions is vital for effective policy implementation. It is also important to link developed technologies with local government for their effective dissemination and utilization. An inclusive approach and enhancement can lead to resilience, productivity, and sustainable growth in Nepal's agricultural sector.

5. Policy Recommendation

The following policy recommendations are outlined based on the findings of the study.

- Policy provisions on the conservation and utilization of indigenous and local genetic resources and maintenance and multiplication of source seeds and breeds are very important while developing and scaling production technologies for their sustainable use.

- Increasing investment in agricultural research and development aligning with national agricultural strategies is vital to address emerging challenges such as food safety, climate change, soil degradation, nutrition security, biotechnology, pest management, etc.
- Develop inclusive agricultural mechanisation directives that support the testing, validation, and adoption of modern farming machinery and technologies considering technology transfer and capacity building of farmers.
- Integrate input supply policies with production strategies of national policies to ensure the efficient use and supply of seeds, fertilisers, pesticides, and machinery including water use efficiency.
- Prioritize research and development strategies in organic and bio-fertiliser-based alternatives to minimise the reliance only on chemical inputs that deteriorate soil health and pollute the environment.

6. Suggested Course of Action

We have suggested the following course of action to implement the recommendations. The suggestions are based on the authors' discussion and consultation with the relevant stakeholders and policymakers. The recommendation and the suggested course of action were validated in the progress review workshop organised by the Nepal Agricultural Research Council (NARC).

S.No	Recommendation	Responsible Agencies	Suggested Action
1.	Conservation and utilisation of locally adapted indigenous and local genetic resources	NARC and other research organisations	Utilisation of local genetic resources in breeding programs to develop and promote the supply of improved locally adapted varieties and breeds by maintaining and multiplying their source seeds and breeds
		National Agriculture Genetic Resources Centre (Genebank)	Collection and maintenance of the genetic resources, and providing pre-breeding materials to related commodity programs
		Federal Ministry of Agriculture and Livestock Development (MOALD)	Facilitation for registration, maintenance, and utilisation of the locally adapted genetic resources
		Farmers Organisation	Operation of community seed banks and resource centres
		Provincial and Local Governments	Facilitation for registration and utilisation of locally adapted genetic resources

S.No	Recommendation	Responsible Agencies	Suggested Action
			Establishment of seed banks and resource centres
		Universities	Incorporate the importance of indigenous and local resources in the course curriculum. Also, utilise the local genetic resources in breeding programs to meet domestic demand
2.	Increase investment in agricultural research and development	National Planning Commission (NPC) and Federal MoALD	Collaborate with relevant stakeholders to increase funding for agricultural research and development Research prioritisation and budget allocation based on national demand
		Federal MOALD	Attract donors to increase funding and prioritise agricultural research
		Ministry of Finance (MOF)	Allocate sufficient funding for agricultural research and development
3.	Inclusive agricultural mechanisation directives	Federal MOALD	Formulate a directive that supports the inclusive testing and adoption of modern farming machinery and technologies Facilitate training and capacity-building programmes and assure equitable access to mechanisation services across different farm sizes, social groups, and regions
		Private sectors	Collaborate with NARC for testing and validation
		Federal Government	Approval of agricultural mechanisation directive
4.	Integrate input supply policies with production strategies	Ministry of Industry, Commerce and Supplies (MOICS) & Federal MOALD	Organise a program to review and identify gaps regarding input supply policies and production strategies jointly
		Policy Research Institute (PRI)/ National Planning Commission	Review different input supply policies and production strategies to integrate them, and recommend the formulation of integrated input supply and production strategy with a detailed action plan

S.No	Recommendation	Responsible Agencies	Suggested Action
5.	Research and development strategies for inorganic and bio-fertiliser	NARC and other research organisations	Invest in research for alternative and balanced use of chemical fertiliser focusing on different options of bio-fertiliser Increase infrastructure and human resources on organic agriculture
		Universities	Foster collaboration between research institutions and universities for joint research and offer specialised agriculutural courses
		Industries	Provide funding for research and development Increase collaboration with other public organizations like NARC, Universities, etc. Integrate research output into production
		Ministry of Forest and Environment	A collaborative program with MOALD
		Federal and Provincial MOALD	Pilot program for promoting bio-fertiliser (based on research findings)

Authors Contribution Statement

Krishna Prasad Timsina: Conceiving ideas; formulation of overarching research goals and aims; design of methodology; application of study framework; conducting the research and investigation process, drafting and finalization of manuscript.

Devendra Gauchan: Conceiving ideas; formulation of overarching research goals and aims; design of methodology; application of study framework; conducting the research and investigation process, drafting and finalization of manuscript.

Shreeya Tripathi: Design of methodology; application of study framework; conducting the research and investigation process, finalization of manuscript.

Sabin Basi: Design of methodology; application of study framework; conducting the research and investigation process, drafting and finalization of manuscript.

Surya Prasad Adhikari: formulation of overarching research goals and aims; design of methodology; application of study framework; conducting the research and investigation process, finalization of manuscript.

Conflict of Interest Statement

The author's declared no conflict of interest.

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Annex

Annex 1: Reviewed Agricultural Policies, Strategies, Visions and Plan

SN	Policies	Date	SN	Policies	Date
1	Foreign Investment and One-Window Policy	1992	26	Floriculture Promotion Policy	2013
2	National Seed Policy	1999	27	Seed Vision	2013-2025

SN	Policies	Date	SN	Policies	Date
3	National Tea Policy	2000	28	Agricultural Mechanization Policy	2014
4	National Fertilizer Policy	2002	29	National Employment Policy	2014
5	Foreign Aid Policy	2002	30	Foreign Investment Policy	2014
6	National Coffee Policy	2003	31	Agriculture Development Strategy	2015-2035
7	Rural Water Supply and Sanitation National Strategy	2004	32	Constitution of Nepal	2015
8	Rural Water Supply and Sanitation National Policy	2004	33	Land Use Policy	2015
9	Irrigation Policy	2004	34	National Youth Policy	2015
10	National Nutrition Policy and Strategy	2004	35	Commerce Policy	2015
11	National Agricultural Policy	2004	36	Public Private Partnership Policy	2015
12	Herbs and non-timber forest products development policy	2004	37	Rural Energy Policy	2016
13	Labor and Employment Policy	2005	38	Bee-Keeping Promotion Policy	2016
14	Agro-Biodiversity Policy	2006	39	National Intellectual Property Policy	2017
15	Biotechnology Policy	2006	40	National Food Security Policy	2018
16	Agribusiness Promotion Policy	2006	41	National Food Safety Policy	2018
17	Dairy Development Policy	2007	42	National Food Hygiene Policy	2018
18	Tourism Policy	2008	43	National Land Policy	2019
19	International Development Assistance Operational Policy	2011	44	International Development Cooperation Policy	2019
20	Industrial Policy	2011	45	National Environment Policy	2019
21	Poultry Policy	2011	46	Poverty Alleviation Policy	2019
22	NARC Vision (yet to be approved)	2011-2030	47	National Agro-Forestry Policy	2019
23	Rangeland Policy	2012	48	The Fifteenth Plan	2019-2024
24	Supply Policy	2012	49	National Science, Technology and Innovation Policy	2019
25	National Cooperative Policy	2013	50	Climate Change Policy	2019

SN	Policies	Date	SN	Policies	Date
51	Monetary Policy	2021	53	National Animal Health Policy	2021
52	National Livestock Breeding Policy	2021	54	National Fisheries Development Policy	2022

Annex 2: Reviewed Agricultural Acts

SN	Act	Date	SN	Act	Date
1	Essential Goods Protection Act	1955	17	Animal Health and Livestock Services Act	1999
2	Export-Import Control Act	1957	18	Companies Act	2006
3	Land Act	1964	19	Poverty Alleviation Fund Act	2006
4	Food Act	1967	20	Plant Protection Act	2007
5	Pasture Land Nationalization Act	1974	21	Tobacco Products (Control and Regulatory) Act	2011
6	Black-marketing and Some Other Social Offenses and Punishment Act	1975	22	Deposit and Credit Fund Act	2016
7	Feed Act	1976	23	Special Economic Zone Act	2016
8	The Guthi Corporation Act	1980	24	Local Government Operation Act	2017
9	Nepal Standards (Certification Mark) Act	1988	25	Cooperatives Act	2017
10	The Seeds Act	1992	26	The Labor Act	2017
11	Nepal Agricultural Research Council Act	1992	27	National Inclusion Commission Act	2017
12	National Dairy Development Board Act	1992	28	National Women Commission Act	2017
13	National Cooperative Development Board Act	1993	29	The Right to Food and Food Sovereignty Act	2018
14	National Tea and Coffee Development Board Act	1999	30	The Consumer Protection Act	2018
15	Animal Slaughterhouse and Meat Inspection Act	1999	31	The Foreign Investment and Technology Transfer Act	2019
16	Nepal Veterinary Council Act	1999	32	Public Private Partnership and Investment Act	2019

Annex 3: Crop Management, Production System Technologies, and Innovations-related Indicators used in the analysis

Policy Provisions /Indicators
1. Productivity & production improvement
2. Climate resilience /adaptation, risk reduction and mitigation
3. Supplementary technology development and management
4. Production of sources seeds, breeds and other planting materials
5. Application of biotechnology and nano-technology for agricultural technology development and management
6. Conservation and utilization of indigenous/local resources/materials through both participatory and conventional breeding
7. Farm Mechanization and Modernization
8. Protected agriculture technologies
9. Precision agriculture technologies including information and communication technology (ICT)
10. Tissue culture for agricultural technology development and management
11. Public-private partnership for improvement of agricultural technology
12. Pesticides and soil health
13. Quality improvement technologies (nutrition and food safety)

Annex 4: Policy Provisions regarding Crop Management, Production System Technologies, and Innovations in Different Agricultural Policy Documents

S.N	Agricultural Policies	Crop Management, Production System Technologies, and Innovation-related Provisions
1.	National Seed Policy 1999	Public and private sectors will be encouraged to work in collaboration with national or international seed entrepreneurs for the development of seeds and increase production. (1) Study and research will be carried out on Biotechnology or Genetic engineering for GMOs, transgenic plants, and tissue culture. (10) Emphasis will be given to the use of tissue culture for the production of disease-free seeds and seedlings. (10)
2.	National Tea Policy 2000	The fertilizers, pesticides, weedicide, and Agricultural equipment required for the Tea business shall be allowed to be imported from other Countries. (12)
3.	National Fertilizer Policy 2002	Farmers shall be encouraged to use chemical fertilizers in a balanced manner concerning required nutrients based on the soil test. (12)

S.N	Agricultural Policies	Crop Management, Production System Technologies, and Innovation-related Provisions
4.	National Coffee Policy 2003	Maintain and improve the quality of coffee, for which appropriate improvement works shall be carried out. (13) Modern and improved technologies shall be developed and disseminated with coordination from the Government and private sector through the establishment of the research center, service center, and improvement of the present Coffee development centers. (13, 11) Organic production of Coffee shall be promoted, by organizing different promotional Programs & campaigns highlighting the importance of organic farming. (12)
5.	Irrigation Policy 2004	The provisions of quantitative measurement in the irrigation facility shall be introduced. The effectiveness of monitoring the irrigation will be held based on water quantity provided for each crop, irrigated area, and increase in production. (1) For expanding year-round irrigation water reservoirs, rainwater harvests, and groundwater resources shall be developed, conserved, promoted, and utilized. (3) Geographical and managerial information systems (GMIS) shall be updated at every level of implementation of the irrigation program and the process of strengthening the institutional aspect of the monitoring and evaluation system shall also be perpetuated in this regard. (9)
6.	National Agricultural Policy 2004	Agricultural production and productivity shall be increased by utilizing the local potentialities, comparative advantages, and special opportunities, ensuring the development, extension, and utilization of appropriate agricultural technologies. (1) Comparatively large projects that cover more than one district promote potential agricultural production, and enterprises shall be operated and supported as central projects along with the participation of the local bodies. (1) Special facilities shall be provided to the target groups to build and install such infrastructures of small irrigation as pedal pumps, rower pumps, sprinklers, drips, and water harvesting ponds. (3) A survey/surveillance system shall be established and activated to assess the impact of excessive rains, droughts, diseases, insects, and other natural calamities and mobilize agricultural reliefs. (9) Organic farming shall be encouraged. Necessary support shall be provided for the certification of the standard of exportable agricultural products produced in production areas based on organic farming. (12) The production, use, and promotion of organic fertilizers shall be encouraged. (12)

S.N	Agricultural Policies	Crop Management, Production System Technologies, and Innovation-related Provisions
		The sale and distribution of manure, insecticides, and pesticides shall be regulated, and quality shall be maintained in their supply. (12)
7.	Agro-Biodiversity Policy 2006	Public participation in the interest of farmers based on agricultural biodiversity shall be encouraged to prioritize employment and increase production. (1)
8.	Biotechnology Policy 2006	Emphasize the development of biotechnology that may assist in environmental protection and the management of natural resources. (5) Emphasis on the use of biotechnology for Bio-pesticides, Bio-fertilizer, and other Biotech Aspects shall be given. (5) Private entrepreneurs to set up laboratories, greenhouses, and nurseries with a view to producing quality and disease-free plants through biotechnology shall be encouraged. (8) Technologies relating to genetic engineering or cell culture, microbiology, biochemistry, molecular biology, and tissue culture shall be used. (10) Research to use biotechnology in tissue culture, forest, agriculture and food grains, herbs, mushroom production, and processing systems including animal and human health systems shall be encouraged. (10)
9.	Agribusiness Promotion Policy 2006	Provision of Services like; agricultural output material, irrigation, insurance, agriculture mechanization, and market set-up in agricultural production regions through cooperation of governmental, non-governmental, cooperative, and private sector. (7, 11) Agribusiness shall be promoted through products produced by organic farming. (12)
10.	Tourism Policy 2008	A program shall be introduced to increase agricultural production in a tourist area and tourist routes in coordination with the Ministry of Agriculture. (1)
11.	Poultry Policy 2011	Based on a suitable environment, organic production shall be encouraged. (12)
12.	NARC Vision 2011-2030	Productivity of oilseeds, winter and summer legumes with emphasis on tolerance to drought and other stresses will be enhanced. (1) Generation and promotion of off-season vegetable and floriculture-related technologies. (13) Identification, development, and promotion of climate-friendly agricultural technologies to adapt to climate change and contribute to sustainable agriculture development while maintaining agroecosystems and agro-bio-diversity. (13)

S.N	Agricultural Policies	Crop Management, Production System Technologies, and Innovation-related Provisions
		Development of Climate-friendly agricultural technologies to adapt to climate change. (13)
		Development of technologies in early and full season OPV maize genotypes to enhance maize productivity in hills and terai. (13)
		Strengthen the screening of QPM genotypes against disease, insect, and abiotic stresses. (5)
		Development of hybrid maize technology to enhance maize productivity in the subtropical region of Nepal. (13)
		Develop proper nutrient and water management technologies for boro, spring, and main season aerobic and transplanted rice. (13)
		Develop proper moisture conservation technologies both for upland and lowland rain-fed cropping systems. (13)
		Develop proper technology for low cost, water saving, and resistance to drought and pests. (13)
		Enhancement of productivity of oilseed crops in Nepal. (1)
		Increasing productivity and sustainability of potato crops through the development /dissemination of improved cultivation practices suitable for different production environments. (1)
		Develop appropriate technologies for soil, water, and pest management practices. (13)
		Develop a cost-effective crop management package of practices based on organic cultivation principles. (13)
		Development of technologies through tissue and embryo culture to improve crop productivity. (1,10)
		Develop a methodology for the different crop areas and yield estimation before harvest to improve preparedness for any extreme situations. (2)
		Marker Assisted Selection (MAS) in crop improvement for resistance to biotic and abiotic stresses. (5)
		Application of molecular markers toward the improvement of maize varieties for hybrid vigor. (5)
		Effective Microorganisms (EM) Technology and EM Composting to improve soil quality and health. (5)
		Strengthen farm mechanization operations in a rice-wheat system including minimum tillage. (7)
		Green Manure/Cover Crops/Mulching to improve or restore fertility and soil texture. (12)

S.N	Agricultural Policies	Crop Management, Production System Technologies, and Innovation-related Provisions
		Develop a package of practices for organic farming. (12) Identification and promotion of biological nitrogen-fixing (BNF) species to maintain soil fertility in agroforestry systems. (12) Develop conservation tillage practices to maintain soil health and improve water retention. (12)
13.	Rangeland Policy 2012	The production of organic products will be promoted by linking the value chain of cost-effective products. (12)
14.	National Cooperative Policy 2013	Special facilities will be provided to farmers participating in cooperatives to encourage the use of advanced technology and organic farming to increase the productivity of the agricultural sector. (1)
15.	Floriculture Promotion Policy 2013	The establishment of flower nurseries will be encouraged to expand flower cultivation in different parts of Nepal. (8) Arrangements will be made to import chemical fertilizers, organic fertilizers, insecticides, herbicides, and agricultural materials from other countries on the recommendation of the flower industry and flower nurseries. (8, 12)
16.	Agricultural Mechanization Policy 2014	Enhancement of agricultural production through mechanized agriculture. (1,7) Establishment of a custom hiring center for farm machinery. (7) Agricultural equipment suitable for Different Geographical structures of Nepal that can be afforded by smallholder farmers will be developed, established, and researched. (7) Priority in research and design of location-specific women-friendly machinery. (7) Modification and development of a traditional form of agricultural equipment through research and innovation. (7) Encouragement of Public-Private partnerships for the introduction, production, and development of agricultural machinery. (7,11)
17.	National Employment Policy 2014	Through irrigation, agricultural materials, and modern technology (Power tillers, threshers, and common types of harvesters that transport crops from the farm to the market), the productivity of those involved in the agricultural sector will be increased and special emphasis will be given on planting high-value crops. (1,7) By improving the productivity of the export-oriented agricultural sector, competitive stability will be expanded and emphasis will be placed on the marketing of agricultural products. (1)

S.N	Agricultural Policies	Crop Management, Production System Technologies, and Innovation-related Provisions
		The increase in the productivity of agricultural products, innovation, and value addition, and the value chain will support the national economy coupled with the global market; through appropriate policy initiatives, the productivity and economic status of people, who are involved in agriculture will be improved. (1) Special encouragement will be given to the youth to get employment at the local level by providing agricultural goods such as agricultural loans, materials, and equipment (power tillers, threshers, transport vehicles from the production site to the market). (7)
18.	Foreign Investment Policy 2014	Foreign investment will be emphasized in national priority areas such as infrastructure development, productivity improvement, and competitive sustainability development. (1) Productivity will be increased by introducing capital, modern technology, and managerial skills in industries that replace imports and meet national needs. (1)
19.	Agriculture Development Strategy 2015-2035	Agricultural production and productivity shall be increased by utilizing the local potentialities, comparative advantages, and special opportunities, and ensuring the development, extension, and utilization of appropriate agricultural technologies. (1,13) A pragmatic solution shall be adopted for fertilizer supply that aims to improve productivity. (1) Implement integrated water resource management. (3) Build resilience for farmers to climate change, disasters, price volatility, and idiosyncratic shocks through the adoption of the stress-tolerant crop, the establishment of an early warning system (EWS), access to farmers' welfare Fund, food and seed reserves systems, and climate-smart agricultural practices. (2) Develop NCI; including gravity piped, water harvesting, and small-scale pumped systems based on drip or sprinkler irrigation. (3) A range of mechanization options accessible to farmers with equipment leasing service shall be made available. (7) Support mechanization with awareness creation, demand stimulation, concessionary financing arrangements, capacity building, and appropriate taxation. (7) Mango Development in the eastern region and Nursery Development. (8) Agricultural market information and ITC products shall be launched for market intelligence. (9)

S.N	Agricultural Policies	Crop Management, Production System Technologies, and Innovation-related Provisions
		The ADS will help improve the surveillance system for zoonotic diseases, improve diagnostic capacity and testing, and improve response capacity. (9)
20.	Constitution of Nepal 2015	Enhance product and productivity by carrying out land pooling, while discouraging inactive land ownership. (1) Commercialization, industrialization, diversification, and modernization of agriculture, by pursuing land-use policies to enhance agriculture products and productivity while protecting and promoting the rights and interests of the farmers. (1, 7)
21.	Land Use Policy 2015	Protection of soil by maintaining its natural core shall be encouraged. (12)
22.	National Youth Policy 2015	Opportunities for full employment for the semi-employed youth shall be created through modernization and professionalization of the agricultural sector. (7)
23.	National Intellectual Property Policy 2017	Priority will be given to the development of new technologies that utilize the maximum amount of intellectual property to increase the competitive strength, quality, and productivity of manufactured goods and services. (1,13)
24.	National Land Policy 2019	Cooperative farming shall be encouraged through commercialization and mechanization to increase production. (1)
25.	International Development Cooperation Policy 2019	Mobilization of development cooperation; to achieve high economic growth, increase production and productivity, create wider employment opportunities, and promote export-oriented production. (1) The Government of Nepal will mobilize, implement, monitor, and evaluate international development cooperation resources, with attention to their contribution to agricultural modernization, energy development, and increasing production and productivity. (1, 7)
26.	Poverty Alleviation Policy 2019	To increase agricultural production and make the country self-sufficient in food security, coordinate with the relevant agencies to ensure the access of the poor to land. (1)
27.	National Agro-Forestry Policy 2019	Necessary infrastructure like irrigation, tools, equipment, technology, and other facilities shall be made available for commercial and communal agroforestry. (7)

S.N	Agricultural Policies	Crop Management, Production System Technologies, and Innovation-related Provisions
28.	The Fifteenth Plan 2019-2024	Production shall be increased by ensuring the classification and utilization of land based on capacity, suitability, and needs according to the Land Use Policy. (1) Productivity will be increased by improving the production regulatory mechanism and the cost of doing business. (1) Increase agricultural production and productivity by introducing agricultural policies, laws, and plans in coordination and collaboration with federal, provincial, and local levels and other stakeholders. (1) Resilient technologies will be developed and expanded to mitigate the effects of climate change in coordination and collaboration with education, research, and communication agencies. Similarly, the development and utilization of bio-fortified crops and other products will be expanded. (2) Agricultural biodiversity will be preserved, promoted, and sustainably utilized by guaranteeing programs and budgets for climate adaptation and resilient technologies. (2) Studies and research will be conducted in the fields of space science and technology, atomic science and technologies, Nanotechnologies, and biological sciences and technologies. (5) Agricultural mechanization will be improved and expanded in collaboration with the private sector and cooperatives based on the feasibility and need of agroecological zones. (7) The private sector shall be motivated to promote the commercialization, modernization, and industrialization of the agricultural sector. (7) Integrated and advanced ICTs will be used in the expansion of agricultural technologies. (9) Potential products and production zones will be identified for organic farming. (12)
29.	National Science, Technology, and Innovation Policy 2019	Productivity and quality of production shall be enhanced through scientific research, technology development, and innovation thereby assisting in economic growth. (1,13) Scientific research and technology shall be developed and utilized for emergency security, climate change adaptation, and disaster risk reduction. (2) Biological, Nano and other innovative technology shall be used for soil management. (5, 12) Assistance shall be provided for the development and utilization of bio, nano, and nuclear technology, for agricultural sector development. (5)

S.N	Agricultural Policies	Crop Management, Production System Technologies, and Innovation-related Provisions
		Modern technologies shall be used for diversification and modernization of the agricultural sector. (7) The partnership shall be developed among academic institutes, research institutes, and industrial enterprises for the promotion of scientific research, technology development, and innovation. (11)
30.	Climate Change Policy 2019	Technologies that protect the crop from climate-induced disasters like drought and cold waves will be developed and expanded. (2) Rainwater harvesting ponds will be constructed for groundwater recharge and their multiple uses. (3) Technologies for storage, multiple uses, and efficient use of water will be developed and promoted in risk-prone areas and settlements considering the effects of climate change on the availability of, and access to, water. (3) Water sources will be protected besides the development and expansion of rainwater harvesting and storage and water efficient technologies will be developed to increase access to, and easy availability of, drinking water. (3) Crop diversification, protection of agricultural biodiversity, and the organic farming system will be promoted. (12)

Note: The number in parentheses indicates the policy indicators

Annex 5: Policy Provisions regarding Crop Management and Production System Technologies and Innovations in different Agricultural Acts

S.N	Acts	Crop Management, Production System Technologies, and Innovation-related Provisions
1.	National Tea and Coffee Development Board Act, 1993	Arrange, or cause to be arranged, for the supply of such loans, seeds, plants, chemical fertilizers, pesticides, equipment, fuels, and technical service, among others, as may be required for the farmers who do the tea and coffee farming on a small scale. (12)
2.	Local Government Operation Act, 2017	Nursery establishment, production, and distribution of seeds and seedlings. (8) Promotion and dissemination of organic farming and fertilizers. (12)

S.N	Acts	Crop Management, Production System Technologies, and Innovation-related Provisions
3.	The Right to Food and Food Sovereignty Act, 2018	To make sustainable development of agriculture, increase food products, or promote food and nutrition security, the Government of Nepal, Provincial Government, and Local Level shall arrange the necessary study, research, and development of scientific technology. (1) Professionalize, industrialize, modernize, and mechanize agriculture to protect agricultural occupation. (7) Expand the sustainable use of and access to improved technology, environment-friendly fertilizers, and various types of seeds, pesticides, or agricultural materials in food production. (12) Expand access of the farmers to infrastructures needed for organic farming. (12)

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Strengthening Climate Resilient Tourism Sector in Nepal

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Abstract

Tourism plays a crucial role in Nepal's gross domestic product (GDP) and employment generation. However, Nepal's tourism industry is highly dependent on seasonality and environmental conditions, which means deviations in these factors can significantly disrupt tourism activities and services. These disruptions have both direct and indirect effects on economic activities and the livelihoods of communities reliant on tourism. Additionally, the increasing frequency and intensity of climate variables and extreme events adversely impact the health and safety of tourists and those involved in tourism, threatening the sector's sustainability. Current tourism models are also linked to carbon-intensive and polluting activities contributing to ecosystem degradation and exacerbating the climate crisis.

This study employs a mixed-methods approach to gather and analyse field-based data and stakeholder opinions, providing recommendations for policy interventions aimed at enhancing climate resilience in Nepal's tourism sector. Field visits revealed significant climate trends and the impact of disasters on livelihoods, economies, and tourism. National stakeholder consultations and interactions highlighted the multi-level effects of climate vulnerability on local tourism, including infrastructural damage, economic setbacks, and safety concerns. This underscores the urgent need for robust adaptation measures.

Engaging intensively the businesses, private, academia, non-government, and government bodies is essential to fostering a climate-resilient tourism sector. Such collaboration can promote local participation and drive sustainable tourism growth in Nepal.

Keywords: Climate resilience, Tourism, Private sector involvement, Policy intervention

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नेपालमा जलवायु-उत्थानशील पर्यटनको सबलीकरण

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सार

नेपालको कुल गार्हस्थ्य उत्पादन र रोजगारी सिर्जनामा पर्यटनले महत्त्वपूर्ण भूमिका खेलेको छ। तर नेपालको पर्यटन उद्योग मौसमी र वातावरणीय अवस्थामा अत्याधिक निर्भर छ, जसले गर्दा यी कारक तत्त्वहरूमा आउने विचलनले पर्यटन गतिविधि र सेवा-प्रवाहलाई उल्लेखनीय रूपमा बाधा पुऱ्याउन सक्दछ। यस्ता अवरोधहरूले पर्यटनमा निर्भर रहेका समुदायहरूको आर्थिक गतिविधि र जीविकोपार्जनमा प्रत्यक्ष एवम् अप्रत्यक्ष रूपमा प्रभाव पार्दछ। साथ-साथै, जलवायु परिवर्तन र यससम्बन्धी चरम घटनाहरूको बढ्दो आवृत्ति र तीव्रताले गर्दा पर्यटकहरू र पर्यटनमा संलग्न सरोकारवालाहरूको स्वास्थ्य एवम् सुरक्षामा प्रतिकूल प्रभाव परी समग्र पर्यटन क्षेत्रको दिगोपनालाई नै खतरामा पुऱ्याउँदछ । हालका पर्यटन मोडेलहरू पारिस्थितिक प्रणालीको ह्रास र जलवायु सङ्कटलाई बढावा दिने खालका कार्बन-इन्टेन्सिभ र प्रदूषणकारी गतिविधिहरूसँग पनि जोडिएका छन् । प्रस्तुत अध्ययनले स्थलगत अध्ययनमा आधारित तथ्याङ्क तथा सरोकारवालाहरूको राय सङ्कलन र विश्लेषण गर्न मिश्रित शोधविधि प्रयोग गर्दै ती विश्लेषणको आधारमा नेपालको पर्यटन क्षेत्रमा जलवायु-उत्थानशीलता बढाउने उद्देश्यले नीतिगत हस्तक्षेपको लागि केही सिफारिसहरू तय गरेको छ । स्थलगत भ्रमणहरूले महत्त्वपूर्ण जलवायु प्रवृत्तिको साथै जीविकोपार्जन, अर्थव्यवस्था र पर्यटन क्षेत्रमा वातावरणीय प्रकोपहरूको प्रभाव पत्ता लगाउन सहज बनाएको छ।

राष्ट्रिय सरोकारवालाहरूसँग गरिएका विमर्श एवम् छलफलहरूले पनि स्थानीय पर्यटनमा जलवायु जोखिमको बहुस्तरीय प्रभावबाट पर्यटन पूर्वाधारमा पुगेको क्षति, आर्थिक गतिविधिमा आएको अवरोध र सुरक्षा चुनौतिका मुद्दाहरूमा परेको समस्याबारे प्रकाश पारेका छन्। यी सबै तथ्यहरूबाट के प्रस्ट हुन्छ भने यो क्षेत्रको विकासको लागि बलियो अनुकूलन उपाय तय गर्नु तत्काल आवश्यक देखिन्छ।

जलवायु-उत्थानशील पर्यटन क्षेत्रलाई प्रवद्धन गर्न सरकारी निकायको साथै व्यवसायी, निजी क्षेत्र, शैक्षिक क्षेत्र एवम् गैरसरकारी क्षेत्रलाई सघन रूपमा संलग्न गराउनु अपरिहार्य छ। यस्ता सहकार्यले स्थानीय सहभागितालाई बढावा दिनुको साथै नेपालमा दिगो पर्यटन विकासलाई थप गति दिन प्रेरित गर्न सक्दछ।

शब्दकुञ्जी: जलवायु उत्थानशीलता, पर्यटन, निजी क्षेत्रको सहभागिता, नीति हस्तक्षेप

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1. Introduction

The tourism sector, Nepal's fourth largest industry by employment, offers around 6.7% contributions to the country's gross domestic product (GDP) (World Bank, 2022) and employs 371140 that contributes 11.5% of persons engaged in all industries in the country (National Economic Census, 2018). It also serves as one of the major sources of foreign exchange and revenue (Poudel & Phuyal, 2016). The Government of Nepal has put the highest importance towards increasing the tourism sector's contribution to the country's economy through its stated goal "to contribute greater GDP growth and employment, reduce poverty and increase sustainable access to foreign exchange for national development" (MoCTCA, 2015). The Tourism Vision 2020 of the government of Nepal has clustered the tourism products under five major categories: a) Culture, heritage and people; b) Cities and leisure; c) Outdoors and adventure; d) Religion and pilgrimage; and e) Nature and wildlife (MoCTCA, 2016). Thus, the involvement of people in these five major categories, directly or indirectly, comes under the tourism industry.

The tourism industry largely depends on seasonality and environmental conditions, especially in the Nepalese context (Nepal, 2000; Maharjan et al., 2017) due to the country's diverse geography, climate, and cultural heritage. The geographical diversity of Nepal, including the Himalayas, mountains, hills, and plains, creates varying climatic conditions across regions. This attracts tourists to activities like trekking, mountaineering, wildlife exploration, and adventure sports, which are influenced by seasonal changes. Trekking and mountaineering depend on favorable weather, particularly during spring and autumn when conditions are stable (Gatti et al., 2022). Nepal's rich biodiversity, with national parks and conservation areas, entices wildlife enthusiasts who observe flora, fauna, and endangered species influenced by environmental factors like bird migrations and seasonal animal activities. Religious festivals such as Dashain, Tihar, and Holi showcase Nepalese traditions and rituals tied to agricultural calendars and seasons, making the timing of visits crucial for cultural immersion. Natural phenomena like high mountains, rhododendron blooms, waterfalls, and rivers are influenced by seasons, enhancing the tourism experience when witnessed at the right time. Safety and accessibility are affected by climatic conditions, with heavy rainfall causing landslides and difficult road conditions during the monsoon season, as well as winter snowfall in high mountains, making some areas inaccessible for trekking. To plan and optimize visits, tourists and the tourism industry must understand and appreciate Nepal's unique climate and geography. Even minor changes in conditions related to seasonality and environmental factors can have a detrimental effect on tourism activities and services in Nepal (Nepal, 2000; Becken et al., 2007). The success of

the tourism industry is heavily reliant on favorable climatic variables that directly and indirectly influence the economic activities and livelihoods of communities dependent on tourism (Nepal et al., 2022).

Abrupt shifts in climatic variables and extreme weather events pose significant risks to the health and safety of tourists and individuals involved in tourism activities (Scott et al., 2012). Such events can include heavy rainfall, landslides, storms, or other natural disasters resulting in physical hazards, disrupting transportation infrastructure, and causing damage to tourist facilities (Rosselló et al., 2020). The consequences are not limited to the immediate impact but can also create a negative perception of the destination, potentially leading to a decline in visitor numbers and revenue (Jopp et al., 2010). Furthermore, the increasing frequency and intensity of climate-induced disasters, a result of climate change, have a profound negative impact on the sustainability of tourism activities (Poudel et al., 2017). Disasters such as glacial lake outburst floods and avalanches pose long-term damages to the natural environment, cultural sites, and infrastructure. These effects undermine the overall attractiveness of the destination and hinder the recovery of the tourism sector (Nyupane & Chhetri, 2009). Disruptions in climatic variables or extreme events can jeopardize the livelihoods of individuals and lead to economic instability and social challenges within these communities (Pandey et al., 2015). It indicates the susceptibility of Nepalese tourism to even minor changes in seasonality and environmental conditions, underscoring the need for careful management and adaptation to environmental changes. The sensitivity of tourism to climatic variables, the risks posed by extreme weather events, and the vulnerability of tourism-dependent communities all necessitate proactive measures to ensure the sustainability and resilience of the Nepalese tourism industry.

Nepal is globally recognized for its abundant natural and cultural treasures, including the Himalayas, diverse landscapes, rich biodiversity, historical monuments, and vibrant traditions (Devkota et al., 2020). The gradual changes in topography along the South to the North have created numerous microclimatic habitats. Within a short span of 200 km across South to North, people can experience the warm tropical climate in the lowland Tarai at about 60 m. mean sea level (msl) to alpine climate in the Himalayas with a height of above 4900 m msl at Lobuche, a small settlement near Mount Everest in the Khumbu region of Nepal, with embedded countless valleys in between irrigated by rivers and surrounded by hills (Mattas, 2021). Despite creating a major hindrance for transportation facilities, such changes in topography have offered panoramic natural beauty with varieties of biodiversity (Bhusal, 2012). Equally, the country is diverse in culture, linguistics, and ethnicity, harboring over 125 castes and ethnic groups (CBS, 2016). The residents living in

the three distinct geographic regions – high mountains (Himal), hills (Pahad) and Terai (Madhesh) – have adopted different customs and cultures according to the climate and terrain. Cultural and ethnic diversity is displayed through food, attire, celebration, and observance of many festivals and rituals, as well as artistic and historical monuments and buildings. The way of life, especially in the countryside and at the core of the old cities, is still traditional and warm for visitors. Such natural, cultural, and traditional diversities have served as the main attractions in the tourism industry.

The rich natural and cultural diversity attracts tourists from all over the world. There are twelve National Parks, one hunting reserve, six conservation areas and 13 buffer zones in Nepal (DNPWC, 2023). The country has ten World Heritage sites, as declared by the United Nations Educational, Scientific and Cultural Organization (UNESCO). Of these, eight are of cultural significance, and two are of natural heritage sites. The country is an attractive destination for mountaineers, harboring eight of the fourteen peaks above 8000 meters worldwide.

Moreover, the trekking routes, especially in the Annapurna, Everest and Langtang regions, are among Nepal's most popular tourist destinations. Even after COVID-19, out of 230085 tourists, 13304 tourists trekked in different parts of Nepal in 2020; and in 2021, such number is 12012 out of 150962 tourists (Nepal Tourism Statistics, 2020, 2021). Conservation areas are also very attractive destinations, as over half (51.4%) of the total tourists arriving in the country visit national parks. Most international tourists visit Nepal for holidays and pleasure (65%), though a significant number of visitors come for pilgrimage, adventure, business and other official purposes (MoCTAC, 2016). March – April and October – November are peak seasons as most tourists visit during these months, while June and January are off-season as the number of tourists arriving is low during these months.

Nepal opened its door to international tourism in 1951. From then on, the tourism industry has gradually been acknowledged in different policy instruments, recognizing its contribution to local and national economic development (Devkota et al., 2020). In 1959, the Department of Tourism (DoT) was established, and since then, the tourism sector has invariably been featured in the national development plans. The DoT was upgraded to the Ministry of Tourism in 1976 based on the recommendation of the first-ever Tourism Master Plan prepared in 1972. Such institutional developments were instrumental in registering several monuments of Kathmandu Valley and national parks as UNESCO World Heritage. The Ministry of Tourism brought the Tourism Act (1978) as a legal framework to manage, regulate and develop the sector. The Master Plan was reviewed in 1985, highlighting tourism

as the most dynamic sector in economic development and the primary source of foreign exchange earnings, while trekking was its mainstay. It also emphasized the need for the government to adequately direct and promote tourism to realize its potential in markets and tourism product development.

The tourism policy in Nepal came into effect in 1995, marking a significant milestone in developing and promoting the country's tourism industry (Devkota et al., 2020). It was revised in 2008 after some amendments to address pertinent issues, including rural tourism, eco-tourism, agro-based tourism, adventure tourism, education tourism and health tourism. The new policy aims to develop tourism as an essential sector for the national economy and to improve the nation's natural, cultural, and human environments to develop and expand the tourism industry. The following year, the Government unveiled Tourism Vision 2020 with the target of welcoming two million visitors and creating one million new jobs, among others, by 2020 (MoTCA, 2009). The Tourism Vision 2020 also highlights the need to sustainably use natural resources and the roles of conservation areas in tourism development. It also has noted climate change as a threat in its SWOT (strength, weakness, opportunity, and threat) analysis, though the policy lacked any such measure to address the issue.

The government brought a 10-year National Tourism Strategic Plan (NTSP) (2015-2024) in 2015 to help achieve the much-needed directions and guidance for the growth of tourism in the country (MoCTCA 2015). The NTSP's overall goal is 'to provide the government and stakeholders with a guiding framework along the economic development vision through technical and financial assistance to develop the tourism industry as a key catalyst for rapid economic growth and job creation'. The strategic plan sets out nine key interventions[1] to improve the tourism economy, including promoting private sector investment, improving infrastructure, product development, and using local resources. NTSP has noted that "even a small change in the climate and weather pattern will directly impact tourism in Nepal."

Moreover, Nepal promulgated its new constitution in 2015, declaring the country a federal republican state. Under the Directive Principles, Policies and Responsibilities

1 The key interventions to improve the tourism economy of the country includes (i) promotion of private sector investment, including FDI and public-private partnership by improving the investment environment; (ii) improvement of infrastructure with more focus on aviation; (iii) a focus on product development around the periphery of the infrastructure that is being developed; (iii) prioritisation of a few areas and products; (iv) improvement of support to facilitate the private sector; (vi) improvement of the legal and regulatory frameworks; (vii) development of mid-level technical manpower; (viii) promotion of the use of local resources through cross-sector linkages; and (ix) access to microfinance to promote micro enterprises in tourist destinations (NTSP, 2013).

of the State, Article 4.51.1 of the Constitution of Nepal has underlined the importance of tourism by mentioning a separate article under the state policy. It states that "developing environment-friendly tourism industry as an important basis of the national economy by identifying, protecting, promoting and publicizing the historical, cultural, religious, archaeological and natural heritage sites of the country, and prioritizing local people in the distribution of benefits of the tourism industry." The constitution has included the 'right to a clean and healthy environment' under fundamental rights and duties, favoring tourism promotion in Article 3.30. Nepal has now implemented the federal governance system, delegating more authority to the local level. Nepal's transition to federal governance involved key steps: a 2015 constitution defining federal, provincial, and local powers; subsequent laws addressing roles and finances; the Local Governance Act empowering municipalities and rural areas; the Fiscal Arrangements Act enhancing local resources; electoral laws enabling local elections; and regulations clarifying roles. These efforts aimed to empower local governments, fostering autonomy for efficient service delivery. Local authorities harnessed this power for infrastructure development, prioritizing activities like boundary road construction and advancing community-focused growth. Similarly, local governments are also prioritizing tourism services as one of the major pillars for local economic development, hence identifying and promoting new destinations for both national and international visitors.

All these efforts have brought significant benefits to the Nepalese economy and its people through tourism. As home to the majestic Himalayas, including Mount Everest, Nepal has become a popular destination for nature-based tourism like adventure and ecotourism. Tourism has played a vital role in driving economic growth by generating foreign exchange earnings, creating employment opportunities, and stimulating various sectors such as hospitality, transportation, and handicrafts. According to the World Bank (2022), tourism contributed 6.7% to Nepal's GDP in 2022, directly supporting over one million direct and indirect jobs. As the Nepal Tourism Board reported, Nepal's tourism revenue reached NPR 77.8 billion in the fiscal year 2018/2019[2]. The influx of tourists has also led to infrastructure development, improving connectivity and living standards for local communities.

Moreover, tourism has fostered cultural exchange, preserving and promoting Nepal's rich heritage and empowering local communities through entrepreneurship and income generation. Initiatives like the Annapurna Conservation Area Project (ACAP) and the Pacific Asia Travel Association (PATA) Nepal Chapter's Sustainable Tourism Task Force exemplify the efforts to preserve culture, empower communities,

2 Fiscal year 2018/19 is taken as it is normal year. Then after, COVID-19 has drastically reduced Nepal's Tourism revenue.

and promote responsible tourism practices. Tourism has uplifted livelihoods, enhanced the nation's global visibility, and contributed significantly to Nepal's economy.

Nepal's tourism policy instruments emphasize the need to promote sustainable and ecological tourism, but the sector's impact on nature and ecology is often ignored. The current tourism model is extractive as it prioritizes short-term economic gain from tourism activities without necessarily focusing on long-term sustainability, preservation of local culture, or the well-being of local communities and their environment. Still, Nepalese tourism seems dependent on travel-related activities and overconsumption of natural resources. This adds to the increasing greenhouse gas emissions and, ultimately, the climate crisis (Baloch et al., 2023; Sunlu, 2003; Thomas, 2013; Francios, 2020). This paper only focuses on the positive aspects of tourism and does not investigate its negative impact on climate change and natural resources.

Moreover, tourism policy instruments need to be more adequately informed by empirical evidence relevant to climate change impacts. However, it is crucial to enhance tourism resilience and sustainability in the long run. Thus, this study aims to understand stakeholders' engagement and recommend potential policy interventions to strengthen climate-resilient tourism in Nepal.

2. Literature Review

2.1 Climate Change and Tourism in Nepal

Temperature and precipitation are the most important climatic variables that create climatic hazards in Nepal (Fort, 2015; Phuyal et al., 2017). Microclimatic variables, including fog, mist, storms, and other extreme weather conditions, are also responsible for creating adverse conditions in the tourism sector. The changing patterns of temperature and precipitation have incurred a multiplier effect on tourism resources and activities (K. C. & Thapa Parajuli, 2015). These effects include increased demand for outdoor activities and adventure tourism, expansion of eco-tourism and cultural tourism opportunities, growth in employment and entrepreneurship within the tourism sector, infrastructure development to accommodate the influx of visitors and promotion of sustainable tourism practices. Different climatic events and hazards, including receding snow lines, melting glaciers, increased intensity and frequency of cloudbursts, floods and landslides, have the potential to change nature and quality of tourism resources (Tse-ring et al.

2010; Ritika et al., 2021), and therefore, tourism appeal of particular areas and regions (Sharma, 2012).

Nepal is experiencing changes in temperature and precipitation patterns over the period that have directly affected tourism industries (Chapagain et al., 2021). The recent report reveals that the surface maximum temperature has increased by 0.056^0C per year while the minimum temperature has increased by 0.002^0C over the period in Nepal. However, this rate differs for different climatic zones within the country (DHM, 2017). The increasing rate of surface temperature is reported higher in the mountain region, with 0.086^0C per year, compared to the Tarai lowland, with 0.021^0C per year. The increasing rate of temperature triggers and accelerates different climatic hazards such as heat waves, drought, landslides, and floods (Malla, 2008; Devkota and Phuyal, 2017). It also hastens the melting rate of ice in the Himalayan region (Orlove, 2009), further triggering the rate of avalanches and other disasters in mountain tourism (Nepal, 2011). The changing trend of the climatic variables determines the cost of the tourism operation (K. C., 2017). The increasing trend of temperature is responsible for other impacts, such as endemics and other hazards in destinations that affect both tourists and service providers (Henderson, 2007; K. C. & Thapa Parajuli, 2015). It also limits tourism services, specifically outdoor activities (Nyaupane & Chhetri, 2009; Nepal, 2011). It impacts the service sources and increases the business operation cost (Nepal, 2011; K. C. & Thapa Parajuli, 2015; K. C., 2017). As the time of monsoon withdrawal is shifting towards consecutive months, its effect is seen on the tourism operator for setting the daily planning (Becken & Hay, 2007). Thus, this shift in the monsoon will require a change in the existing operation and management system.

2.2 Climate-Induced Disasters and Tourism in Nepal

Climate-induced disasters are a major concern for the development and promotion of tourism business in Nepal (K. C. et al., 2021). The country is ranked the 4th most vulnerable to climate change risks globally (Gentle et al., 2014). Several climate-induced hazards directly affect tourism and services (Nyaupane & Chhetri, 2009; Nepal, 2011). Among these, floods, landslides, avalanches, lightning, forest fires, storms and heavy rainfall are major hydro-meteorological-based and climate-induced hazards that affect the tourism industry directly and indirectly (Thakuri et al., 2020). The other climate-induced hazards are windstorms, hailstorms, cloudbursts, fires and epidemics (Ghimire et al., 2014).

National Climate Change Impact Survey Report, 2016 - the first-ever conducted climate change impact survey in Nepal has revealed that climatic variables have

caused an increase in the frequency and intensity of disasters, including flash floods and landslides, over the period (CBS, 2018). It is pushing more than 1.9 million people to high vulnerability and exposing an additional 10 million people to climate risks. Increases in such disasters and rises in temperature have caused a negative impact on tourist flow in Nepal (KC, 2017).

Floods and landslides have been recorded more frequently in recent years, which have incurred the most serious damage in the tourism business. The intensity of flooding has been increased in recent years compared to past decades because of heavy rainfall and river overflow (NAPA, 2010). At times, it damages roads and other infrastructures and inundates heritage sites of tourist interest. For example, the flood of August 2017 in Lumbini and Chitwan was a recent example of its severity when a number of tourist destinations were affected, and thousands of tourists were stranded for several days. Similarly, the major tourism destination Pokhara-Chitwan-Lumbini is linked by a road, which has the potential to landslide. Recently, the tourism enterprises in the area are experiencing a sharp decline in business as the landslide strikes the conjoining highway. Numbers of such incidences have been reported recently. Further, COVID-19 added to the harsh impact of tourism. Moreover, mountain tourism which has a good share of contribution to the overall tourism sector and employment generation is experiencing challenges due to increased incidents of climate-induced hazards, including heavy rainfall avalanches and snowstorms (Nepal, 2011; Devkota, 2017), avalanches in the Everest region in 2014 and the snowstorm in Thorun-La of Annapurna circuit in the same year are an example of such events that claimed lives of tourists, employee, and added risk on the investment.

2.3 Climate Change Impact on Tourism in Nepal

The changing pattern of climatic variables and changes in the intensity, frequency and location of climate change-induced disasters have created adverse impacts on tourism in Nepal (Nyaupane & Chhetri, 2009; Devkota, 2017). It increases the stress on the environment and brings more risks than opportunities for tourism-based economies (K. C., 2017). Nepal falls among the top 20th list of the most multi-hazard prone countries in the world, which is ranked 4th, 11th and 30th in terms of climate change, earthquake, and flood risk, respectively (Koirala, 2014). Moreover, landslides, fires, droughts, epidemics, storms, hailstorms, avalanches and GLOF are the other major disasters in Nepal (Dangal, 2011). The key sectors affected or potentially affected by climate-induced disasters in Nepal include agriculture, health, water and energy use, infrastructures, biodiversity, ecosystem

services, and tourism (CBS, 2018). Increases in such natural disasters and rises in temperature have caused a decrease in tourist flow in Nepal (KC, 2017).

Since Nepal is mostly dependent on nature and adventure tourism, as 4 out of 5 tourists visit Nepal for holiday pleasure and trekking & mountaineering purposes, the weather patterns require careful consideration before carrying out any nature or adventure-related activities. The weather conditions, rainfall, fog, and wind speed must be considered, especially for major outdoor tourism activities, including trekking, bungee jumping, hiking, and rafting (Nyaupane & Chhetri, 2009). Lorde et al. (2016) rightly remark that the changes in climatic conditions and variables have a proportionate relation to the satisfaction of an individual tourist with the destination, comfort level, and demand. Similarly, climate change could incur additional investment and increase operating costs such as installing heating-cooling, food and water supply, and insurance costs (Jauhari, 2014). Moreover, it could also impact a tourist's total length of stay and limit the quality of the holiday, ultimately having a chain effect on the tourism economy (Filimonau et al., 2011). The increasing frequency of climate-induced hazards, including floods and landslides, also impacts tourism infrastructures such as roads and trails (Nyaupane & Chhetri, 2009; Nepal, 2011). Globally, climate change damages on tourism range from 0.1% to 0.5% of GDP by 2060 (Bosello et al., 2009, 2012; Agrawala, 2013). However, the loss and damage at the country context is significant. A recent technical report by the government reveals that changes in climate variability and extreme events have observed impacts on the national economy, equivalent to 1.5% to 2% of the current GDP (MoSTE, 2014).

The natural resource-based tourism is likely to be affected due to climate change (Nyaupane & Chhetri, 2009). For example, melting glaciers or snow-capped mountains in the Himalayas might reduce the number of trekkers/ mountaineers. Long Babk in 2001, researchers from the UNEP and ICIMOD identified 3,252 glaciers and 2,323 glacial lakes in the Hindu-Kush Himalayas, of which 44 are filling rapidly and that might burst soon (Mool et al., 2001). 20 years back, the ICIMOD team further identified 47 potentially dangerous glacier lakes – 25 in China, 21 in Nepal and 1 in India (Bajracharya et al., 2020). Considering the average vertical lapse rate of 6.5 °C per km, the present glaciated area above 5,000 m is likely to be snow-free with an increase in temperature of 1°C in the next few years. Glacier lake outbursts (GLOF) and avalanches are frequently seen in the Himalayas, which decreases the number of tourists visiting those areas.

Similarly, an increase in temperature of 3-4 °C could result in the loss of 60-70 percent of snow cover from the Himalayas (Alam & Regmi, 2004). This will make

the major cause of mountain landscapes losing their beauty, adversely impacting visiting trekkers and climbers. This will bring hardships to the mountain communities as many depend on tourism as their livelihood opportunity. It is a similar case with diminishing flora and fauna due to climate change, which serves no purpose for tourists to visit the place, affecting the tourism industry further.

2.4 Policy and Governance of Nepalese Tourism Sector

Nepal's venture into international tourism began in 1951, and over time, the country recognised the substantial economic potential this industry held (Shrestha & Shrestha, 2012). The pivotal establishment of the Department of Tourism (DoT) in 1959 marked a milestone, integrating tourism into the fabric of national development plans. As Nepal's tourism sector evolved, the inaugural Tourism Master Plan took shape in 1972. This comprehensive blueprint steered the sector's growth and played a significant role in recognising Nepal's UNESCO heritage sites, underscoring its cultural and natural wealth on the global stage. In a strategic move in 1976, the Department of Tourism was elevated to the status of the Ministry of Tourism. This elevation signified the growing importance of tourism in Nepal's economic landscape and provided a platform for shaping more comprehensive policies. The subsequent enactment of the Tourism Act in 1978 laid down the foundational regulatory framework for the industry's operations (Devkota et al., 2020).

By 1985, Nepal's Tourism Master Plan highlighted a paradigm shift towards active government sector promotion. This emphasis on strategic promotion aimed to leverage Nepal's diverse tourism offerings and attract a wider range of visitors. Following the advent of multi-party democracy in 1990, Nepal's tourism policies gained new dimensions and enhancements. In 1995, the Tourism Policy underwent a significant expansion, encompassing a diverse array of forms such as rural, eco, agro, adventure, education, and health tourism. This inclusive approach aimed to tap into various tourism niches and broaden the sector's scope. Subsequently, the 2008 update further refined Nepal's tourism policy framework, aligning it with changing trends and demands. This period marked a transition towards a more participatory and dynamic approach to tourism development. In 2020, the Tourism Vision took a forward-looking stance, focusing on growth while remaining attuned to environmental concerns. This vision recognized the importance of responsible tourism to safeguard Nepal's natural heritage and the well-being of its communities.

The National Tourism Strategic Plan (2015-2024) underscored the role of the private sector, the need for infrastructure development, innovative product creation, efficient use of local resources, and the incorporation of climate resilience strategies.

This plan aimed to ensure that the benefits of tourism reached various strata of society while also acknowledging the impacts of climate change on the industry. Nepal's constitution of 2015 enshrined the significance of tourism. The constitution emphasized environmentally friendly development, the preservation of cultural heritage, and the equitable distribution of benefits arising from tourism activities. With the transition to federal governance, local authorities gained enhanced decision-making power to pursue targeted tourism growth (Devkota et al., 2020). Furthermore, Nepal's climate change policies acknowledged the vulnerability of the tourism sector to climate impacts, with the National Adaptation Plan (NAP) and nationally determined contributions recognizing the need for adaptation strategies within the sector.

Nepal's rich tapestry of policies and strategies has evolved to address the multifaceted dynamics of its tourism industry. From early recognition of the economic potential to embracing sustainability and resilience, these endeavors mirror the nation's commitment to harnessing tourism for economic growth and its people's well-being. Nevertheless, a recent report compiled by the National Planning Commission reveals that the existing tourism policy, despite its age, needs to align with the principles of Nepal's newly established constitution (NPC, 2021). Furthermore, it lacks the ability to address the goals outlined in the sustainable development agenda effectively and adequately tackle challenges stemming from disasters. Consequently, the necessity to formulate a fresh tourism policy is evident, which can give the tourism sector a rejuvenated mandate and a comprehensive roadmap. This novel policy should meticulously assess the gaps between various policies and establish a cohesive linkage that elucidates the operational framework for all stakeholders involved. Such an initiative would rectify the current inadequacies and propel the tourism sector towards a more prosperous trajectory (NPC, 2021). By fostering a harmonious synergy among policies and stakeholders, this reimagined policy has the potential to foster the growth and prosperity of Nepal's tourism sector in the times ahead.

3. Methods

The study adopted a convergent parallel mixed-method approach to collecting empirical data: quantitative information, qualitative information, and narratives and stories through primary and secondary data collection procedures.

The quantitative information: Data was collected from several sources. Socio-economic data were collected from the Ministry of Finance (MoF), National Planning Commission (NPC), Nepal Rastra Bank (NRB), and Central Bureau of Statistics (CBS). Tourism-related statistics and data were gathered from the Ministry

of Culture, Tourism and Civil Aviation (MoCTCA), Nepal Tourism Board (NTB), Tourism Department, and Himalayan Rescue Association (HRA). The data on observed climate change trends and projections were collected from the Department of Hydrology and Meteorology (DHM). The data on disaster events relevant to the tourism sector and their loss and damage was extracted from the DesInventar dataset in the disaster risk reduction (DRR) Portal of the government of Nepal. The information from different sources was cross-checked to maintain the consistency of the analysis. The study has also collected information on each activity of the tourism sector to determine the main physical losses and damages to tourism sectors caused by climate change. These data are limited in that they represent the period between 1985 and 2016. This is due to the need for a complete data set for regression analysis, which establishes the connection among various factors. It is also an international practice to analyze environmental impact of climate for a minimum of 30 years (Climate Change Committee, n. d.).

The qualitative information: Field visits were conducted to assess the effects of climate-induced disasters on the tourism industry and gather insights from various stakeholders to enhance climate-resilient tourism. Three major tourism sites – Langtang, Pokhara, and Chitwan – were selected based on the criteria, including popularity, ecological representation, recent disaster occurrences, tourism sub-sectors, and National Adaptation Plan (NAP) identification. Stakeholder consultations and focus group discussions (FGDs) were conducted at the local and national levels. Local entrepreneurs, including tea shop owners, hoteliers, government representatives, tourist guides, and porters, were consulted alongside relevant government agencies, associations, and the private sector. The study involved five focus group discussions (FGDs) – three in Pokhara and one each in the other two districts, three consultation meetings with Trekking Agencies' Association of Nepal (TAAN), Hotel Association Nepal (HAN), and Nepal Mountaineering Association (NMA), respectively, seven key informant interviews (KIIs) including experts and tourism entrepreneurs, and field observations of disaster impact over three days in Langtang, four days in Pokhara, and two days in Chitwan. A checklist guided these consultations to understand climate change impacts, disaster frequencies, sectoral effects, and response mechanisms. The study analyzed climate change impact by collecting narratives and stories, focusing on changing climatic trends, disaster timelines, and their impacts on tourism over three decades. Disaster-affected areas, such as damaged infrastructure and flooded sites, were observed. The findings offer site-specific insights into climatic variables, disaster impacts, and implications for livelihoods, economies, and overall tourism sector resilience.

4. Results and Discussion

4.1 Results Based on Secondary Data

4.1.1 Contribution of Tourism to the National Economy

The study examines tourist arrival trends in Nepal from 1985 to 2016, encompassing various purposes and modes of travel. For that, several data have been analyzed. The result shows a rapid increase in foreign tourist arrivals, despite a temporary decline between 2000 and 2006, attributed to internal political instability. Notably, 2015 witnessed a dip due to a massive earthquake and an unofficial blockade along the Nepal-India border. Tourists visit Nepal for outdoor, cultural, natural, wildlife, recreational, and other tourism activities, with a substantial portion (36%) engaging in recreation and leisure, followed by nature and wildlife (29%) and outdoor adventures (12%). The country also attracts visitors for cultural and pilgrimage purposes (5%) and various other activities (18%).

The data also revealed that tourists predominantly enter Nepal by air, while those entering by land are primarily from India. The proportion of land-based tourists has grown, accounting for 24% of total arrivals in 2016 compared to 15% in 1985, indicating an increasing number of Indian visitors. Nepal remains a year-round tourist destination, with peak seasons in spring (March to May) and autumn (September to November), though substantial numbers visit even during off-peak periods. The average duration of tourist stays has risen from approximately 11 days per visit in 1985 to around 13 days in 2016. Marketing efforts and diversified offerings play a role in prolonging tourist stays. The study suggests a dual focus on attracting more visitors and extending their stay to enhance further the tourism sector's impact on Nepal's economy and reputation as a desirable travel destination.

It is also observed from the data that Nepal's tourism sector, though small, displays robust growth and diverse economic contributions. It generates significant employment, tax revenue, and foreign exchange earnings. Trekking, hotels, and travel agencies stand as key employment generators within the industry. Direct jobs in travel and tourism reached 497,500 in 2017, projected to grow further. The sector's direct contribution to GDP was NRs 99.8bn (4.0% of GDP) in 2017, which is predicted to rise annually, emphasizing its economic impact. Tourism revenue sources include entry fees and permissions for adventurous activities. The positive link between GDP growth and tourist arrivals is evident, signifying the sector's role in bolstering economic opportunities. Tourists' spending per visit has risen, encouraging potential for extended stays and diversified offerings. Various studies confirm tourism's bi-directional relationship with GDP, underlining its positive

impact on economic growth. Despite challenges, tourism's contribution to Nepal's GDP has expanded significantly over the last three decades. Sub-sectors, such as trekking and hotels, play pivotal roles in shaping this contribution.

4.1.2 Climatic Impact on Tourists in Nepal

Climate change-induced disasters have brought about significant loss and damage (L&D) within Nepal's tourism sector, affecting vital components such as infrastructure, workforce, tourists, and investments. Scholarly research has estimated that the growing frequency of climate-induced hazards results in L&D costs equivalent to approximately 2-3% of the country's total GDP on an annual basis (IDS-Nepal, PAC, and GCAP, 2014). As climate variability intensifies, there is a growing concern that L&D within the tourism sector could become even more severe, particularly with regard to extreme shifts in rainfall patterns and temperature.

Examining the available data from 1985 to 2015, it becomes evident that the trend of L&D on the national and tourism GDP has been on the rise. The overall economic loss and damage to tourism GDP increased from NRs 0.0778 billion in the period from 1985 to 1990 to NRs 1.4624 billion in the period from 2010 to 2015. An analysis of specific sub-sectors within tourism reveals that outdoor and adventure tourism and leisure and recreation tourism have borne a significant share of this loss (Table 1). This escalating economic loss is primarily attributed to four major climate-induced hazards: floods, landslides, snowstorms, and avalanches. These hazards have led to an annual economic loss in tourism GDP, amounting to approximately $987,968 over the last three decades. Notably, floods and landslides have inflicted more substantial economic losses than avalanches and snowstorms due to their widespread impact across various geographic zones within the country.

Table 1: Economic Loss and Damages to the Tourism Sector in Nepal (in NRs. billion)

Years	Entire GDP of Tourism	Outdoor and Adventure Tourism (ADT)	Cultural and Pilgrimage Tourism (CT)	Leisure and Recreational Tourism (RT)	Ecosystem Based Tourism (ET)	Other Tourism (OT)
1885-1990	0.0778	0.0106	0.0004	0.0497	0.0068	0.0015
1990-1995	0.2591	0.0418	0.0044	0.1140	0.0302	0.0129
1995-2000	0.4084	0.1155	0.0141	0.2803	0.0592	0.0249
2000-2005	0.4662	0.1154	0.0462	0.2301	0.0606	0.1169
2005-2010	0.7270	0.1813	0.1102	0.3235	0.1056	0.2043
2010-2015	1.4624	0.1422	0.1199	0.8289	0.1330	0.2311

Source: Researcher's calculation

The implications of climate change extend beyond mere economic repercussions. Increasing occurrences of landslides and floods have destroyed crucial infrastructure such as bridges and trekking trails in prominent tourist destinations like Mt. Everest and the Annapurna Circuit. The escalation of temperature-related issues has triggered additional hazards like wildfires and habitat loss, posing a significant risk to biodiversity and endangered species (WRF, 2006; Lal et al., 2001). Such developments also have far-reaching implications for Nepal's tourism sector. Given the tourism industry's reliance on natural resources, it remains particularly vulnerable to the adverse impacts of climate change. Addressing this issue necessitates swift and effective measures to both mitigate and adapt to these challenges. By proactively addressing the increasing risks associated with climate-induced hazards, Nepal can safeguard its tourism sector, minimize economic losses, and ensure the industry's sustainable growth for years to come.

4.1.3 Climate Change Impact on Foreign Tourist Arrival

The impact of climate change on foreign tourist arrivals has significant implications for the tourism industry, a crucial economic sector. Analyzing the underlying determinants of tourism success is essential for economic benefit maximization. This study employs a single equation model of demand, a common methodology to assess the implications of foreign tourist demand. This approach offers statistically accurate results and a comprehensive overview of tourism demand. The model's linear form encompasses various factors: GDP of the origin country, exchange rates, average cost of visiting the destination, consumer price index, temperature, precipitation, and unobserved variables. Data for these variables are sourced from national and international statistical sources. The measurement of tourism demand is based on the total number of tourists arriving from countries of specific origins per year, with foreign tourist-contributed GDP measured in local currency.

Prevailing economic theory assumes constant elasticity and non-constant slopes in product demand models. A double-log transformation is commonly used to model constant elasticity, with the natural log of total tourist arrivals as the dependent variable and natural logs of independent factors as explanatory variables. This transformation allows interpretation of each coefficient's impact on tourist arrivals, indicating the percentage change in arrivals due to a one-percent change in an independent variable, all else being constant. The study observed that maximum temperature and rainfall data were at a stationary level, limiting the use of Vector Autoregression (VAR) and Vector Error Correction Model (VECM) models. An Ordinary Least Square (OLS) regression was found to be appropriate. The model's robustness was verified through post-performance tests for multi-collinearity and

autocorrelation. While the model's statistical fit is suitable, the choice of functional form should be driven by economic theory.

The estimated regression result demonstrates the relationship between climate change and foreign tourist arrivals. Variables such as GDP, exchange rate, average cost, consumer price index, temperature, and precipitation all play a role. Notably, a 1% increase in the GDP of the country of origin corresponds to a 0.199% increase in tourist arrivals in Nepal. Exchange rate and average cost show negative relationships, indicating that a 1% increase in these factors decreases foreign tourist arrivals by 0.464% and 0.459%, respectively. Consumer price index, representing inflation, positively affects arrivals. Temperature and rainfall have notable impacts. A 1% increase in maximum temperature leads to a 1.533% increase in tourist arrivals, while a 1% increase in minimum temperature corresponds to a 1.047% decrease. Precipitation's influence is less significant, with a 1% increase potentially causing a 0.749% rise in arrivals, though not statistically significant due to the concentrated rainy season. The result highlights the sensitivity of tourism to temperature and suggests that rainfall may have a more nuanced impact. This analysis contributes to informed decision-making in managing tourism amid changing climate conditions.

4.1.4 Estimation of Climate Change Impact on Tourism GDP

This study also explores the ramifications of climate change on the overall GDP generated by the tourism industry, as well as its specific sub-sectors. Following Johnson and Ashworth's (1990) model, the study analyses national tourism sector data from 1985 to 2015. The regression results show that a 1% increase in certain input factors leads to a corresponding increase in tourism GDP: 0.572% for ADT, 0.431% for RT, and 0.134% for other tourism sectors. However, CT only contributes 0.078%. Moreover, the model underscores the sensitivity of tourism activities to temperature and rainfall. A 1% decrease in average minimum temperature results in a 3.66% increase in total tourism GDP, while the same percentage increase in average maximum temperature leads to a remarkable 9.36% increase in tourism GDP. Conversely, a 1% rise in precipitation causes a decrease in tourism GDP by 0.525%. The regression outcomes reveal significant insights into the connection between climate change and tourism GDP.

The regression results indicate that the GDP contribution of different tourism sectors is heavily influenced by those from various sub-sectors, such as outdoor and adventure, culture and pilgrimage, nature and wildlife, leisure and recreation, and other tourism sectors. The analysis demonstrates parallels with the impact of

climatic variables on tourist arrivals. Similar relationships are observed between average minimum temperature, tourist arrivals, and tourism GDP, as well as average maximum temperature and the same variables. However, the study indicates that changes in precipitation have a less pronounced impact on tourism GDP, which aligns with the observation that tourist arrivals are lower during the rainy season. These findings reveal valuable insights into the intricate interplay between climate change, climatic variables, and the tourism sector's GDP, emphasizing the significance of temperature and its varying effects across different sub-sectors. Further analysis of the impact of climate change on individual sub-sectors of tourism may generate more evidence for policymakers.

4.1.5 Projected Economic Costs of Loss and Damages on the Tourism Sector

Tourism is crucial to Nepal's economic development, contributing significantly to its GDP. The World Travel and Tourism Council (WTTC) indicates that tourism makes up 7.5% of Nepal's GDP and is projected to rise at an annual rate of 4.3%, reaching 8.3% by 2027. The trend of tourism GDP demonstrates this growth trajectory until 2030. Future projections are based on various annual growth rates derived from authoritative sources, ranging from 4.3% to 3.7%. Globally, the anticipated economic cost of loss and damages in the tourism industry is relatively modest, projected to range from 0.1% to 0.5% of GDP by 2060. However, the extent of these losses could escalate due to unprecedented climate change, particularly in countries like Nepal, where tourism heavily relies on nature-based activities and constitutes a significant portion of the economy.

The shifts in climatic variables and the increasing frequency of climate change-related extremes have varying impacts on both the national economy and the tourism industry. These changes affect resources in tourist destinations, leading to indirect environmental repercussions on areas such as biodiversity, water resources, landscapes, visibility, health, agriculture, and small industries. Moreover, these changes could trigger societal shifts, such as the migration of indigenous communities, alterations in tangible and intangible cultural aspects, and potential conflicts arising from climate-induced issues like droughts and water shortages. These impacts have a direct bearing on the tourism industry, and, by extension, the GDP generated from it. Notably, the loss and damage experienced by the tourism sector due to climate-induced hazards are on the rise and are expected to become even more substantial in the future. As a result, careful consideration of climate change's impact on the tourism sector is imperative for Nepal's sustainable economic growth and the preservation of its natural and cultural assets.

The findings offer policymakers invaluable insights for shaping Nepal's tourism future. Despite challenges, the rising foreign tourist influx underscores Nepal's allure. Addressing instabilities, understanding diverse visitor interests, and tailoring experiences are crucial. Enhancing infrastructure, especially transportation and accommodations, will improve visits' quality and quantity. Targeted off-peak marketing can tap wider markets and extend stays. Sustainable practices safeguarding heritage are vital for lasting success. These insights provide a strong foundation for informed decisions. Aligning policies with global travel dynamics can help Nepal not only sustain its tourist growth but also establish a distinctive position on the global tourism map.

4.2 Evidence from Stakeholders Consultation

4.2.1 Stakeholders Experience on Climate Change Impacts in Tourism

To assess the ramifications of climate change on Nepal's tourism sector, our study drew upon a rich tapestry of narratives and accounts gathered from diverse locations. Respondents shared their experiences of changing climatic events, disaster timelines, and the resulting effects on their tourism businesses and services over three decades. The study also took note of disaster-affected areas, including damaged infrastructure like bridges and trekking trails due to landslides and flooding. The field visits and consultations provided specific trends of climatic variables, climate-induced disasters, their implications for livelihoods and local economies, and their overall impact on the tourism sector. Table 2 shows the results derived from FGD, KII and consultation meetings.

Table 2: Stakeholders View on Tourism in Nepal

A. Outdoor and Adventurous Tourism (ADT)	
Service/ Products	Rafting/canoeing, trekking, mountaineering/expedition, wildlife (Flora/fauna/ fish), areal adventurous (Paragliding, mountain flight, ultra-light flight, skydiving, para-hawking and helicopter)
Major Climate Extremes	Unpredictable weather, loss of visibility, heavy rainfall, extreme temperature, seasonal shift
Experience Impacts	Decreases on water level/rapid, water sources depletion, biodiversity/habitat loss, increased wet and dry landslides, avalanche; ice level decrease, ice trap, snow storm, dense fog, No more adventurous, uncomfortable camping site, loss of scenic view, business loss, increase tourists' disappointment, flight cancellation, passenger stranded, increase in operation cost, unsecured campsite, increase in insurance cost, high risk of life, difficulties in rescue and evacuation, drinking water scarcity, loss of base camp/expedition route, accident rate high.

B. Culture and Pilgrimage Tourism (CT)	
Service/ Products	Local architecture (Karnali, Dolpa, Manag, Mustang, Humla, Dolpa, Mithila), Tharu arts (Chitwan, Eastern and Western Nepal), Heritage site in Kathmandu, Festivals, Baraha Chhetra Pilgrimage (Eastern Nepal), Devghat, Muktinath, Hot Spring (Pokhara)
Major Climate Extremes	Rainfall, snowfall, floods, acidic rain, changing seasonality, flooding due to heavy rainfall, snow fall/rainfall
Experience Impacts	Damage to local architecture, damage and wash out the arts, weathering of wood crafts and metal roof, endangered and inaccessible for pilgrimage, damage the roofs, swept away and extinction of the indigenous arts
C. Nature and Wildlife Tourism i.e. Ecosystem based Tourism (ET)	
Service/ Products	Jungle safari/walk, rafting, boating, canoeing, kayaking, fishing, trekking and expedition, sightseeing and hunting.
Major Climate Extremes	Extreme temperature and rainfall, visibility, flood, landslides, fire, drought, lake eutrophication, snowstorm, heavy snowfall
Experience Impacts	Habitat and biodiversity losses, water pollution, river course change, change of habitat of migratory birds, loss of wetland, shift in the water sprouts, snowline shifting, vegetation shifting, human life loss, wildlife extinction, damage of trail, increasing snow melting, base camp destruction, climbing route damage, tour cancellation, avalanche and GLOF, revenue losses.
D. Recreational and Leisure Tourism (RT)	
Service/ Products	Accommodation, food and beverage, hospitality, information, sightseeing, transportation, group and mass tourism.
Major Climate Extremes	Extreme temperature and rain, landslide, floods, drought, endemic, loss of visibility and storm.
Experience Impacts	High expenses on operation costs, decreasing the accommodation rate, decreasing tourist flow, damaging the infrastructure, blocked supply chain, blockage in tourism value chain.

In the study area, stakeholders opined that outdoor and adventurous tourism, encompassing rafting, trekking, mountaineering, and aerial activities, faces operational and safety concerns due to unpredictable weather, low visibility, heavy rainfall, temperature fluctuations, and seasonal changes. Culture and pilgrimage tourism, featuring local architecture, Tharu arts, heritage sites, and festivals, grapple with climate-related issues like structural damage, cultural artifact deterioration, and accessibility problems due to floods and changing weather. Nature and wildlife tourism, offering jungle safaris and trekking, confront habitat loss, water pollution, river course alterations, and natural disasters. Recreational and leisure tourism, covering accommodations and hospitality, is impacted by extreme weather,

landslides, floods, and supply chain disruptions, causing higher costs and fewer tourists. These findings underscore the study area's tourism's vulnerability to climate variations.

On the other hand, in terms of services/products, in outdoor and adventurous tourism, unpredictable weather, reduced visibility, heavy rainfall, temperature fluctuations, and seasonal changes pose safety and enjoyment risks. Culture and pilgrimage tourism experiences issues such as rainfall, snowfall, floods, acidic rain, changing seasons, and flooding, leading to damage to cultural and religious sites. Nature and wildlife tourism confronts extreme temperatures, rainfall, floods, landslides, fires, and habitat loss, affecting biodiversity and human safety. Recreational and leisure tourism grapples with extreme weather, landslides, floods, and operational disruptions. These findings highlight the diverse and significant challenges posed by climate events in the study area that also resembles Nepal's tourism sectors.

Similarly, the impact on people and communities engaged in Nepal's tourism sectors, as discussed in focus group sessions, consultations, and expert opinions, is both extensive and complex. In outdoor and adventurous tourism, there are concerns over declining water levels, biodiversity loss, and safety risks due to unpredictable weather and natural disasters. Culture and pilgrimage tourism faces architectural damage and challenges in preserving indigenous arts, while nature and wildlife tourism grapples with habitat loss and ecological disruptions. Recreational and leisure tourism deals with rising costs and infrastructure damage. These impacts encompass a wide range of issues, including economic losses, safety hazards, and environmental degradation, highlighting the multifaceted challenges posed by climate-related events in the tourism industry.

The collected narrative stories from several sites and stakeholders underscored that the tourism sector has indeed felt the impact of climate change at the grassroots level – including the study areas, i.e. Langtang, Pokhara and Chitwan. In this area, the increasing frequency of climate-induced disasters has led to loss and damage to tourism infrastructure, resulting in higher operational costs, diminished service quality, and economic challenges. These disasters have caused injuries and fatalities among both tourists and employees, emphasizing the need for effective adaptation and resilience strategies in Nepal's tourism sector. A Plethora of research reports already support the findings of this study and agree that extremes in Nepal have diverse and significant impacts on various tourism sectors, including outdoor adventures, cultural and pilgrimage experiences, nature and wildlife encounters, and recreational and leisure activities, leading to economic and environmental

challenges for tourism business in the tourism industry. It demands stakeholder consultations at the national level that help to reinforce the multi-scalar impact of climate change on the tourism industry in Nepal.

4.2.2 Interventions for Climate-Resilient Tourism

Nepal is endowed with a rich natural and cultural heritage that attracts tourists from all over the world. However, conditions are changing due to climate change. There is increasing vulnerability as rainfall patterns shift, temperatures rise, and the frequency and intensity of natural disasters increase. This has demanded the engagement of different stakeholders to develop a resilient tourism sector in the country.

4.2.3 Tourism Stakeholders and Private Sector Engagement

Multiple stakeholders are engaged in the tourism sector in multi-layer roles. Government agencies mainly play the role of enablers in developing and implementing policy instruments, along with engaging other stakeholders, including academia, civil society organizations, experts, and the private sector. Moreover, the private sector is a crucial stakeholder as it is the main investor in the tourism sector. The private sector is also the main source of innovation, specifically through marketing strategies so as to sell tourism products and services and hence generate more benefits.

There are few public academic institutions that are playing the crucial role in producing trained human resources specifically, through offering formal training. However, the private sector includes diverse levels of institutions based on their services within the country's tourism industry. Consultations, field visits, and literature reviewed during this study suggested that the private sector has multiple roles to play in the tourism industry. Their role ranges from investment in the industry to conservation of resources and communicating their services (Table 3).

Table 3: Private Sectors' Involvement in Tourism in Nepal

Tourism Products/Strategies	Private Sector Support
Promote resource preservation and responsible resource usage	Develop and expand the array of available destinations
Establish rigorous quality benchmarks for fostering sustainable tourism growth	Simplify the process of setting benchmarks and obtaining certifications
Enhance the quality and diversity of available accommodations	Improve the scope and coverage of the markets
Provide technological assistance for the creation of imaginative tourism initiatives	Offer technical assistance and resources for effective marketing and online distribution

Tourism Products/Strategies	Private Sector Support
Foster economic prosperity within the local community	Create inventive strategies to engage local communities
Overcome investment barriers	Providing access to new markets or enter into the new markets
Protect, promote and safeguard the rights and interests of tourists	Enhance the availability of comprehensive information networks
Encourage healthy competition in the tourism industry	Promote diversity by discouraging monopolies and fostering a variety of endeavours
Ensure sustainable tourism standards are maintained	Support research methods and quantitative assessments; secure investment and funding
Ensure public health and sanitation standards	Secure investment and funding for advanced and innovative technologies
Enhance better communications and communication channels	Secure investment and funding for cost-effective, state-of-the-art technological interventions
Empower all pertinent stakeholders, including local residents, through capacity building	Secure investment and funding for training facilities

In the face of climate change, the private sector has multifarious roles in tourism, including mobilization of financial resources, raising capital through innovative financial mechanisms, improved service delivery by better service levels through the economics of scale and/or new technologies and facilitating access to a wider range of skills in planning, management, and implementation. In fact, the private sector's investment in tourism is also at risk if it is avoided to consider climate change risks. Hence, private sector engagement is crucial to developing climate-resilient tourism. The specific role of the private sector in developing a resilient tourism sector is further described in the next sub-section.

4.2.4 Role of the Private Sector in the Resilient Tourism Industry

The private sector is vital in Nepal's tourism, spanning transportation, accommodation, and innovation in energy, water, and infrastructure. Public-private partnerships, emphasized in Nepal's Tourism Strategy, are crucial. Tourism interfaces with sectors like hotels, communication, energy, and transport, making private sector engagement imperative. It enhances service delivery, mobilizes diverse financing resources, and promotes innovation. Private sector flexibility aids in overcoming challenges. The private sector in Nepal can enhance climate resilience in tourism through supply chain management, diversifying tourism products,

exploring innovative financing, and improving climate information management. Collaborating with local suppliers reduces carbon emissions and supports communities. Diversification minimizes vulnerability and benefits local communities. Innovative financing aids sustainable infrastructure and renewable energy adoption. Improved climate information management enables effective decision-making and enhances safety for tourists. Engaging the private sector, academia, and experts fosters a climate-resilient tourism sector, promotes local participation, and drives sustainable growth. This collaboration is crucial for Nepal to enhance overall resilience and mitigate climate change impacts in its tourism industry.

Further, the legal and regulatory framework needs to be strengthened. Similarly, there is a need for better awareness and orientation about disaster risk reduction and climate change adaptation in the context of the tourism sector. However, close coordination and collaboration between the government, private sector, and other relevant stakeholders are necessary for developing the climate-resilient tourism sector in Nepal.

5. Conclusion and Recommendation

Nepal's tourism sector, heavily dependent on seasonal patterns and environmental conditions, faces significant disruptions due to climate variability and disasters. Utilizing a mixed-methods approach, this study has gathered and analyzed field-based data and stakeholder opinions to offer policy recommendations for enhancing climate-resilient tourism in Nepal.

5.1 Key Findings

- Field visits and stakeholder consultations reveal that climate change and natural disasters profoundly affect local communities, economies, and the tourism sector.
- Interviews across Nepal confirm that local tourism is particularly sensitive to climate change, leading to issues such as infrastructure damage, financial strain, and safety concerns.

5.2 Recommendations

- **Collaborative Efforts**: Stakeholders, including government, private sector, and local communities, must work together to develop a climate-resilient tourism sector. Given the private sector's crucial role as the primary investor,

strategies should be devised to enhance private sector engagement, minimise investment risks, and maximise tourism benefits.

- **Incorporate Climate Change into Tourism Policies:** Tourism policy instruments should explicitly address climate change, considering both current impacts and future projections. As climate change impacts are expected to intensify, integrating climate resilience into policy frameworks is essential for sustaining the tourism sector.
- **Establish a Data Management System:** A comprehensive data management system is needed to monitor climate-related damages, track losses, and estimate maintenance costs. Improved data management will enable better assessment of climate impacts and inform more effective response strategies.
- **Conduct Further Research:** Additional research is necessary to assess in detail the impacts of climate change on the tourism sector, including vulnerability assessments. This will help formulate targeted strategies to address specific risks and enhance resilience.

By implementing these recommendations, Nepal can strengthen its tourism sector's ability to withstand climate-related challenges and ensure more sustainable growth.

6. Suggested Course of Action

We have suggested the following course of action to implement the recommendations. The suggestions are based on the results and findings of the study and the authors' discussion and consultation with relevant stakeholders and policymakers.

S.N.	Recommendation	Responsible Agencies	Suggested Action
1	Multi-stakeholders Engagement in Resilient Tourism Development	Federal Government Sector (MOCTCA, Department of Tourism, NTB etc)	Formulate policy instruments, prepare laws/acts/ guidelines/regulations/frameworks/code of conduct for stakeholder coordination, ensure product quality assurance, establish institutional mechanisms, support infrastructure development and financial arrangements, and facilitate product identification and conservation.
		Provincial government,	Formulate provincial policies, coordinate with other stakeholders, establish institutional mechanisms, support infrastructure development and financial arrangements, and facilitate product identification, development, and conservation.

S.N.	Recommendation	Responsible Agencies	Suggested Action
		Local government	Conserve natural and cultural heritage, support private sector service provision, and facilitate infrastructure development and product identification.
		Private Sector (FNCCI and Tourism sectors related association)	Identify and develop products, promote and market tourism, provide financing, support plan implementation, advocate for entrepreneurs' rights, and explore new tourism markets.
		Development Partner	Prepare and implement projects, support infrastructure development, and provide financial assistance.
		Academia and universities.	Develop curricula for academic and training courses, conduct research for product identification and market analysis, and support capacity and human resources development.
2	Multi-stakeholders Engagement in Climate Resilient Policy	Government Sector (MOCTCA, NTB)	Formulate policies and plans for multi-stakeholder engagement in resilient tourism, prepare codes of conduct and criteria for responsible tourism development, establish institutional mechanisms, and ensure coordination among stakeholders
		Non-Government	Project preparation, resilient tourism product identification and development, support to financing,
		Private Sector	Identify product, develop, promote, and market products, and advocate for resilient tourism practices.
		Academia and Universities	Develop curricula for academic and training courses, conduct research for product identification, market analysis, and support capacity and human resources development
3	Integrated Tourism Sector's Data Management	NSO	Data collection, compilation and analysis of tourism and climate change related.
		MOCTCA	Collect, compile, and analyse data related to tourism and climate change.
		NPC	Analysis of raw data, support to planning and budgeting for climate change resilience tourism development,
4	Adequate R & D on Tourism Vulnerability	Government	Develop a framework for research on vulnerability, support human resource development, and create curricula for university and school education on Vulnerability Risk Assessment (VRA) in tourism.

Authors Contribution Statement

Ram Kumar Phuyal: Developed the research ideas and formulated the overarching goals and aims of the study. Designed the methodology, applied the study framework, conducted the research and investigation process, and was responsible for drafting and finalizing the manuscript.

Thakur Prasad Devkota: contributed to the formulation of research goals and aims, and participated in the research and investigation process.

Niranjana Devkota: Applied the study framework and contributed to drafting the research manuscript.

Conflict of Interest Statement

The authors declare that they have no conflicts of interest.

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The Spatial Impact of International Reconstruction Aid in the Aftermath of the 2015 Gorkha Earthquake: Gentrification and Lessons

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Abstract

The 2015 Gorkha earthquake in Nepal caused significant property and life loss, triggering a large influx of international reconstruction aid. This paper investigates the spatial implications of this international aid, particularly in Lalitpur. It examines how aid from NGOs and bilateral and multilateral agencies affects urban spaces, including rent, land values, and infrastructure distribution. The study focuses on Wards hosting aid projects and personnel and compares these to earthquake-affected Wards without aid presence as a counterfactual.

Two key points emerge: 1) The clustering of aid organization headquarters (operational presence) creates negative externalities, favoring a rentier class over equitable distribution of housing and infrastructure. 2) Aid-funded reconstruction projects (project presence) shift amenities and businesses, accelerating inequity in ways distinct from operational presence. Two Wards in Lalitpur show notable negative impacts, including rising rents, changes in small businesses, and a shift towards catering to the rentier class due to the effects of aid.

The research provides policy recommendations for local governments and disaster management authorities in Nepal to address these unequal impacts. Recommendations include monitoring and evaluating aid effects over time, collaboration, and the promotion of transparency in urban development and fiscal resilience.

Keywords: Disaster Resilience, Impact Evaluation, Local area management, Urban Planning

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सन् २०१५ को गोरखा भूकम्प पछिको अन्तर्राष्ट्रिय पुनर्निर्माण सहयोगको स्थानिक प्रभाव: स्थान सम्पन्नीकरण र पाठहरू

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पाण्डुलिपी प्राप्त: ३० जुन २०२३ अन्तिम परिमार्जन: ६ सेप्टेम्बर २०२४ स्वीकृत: ५ अगस्ट २०२४

सार

नेपालमा २०१५ को गोरखा भूकम्पले उल्लेखनीय जनधनको क्षति गऱ्यो, जसले अन्तर्राष्ट्रिय पुनर्निर्माण सहायताको ठूलो प्रवाहलाई निम्त्यायो । प्रस्तुत अध्ययनले विशेष गरी ललितपुर नगरपालिकामा यस्तो अन्तर्राष्ट्रिय सहायताको स्थानिक प्रभावहरूको अनुसन्धान गरेको छ । यसमा गैरसरकारी संस्थाहरू र द्विपक्षीय र बहुपक्षीय एजेन्सीहरूबाट प्राप्त सहायताले घरभाडा, जग्गाको मूल्य र पूर्वाधार वितरण लगायत शहरी स्थानिक विशेषताहरूलाई कसरी असर गर्छ भनेर जाँचिएको छ । यस अध्ययनले सहायता परियोजनाहरू र कर्मचारीहरूको उपस्थिति भएका र नभएका भूकम्प प्रभावित वडाहरूको तुलना गरेको छ ।

यस अध्ययनमा दुई मुख्य बुँदाहरू देखा परेका छन्: १) सहायता सङ्गठन मुख्यालयको क्लस्टरिङ (परिचालन उपस्थिति) ले आवास र पूर्वाधारको समान वितरण होइन कि बरु भाडा खाने सम्पन्न वर्गलाई फाइदा हुने किसिमको नकारात्मक बाह्यताहरू (negative externalities) सिर्जना गर्दछ, २) अन्तर्राष्ट्रिय वित्तीय सहायता-पोषित पुनर्निर्माण परियोजनाहरू (परियोजना उपस्थिति) ले सुविधाहरू र व्यवसायहरू स्थानान्तरण गर्दछ र 'परिचालन उपस्थिति' ले भन्दा फरक ढङ्गले असमानताको वृद्धि गर्दछ । ललितपुरका दुई वडाहरूमा घरभाडामा वृद्धि, साना व्यवसायहरूमा परिवर्तन, र सहायताको प्रभावका कारण भाडा खाने सम्पन्न वर्गलाई फाइदा पुग्ने किसिमको उल्लेखनीय नकारात्मक प्रभावहरू देखियो ।

यस अनुसन्धानले यी असमान प्रभावहरूलाई सम्बोधन गर्न नेपालका स्थानीय सरकारहरू र प्रकोप व्यवस्थापन अधिकारीहरूका लागि नीतिगत सिफारिसहरू दिएको छ । सिफारिसहरूमा सहायता प्रभावहरूको लामो समय समेट्ने अनुगमन र मूल्याङ्कन, सहकार्य र शहरी विकास तथा वित्तीय उत्थानशीलतामा पारदर्शिताको प्रवर्धन गर्नुपर्ने विषयहरू समावेश छन् ।

शब्दकुञ्जी: प्रकोप उत्थानशीलता, प्रभाव मूल्याङ्कन, स्थानीय क्षेत्र व्यवस्थापन, शहरी योजना

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1. Introduction

On April 25th, 2015, a 7.8 magnitude earthquake struck Nepal, followed by a 7.3 magnitude aftershock on May 12, 2015. Over 800,000 homes were destroyed, and over 288,000 were damaged in the 14 worst-hit districts (Nepal earthquake recovery monitoring assessment, 2015). A Post Disaster Needs Assessment determined that economic loss due to the earthquake was one-third of the country's GDP. Earthquake impact was felt most acutely in 14 municipalities, and damages included those to housing, infrastructure such as roads and bridges, public buildings and educational structures.

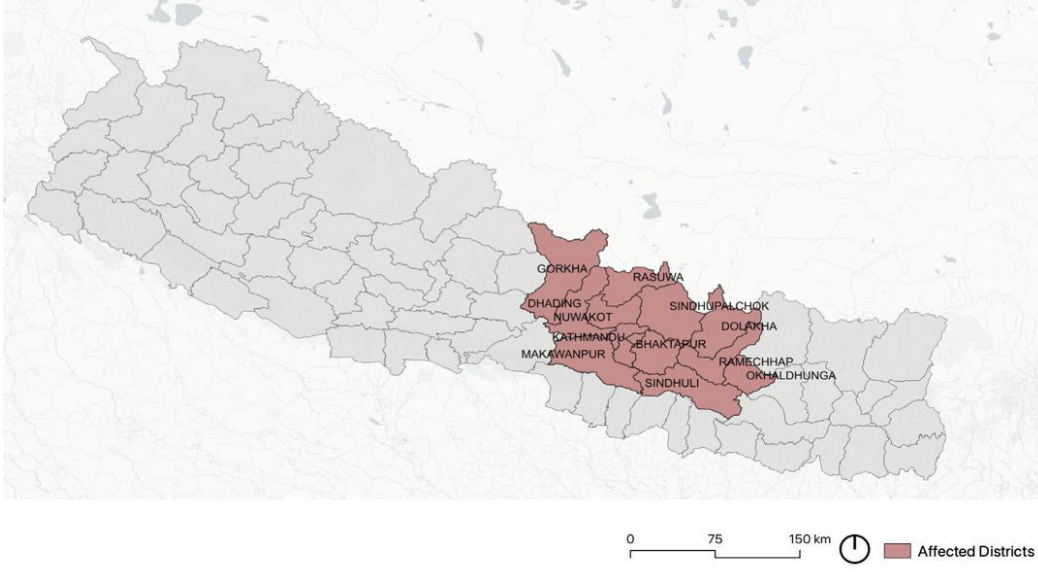

Figure 1: Affected Areas Include Areas Where There has been a Damage to Structures, Physical Infrastructure, and Roads | Situation Report, Shelter Cluster Nepal, November 2015

In the immediate aftermath of the earthquake, about $4.1 billion was pledged by donors to help reconstruct Nepal, led by a donor consortium of bilateral, multilateral and international donors. Since this pledge, there has been a significant increase in both the number of projects and the operational presence of aid in Nepal. According to the Social Welfare Council (SWC), the apex regulatory authority in Nepal for NGOs, there were 39,759 NGOs registered between 1977 and 2014 in Nepal, which increased to over 50,000 NGOs right after the earthquake (Karkee et al., 2016). There were 232 operational INGOs in Nepal before the earthquake, which rose to 250 post the earthquake. The aid avalanche that followed upended Nepal's urban development patterns in beneficiary cities.

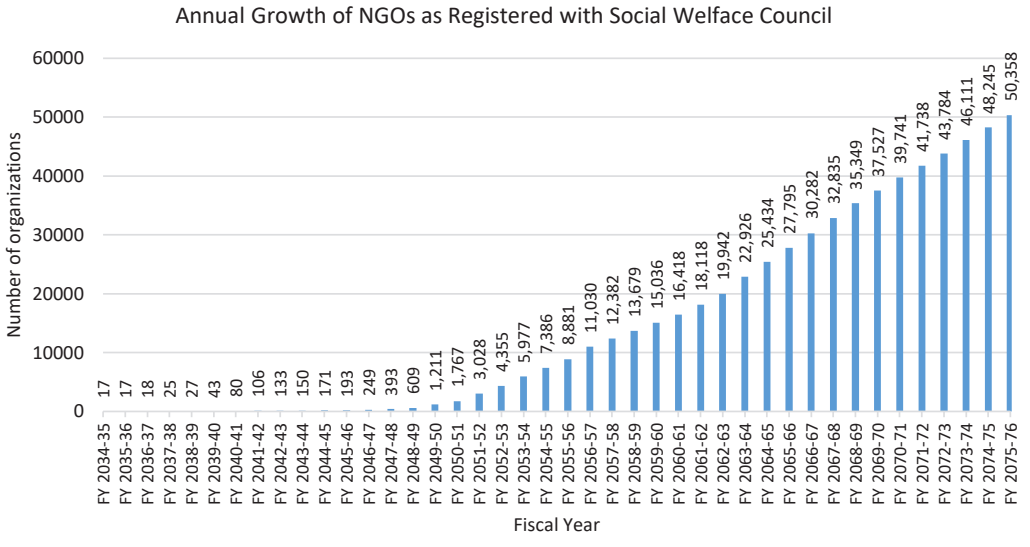

Figure 2: Increase in the Number of NGOs Registered with the Social Welfare Council. There were 232 operational INGOs in Nepal before the Earthquake, which rose to 250 post the earthquake. | Social Welfare Council, 2023

2. Knowledge Gap

2.1 Inequities in Aid Distribution in Nepal

Literature on international aid-funded urban development in Nepal post-earthquake suggests a pattern of gentrification, particularly in historic settlements like Lalitpur near Patan Durbar Square, where traditional Newari homes are increasingly converted into Airbnbs through foreign investment (Bajracharya, 2017; Sengupta, 2022). Scholars have noted that development projects in Nepal often produce unintended economic, social, cultural, and ideological impacts on local communities (Fehr, 2022). Following the 2015 earthquake, aid distribution in Kathmandu favored higher-caste, wealthier neighborhoods, disproportionately disadvantaging lower-income and lower-caste communities further from the city center (Eichenauer et al., 2020). This growing urban inequity can exacerbate social conflicts (De Juan, Pierskalla, and Schwarz, 2020), an issue requiring further investigation. While research has explored the roles of government, social actors, and international development groups in urban change (Daly et al., 2017), there is a gap in understanding how international aid contributes to rising inequity and gentrification from a spatial and urban perspective. This paper addresses this gap using quantitative analysis of open-source geospatial data, rental, and land values.

3. Problem Statement

3.1 An Ad-hoc Post Disaster Policy Environment

At the time of the earthquake, land development in Lalitpur was governed by the National Land Use Policy of 2012, while urban development in the Kathmandu Valley, including Lalitpur and Kathmandu, was guided by the Long-Term Development Concept Plan of 2002 (Kathmandu Valley Development Authority, 2015). Despite having these urban development master plans in place, many neighborhoods had been growing organically and haphazardly (Bloomberg,2015). The influx of international aid in Nepal had been thriving even before the earthquake, largely due to the government's free-market policies and a favorable regulatory environment established following the restoration of a multi-party democratic system in 1990 (Karkee et al., 2016). The Social Welfare Act of 1992 led to the creation of the Social Welfare Council (SWC), which has since monitored and recorded the presence and funding of NGOs within the country, albeit in a limited capacity (S Malik, 2023, personal communication).

Although the Nepalese government had been aware of the likelihood of a major earthquake, there were no fully functional disaster management agencies at the time (Chaudhary, 2020). The National Reconstruction Authority (NRA) was established as an emergency measure in 2016 following the earthquake but has since ceased to exist, with its remaining responsibilities and capital transferred to the Department of Urban Development and Building Construction and the National Disaster Risk Reduction and Management Authority (NDRRMA). This policy environment—characterized by uncontrolled urbanization, increasing foreign aid presence, uncertain governance, and underdeveloped disaster management policies—further exacerbated the effects of the earthquake.

3.2 Inequities in Urban Patterns of Aid Distributions

Of the 14 municipalities with significant earthquake damage, urban areas in Nepal were notable because they suffered damages in Wards such as the heritage squares of Patan Durbar Square. However, even though 25% of all damaged structures were in urban areas of Kathmandu and Lalitpur, these areas were largely overlooked in the immediate international humanitarian response (Shelter Cluster Nepal , 2015), due to lack of funding, lack of clarity about land and property rights, and inefficiencies in interacting with administrative bodies at the time of the disaster, even though they equally bore the impact of the earthquake (L. Sharma; P. Kadariya; Y. Sharma; S. Lama, personal communications, January 2023).

Nonetheless, even though urban areas were overlooked as project site locations in the immediate aftermath of the earthquake, the operational presence of INGOs and humanitarian groups conglomerated in urban areas for a range of up to 5 years after the 2015 event (S. Malik, personal communication, January, 2023).

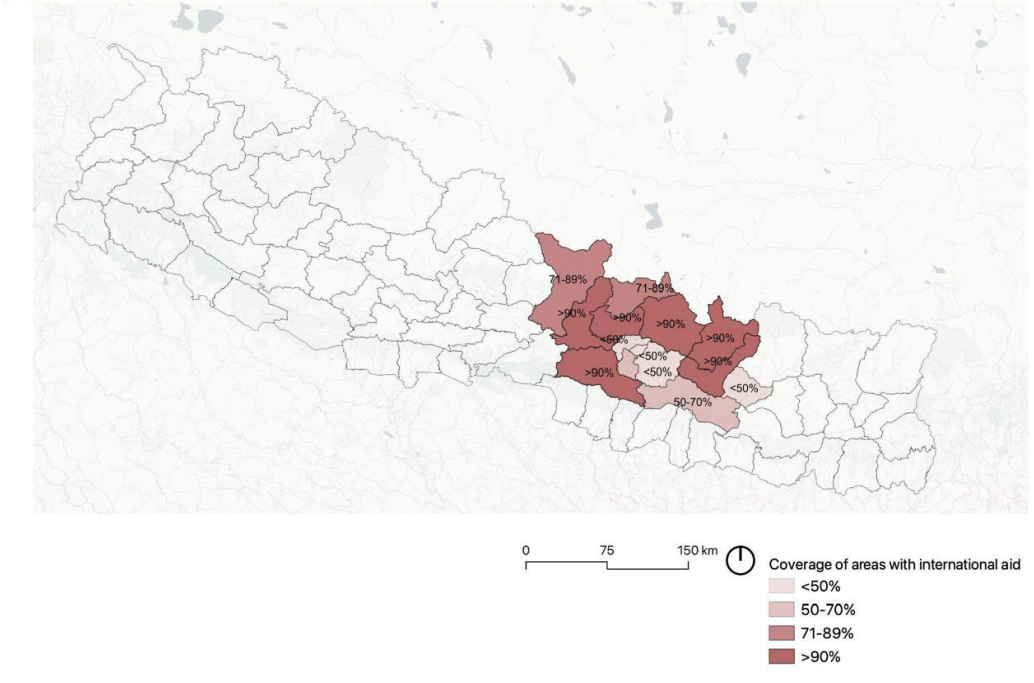

Figure 3: Coverage of Areas by International Aid | Shelter Cluster Factsheet, November 2015

According to the Social Welfare Council, 17 new INGOs started operating in Kathmandu and Lalitpur after the 2015 earthquake, out of which ten remained by 2017. Several INGOs in the country altered their existing operations to cater to the pressing needs of earthquake response, thereby increasing INGO presence and reach.

3.3 Hypothesis

Post-earthquake Nepal is a fascinating case study for Bello's theoretical definition of the 'relief and reconstruction complex', where he analyzed the motivations of the same key actors who emerge in post-disaster response across the world - namely the World Bank, INGOs and the US military and political command, to push privatization and soft diplomacy agendas (Bello, 2006). Carolini (2021) goes a step further to analyze not just the motivations of development agencies but the negative externalities that emerge from their impact on urban neighborhoods— particularly

in capital cities where they headquarters—and enhanced urban inequities due to their presence and operations by conducting a much more spatially sound analysis (Carolini, 2021). Both theoretical frameworks are applicable in urban areas of Nepal.

This paper hypothesizes that reconstruction aid post-earthquake of 2015 led to an agglomeration or clustering of both the operational presence of aid workers and project presence (and benefits) in certain urban Wards, which led to intra-urban changes in Ward neighborhoods, creating pressures on rents, infrastructure, and access to amenities within Lalitpur which had not previously existed. Here, Lalitpur was chosen as a case study due to the dynamic nature of the emerging intra-Ward inequities within this urban municipality. A counterfactual study will be used to study if this hypothesis holds true in a comparable Ward and the spatial impact and extent of this change across neighbourhoods in Lalitpur particularly.

4. Research Methodology

This paper leverages a mixed methods approach—using both quantitative and qualitative methods—to explore Nepal's spatial and socio-economic imprint of aid operations after the 2015 earthquake. I use publicly available data from the National Reconstruction Authority, the Lalitpur Municipal Authority (LMA), the Kathmandu Valley Development Authority (KVDA), and the Housing Recovery and Reconstruction Platform (HRRP) to conduct a geospatial clustering analysis. I also used semi-structured qualitative interviews collected across selected sites using stratified sampling to select interviews in a transect walk within particular Wards. In addition, Ward officers' focus group interviews and targeted interviews were also collected. All interviews were coded for patterns of neighborhood change, and externalities spatialized within respective Wards.

4.1 Profiling of Variables

4.1.1 Profile of Built Projects

Public projects such as schools, healthcare, healthcare, and historical structures were enumerated as aid projects. Housing projects with more than 80% of their aid contributions through international aid were also enumerated.

4.1.2 Profile of Personnel

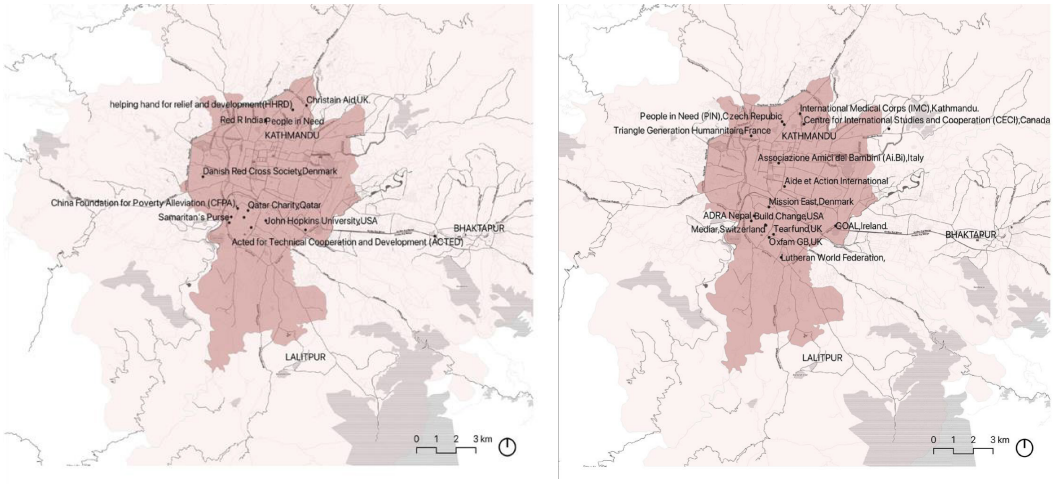

Figure 4: INGOs Operating in Kathmandu and Lalitpur in 2015-16 and 2016-17

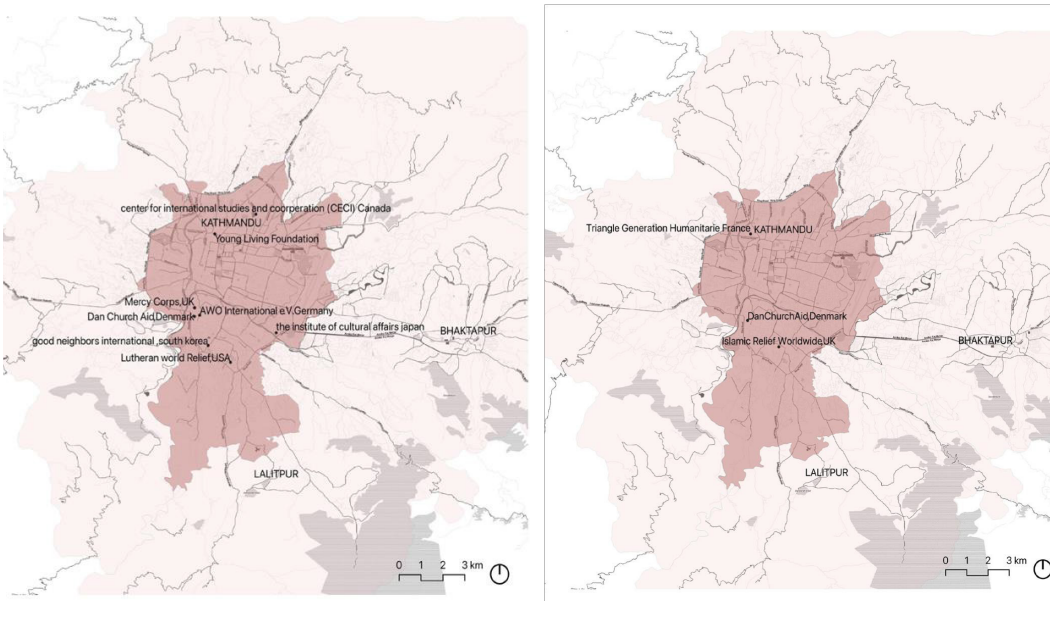

Figure 5: INGOs Operating in Kathmandu and Lalitpur in 2017-18 | NGOs Operating in Kathmandu and Lalitpur in 2018-19

This paper focuses on studying long-term foreign aid workers who typically stay on for 3-5 years, often in managerial roles, and have distinct needs, including housing, schools for their families, and culturally specific amenities. These personnel are

contrasted with short-term humanitarian workers, who tend to be younger and stay for shorter periods. The long-term workers were chosen for the study due to their significant impact on local infrastructure and urban areas, as they often lead to developing specialized facilities and retrofitting buildings to meet their needs. These aid workers' physical presence and outposts, including their headquarters, embassies, and living quarters, were examined to understand their spatial influence on the urban environment.

4.2 Site Context

This paper will focus on Lalitpur as an emerging urban area that has imbibed the impacts of both post-earthquake reconstruction and the operational presence of embassies and INGOs. It will analyze the spatial distribution of emergency reconstruction aid in the aftermath of the earthquake across Wards in Lalitpur.

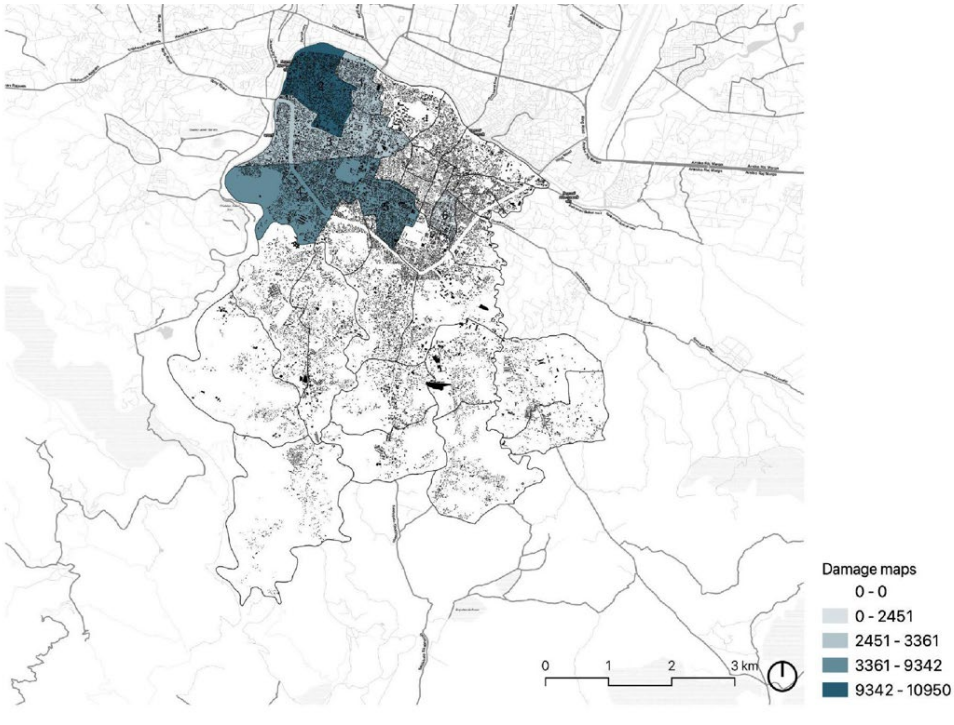

Figure 6: Distribution of Damage Across Lalitpur Wards After the 2015 Earthquake | One of the limitations of assessing damage across the wards in lalitpur is the concentration of data in the northwest wards closer to kathmandu city. It is difficult to ascertain whether this is because these were the only wards that were surveyed due to ease of access of ngos or because this a geo aggregation has gone wrong | Readapted from the National Reconstruction Authority portal, accessed in 2023

The spatial clustering of projects built by international aid within Lalitpur is concentrated within the northern part of the Mahanagarpalika (Metropolitan City) in Wards 2 and 3 and the southwestern parts of the metropolitan area in Wards 21 and 22. Analysis of the distribution of INGOs, embassies and projects in Lalitpur Metropolitan City, one finds that there is a clustering and subsequent increase in the number of personnel that lived in Lalitpur after the earthquake, within Ward No. 2, 3 and 1, where most of the INGO presence is located.

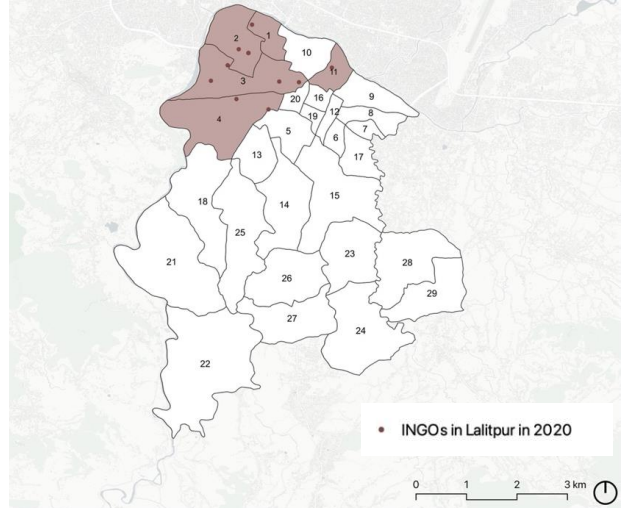

Figure 7: Wards 1, 2, 3, 4 and 11 have the most concentration of INGOs and embassies in 2020

In addition, a counterfactual analysis was conducted in Ward No. 26, which officials of the Lalitpur Municipal Authority pointed out as one of the most underdeveloped Wards in Lalitpur Metropolitan City. Further, city officials mentioned Ward No. 26 as one of the few urban Wards that received very little aid intervention compared to other Wards. "A counterfactual is a statement about how things occur in other possible worlds governed by the same laws of nature" (Lewis, 1973). To challenge the supposition that there was an impact of pressures of operational and project presence of foreign aid workers in various Wards in Lalitpur, Ward No. 26 with no known presence of projects and personnel was studied through the same methods.

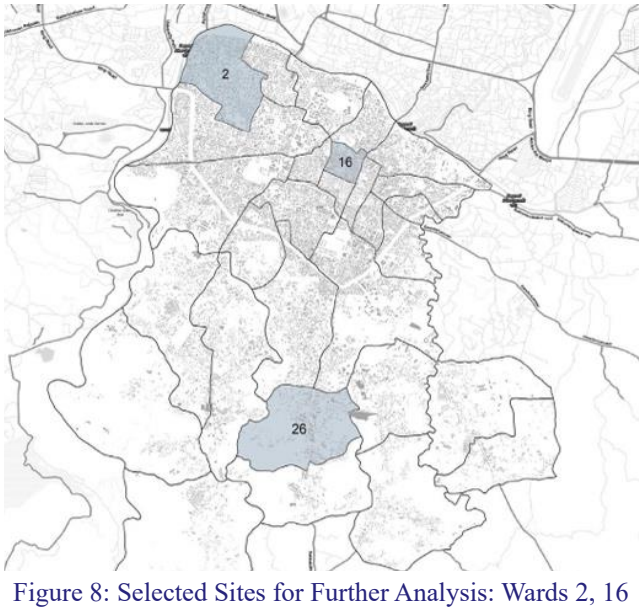

Figure 8: Selected Sites for Further Analysis: Wards 2, 16 and 26

5. Results

The paper conducted qualitative interviews of key stakeholders and small business owners in Wards 2,16, and 26 across a 1 km-1.5 km stretch, with up to 5 interviews across a uniform survey questionnaire, as seen in the Appendix. Interviewees were selected from a spectrum of professions and a range of tenancies, including renters and owners. One limitation of this study is that interviewees were selected on the basis of their availability on the particular day of the interview, not across a time period.

5.1 Areas of Analysis – Ward No. 2, 16, 26

5.1.1 Sanepa - Ward No. 2

The random sampling interviews mainly focused on hospitality and service providers within the area, as they kept a log of customer preferences and customer turnout within the area. In the aftermath of the earthquake and COVID pandemic, hospitality and service providers in Lalitpur's Ward 2 experienced shifts in customer demographics, with a higher percentage of non-Nepali and higher income Nepali customers, leading to menu diversification and rent increases. For grocery store owners, catering to the international population spurred product diversification, while closures of local eateries highlighted neighborhood changes, with rising rents driving out traditional businesses. Despite challenges, improved infrastructure and services characterize Ward 2 as one of Lalitpur's best-served areas.

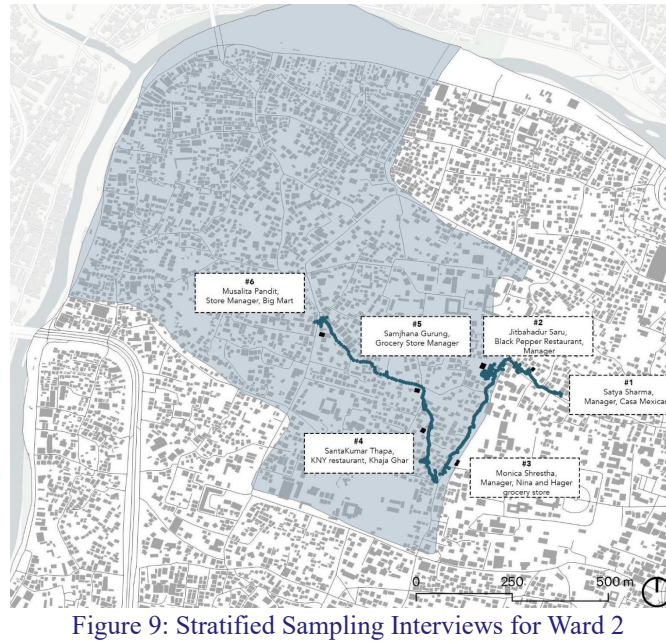

Figure 9: Stratified Sampling Interviews for Ward 2

5.1.2 Patan Durbar Square - Ward No. 16.

Ward No. 16 is home to the UNESCO World Heritage Site Patan Durbar Square area, which is a historic palace square dating back to the 15th Century. This historically

has been the old city and city center, and therefore was one of the neighborhoods with the highest rents. Since its UNESCO designation in 1979, Patan Durbar Square and the adjoining area have been a hub of tourist attractions and commercial.

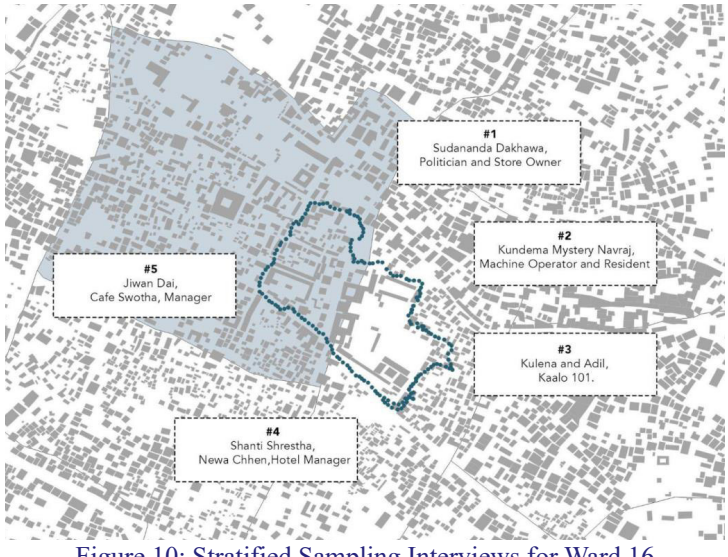

Figure 10: Stratified Sampling Interviews for Ward 16

The Ward encompassing Patan Durbar Square, a UNESCO heritage site, has seen significant reconstruction efforts post-earthquake, with donor funds channeled through organizations like Kathmandu Valley Preservation Trust (KVPT) and UNESCO. This concentrated interest has led to a transformation in housing dynamics, with abandoned structures repurposed for art studios and boutique hotels, catering primarily to tourists and expats. However, this influx of funds has also created disparities, with some struggling to access grants for heritage conservation. In contrast, others exploit the opportunity for commercial gain, contributing to neighborhood gentrification and shifting away from traditional livelihoods. Overall, the evolving landscape reflects a complex interplay of tourism, globalization, and privatization, complicating efforts to isolate the specific impacts of the earthquake and aid initiatives.

5.1.3 Sunakothi - Ward No. 26

Sunakothi is a neighborhood to the southernmost end of the Lalitpur Metropolitan City. It is a recently bifurcated Village Development Committee that has been devolved into two Wards.

Ward No. 26 (Sunakothi) was chosen as a counterfactual study of the impacts and effects of international reconstruction aid in Lalitpur. As per the NRA and the HRRP websites, there are no known partner organizations and/or projects within the Ward boundaries, and there has been no known recollection of any international NGO working within Sunakothi either before or after the earthquake by the officials in the Ward office no. 26. Ward officials note minimal interest from INGOs post-earthquake,

with only government-led reconstruction efforts observed. Sunakothi experienced demographic shifts through internal migration, with residents predominantly commuting to Lalitpur or Kathmandu for work. Rent and land prices increased marginally post-earthquake, accompanied by densification and loss of open spaces, raising concerns about community resilience to future disasters. Additionally, the preference for NRA-certified seismic structures has driven up housing prices, contributing to small yet noticeable neighborhood changes.

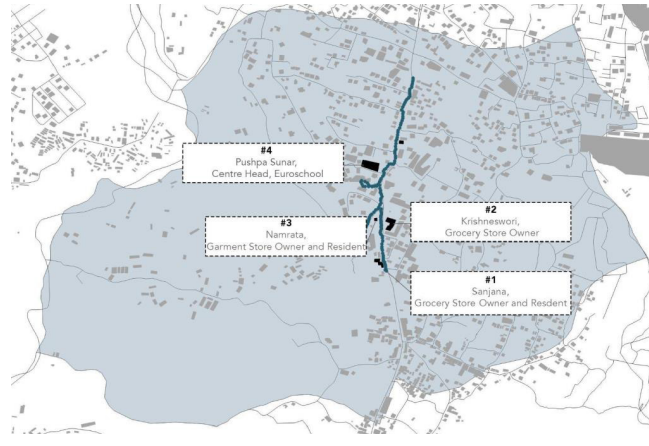

Figure 11: Stratified Sampling Interviews for Ward 26

5.2 Building Construction Analysis of Selected Wards

The paper analyzed quantitative data, such as the year-on-year increase in building permits from 2015 to 2022, as provided by the Lalitpur Electronic Building Permit System and Lalitpur Metropolitan Authority. The building permits data also includes information on retrofits, restoration, and new construction.

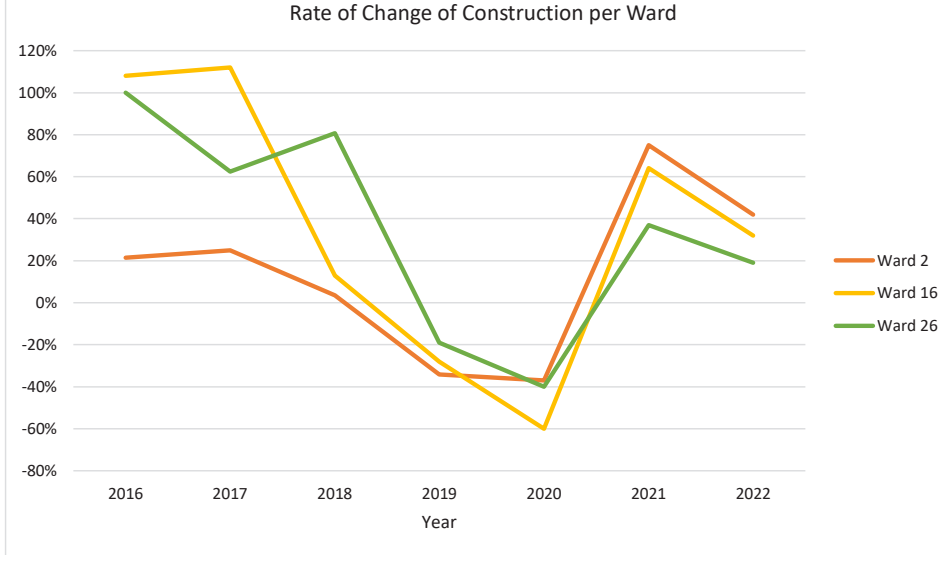

Figure 12: Rate of Construction Across Wards 2, 16, 26 Across Time Series Data From 2015 – 2022

5.3 Land Value Analysis of Selected Wards

Land values in Lalitpur are predetermined by a government-regulated formula, which is set per aana and based on proximities from main, secondary, and tertiary roads (See Appendix A).

Land prices are speculative and rise and fall according to informal market transactions (S. Shrestha, personal communication, January 2023). The difference between current prices and baseline rates can be estimated as a percentage increase (See Appendix B for reasoning and methods of deduction).

Table 1: Increase in Land Values From 2010 to 2023 as Tabulated From Random Sampling Interviews

Land type	Ward No. 2	Increase from baseline	Ward No. 16	Increase from baseline	Ward No. 26	Increase from baseline
For sale - Primary road type	55 lac per aana	254% increase	45 lac per aana	25% increase	22 lac per aana	53% increase

5.4 Rent Analysis of Lalitpur Wards

In order to understand the trend of rental rates within Ward No. 26, 16 and 2 after the earthquake and in comparison, to each other presently, rental information was scraped from four major publicly available rental information websites such as 99 aanas, GharGhaderi, Nepal Homes and Green Real Estate over the period of one month from March to April 2023. In addition, the paper looked at AirBnB websites to determine the prices of short-term leases (See Appendix C). The above rent and housing prices were further corroborated by talking to real estate brokers who conducted these transactions, particularly in Ward No. 2 (See Appendix D).

6. Discussion

6.1 Ward-Wise Sampling Results

As a mid-rise, mid-density and fairly residential enclave, Ward No. 2 belies the assumption that it is one of the wealthiest Wards in Lalitpur. However, it is one of the largest property taxpayers in the metropolitan area and has the largest percentage of commercial areas in LMC (Paudel, 2022). The stratified sampling results indicate that there has been a rising gap between the purchasing power of locals vs expats in Sanepa and Jhamsikhel, which can be attributed to the increase in the number of personnel in Ward No. 2 and 3. Ward No. 16 has also seen a change in demographics; however, the impacts of international aid alone cannot be sufficiently established since the Ward has been a heritage and historically high Ward since before the

earthquake. On the other hand, while rents and gentrification marginally increased in Ward No. 26, interviewees do not attribute it to the impacts of international aid projects or personnel.

6.2 Building Construction Analysis Results

Aside from the global changes in construction rates across all three Wards, each Ward has a rate of acceleration or deceleration of building construction services that reflect aid intervention. However, since all Wards reacted similarly to similar market forces and had similar numbers in terms of construction growth, this analysis also serves as a control factor to demonstrate the similarity in comparable Wards to analyze effects of an aid intervention separate from market forces

6.3 Land Value Analysis Results

The total area encompassed by the highest value lands within each Ward is the highest in Ward No. 2 and Ward No. 26. Land tax is levied at a rate of 0.01% to properties (land+ property) ranging over an NPR 0.2 million. This calculation gives us an approximation that Ward No. 2 is one of the richest in terms of cumulative land value, while Ward No.16 is the lowest (even though it is priced higher per sq. ft. rate). The most interesting deduction from this data is the price increase rate across Wards as per speculative pricing. Ward No. 2 registers a whopping 254% increase as compared to Ward No. 16's 25% increase. Ward No. 26 is also increasing in speculative land pricing, but not at the rate of Ward No. 2.

6.4 Rent Value Analysis Results

Ward No. 2's showed exorbitant rent differentials for expats and locals. A rented apartment for an expat costs about a couple of hundred dollars more than the rent of the same apartment for a Nepali person. The effect of this price differential in rents is the collective raising of rent ceilings for the entire Ward. These are rents for furnished apartments with amenities such as heating and air conditioning - all luxuries for a regular apartment owner in Lalitpur and are not uncommon, particularly in Ward No. 2 (M. Anthony, personal communication, January 2023). Further, each interviewee in the random sampling process shared the rents they paid for their home or establishment, and their results were tabulated (See Appendix E). Ward No. 2 again emerges as the Ward with the highest rental and property values of all three Wards. Additionally, there is also an intra-Ward variation in the rents that a local pays vs the rent that an expat is expected to pay, which at times is three times more than current market rates, thereby creating inequities in access to housing.

7. Conclusion

This analysis reveals opportunistic buying across all three Wards in Lalitpur post-earthquake, driven by low rent values, increased job opportunities, and migration (S. Shrestha, personal communication, January 2023). These changes can be directly attributed to the impact of the earthquake. The paper's main hypothesis is that international aid accelerates neighborhood change and contributes to gentrification. The findings show significant speculation and rising rents in Ward 2, while Ward 16 experienced a decline in rent contrary to gentrification patterns suggested in previous studies (Bajracharya, 2017; Haselberger and Krist, 2020). This decline is linked to heritage retrofitting grants that attracted younger renters and artists, contradicting traditional gentrification models.

Additionally, the study highlights the overlooked impact of international aid workers on urban dynamics. Similar to Carolini's findings in Maputo (Carolini, 2021), Sanepa (Ward 2) saw sharp increases in rent, land values (254%), and housing prices ($600-$1,200) due to the influx of aid workers, displacing small businesses and low-income residents. These changes indicate that the presence of aid personnel has a more substantial impact than aid projects themselves. The findings also reveal increasing intra-urban inequalities in Lalitpur, driven by diverse rates of neighborhood change.

8. Recommendations

This paper offers a range of policy recommendations to stakeholder groups within this discussion of the role and range of aid in post-disaster reconstruction in Nepal, and for researchers who wish to study the scalar relationships between international aid and disaster recovery in South Asian cities.

The following policy recommendations are for various agencies and communities including Municipalities, Watchdog institutions, disaster management authorities, Aid organizations and research communities.

1) **Conduct a broader study to understand funding and aid needs post-disaster at the Ward level**: Post-earthquake aid distribution revealed significant urban inequities and over-reliance on external funding, weakening local capacity. It is recommended to establish a comprehensive methodology and plan of action for conducting Rapid Post-Disaster Needs Assessments at the ward level, to understand funding needs. This approach should also include accurate calculations of funding requirements from aid, central government contributions, and own-source revenue.

2) **Implement land use policies to prepare for both slow onset and rapid onset disasters at a Municipality level**: Land use plans and development policies, such as Vision 2035 and Beyond: 20 Years Strategic Development Master Plan (2015 - 2035) for Kathmandu Valley, serve as critical tools for regulating spatial development at the ward level. Our analysis, which employed geospatial and rental assessments, has revealed not just a lack of disaster preparedness but a mismatch between long-term development agendas and realities on the ground. To address these disparities, land use plans should be leveraged to prepare for disaster risk, compare the rate of development between municipalities and mitigate the growing inequities within wards.
3) **Establish partnerships with all stakeholders to build resilience:** As several grassroots NGOs and community groups pointed out in this paper, the mismatch in motivations of aid agencies, agendas and capacities of ward officials, and the priorities of those impacts led to an unequal and prolonged recovery process. Establishing a relationship with all partnerships across all stakeholders, including government agencies, local and international NGOs and civil society groups before the onset of the disaster will allow for all stakeholders to operate from a space of transparency and collaboration and avoid the duplication of efforts. This can be achieved by having a platform where all parties can agree upon blended finance strategies for development.
4) **Enhance monitoring of project impacts by the Social Welfare Council:** Interviews with representatives from the Social Welfare Council reveal significant gaps in the monitoring and evaluation mechanisms applied to international non-governmental organizations (INGOs). These gaps extend over prolonged periods and surpass the immediate boundaries of project-specific outcomes. Enhancing the regulatory scope of the Social Welfare Council to include comprehensive oversight of INGOs—encompassing both short-term and long-term evaluations of their operational presence, aid distribution practices, and overall impact—could significantly improve transparency.
5) **Separate responsibilities within disaster management at administrative levels:** Prior to the establishment of the National Reconstruction Authority (NRA), NGOs highlighted significant coordination challenges between government agencies and NGO representatives at both the ward and city levels. These challenges exacerbated disparities in the distribution of resources and services across different wards. In response, the National Disaster Risk Reduction and Management Authority (NDRRMA) has implemented a three-tier disaster management system encompassing central, provincial, and local

levels. While this decentralization represents progress, it is crucial to further enhance the framework by instituting mechanisms for transparency and ongoing dialogue at each level of governance.

6) **Improve urban data capacities of municipalities:** Given that the findings of this paper can be readily replicated by metropolitan agencies to monitor the impact and benefits of post-disaster projects and aid within their respective wards, the analysis is built on open-source data. Strengthening the capacities of local bodies by providing them with the necessary tools, training, and resources to leverage existing resources is essential. This will empower local agencies to effectively utilize open-source data for continuous monitoring and evaluation, ensuring that post-disaster interventions are both equitable and aligned with long-term development goals.
7) **Tailor aid strategies to long-term impacts of aid agencies:** Similar to the challenges faced by the SWC, this paper identifies that program monitoring and evaluation conducted by international NGOs have limitations. These limitations often restrict the assessment to the immediate benefits of the project. The paper recommends expanding the scope of impact measurement to include not only the direct effects of aid projects but also the broader impacts on personnel needs and any resulting externalities that extend beyond the specified project timeframe.
8) **Establish research methods to address dual perspectives on urban change and their causal factors:** The current body of research on post-earthquake reconstruction in Nepal overlooks critical knowledge gaps related to the role of international aid and the gentrification that follows disasters. This paper recommends adopting a spatial analysis approach to quantify these changes in the municipality under study and other urban areas facing similar dynamics. This method would contribute to developing a comprehensive framework for assessing the factors driving gentrification in neighborhoods experiencing significant post-disaster development.

9. Suggested Course of Action

The policy recommendations made above have been further elaborated by identifying the responsible agency, the suggested/anticipated role and action, and expected outcomes. These suggestions are logical extensions of the recommendation and have not been validated by the agency representatives at this point. Therefore, these should be regarded as helpful tips.

Recommendation	Suggested Action	Outcome
1. Conduct a broader study to understand funding and aid needs post disaster at the Ward level	Develop a methodology and plan of action to conduct Rapid Post Disaster Needs Assessments at the Ward level, as opposed to the national level alone, and establish accurate funding needs from aid, from central governments and from own source revenue	By decentralizing the needs assessment at a local level, each ward will be able to improve decision making, able to allocate resources accordingly, enhance fiscal resilience at the local level and be able to leverage existing local knowledge.
2. Implement land use policies to prepare for both slow onset and rapid onset disasters at the Municipalility level	Utilize spatial policy instruments such as the Vision 2035 and Beyond: 20 Years Strategic Development Master Plan (2015 - 2035) for Kathmandu Valley	Utilizing spatial policy instruments will help with risk informed land use planning, alignment of development agendas with realities on the ground and improved coordination between municipalities over an extended and prescribed period of time
3. Establish partnerships to build resilience amongst all stakeholders	Establish a relationship with all partnership across all stakeholders including government agencies, local and international NGOs and civil society groups before the onset of the disaster by imagining blended finance strategies	Utilizing blended finance strategies, which combine public, private, and philanthropic funding sources, would create a more sustainable and diverse pool of financial resources to support resilience-building activities before and after disasters. This will help foster relationships and trust between all actors towards shared goals.
4. Enhance monitoring of project impacts at the SWC	Incorporate a framework to quantitatively monitor and evaluate the impact of aid agencies and their personnel on local areas, with a long term perspective rather than short term project gains	A robust monitoring framework ensures that aid agencies are held accountable for their actions by the SWC, focusing on long-term outcomes rather than short-term project gains.
5. Separate responsibilities within disaster management within NDRRMA	Integrate a three-tier disaster management system to clarify NGO roles at provincial, district, and local levels, and establish channels of communication where INGO feedback and presence can be regulated	Improved efficiency, accountability and transparency at all administrative levels will help create clear channels of communication at the onset of the next disaster
6. Improve urban data capacities at the municipality level	Strengthen local authorities' frameworks to maintain autonomy and monitor their wards by training staff on readily available open source data and software	This will empower local agencies to effectively utilize open-source data for continuous monitoring and evaluation, ensuring that post-disaster interventions are both equitable and aligned with long-term development goals.

Recommendation	Suggested Action	Outcome
7. Tailor aid strategies to long-term impacts for aid agencies	Ensure aid strategies consider long-term impacts, including infrastructure needs and local amenities amenable to long term presence to monitor their externalities	This action will ensure that aid agencies are mindful of the duration of personnel intervention and adjust their operations to minimize the long-term impact on the neighborhoods in which they operate
8. Establish research methodologies to address dual perspectives on urban change and their causal factors	Establish robust methods to explore causal relationships between urban gentrification and underlying factors	This would contribute to developing a comprehensive framework for assessing the factors driving gentrification in neighborhoods experiencing significant development.

Author Contribution

This paper was written as a part of this author's master's thesis at the Department of Urban Studies and Planning at the Massachusetts Institute of Technology in 2023.

Conflict of Interest Statement

The author has no conflict of interests to declare.

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Appendix

Appendix A: Primary, Secondary and Tertiary Road Buffers for Wards 2, 16 and 26

Appendix B: Land Value Calculations as per Kathmandu Valley Developmemt Authority Data and Buffer Analysis

	Primary Road Buffer (Sum Area sq.m.)	Secondary Road Buffer (Sum Area sq.m.)	Tertiary Road Buffer (Sum Area sq.m.)	Total Saleable Area and Profits	Per Aana Baseline Calculations
Ward 2	634746.46	109778.58	78470.52	822955.56	
Multiplier	1550000	1300000	800000		1550000
Total Ward 2	983857013000	142712154000	62776412000	1189345579000	

	Primary Road Buffer (Sum Area sq.m.)	Secondary Road Buffer (Sum Area sq.m.)	Tertiary Road Buffer (Sum Area sq.m.)	Total Saleable Area and Profits	Per Aana Baseline Calculations
Ward 16	158791.32	31790.89	15479.47	206061.68	
Multiplier	3750000	1650000	175000		3750000
Total Ward 16	595467457500	52454968500	2708907075	650631333075	
Ward 26	675935.051			675935.051	
Multiplier	1300000				1300000
Total Ward 26	878715566300			878715566300	

Appendix C: Sales Comparison Method for Rental Variation Across Wards 2, 16, And 26

Rental Agency	Ward No. 2 (NPR per sq.ft)	Ward No. 16 (NPR per sq.ft)	Ward No. 26 (NPR per sq.ft)
Comp 1 (GharGhaderi.com)	143	409	111
Comp 2 (NepalHomes)	130	15	32.89
Comp 3 (AirBnB)	$14 - 76 a night	$11- 65 a night	$10-30 usd a night
Comp 4 (99aana)	116	-	-
Comp 5 (Green Real Estate)	83	-	-

Sources: As Above

Appendix D: Estimates from Ward No. 2 Real Estate Broker 'Green Real Estate'

Inside the ring road

1 bedroom = 50,000 NPR to expats (foreign aid workers in this case)

1 bedroom = 35000 NPR to a Nepali person (unfurnished)

Outside ring road

1 bedroom = 15000 NPR (expats choose not to live outside the ring road)

The following are the rates of buying a house for a local Nepali person:

1 bedroom = 1.25 lacs NPR

Expats are not allowed by law to buy a house. However, many expats in Sanepa form co ownership agreements with local Nepalis to buy property.

The following are the rental rates within Sanepa for a local Nepali person

1 sq ft = 1.25 NPR for a ground floor space, with spaces ranging from 3000 – 4000 feet. There has been an increasing trend of rents in Kumaripati, Bhaisipati and Pulchowk (Ward 3) after a market saturation in Sanepa, which corroborates with SWC's evaluation of an increasing trend of newer NGOs to migrate to these areas.

Appendix E: Average Rents per Ward as Estimated from Random Sampling Results Across Wards 2, 16, 26 as Collected in January 2023

Type of Space	Ward No. 2	% Increase in Rents After Earthquake	Ward No. 16	% Increase in Rents After Earthquake	Ward No.26	% Increase in Rents After Earthquake
Furnished room for rent	5000 NPR per room - 1200 usd per room	10-15%	15000 NPR for a room in a heritage structure	10%	4000-15000 NPR	NA
Commercial shop	25000 NPR	5-10%	NA	Decrease	2000-6000 NPR	10%
Airbnb rates	$30 per night	-	$20 per night	-		-
Studio space	55,000 NPR	10%	22,000 NPR	10%	20000 NPR	10%

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Research Article

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Environmental Study Delays in Nepal: A Comparison with India and Bangladesh and Policy Recommendations

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Abstract

This research examines the environmental approval process in Nepal and compares it with those in India and Bangladesh, focusing on the time taken to complete the assessment of environmental study reports. The study conducts three levels of analysis. First, the policy review outlines all relevant environmental policies and laws, highlighting key provisions related to approval timelines. While not every step of the environmental study process has a mandated time frame, the legal time limits for report forwarding and approval are explicitly defined. Second, statistical analysis reveals a significant discrepancy between the statutory and actual approval times. While the legal mandate is just 35 days for Environmental Impact Assessment (EIA), assessing a report actually takes 339 days on average. The trend line reveals that the average time taken is decreasing. However, it is still much higher than India's average EIA approval time of 64 days. Third, through a comparative analysis of eighteen different components of the environmental assessment process, this paper identifies the possible factors contributing to the delays, such as ambiguous jurisdiction, lack of nodal agency, lack of integrated guidelines, high centralization, and no use of e-governance. This paper also compares the thresholds that trigger the environmental study across eight sectors for three countries and finds that Nepal's thresholds are narrower than India's and comparable to Bangladesh's. Recommendations made include clarifying jurisdictional roles, developing integrated guidelines, establishing specialized nodal agencies, and implementing digital systems. Overall, this research attempts to address flaws in Nepal's environmental assessment system, offering solutions for efficient environmental regulation and improving the business environment in Nepal.

Keywords: Environmental study, Environmental clearance, EIA, Approval time, Environment regulation

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नेपालमा वातावरणीय अध्ययनमा हुने ढिलाइः भारत र बङ्गलादेशसँगको तुलना र नीति सिफारिसहरू

उमेश राज रिमाल

प्रधानमन्त्री तथा मन्त्रिपरिषद्को कार्यालय, सिंहदरबार, काठमाडौँ, नेपाल

पाण्डुलिपी प्राप्तः ५ अगस्ट २०२४ अन्तिम परिमार्जनः ९ नोभेम्बर २०२४ स्वीकृतः ९ अक्टोबर २०२४

सार

प्रस्तुत अध्ययनले वातावरणीय अध्ययन प्रतिवेदनको मूल्याङ्कन गर्न लाग्ने समयमा केन्द्रित रही नेपालमा वातावरणीय स्वीकृति प्रक्रियाको परीक्षण र यसको भारत र बङ्गलादेशसँग तुलना गरेको छ । अध्ययनमा तीन वटा तहहरूमा विश्लेषण गरिएको छ । पहिलो, सम्बन्धित वातावरणीय नीति तथा कानुनहरूको पुनरावलोकन गरी वातावरणीय अध्ययन र स्वीकृतिका लागि लाग्ने समयको बारेमा प्रकाश पारिएको छ । दोस्रो, तथ्याङ्कीय विश्लेषण गरी कानुनले तोकेको समय र वास्तवमा लागेको समयबिच महत्त्वपूर्ण भिन्नता रहेको पत्ता लगाइएको छ । कानुनले वातावरणीय प्रभाव मूल्याङ्कन प्रतिवेदन स्वीकृति गर्ने समय ३५ दिन मात्र तोकेको भए तापनि औसतमा ३ सय ३९ दिन लाग्ने गरेको देखिन्छ । समय प्रवृत्ति रेखाले यस्तो समय घट्दै गएको देखाउँछ । यद्यपि, अझै पनि भारतको औसत वातावरणीय प्रभाव मूल्याङ्कन प्रतिवेदन स्वीकृतिका लागि लाग्ने समय ६४ दिन भन्दा नेपालमा निकै नै धेरै समय लाग्ने गरेको छ । तेस्रो, नेपालमा विद्यमान वातावरणीय मूल्याङ्कन प्रक्रियासँग सम्बन्धित विभिन्न १५ वटा अवयवहरूको भारत र बङ्गलादेशसँग तुलना गरी उक्त ढिलाइका कारणहरू पहिचान गर्न प्रयत्न गरिएको छ । यस्तो तुलनाबाट अस्पष्ट क्षेत्राधिकार, नोडल एजेन्सीको अभाव, एकीकृत निर्देशिकाको अभाव, अति केन्द्रीकरण र विद्युतीय शासनको प्रयोगका अभाव जस्ता कारणहरू औँल्याइएको छ । यो अध्ययनमा तीन देशका वातावरणीय अध्ययन अनिवार्य बनाउने आठ वटा क्षेत्रका थ्रेसहोल्डबिच पनि तुलना गरिएको छ । यसले नेपालमा वातावरणीय अध्ययनको सीमा भारतमा भन्दा सङ्कुचित रहेको तथा बङ्गलादेशमा करिब उस्तै-उस्तै रहेको देखाएको छ । नेपालको वातावरणीय अध्ययन प्रतिवेदन स्वीकृतिको प्रक्रियालाई छिटो बनाउन उल्लिखित तुलना, विश्लेषण र नतिजाको आधारमा विविध नीति सिफारिसहरू गरिएको छ जसमा स्पष्ट क्षेत्राधिकार, एकीकृत निर्देशिका, प्रत्येक तहमा विशिष्टीकृत नोडल एजेन्सी र विद्युतीय प्रणालीको प्रयोग जस्ता सुधारका उपायहरू रहेका छन् । समग्रमा, यस अध्ययनले नेपालको वातावरण मूल्याङ्कन प्रणालीमा रहेका कमी कमजोरीहरूलाई सम्बोधन गर्दै नेपालमा कुशल वातावरण नियमन र व्यावसायिक वातावरण सुधारको लागि उपायहरू सिफारिस गरेको छ ।

शब्दकुञ्जी: वातावरणीय अध्ययन, इआइए, स्वीकृति समय, वातावरण नियमन

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1. Introduction

Environment Protection Act 2019 and accompanying legal instruments necessitate the approval of environmental study reports from the concerned authorities before commencing specified infrastructural and industrial projects in Nepal. The provision of integrating environmental considerations into the development processes was initiated to balance between environmental protection and economic growth (NPC, 1980). Given its sensitive geo-climate and topography, such measures are critical for Nepal (Khadka & Tuladhar, 1996). While environmental studies have contributed to maintaining environmental integrity and reducing pollution, at least to some extent, various stakeholders, including regulatory agencies, the private sector, and the media, have raised concerns regarding significant delays in approving environmental study reports. These delays have hindered the timely completion of projects, negatively impacting the business environment in Nepal. Therefore, smoothing the environmental study process has been a critical policy issue that needs prioritized resolution.

An environmental study is a precautionary action that documents the potential negative impacts of the construction and operation of the proposed projects and finds a way to control them. Various alternatives are discussed and analyzed to select the best alternative in terms of environmental permissibility. Regular follow-ups with the necessary corrective measures in a timely manner are conducted to address the environmental concerns that may arise from project execution.

The concern for encroachment of developmental activities on the natural and manmade environment led to the emergence of environmental impact studies worldwide. The first such effort materialized in the United States with the enactment of the National Environment Policy Act (NEPA), which assesses the environmental impact of US federal agencies' actions on the environment and takes necessary actions to mitigate the effects (NEPA, 1969). The goal was to ensure that the infrastructure projects such as airports, complexes, and highways financed through the federal budget were sustainable, pro-people, and environmentally friendly. Although initially adopted by the developed Western countries, the NEPA initiative quickly gained traction globally. This momentum was further accelerated by the mandatory provision of environmental assessment for the projects implemented with the World Bank's assistance (World Bank, 1991). Today, virtually all countries have legal frameworks to govern the environmental concerns of developmental activities regardless of the sectors, whether they are public, private, or third sector, that implement the projects.

Nepal started environmental impact assessment in the 1980s mainly to address the environmental effects of donor-assisted projects. The binding provision was made on constructing infrastructures passing through the forest area in 1982 after the establishment of the Environment Protection Council. The Environment Protection Act (1997) and the Rules (1997) made environment study mandatory for the projects and activities specified in the Rules. Article 4 of the Act states that no one should implement or cause to implement the specified proposal without approval from the concerned authority or the ministry after the Act comes into force. With these initiatives, addressing environmental side-effects during developmental activities got legal frameworks in Nepal. The Act underwent amendment thrice before its replacement by the new Act; first to address the republic transformation of the nation, second to accommodate the role of provinces after the declaration of a new constitution, and the third was miscellaneous amendments to introduce provisions that do not have direct consequences on environmental clearance procedures. However, the Rules witnessed five revisions, almost all of them having a direct bearing on the environmental study.

The Office of Auditor's General (OAG) has repeatedly pointed out the need to reform the environmental clearance procedures to expedite the process. In its 59th report, OAG states that despite the legal compulsion to clear the reports within 35 days, almost none of them have been approved on time (OAG, 2022). Some instances even show that the Ministry of Forests and Environment took more than two years to complete the procedures, resulting in prolonged extension of development projects. The unusual extension of the construction period has mandated repeated variations in time and cost, ratcheting up the consultation and construction costs. This has shifted the overall project cost to a substantially higher level. OAG advised the ministry to effectively coordinate among the stakeholders to approve the Environment Impact Assessment (EIA) report within the period fixed by the law. Remarks with similar spirits are also repeated in the 60th report (OAG, 2023). Along with continuing the previous year's remarks, the 61st report has gone one step further (OAG, 2024). The report analyses the causes and consequences of the delay and directs the ministry to address those limitations.

The current Environment Protection Act and the Rules, enacted respectively in 2019 and 2020, allocate the roles and responsibilities among three tiers of the government. These legislations have adopted a decentralized approach in the context of the federal structure of the country. Though a continuation of the previous Acts and Rules in many respects, the new Act allocated the approval authority to the three tiers of the government. With the new law, environmental study of national priority developmental projects, Investment Board approved projects, national

pride projects, federally governed projects, inter-provincial projects, and any other projects specified by the Government of Nepal must be submitted to the federal ministries (EPA, 2019). Brief Environmental Study (BES) and Initial Environmental Study (IEE) are approved by the specified ministries, whereas the EIA is approved by the Ministry of Forests and Environment (EPR, 2020). The environmental study reports regarding the developmental activities or the projects under the jurisdiction of provinces are to be submitted to the authorities specified by the provincial law. Similarly, for the activities or projects under the jurisdiction of local levels, BES and IEE reports should be submitted to the authority specified by the local level laws. In contrast, the EIA report should be submitted to the authority specified by the provincial law.

The Government of Nepal has enacted numerous legislations, decentralized the decision-making process, and amended environmental study thresholds multiple times. Yet, the average time for obtaining environmental clearance is excessively long (OAG, 2022; OAG, 2023: OAG, 2024). This inefficiency directly contributes to the slow project implementation and low capital expenditure (MOF, 2024). Although the prolonged clearance process is recognized as a significant governance problem, only some studies have examined the underlying causes of delay. Existing literature primarily focuses on the qualitative aspects of Environmental Impact Assessment (EIA). Research that analyzes the time dimension of bureaucratic processes for environmental clearance is almost non-existent.

This study analyzes the approval time for environmental study reports in Nepal, collecting data from three federal ministries: the Ministry of Forests and Environment (forests), the Ministry of Physical Infrastructure and Transport (physical infrastructure), and the Ministry of Energy, Water Resources and Irrigation (energy). It presents summary statistics, descriptive analysis, and trend analysis of three-and-a-half-year period data to examine variations in approval times among the ministries over the study period. The time taken for approval may vary according to the types of proponents, such as government agencies vs. private sector, as their operating efficiency and incentives differ. Because the time taken can vary according to the kinds of proponents, the equality of mean test is applied to observe if there is a statistically significant difference in approval time between the study reports proposed by the government and private sectors. The study also compares approval times across different sectors, as the environmental impact and consequences of projects vary by sector, affecting the time needed for report analysis. For example, environmental study reports of constructing a hotel or a hospital may be less complex than those of industrial zones. Therefore, environmental study reports of a hotel or hospital may take less time to approve than those of industrial zones.

In addition to examining the Nepali context, the study conducts a comparative analysis of the EIA process between Nepal, India, and Bangladesh. The four general processes of environmental clearance, viz. screening, scoping, public consultation, and evaluation, are being practiced differently in these countries. Apart from these four broad processes, the constituents of the process, such as the number and types of reports, authority delegation, approving authority, the role of experts, time limit for each stage, and the use of automation, also have a significant bearing on the timely completion of the clearance process. Therefore, this study will cover the time taken for the EIA process and the scope, thresholds, and procedural differences among these countries. By highlighting these differences, the study seeks to pinpoint specific areas where Nepal lags or excels compared to its neighbors.

Based on the comparisons between the eighteen EIA approval constituents, this research found that Nepal needs reforms in several processes and managerial aspects. A nodal agency should be ascertained, and capacity enhancement should be done to make the agency a knowledge reservoir for environmental study. The agency should coordinate all the environmental study processes. There is no better place than the Department of Environment for that role. The three reports, BES, IEE, and EIA, should be reconfigured into BES and EIA. Most of the thresholds necessitating BES so far should be lifted, making the current IEE thresholds as new BES thresholds.

Similarly, the current provision of a separate scoping document before Terms of Reference (TOR) should be scrapped as the TOR satisfies the document requirements in the scoping stage. Separate integrated and other sector-wise guidelines and their regular update can guide both the proponents and authorities to expedite the process. The most important aspect is the need for more application of automated IT systems in Nepal. The web-based system is used in both Bangladesh and India. A detailed discussion about these issues is presented in the discussion section.

2. Literature Review and Knowledge Gap

2.1 EIA Approval Time

The delay in the approval time of the environmental study report is an important contributor to environmental study delay, hence, project execution delay (Harvey, 1994). Realizing the sluggish pace of environmental clearance and, therefore, the need for speedy project completion, many countries have amended their EIA-related statutes to include the mandatory time period within which the relevant authority must review environmental study reports. Approval time is defined

vaguely by some countries without explicitly mentioning the duration, as in the case of South Africa. In contrast, some other countries' statutes mention the approval time explicitly in terms of the number of days, as in the case of Nepal, India, and Bangladesh (EPR, 1997; MoEF, 2006; EPR, 2019).

In Nepal, the Environment Protection Rules, 1999 originally stipulated 30 days to approve IEE by the concerned ministry and 90 days to approve EIA by the Ministry of Forests and Environment from the date of the receipt of the report. The first amendment to the Rule reduced the IEE and EIA approval time from 30 and 90 days to, respectively, 21 and 60 days, with a caveat that the extra 30 days are allowed to the Ministry of Forests and Environment in case it cannot approve EIA within 60 days because of special reasons. The Environment Protection Rules, 2020, framed under the new Environment Protection Act, 2019 reduced the approval time significantly to 15 days for BES and IEE and 35 days for EIA. However, the caveat this time is more obscure and indeterminate than in the previous Rules. With the new Rule, the statutory approval time will begin only after the approving authority receives documents or clarifications, without imposing time limits on collecting those documents and clarifications.

In India, the EIA notification of 1994 stipulated 90 days for EIA approval by the Ministry of Forests and Environment. However, such time would be counted only from the date of receipt of the requisite documents and data from the promoter and after the completion of public hearings. An additional 30 days was allowed to inform the decision. In total, the Indian statute provisioned 120 days for EIA approval in the beginning. Later on, in EIA notification 2006, this period was reduced to 60 days for appraisal and recommendation by the Expert Appraisal Committee, and 45 additional days were given to the regulatory authority for making the final decision on the expert committee's recommendation.

In Bangladesh, the relevant regulatory authorities take 15 working days for Green category projects, 30 working days for Orange-A and Orange-B category projects, and 60 working days for Red category projects to issue Environment Clearance Certificate (ECC), once all requisite documents are received (EPR, 1997).

Environmental legislation in South Africa does not prescribe time limits for environmental study reports by the relevant authority. However, EIA regulations require the appropriate authority to decide on proposals within a reasonable time. The applicant has the right to receive information about any delay immediately and a written explanation of potential future delay. Studying land and infrastructural development in South Africa, Kotze & Walt (2003) found that, despite such

provisions, there were unreasonable delays in approvals by the relevant environmental authority. These delays imposed the time and money constraints on developers, jeopardizing aspirations for fast-tracked development.

Reducing approval time and the overall time taken for EIAs has been a top priority for governments worldwide. Exempting and minimizing some of the processes or whole EIA has been increasing particularly in the US (Bond, 2014). EIA notification 2006 and concomitant amendments have kept strategic and defense projects outside the ambit of environmental study in India. A series of reforms have been implemented to reduce the EIA approval time in Nepal (Shrestha, 2016; EPR, 2020).

2.2 EIA Cost

Environmental study is a crucial tool to sustainable development. However, the cost associated with it could have negative consequences on business competitiveness. EIA has direct and indirect costs. Studies show that while average direct costs are within the limit of 1.5 percent (European Commission 1996; Norwegian Ministry of Environment, 2003; Wood, 2003; Tyldesley, 2005; Retief & Chabalala, 2009), the indirect cost could go up to 10 percent of total project cost (Gilpin, 1996).

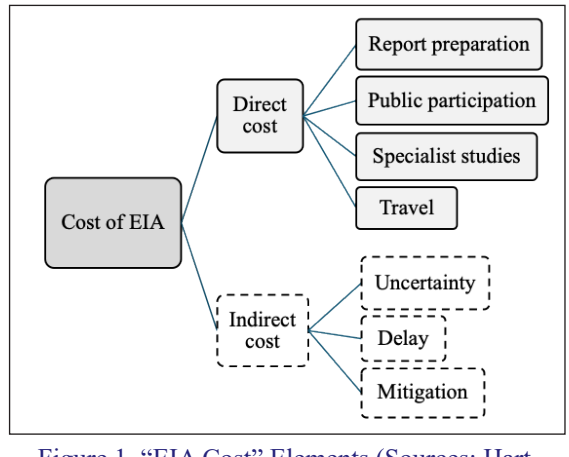

Figure 1. "EIA Cost" Elements (Sources: Hart, 1984; Gilpin 1996)

Unlike direct costs, indirect EIA costs are not straightforward to measure. The indirect cost of EIA delays could range from additional consultant fees to lost opportunities in resources tied up and deferred revenue streams. In the study based on the proponent's views on cost-effectiveness, Macintosh (2010) found that estimated delay costs of federal EIA processes range between AUD 301,195 and 756,995 on average. Delay costs are more serious in Nepal, especially for developmental projects initiated by the government, as there are instances of projects entering into the implementation phase without proper preparatory works (MOF, 2024). Awarding tenders without receiving approval for the use of forest areas are common. As environmental study is the prerequisite for using forest land and site clearance, infrastructure projects are often stalled indefinitely, even after their formal commencement, as they await environmental clearance.

2.3 Knowledge Gap

Most of the studies so far focus on EIA's indispensability and quality aspects. These studies discuss the techniques, methods, and processes to make EIA more effective and impactful (Caldwell, 1988; Bartlett, 1986a, 1986b). Reviewing EIAs of 110 developing countries based on 14 benchmark evaluation criteria, Wood (2003) found that only a few of these benchmarks were met by the EIAs of the countries studied. Ahmed (2008) studied EIA practices in Sudan, comparing and contrasting the US, the World Bank, and the European Union practices in 17 major areas. The study found that the Sudanese practices failed to confirm to the best practices. The study also analyzed the EIA status of nine projects and found lapses in numerous quantitative and qualitative aspects. The absence of alternative analysis, no cost-benefit analysis, poor integration of EIA with planning, poor public participation, limited tools, and few monitoring were identified as some of the challenges faced by the EIA process in Sudan. Many other studies, such as Zhao (2009), discovered that narrow EIA mandatory areas, weak public participation, low-quality reports, and laxity in implementation follow-ups are the problems affecting the qualitative aspects of EIA. Bhatt and Khanal (2010) opined that the EIA system in Nepal primarily focuses on screening, scoping, TOR, and impact monitoring but lacks policies for Environmental Impact Statements (EIS) and post-evaluation mechanisms, limiting its effectiveness compared to international standards.

Dangi et al. (2015) examines the qualitative shortcomings of the EIA in landfill development projects in Kathmandu Valley, highlighting issues such as poorly prepared reports by unaccredited contractors, limited public participation, and government failure to follow proper procedures. While the study focuses on the procedural and participatory flaws in EIAs, it does not address quantitative aspects such as the time taken for the EIA process.

Much of the existing research focuses on the qualitative aspects of EIA. There needs to be more research investigating the efficiency and approval time aspects of the EIA process. In the case of Nepal, studies on approval time are almost nonexistent.

Against this backdrop, this study reviews the environmental study regime in Nepal, focusing on the organizational procedures and the time taken to complete the EIA process. By analyzing these aspects, the study aims to provide a detailed understanding of the efficiency and effectiveness of the current procedures. This involves a statistical analysis of the time required to complete the EIA process across various ministries in Nepal, identifying any variations and underlying reasons for delays.

In addition to examining the Nepali context, the study aims to conduct a comparative analysis of the EIA process between Nepal, India, and Bangladesh. This comparison will cover the time taken for the EIA process and the scope, thresholds, and procedural differences among these countries. With these comparisons, the study seeks to pinpoint specific areas where Nepal lags or excels compared to its neighbors. Recommendations are presented to address gaps in policy, law, and administrative processes so that the entire environmental study can be conducted efficiently and in a timely manner in Nepal.

3. Research Methodology

3.1 Data Collection

Recording of incoming and outgoing letters is the basic administrative procedure. These records include the date, sender's name, subject, and any remarks or additional information associated with the letters. In addition to these details, environmental study approving ministries have recorded the project's name, size, name of the proposer, the type of the project, and the approval date. These records were extracted from the register book of the respective ministries. The principal variable of this study is the time taken in terms of the number of days between the applications registered and the letter dispatched to the proposer informing the approval of the environmental study. This variable is calculated by taking the difference between the registered and approval date.

The project-wise number of days for EIA approval in India is not publicly available. However, the MOEFF&CC publishes annual reports with the average number of days for each year for all the projects approved during the year. This data is compared with the average number of days MOFE took in Nepal for EIA approval.

In the case of Bangladesh, the time taken for EIA approval can't be collected. Upon the examination of various literature, including journal articles, newspaper articles, and international agencies' publications about the project implementation in Bangladesh, it is found that the delay in the environmental procedures does not feature in the list of affecting the smooth and timely completion of projects in the nation. However, Bangladesh's legal and administrative procedures for EIA are taken as a yardstick for comparative analysis.

3.2 Data Analysis

Descriptive statistical analysis, t-test, line plots, and comparative tabular format were used to analyze the approval time. Summary statistics such as mean, median,

and standard deviation were calculated and compared. Sector-wise summary statistics are compared to analyze the sector-wise differences in approval time. The approval time also varies according to the type of proposer such as government versus private sector. A t-test was used to examine the difference in the group mean of projects in these two sectors. Line plots show the variation in time over the study period. Administrative, legal provisions, and thresholds for environmental study in three countries were analyzed using tabular format.

3.3 Methodology

This research employs two approaches to comparative analysis. The first approach involves an across-ministry comparison, where the time taken by different federal ministries in Nepal to approve environmental study reports is analyzed. The second approach is an across-country comparison, where the time taken by the Ministry of Forests in Nepal for approval was compared with the corresponding processes in India and Bangladesh.

In the first approach, three federal ministries were selected for analysis: the Ministry of Physical Infrastructure, the Ministry of Energy, and the Ministry of Forests and Environment. These ministries were chosen because they oversee most environmental study reports under federal authority. The Ministry of Forests and Environment is the sole authority that approves all EIA reports. The relevant ministries approve BES and IEE reports and forward the EIA reports to the Ministry of Forests and Environment for approval. The Ministry of Energy handles approvals for the hydropower sector, while the Ministry of Physical Infrastructure manages approvals for road and bridge projects. These sectors are significant regarding the number of projects requiring environmental studies.

The second approach examined the environmental study approval process by the Ministry of Forests in Nepal and compared it with the processes in India and Bangladesh. Both approaches focused primarily on the time taken to approve reports and review the policies, laws, and administrative procedures that impact this timeframe.

The analysis began with reviewing the policies and laws governing environmental studies in Nepal, focusing on the provisions related to approval time. Key features of these policies and laws were examined and presented to illustrate how they influence the duration of the report approval process.

Next, the number of days taken to approve environmental study reports by different ministries was presented. Descriptive statistical analyses were conducted. Trend

lines were drawn and analyzed. The trend line of approval time in India from 2014 onwards was presented and analyzed. After the statistical analysis, the three countries' environmental study processes and thresholds were compared and analyzed. Based on these within and between comparisons, conclusions were drawn for the delay in the environmental study in Nepal. Policy recommendations to tackle these reasons were presented. Actions needed to actually carry out these recommendations, pinpointing the responsibilities of each government agency, were prescribed as suggested courses of action.

4. Results

4.1 Review of Existing Policies

The major relevant policies and laws of the Nepal Government are listed in Table 1

Table 1: Review of relevant policies and laws

SN	Relevant Policies and Laws	Main Features
1.	Environment Protection Act, 2019	• Principal legislation preparing the legal ground for environmental study • Power, authorities and responsibilities of administering and approving environmental study reports are divided among three tiers of government. The primary basis of division of responsibilities is the type of environmental study report the proposed project triggers. • Process and prerequisite reports before preparing the final report are described. • The Ministry of Forests and Environment is given the responsibility of approving and administering the EIA proposals with federal jurisdiction. • The broad process of environmental study is preparing terms of reference, public consultation, and approval of the study report • The reports should be prepared in the standard, quality and structure prescribed by the Government of Nepal. • The Relevant authority may form a committee involving the employees of that authority, representatives of the relevant bodies concerned with the proposal and experts to examine and provide opinions and suggestions on the report. • The relevant authority approves the report if, upon examination, it is found that the proposal shall not have serious adverse effect on the environment.

SN	Relevant Policies and Laws	Main Features
2.	Environment Protection Rules, 2020	• All the processes of environmental study including the approval process are described in detail. • Public consultation is required at three stages. At the scoping stage, stakeholders provide suggestions in writing. At the study report preparing stage, a public hearing should be conducted for collecting opinions and suggestions in the affected areas. At the EIA approval stage, the relevant authority publishes the notice for collecting opinions and suggestions on national daily newspaper and EIA report on its website. • Approval and report forwarding time duration for each type of reports are specified. Forwarding time is 15 days if repot submitting and approving agencies are different. Approval time for scoping document, terms of reference, BES and IEE is 15 days whereas that for EIA is 35 days. However, the time counting starts only after the receipts of clarification or documents sought by the approving authority. • Thresholds for each type of reports i.e. BES, IEE and EIA are specified in the annexes. Environmental studies are not required for the project below the BES threshold.
3.	Forest act, 2019 and Forest Rules, 2020	Forest area use sought by national pride projects, national priority projects and the plans whose investment is approved by the Investment Board can be sanctioned by the Government of Nepal. Coordination with Division Forest Office is must before project formulation, feasibility study and environmental study. Approved Environmental study report is required for applying for use of forest land by any project.
4.	Standard Operation Procedures for constructing infrastructure in the protected area, 2023	Approved Environmental study report is required for applying for constructing infrastructure in the protected area.
5.	59th Office of Auditor's General Report,	There has been a situation of slow implementation and cost increment of projects due to time and price adjustment of project developer and consultant on account of delay in the approval of environmental study reports. Therefore, the Ministry of Forests and Environment should coordinate among stakeholders to approve the EIA within the time-period specified by the law.

SN	Relevant Policies and Laws	Main Features
6.	60th Office of Auditor's General Report	OAG has listed the sample projects that crossed the legally time bound period for approval. The time taken is divided into the time taken for collecting evidences, for forwarding EIAs to the minister by the secretary and for approving by the minster. OAG has also suggested the ministry to coordinate among stakeholders so that EIA can be approved within the time prescribed by the law.
7.	61st Annual Policy and Programs of the Government of Nepal	OAG has listed the sample projects that crossed the legally time bound period for approval. The time taken is divided into four stages; time taken for collecting evidences, time take for return of file after amendment, time taken for forwarding EIAs to the minister by the secretary and the time taken for approval by the minster. OAG has pointed out the reasons such as EIAs forwarded to the minister without complete documents, delay in return of files sent for amendments, non-inclusion of suggestions and opinions gathered in public hearings, no mention of the number of trees to be cut for project implementation. Attributing the delay in EIA as one of the reasons for project delay in Nepal, OAG has also suggested the ministry to coordinate among stakeholders so that EIA can be approved within the time prescribed by the law.
8.	Budget Speech 2023	The budget speech commits to amend the necessary laws for making provisions for approving the EIA within 30 days after the duly submission of environmental study report.
9.	Mid-term Budget evaluation report 2024	One of the common obstacles for the timely implementation of the national pride and game changer projects is long time taken by the EIA approval. The report has suggested streamlining the EIA approval process.

These policies, reports, and recommendations have shaped the guiding and operational framework for environmental study in Nepal. Auditor general reports, budget speeches, and evaluation reports have pointed out the reform areas as well.

Water (Prevention and Control of Pollution) Act, 1974; Environment (Protection) Act, 1986; Environment (Protection) Rules, 1986; National Environment Policy, 2006, and the EIA Notification 2006 serve as the primary policies that guide the environmental study in India. Similarly, Bangladesh has National Environmental Policy, 1992; National Environmental Management Plan, 1995; Environment Protection Act, 1995, and Environment Rules, 1997, which define the environmental study legal regime.

4.2 Approval Time Analysis and Comparison

4.2.1 Time taken by the Ministry of Physical Infrastructure and the Ministry of Energy

Environment laws in Nepal provide three types of environmental studies based on the scale and category of the projects. The Ministry of Physical Infrastructure and the Ministry of Energy are relevant ministries for BES and IEE approval of the projects of their respective sectors. They forward the EIA to the Ministry of Forests and Environment. The Ministry of Physical Infrastructure is responsible for bridge and road sector projects, while the Ministry of Energy is responsible for electricity and transmission line projects. They are allowed 15 days to approve or forward the study reports, as the case may be. A comparative analysis of summary statistics and timelines was conducted between these two ministries (Table 2).

Summary statistics of time taken by the Ministry of Physical Infrastructure and the Ministry of Energy

Table 2: Time Taken by Two Ministries for Environment Study Reports Approval

Statistics	Ministry of Physical Infrastructure				Ministry of Energy			
	TOR (BES and IEE)	BES and IEE	EIA	Overall	TOR (BES and IEE)	BES and IEE	EIA	Overall
Minimum	0	0	0	0	1	2	6	1
Maximum	302	335	269	335	56	90	42	90
Median	10	46	20	18	13	14	12	14
Mean	31	78	43	51	16	19	15	17
Standard Deviation	67	81	55	71	10	13	10	11
Count	43	42	42	127	230	275	34	539

The Ministry of Physical Infrastructure takes 51 days on average, with a median of 18 days and a standard deviation of 71 days. The table also shows that the Ministry of Physical Infrastructure takes 43 days just to forward the EIA to the MOFE, whereas the Ministry of Energy sends the EIA to the MOFE exactly in 15 days on average. Compared to the Ministry of Physical Infrastructure, the Ministry of Energy seems more efficient. On average, it approves all reports in 17 days. The median is 14 days, and the standard deviation is smaller than the mean. Two ministries with similar power, authority, and responsibilities for processing environmental study reports differ remarkably in terms of time taken.

The line plot portrays more nuanced and zoom-in views of what was happening during the approval period. The dotted blue line, a fitted regression line, shows decreasing time for both ministries. The blue line of the ministry of physical infrastructure starts at around 50 and falls gradually to approximately 40. The blue line of the Ministry of Energy starts from around 20 and falls as down as to around 17 days. Red lines show that the approval time taken by the Ministry of Physical Infrastructure is higher, more unstable, and more oscillating than that of the Ministry of Energy (Figure 2).

Although they have equal jurisdictions, their institutional designs are fundamentally different. MOPIAT (Ministry of Physical Infrastructure) reserves all the rights, making the ministry the focal point of environmental study. It receives proposals and environmental study reports from the Department of Road, makes decisions in the case of BES and IEE, and forwards the reports in the case of EIA. MOEWRAI (Ministry of Energy, Water Resources, and Irrigation) has delegated authority to the Department of Electricity Development (DoED) to oversee all the procedures job, retaining only the right to give final decision. Moreover, MOEWRAI has issued environmental study guidelines and manuals, which MOPIAT has not done.

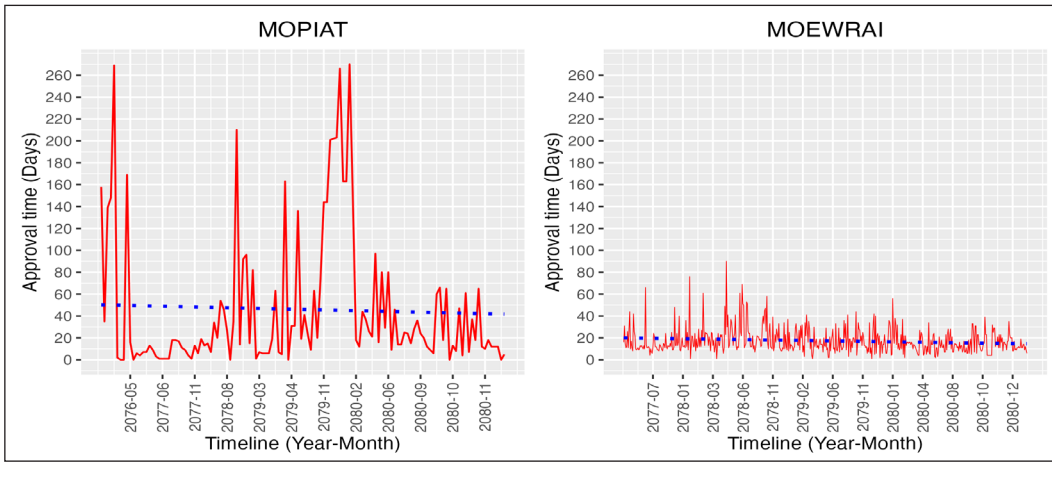

Figure 2: Time Taken for Environment Studeis Report Approval

Hydropower proponents use the environmental study guidelines for the hydro sector 2018 for preparing the reports. The guidelines clearly lay out the processes and methods of carrying out the study. Therefore, the guidelines issue is another MOEWRAI reform that the MOPIAT is lacking.

4.2.2 Approval Time Taken by the Ministry of Forests and Environment

Proponents desiring to implement the proposals related to the activities or projects mentioned in Annex 3 of the Environment Protection Rules, 2020, prepare the EIA

report and submit the same to the Ministry of Forests and Environment through the concerned ministry. The EPR 2020 clearly states that MOFE, if upon examination, finds that the execution of the proposals will not have a significant impact on the environment, should approve environment study proposals within thirty-five days with the caveat that the time starts from the date of receipt of the documents or the clarification sought by the MOFE.

Table 3: Summary Statistics of the Number of Days Taken by rhe Ministry of Forests and Environment to Clear the Eia Report

Sector	Min	Max	Median	Mean	Standard Deviation	Count	Proportion of Count
Medical College	123	142	132	132	13	2	1
Waste management	121	418	182	240	157	3	2
Hotel	116	427	236	265	77	26	14
Building	83	713	277	327	181	12	7
Others	62	772	308	332	225	16	9
Hydropower	47	1285	254	340	278	54	30
Bridge	88	686	205	352	264	16	9
Hospital	32	1289	290	355	279	20	11
Road	35	997	323	404	255	29	16
Industry	236	719	424	451	216	4	2
Overall	32	1289	273	339	239	182	100

Table 3 presents sector-wise summary statistics of the time taken by the Ministry of Forests for EIA approval in days. During the three-and-a-half years of the study period, the Ministry of Forests approved 182 proposals, taking an average time of 339 days with a standard deviation of 239 days. As the mean is higher than the median, i.e., 273 days, the distribution is skewed to the right, suggesting some proposals take an unusually long time for approval. This is also shown by the Max column in Table 3, which shows the very high range across the sectors. Though only four proposals, the industry sector EIA waited for the longest with a mean of 451 days, followed by the road sector 404 days, and the hospital sector 355 days. The hotel sector with a significant number of proposals, i.e. 26, got environment permission in 265 days on average. While industry, road, hospital, and bridge sectors are performing worse, medical, waste management, hotel, and building are performing better than the overall average. The hydropower sector with the most proposals almost coincides with the overall average.

The summary statistics vividly show that the average time taken for EIA approval is far from 35 days, as specified in the Environment Protection Rules, 2020. This indicates that something else is causing delay apart from the complexities of the reports, as all sectors are falling way off the mark. This also indicates that there is a need for serious reform in the existing EIA approval process.

4.2.2.1 Time Trend Analysis

The summary statistics are analyzed assuming the three-and-a-half-year occurrences of data as happening in a single point of time, ignoring the dynamics being played out along the passage of time. The new environmental laws, enacted taking power sharing in the new federal setting into consideration, empower the subnational governments to approve the environmental study reports and hence significantly reduce the burden of federal ministries. This phenomenon has enabled the Ministry of Forests and Environment to clear the reports faster than it used to be earlier.

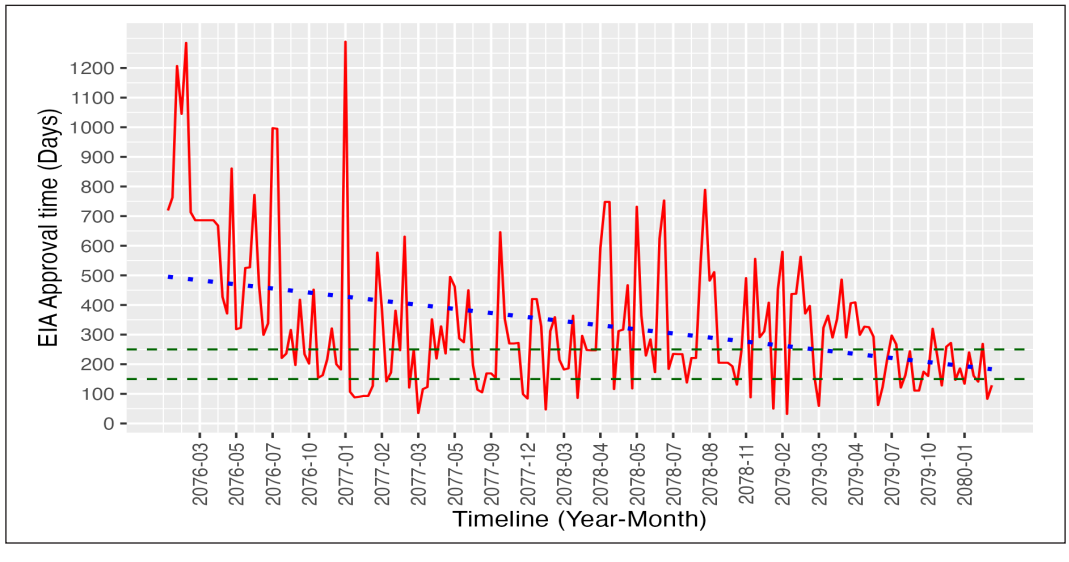

Figure 3: Time Taken for EIA Approval by the Ministry of Forests and Environment

Figure 3 aptly captures this reality. The fluctuation of time, especially the upward swing, is stabilizing after the issuance of new laws. The last period is marked by the period with little volatility as the time moves with the bands of 150 and 250 days, as shown by the green dashed lines. In a few instances, the EIA approval time has even come under 100 days. The blue dotted line shows that the time taken for EIA approval is continuously decreasing. Based on the past year's data, today, the EIA report takes around 200 days on average to get approval from the Ministry of Forests and Environment. Still, this figure is way higher than the legally mandated time of 35 days.

4.2.2.2 Proponent Wise Approval Time Analysis

In this section, we examined whether there is a difference in the average time according to the types of proponents. The EIA-requiring projects are proposed by the government and private sector (Table 4). The road, bridge, and medical college construction projects are mainly proposed by the government, whereas hotels and hospitals are mainly proposed by the private sector. Both types of proponents propose Hydropower and Building projects.

Table 4: Summary Statistics and Mean Equality Test Between the Private and Government Proponent

Type of Proponent	Min	Max	Median	Mean	Standard Deviation	Count	Percent
Government	32	997	293	348	221	91	50
Private	47	1289	248	327	256	90	50
Overall	32	1289	272	338	239	181	100
Two side mean t-test at 5% level of significance					Not Significant		

Although the mean number of days for projects where the private sector is the proponent is less than for the projects where the government sector is the proponent, the two-sided mean t-test shows the difference is not significant at the 5% level of significance. The general hypothesis is that the government proposals are cleared faster on account of influence, experience and familiarity. However, the data analysis fails to reject the null hypothesis that the two sectors are different in terms of the EIA approval time. This analysis indicates that the delays in environmental clearance do not come from the proponent side.

4.2.3 Approval Time in India and Bangladesh

Table 5: Year-Wise Delay in Grant of Environmental Clearance in India (EC)

Year of Grant of EC	Number of Projects	Number of Projects With Delays	Maximum Delay (Days)	Average Delay (Days)
2011	61	45	944	86
2012	56	54	588	184
2013	24	23	820	231
2014	25	25	761	316
2015 (up to July)	42	38	1,002	238
Total	208	185		

Source: Comptroller and Auditor General of India, 2016

Table 5 shows the sample of projects that were delayed in giving environmental clearance by the Union Ministry of Environment, Forests and Climate Change (MoEF&CC) in India from 2011 to July 2015. The Indian EIA notification 2006 provides 105 days to grant environmental clearance once the EIA report is registered in the ministry. According to the Comptroller and Auditor General of India's report and table 5, the average delay for granting permission increased from 86 days in 2011 to 238 days in 2015. Overall, 185 proposals out of 208, i.e., 89 percent, were not processed on time. The average time taken was more than 600 days. However, after the introduction of PARIVESH (Pro Active and Responsive Facilitation by Interactive and Virtuous Environmental Single Window Hub), a web-based integrated system for environmental, forest, wildlife, and coastal regulation zone clearance on 10th Aug 2018 (MOEF&CC, 2019), and together with other hosts of reforms including an additional incentive to the states reducing the environmental clearance time, the time for environmental clearance has been reduced significantly bringing down to 64 days in 2022 against the legally specified 105 days (MOEF&CC, 2023) for category A projects, as shown in Figure 4.

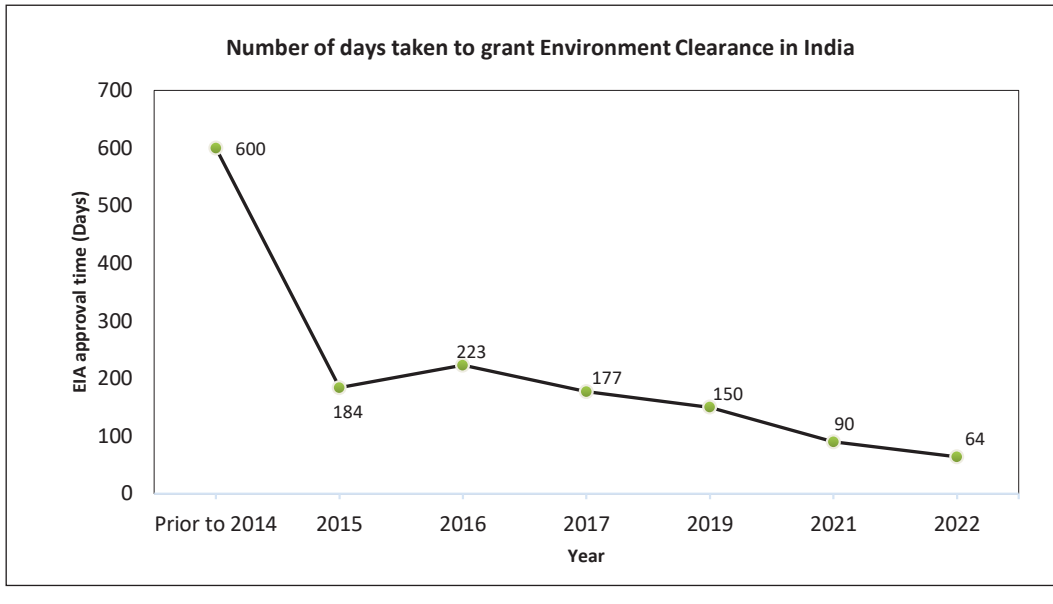

Figure 4: Time Taken for Environment Clearance in India (Source: MOEF&CC, 2014; 2015; 2016; 2017; 2019; 2021; 2022)

Although the legally mandated time for EIA approval once the final report is registered in the Department of Environment in Bangladesh is 30 days, the data for actual time spent cannot be collected. Therefore, an inference is made by

analyzing the research reports about the government project delay. Research on the factors affecting the timely completion of government projects does not report environmental concerns or EIA delays as causes of project delays in Bangladesh.

4.3 Process Comparison

The three countries have slight differences in the philosophy, principle, and process of addressing the environmental concerns of developmental activities. Bangladesh and India have the concept of environmental clearance, where the EIA reports are one of the documents along with many others in the list. In Nepal, approving environmental study reports, i.e., BES, IEE, or EIA itself, is the permission to go with the project. Proponents do not need to furnish supplementary documents regarding environmental disturbances or pollution in Nepal. In India, projects should obtain NOC from the SPCB (State Pollution Control Board) for air and water quality regulation. Bangladesh's environmental clearances are generally issued in two stages: first, a Location Clearance Certificate (LCC) and then an Environmental Clearance Certificate (ECC). Every project, even the projects under the green category, should apply for and obtain ECC from the Department of Environment.

Table 6 shows the comparison made on eighteen different areas of the environment clearance process. These eighteen aspects cover the key areas that have the potential to make differences in timelines of environment approval. All three countries have separate Acts and Rules. However, their scope and priorities are different. Environment Protection Act 2019 and the Rules 2020 in Nepal chiefly focus on preparing and approving environmental study reports, assigning the power to approve such reports to concerned federal ministries and the concerned subnational governments depending on the nature, scale, and size and projects or activities. Environment Protection Act, 1986, and the Rules, 1986, are the source legislation for environmental clearance in India. The EIA notification, 2006 provides all the details and processes for environmental impact assessment where the power to approve EIA rests on the Ministry of Environment, Forest and Climate Change for type A projects and SEIAA in case of category B projects. Bangladesh enacted The Bangladesh Environment Conservation Act, 1995, and the Environment Conservation Rules, 1997, with the powerful Department of Environment, which administers all the environment clearance matters.

Table 6: Comparison of the Process and System for Environmental Clearance in Nepal, India and Bangladesh

SN	Constituents of Process	Nepal	India	Bangladesh
1.	Legislation	Act and Rules	There are Act and Rules, but EIA is guided mainly by executive EIA notification 2006	Act and Rules
2.	Focus	Balance between development and environment	Conservation	Conservation
3.	Separate Guidelines	No	Yes	Yes
4.	Types of study	3 (BES, IEE and EIA)	1	1
5.	Approving authority and Jurisdiction	Federal MOFE, concerned federal ministries, Concerned Provincial ministries and Local governments. Jurisdiction is overlapping among federal agencies and across tiers of government.	MOEF&CC for category A projects, SEIAA for category B projects. Well-defined jurisdiction.	DoE. Well-defined jurisdiction.
6.	Nodal agency	Not specified	Specified	Specified
7.	Decentralization	Yes	Highly centralized	Highly centralized for EIA; but Environmental clearance can be obtained from district offices of DoE.
8.	Classification of Projects and Activities	3 (Activities requiring BES, IEE and EIA)	Mainly two; A and B; B is further classified into B1 and B2; A and B1 require to prepare EIA.	Four; Green, Orange A, Orange B and Red; Orange B and Red require to prepare EIA

SN	Constituents of Process	Nepal	India	Bangladesh
9.	Separate Scoping document (SD)	EIA requires separate SD. Not required for BES and IEE	NO	NO
10.	Separate Terms of Reference (TOR)	Yes	Yes	Yes
11.	Public Hearing	Two times; by proponent	One time; by government agency	No
12.	Opinions collection	Two times	One time	No
13.	Expert committee recommendation	Committee can only give opinions and suggestions. No recommendation.	Experts committee's recommendation is the basis for the decision.	Experts committee's recommendation is the basis for the decision.
14.	Expert involvement for report preparation	Mandatory; Qualification, experiences and composition of team mentioned in the Environment Rules	Mandatory; Sector and category wise organizational accreditation from QCI-NABET; research and educations institutions can work as environment consultant	Mandatory; Organizational accreditation from Bangladesh Accreditation Board
15.	Use of ICT	No	Complete and Full	Partial
16.	Incentives for faster processing	No	Yes	
17.	Statutory time bound	Partial; time specified for only the last stage; for forwarding and approving and with many caveats	Yes; Each and every steps are time bound	Yes; Each and every steps are time bound
18.	Fees	No	Yes	Yes

India and Bangladesh have issued guidelines detailing the processes of EIA, whereas Nepal needs a comprehensive document. Nepali laws provisioned three types of reports. India and Bangladesh have only one. Nepal's provision is more decentralized. Provinces and local governments can approve reports. In India, the federal ministry approves the EIA reports in the case of Category A and the SEIAA, constituted by the MOEF&CC, approves Category B projects. Bangladesh's system seems highly centralized. However, all the powers are with the department, which has delegated

the Environment Clearance Certificate (ECC) issuing authority to the district/ divisional offices and local bodies.

The document requirements and processes to be followed while preparing the EIA differ in three countries. In Nepal, the concerned authorities must approve a separate Scoping Document (SD) along with the Terms of Reference (TOR). However, the proponent proposes only the TOR in India and Bangladesh.

Public consultation has been given high importance in Nepal. Public hearings and notices in public areas, including the newspaper, are a must and rigorous. All types of reports, whether BES, IEE, or EIA, need public hearings. Public hearings are the responsibility of the government agency in India, and they have to be completed within a specified time. In Bangladesh, the law does not mandate a public hearing. Time and again collecting opinions and ensuring their inclusion in the report is another legal burden in Nepal. In contrast, that process is simpler in India, and there is no such provision in Bangladesh.

India and Bangladesh's concerned authorities based their decisions on the recommendations of the expert group. In contrast, the role of an expert is confined to providing suggestions and opinions on the reports individually and separately in Nepal. The use of ICT, statutory time bound, incentive for faster processing, and fees are some other areas that make the differences in environmental process in the three countries.

4.4 Threshold Comparison

Another area is the threshold of activities or projects that necessitate the preparation of reports. Even the process of BES preparation in Nepal has to follow the process that Bangladesh and India follow to prepare for the EIA.

Table 7: Threshold of Nepal, India and Bangladesh in Major Sectors

SN	Sectors	Nepal	India	Bangladesh
1.	Hydropower	BES: Electricity from magnetic energy IEE: hp 1-50 MW, Solar from 1-10 MW EIA: >50MW, solar >10MW	Not required: <25MW, B1: < 75 MW ≥ 25 MW A: ≥ 75 MW	Hydro not mentioned Red: Power plant
2.	Transmission Line	BES: up to 66KV IEE: 132 KV or more	Not required	Red(EIA)

SN	Sectors	Nepal	India	Bangladesh
3.	Hospital	BES: 16-25 beds, IEE: 26-100 beds, EIA: > 100 beds	B1: ≥1, 50, 000 sq. mtrs. of built-up area and or covering an area ≥ 50 ha	Red(EIA)
4.	Hotel	BES: 25 to 50 beds, IEE: 51 to 100 beds, any house boats EIA: >100 beds	B1: ≥1, 50, 000 sq. m. of built-up area and or covering an area ≥ 50 ha	Orange-B
5.	Bridge	BES: up to 250 M IEE: more than 250 M	Not required	Orange B: <100m, Red: ≥ 100m
6.	Road	BES: Local Road IEE: Flyover, up gradation of widening of road with length 10 to 50 km, internal waterways EIA: new road >25km km, upgrade >50km	B1: State-Highway expansion projects in hilly terrain (Above 1,000 m AMSL) and or ecologically sensitive areas National: New highways, widening >100km	Orange B: local road, feeder road, Red: regional, national and international road
7.	Building	BES: 20-30 m tall, 3000-5000 built up area, IEE: >30-45 m tall, >5-10 thousands built up area, housing 1-5 ha EIA: >45m tall, >10 thousands built up area	B1: >50,000 sq. m. built-up area	Orange B: Hotel, multi-storied commercial & apartment building.
8.	Education (Teaching hospital)	BES: up to 50 beds IEE: >50 -100 bed EIA: >100 bed	B1: ≥1, 50, 000 sq. m. of built-up area and or covering an area ≥ 50 ha	Not mentioned

Table 7 shows eight major infrastructure development sectors for which approval on the environmental reports has been sought in the past three and half years. The comparative chart showing Bangladesh and India has been presented. This chart clearly shows that Nepal's threshold is narrower than India's and less liberal than Bangladesh's in many instances. For example, electricity generation from magnetic energy needs BES, 1 MW to 50 MW hydropower generation needs IEE, and EIA is needed for hydropower with a capacity above 50 MW in Nepal. Hydropower below 25 MW does not need an environmental study in India, whereas the hydropower

threshold is not mentioned in Bangladesh. However, the power plants are classified under red categories, which need EIA. Even the local road has to conduct BES in Nepal regarding road construction. India has a broader threshold in terms of road construction, where EIA starts from a state highway above 1000 m terrain or ecologically sensitive areas. Local roads don't need EIA or environmental study. In Bangladesh, local roads and feeder roads are classified under category B, which may not need EIA. However, regional, national, and international roads are classified under the red category and need EIA. In India, hospitals, teaching institutions, hotels, or any building is treated as a construction building. It falls under the B1 category for buildings equal to or above 50 thousand square meters. No environmental study is required for any kind of building below this threshold. In contrast, the trigger is based on the number of beds, the height of buildings, and built-up area, and they are too narrow compared to India, as presented in Table 7.

5. Discussion

The results derived from the policy review, approval time comparison, process comparison, and threshold comparison reveal interesting legal and administrative features of the environmental study in three countries.

The policies and regulatory frameworks in place clearly outline the objectives and direction of environmental studies in all three countries. At the highest level, the environmental protection Acts in each country mandate environmental studies. Rules, guidelines, and decisions are subsequently framed to implement these Acts. However, the approaches taken by these policies differ. In India and Bangladesh, the focus is primarily on environmental conservation and improvement. In contrast, Nepal's policies emphasize conservation and maintaining a balance between environmental preservation and development (EPA, 1986; EPA, 1995; EPA, 2020).

In comparison to India and Bangladesh, in Nepal, there needs to be a nodal agency and blurred lines of responsibilities regarding environmental study jurisdictions at the federal level and among the three tiers of government. This has led to confusion for proponents seeking environmental clearance. This uncertainty complicates the approval process, as stakeholders often need guidance on which agency or level of government to approach.

Research and practices underscore the importance of clearly defining nodal agencies to enhance organizational performance within governmental settings. A lack of clarity can result in interdepartmental ambiguity, which significantly hinders service delivery and governance and leads to inefficiencies, accountability issues, and

delays (Agranoff & McGuire, 2001; O'Toole & Meier, 2004; U.S. Government Accountability Office, 2005; Carey et al., 2017; Ilawagabon & Ajisebiyao, 2024).

The three countries vary in terms of decentralization and delegation structure for administrating the environmental study. Such variation also exists among the three ministries of Nepal under study. In India and Bangladesh, the federal agencies have ultimate power. They have either established branch offices or appointed expert bodies to assess and approve the reports. In contrast, all tiers of government have the power to approve the study reports of the activities under their respective jurisdiction in Nepal. Therefore, Nepal performs better in decentralization than India and Bangladesh. However, India and Bangladesh have practiced robust delegation of authority systems. The differences in the organizational design, such as delegation of authority, have significant bearings on the organization's performance (Fayol, 1949; Dunham and Pierce, 1989; Bell & Bodie, 2012). Therefore, the federal EIA approving authority of Nepal, the Ministry of Forests and Environment, can learn from the good practices of not only India and Bangladesh but also from counterpart ministries, especially from the Ministry of Energy, Water Resources, and Irrigation, which has a better delegation of authority system.

EIA approval data presented in Table 3 and Figure 3 for Nepal shows that though decreasing, the average approval time is way higher than the legally mandated time and time taken by the Union Ministry of Environment, Forests and Climate Change (MoEF&CC) in India. Even if we assume the approval time taken in Nepal to be just 150 days, as indicated by some recent data points in the trend line, it is still 4.28 times higher than the statutory approval time of 35 days. This figure is only 0.61 for India as the approval time has come down to 64 days, which is against the statutory duration of 105 days. The stark differences between Nepal and India are not because of the history and legacy; India's average approval time was more than 600 days before 2014. The series of reforms introduced, including the digital systems, drastically reduced approval time in India. The PARIVESH system's automation has made India's environmental clearance process faster, more transparent, and more accountable (Hindustan Times, 2023; ThePrint, 2024; National Informatics Centre, n.d.; MOEF&CC, 2019, 2021, 2022).

Nepal's reforms predominantly target reductions in stipulated approval timelines as outlined in legal frameworks (EPR,2020). In contrast, India's approach combines these legal reforms with decentralization, digitalization, performance-based incentives, and rigorous monitoring and feedback mechanisms. Continuous improvements across the parts and processes have been involved. Furthermore, India's stable governance and leadership commitment to enhancing the business

environment have been pivotal to expediting EIA processes (MOEF&CC, 2019; 2021; 2022).

Though not explicitly mention the approval time, Kabir & Momtaz (2013) found a shortage of staff, lack of adequate decentralization, and paucity of budget as some of the challenges faced by environmental clearance practices in Bangladesh.

The limited public involvement in India has often restricted the representation of community concerns in development projects, resulting in frequent litigation in India (Dilay et al., 2018; Thayyil, 2014; Parikh, 2020). Though public consultations in Nepal are comprehensive, the approval process is often delayed due to lengthy and repetitive consultation procedures. Streamlining these processes while safeguarding community interests could help accelerate approvals without compromising public input.

A threshold comparison shows that despite similar social, political, and geographical sensitiveness, Nepal's thresholds are lower than those of Bangladesh and India, especially for EIA. If thresholds are revisited in the broader context, Nepal's environmental study procedures will be more streamlined and smoother.

The comparison of Nepal's environmental study system with Bangladesh and India reveals exciting findings. Nepal should draw lessons to improve on the numerous fronts in the overall environmental study system, such as administrative procedures, number, and type of report requirements, public hearing, use of information and communication technology, the role of experts, and design of incentive structures. These measures will help reduce the approval time.

6. Conclusions

Based on the policy review, data analysis on the clearance time, the process and threshold comparison with India and Bangladesh, and discussion of these results, several conclusions can be drawn about environmental study practices in Nepal. The conclusions focus on the system's lacunae, which needs reform to streamline environmental studies and foster the business environment in Nepal.

1) **Fuzzy Jurisdiction**: Nepal's environmental study legislation indicates that the system is primarily designed for government-initiated projects. Therefore, there is not much ambiguity regarding the projects to be implemented by government agencies. However, when a proponent from the private sector plans a project, he or she needs to consult other laws, including the unbundling report, to determine which tier or ministry holds the authority, as responsibilities

often overlap. Therefore, firstly, identifying the relevant tier and secondly, identifying the relevant ministry or agencies is challenging, especially for the private sector proponent. For example, if a private proponent intends to build a stadium, determining jurisdiction is complex because sports are managed concurrently at all tiers of government. Even if the relevant level of government is identified, the ambiguity persists regarding which ministry, the Urban Development Ministry or the Youth and Sports Ministry, administers the approval process. This seriously impacts the quality and timely completion of environmental studies. This problem doesn't exist in India and Bangladesh.

2) **Absence of Nodal Agency**: The environmental study report administering authority has been spread across all federal ministries, provinces, and local governments. At times, the jurisdiction has not yet been clear in the new federal setting, entailing jurisdiction disputes among the different levels of government. In the absence of nodal agencies, proponents are in the midst of figuring out the first contact point to apply for environmental clearance. This confusion contributes to the delay in environmental clearance. The confusion is more severe in the case of private industry and privately constructed infrastructure.

   The problem compounds when a project needs forest land. Being a national priority project is a prerequisite for any project to apply for forest land use. Therefore, even small-scale projects constructed in the forest land must be national priority projects, and subsequently, their environmental study reports administering jurisdiction lies with the specified federal ministry (EPA, 2019). The law stipulates that the environmental study reports should be submitted to the concerned ministry. However, identifying the concerned ministry takes more work. Therefore, the absence of a nodal agency combined with jurisdiction perplexities impedes the approval process for environmental study reports in Nepal. India has a single window system, and the Department of Environment is the nodal agency in Bangladesh.

3) **Lack of Integrated Clear-Cut Guidelines**: Unlike in Nepal, India, and Bangladesh both have prepared guidelines that guide the stakeholders, including the proponent and decision maker, to navigate the EIA process smoothly. Nepal has had such guidelines for hydro-sectors in the past. It has been obsoleting with the enactment of new laws.

4) **Multiple Reports**: Nepal's environmental study system has the provision of multiple types of primary reports: BES, IEE, and EIA. If there are changes to the project, like adjustments to infrastructure, design, structure, forest area, or project capacity, an additional Supplementary EIA is needed. There is also a provision for strategic and revised reports, separate scoping documents, and

TOR. While both SD and TOR are mandatory before an EIA in Nepal, only TOR is required in India and Bangladesh. The jungle of reports and processes adds confusion and financial burden. Bangladesh and India have a simpler system: a filling-up-form system for small-scale projects and single environmental study reports, i.e., EIA for larger projects.

5) **High Centralization**: Though environmental study reports are approved by all levels of government, the reports approval process at the federal level is highly centralized. In the absence of application of appropriate organizational and management principles, even the decisions that could have been made at the departmental or divisional level reach the ministerial level. For example, scoping and TOR documents are approved by the minister. Ironically, the Department of Environment (DoE), assigned with the task of preserving the environment and supposed to have the reservoir of technical and theoretical knowledge about the environment, has no role in administering environmental clearance.

6) **Frequent Opinions and Suggestions Collection**: Existing provisions require public hearings for all types of reports, and opinions and suggestions must be collected multiple times. This impacts the report analysis and approval process, leading to delays.

7) **Narrow Thresholds**: The threshold comparison in Table 6 states that the thresholds for preparing EIA reports are narrower in Nepal in comparison to India and Bangladesh.

8) **Lack of Expertise**: Nepal lacks a dedicated committee and agency to review, recommend, and approve environmental study reports, resulting in limited division of labor and specialization. In contrast, India and Bangladesh have a single window system and specialized committees to handle this process, resulting in enhanced efficiency and expertise in reports evaluation and approval.

9) **Lack of E-governance**: The striking difference between Nepal and the other two countries, and Nepal has ample opportunity for reform, is the use of e-governance. Bangladesh has smoothed the administration process, while India has brought about a revolution using an e-government platform called PARIVESH.

10) **Lack of Incentives**: India has an institutional incentive system to encourage faster document processing, but Nepal and Bangladesh lack such incentives.

11) **Fees**: Unlike in Nepal, obtaining environmental clearances is not gratuitous in India and Bangladesh.

12) **Logistics**: The lack of adequate resources, including human, financial, and logistics, is hampering the quest to streamline the process in Nepal.

Apart from the issues mentioned above related mainly to laws and administration, this study also found issues on the part of proponents that are delaying environmental clearance in Nepal. These include submitting incomplete and low-quality reports, submitting the additional documents sought by the authorities, and high dependency on consultants.

7. Policy recommendations

1) **Clear-Cut Jurisdiction**: Service-providing agencies should be defined unambiguously so that a public service seeker can contact the service-providing agency with ease and speed. The relevant tiers of government and the agencies in respective tiers should be clearly mentioned in the law. Currently, many relevant ministries still lack the environment section. Quality, efficiency, and effectiveness could seriously be compromised if these ministries, as such, approve the environmental study reports.

   First, the unbundling report and then the respective sectoral law should be revised to delineate the jurisdiction regarding the project and activities clearly. The projects should be categorized into sectors, and the responsible ministry should be specified for each sectoral category, with the Ministry of Forests and Environment responsible for the projects not classified under any category. This brings jurisdiction clarity and expedites the EIA approving process, along with ensuring the quality of the reports.

2) **Ascertain Nodal Agency**: Defining a nodal agency can have multiple benefits. In addition to faster document processing, it facilitates better coordination, improves accountability, and enhances monitoring and evaluation. Specialization can enhance quality. At the federal level, the Department of Environment should be made the nodal agency. In the provinces, the respective environment-related ministry should be made the nodal agency.

3) **Issue Guidelines**: No guidelines are in place to meet the proponent's needs as per the new Environment Act and Rules. Integrated guidelines with separate guidelines or procedures for each sector should be developed and immediately issued.

4) **Limit the Number of Reports**: Earlier, there used to be only two types of environmental study, namely IEE and EIA. The new law added one additional type of environmental study, i.e., BES, for the projects that just cross the

initial threshold. Multiple kinds of environmental studies create confusion for the proponent and increase the transaction cost. Therefore, it is advisable to have only two types of reports: IEE and EIA. The current threshold of BES should be removed with no study requirement until the size, scope and nature of the projects touch IEE threshold. Similarly, SD and TOR are different documents serving the same purpose. The SD and TOR should be merged into one single document.

5) **Delegate the Approving Authority**: Most of the administrative power has been given to the ministry by the law. The power conferred to the ministry by the law is the power to the highest authority of the ministry, and often, the minister uses such power either by oneself or by delegating it to the secretary. The inefficiency arises when the minister desires to exercise all the ministerial powers, including the administrative and technical and does not intend to delegate the powers to the bureaucracy. To remove this managerial inefficiency, powers to approve SD and TOR should be given to the relevant division chief whereas the power to approve final reports should be given to the secretary.

6) **Simplify the Public Consultation**: Seeking suggestions in writings from the stakeholders and publishing notices in the newspapers are recurring at every stage of the study. This provision has increased the cost of doing business in Nepal. Similarly, public hearings for even BES and IEE may not be appropriate, even from the perspective of impacts. Therefore, for BES and IEE requiring projects, collecting opinions and views in written form and publishing notices should be done only once. Public hearings should be reserved for only EIA-requiring projects.

7) **Loosen the Thresholds**: As presented and discussed in Section 4.4, thresholds should be raised higher so that the projects that do not significantly impact the environment could be kept outside the purview of environmental study. Many BES-requiring projects and few IEE-requiring projects should be made eligible to apply threshold relaxation measures.

8) **Increase the Role of Experts**: Assessing environmental study reports demands a higher level of expertise. Like in India and Bangladesh, where the expert committee recommends approving or not approving the report, experts should be given more decisive roles in evaluating the reports in Nepal.

9) **Digitalize the Process**: Like in India and Bangladesh, an integrated online system should be introduced to automatize the whole process.

10) **Introduce the Incentive Structure**: This is required to motivate the employees to exert greater effort to ensure the timely completion of the

process. When all processes are digitalized, an individualized incentive system can be implemented.

11) **Introduce the Fee System**: This will enhance the government's revenue base and make the proponent more responsible. As in India and Bangladesh, a fee, albeit a small amount, is advised.

12) **Improve Logistics Management**: Provision of adequate human, financial, and other logistics is required in the ministries, departments, divisions, and sections responsible for administering the environmental study.

8. Suggested Course of Action

Most of the policy recommendations suggested above come into effect through law amendments and cabinet and relevant ministries' decisions. Some suggestions may require additional budget allocation. Based on the experience and discussion with relevant stakeholders, I suggest the following course of action.

Table 8: Suggested Course of Action for Implementing Policy Recommendations

SN	Recommendations	Responsible Agencies	Suggested Action
1.	Clear cut jurisdiction	OPMCM, MoFE, MoLJPA,	Collect views and opinions from stakeholders, propose amendments to laws, obtain approval from relevant ministries and submit to the cabinet
2.	Nodal Agency	GoN, MoFE	Determine the nodal agency, conduct Organization and Management Survey to strengthen the capacity of nodal agency, make provision for resources, train employees
3.	Guidelines	MoFE, Relevant Ministries	Form a committee of experts, give them TOR, prepare sectorial and integrated guidelines, get approved from the minister
4.	Number of reports	MoFE, MoLJPA	Analyze the activities in the Annexes 1,2 and 3 of Environment Protection Rules, regroup them into two, propose amendments to the Rules, get approval from relevant ministries and submit to the cabinet
5.	Delegation of authority	MoFE, Relevant Ministries	Delegate power to the divisions, sections and team formed for assessing the reports
6.	Public consultation	MoFE, Proponents	Prepare the amendment proposals, include video recording of public hearing

SN	Recommendations	Responsible Agencies	Suggested Action
7.	Thresholds	MoFE, MoLJPA	Collect views and opinions from stakeholders, revise the current thresholds, make amendments to the relevant annexes, get approval from relevant ministries and submit to the cabinet
8.	Role of experts	MoFE, Relevant Ministries	Define roles, redefine the qualifications, propose amendments to the Rules, submit to the cabinet
9.	Digitalization	MoFE, E-Governance Commission	Prepare plan for integrated system, make directive for operating online system, purchase/ develop the system, train the employees
10.	Incentive system	MoFE, MoF	Prepare indicators, allocate budget
11.	Fees	MoFE, MoF, MoLJPA, FCGO	Amend EPA,2019, determine the fees, make online payment system
12.	Logistic Management	MoF, MoFE, Relevant ministries	Allocate adequate budget, procure necessary logistics, conduct O & M survey for additional human resources

Conflict of Interest Statement

The author has no conflict of interests to declare.

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Assessing Affirmative Action Practices in Nepal's Federal Civil Service: Current Achievements and Future Reform Needs

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Abstract

Nepal has implemented an affirmative action policy in the federal civil service since 2007 to address historical injustices and inequalities and promote the representation of marginalized people, such as women, ethnic minorities, and underprivileged castes, in public sector employment. This move has contributed to empowering disadvantaged people, mainstreaming minorities, and promoting social justice by strengthening inclusion within the bureaucratic structure. A qualitative research methodology is applied to perform a scoping review of 87 scholarly articles and a media review of 45 news articles to reveal the reasons behind the reforms made by policy enterprises in Nepal. The findings scrutinize both the constructive and critical facets of affirmative action practices in Nepal's public service from 2007 to 2024. Besides some positive results leading to cultural competencies, such as the increased representation of women, Dalits, and ethnic minorities, there are still substantial inequalities in equal opportunities for empowerment and active participation in decision-making processes. The main reasons for such negative situations are complex social, ideological, and legal barriers, narrow-minded and deeply established prejudices, the lack of sufficient financial and human resources to undertake the programs, patriarchal organizational culture, and ultimately inadequate political commitment. The paper recommends continued reforms, timely review, preventing elite capture, adaptation to changing needs, a focus on the inadequate representation of marginalized groups, and the promotion of affirmative action policies that will result in the ending of these hurdles and, eventually, a more representative and all-inclusive Nepalese civil service.

Keywords: social justice, social inclusion, meritocracy versus inclusivity, diversity, civil service

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नेपालको सङ्घीय निजामती सेवामा सकारात्मक विभेदका अभ्यासहरूको मूल्याङ्कनः वर्तमान उपलब्धि र आगामी दिनमा सुधारका आवश्यकताहरू

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पाण्डुलिपी प्राप्तः १३ जुलाई २०२४ अन्तिम परिमार्जनः २६ नोभेम्बर २०२४ स्वीकृतः ९ नोभेम्बर २०२४

सार

नेपालले ऐतिहासिक अन्याय र असमानतालाई सम्बोधन गर्न र सार्वजनिक क्षेत्रको रोजगारीमा महिला, जातीय अल्पसङ्ख्यक र पिछडिएका जातिहरू जस्ता सीमान्तकृत मानिसहरूको प्रतिनिधित्वलाई प्रवर्द्धन गर्न वि.सं. २०६४ सालदेखि संघीय निजामती सेवामा सकारात्मक विभेद (आरक्षण) नीति लागू गरेको हो । यस कदमले पिछडिएका जनतालाई सशक्त बनाउन, अल्पसङ्ख्यकलाई मुलधारमा ल्याउन र निजामती सेवाको संरचनामा समावेशीकरणलाई मजबुत बनाउँदै सामाजिक न्यायको प्रवर्द्धन गर्न महत्त्वपूर्ण योगदान पुऱ्याएको छ । नेपालका यस नीति सुधारका कारकहरू पत्ता लगाउन गुणात्मक अनुसन्धान पद्धति प्रयोग गरेर ८७ अनुसन्धानात्मक लेखहरूको स्कोपिङ समीक्षा र ४५ अनलाइन पत्रिकाका लेखहरूको मिडिया समीक्षा गरिएको छ। यस अध्ययनले सन् २००७ देखि २०२४ सम्म नेपालको निजामती सेवामा सकारात्मक विभेद नीतिका सकारात्मक र आलोचनात्मक पक्षहरूको मूल्याङ्कन गर्दछ । नेपालको निजामती सेवामा महिला, दलित, आदिवासी जनजाति, मधेसी, अपाङ्ग र पिछडिएको क्षेत्रका अल्पसङ्ख्यकहरूको बढ्दो प्रतिनिधित्व जस्ता सांस्कृतिक सक्षमता (cultural competencies) बढाएको लगायत केही सकारात्मक उपलब्धिहरू भएको देखिन्छ, तर सशक्तिकरणका लागि समान अवसर र निर्णय प्रक्रियामा सक्रिय सहभागिताका सम्बन्धमा अझै धेरै असमानताहरू विद्यमान देखिन्छन् । यस्ता नकारात्मक अवस्थाहरूको मुख्य कारणहरूमा जटिल सामाजिक, मनोवृतिगत र कानूनी अवरोधहरू, सङ्कीर्ण र गहिरो पूर्वाग्रह, कार्यक्रम सञ्चालनका लागि पर्याप्त आर्थिक स्रोत र जनशक्ति अभाव, पितृसत्तात्मक सङ्गठनात्मक संस्कृति र अन्ततः राजनीतिक प्रतिबद्धताको अपर्याप्तता हुन् । यस अध्ययनले निरन्तर सुधार, समयमै मूल्याङ्कन, सम्भ्रान्त वर्गको कब्जा हुनबाट रोक्नु, बदलिँदो आवश्यकताअनुसार अनुकूलन, सीमान्तकृत समूहहरूको अर्थपूर्ण प्रतिनिधित्वमा ध्यान केन्द्रित गर्ने र यी अवरोधहरूको अन्त्य गर्न सकारात्मक विभेद नीतिको प्रवर्द्धनको आवश्यकता औँल्याउँछ, जसले अन्ततः नेपालको निजामती सेवा बढी प्रतिनिधिमूलक र समावेशी बन्ने कुरा सुनिश्चित गर्दछ ।

शब्दकुञ्जी: सामाजिक न्याय, सामाजिक समावेशीकरण, योग्यता प्रणाली र समावेशिता, विविधता, निजामती सेवा

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1. Background

Affirmative action is a widely debated issue in the field of public administration. Affirmative action involves a group of policies and procedures designed to eradicate discrimination at work against women and ethnic minorities and compensate for the effects of discrimination suffered in history (Kovacs et al., 2014). However, in the broader sense, it can include all policies and actions to promote opportunities for disadvantaged (or minority) groups to give them equal access to the majority population within a society (Sowell, 2004). The term "affirmative action" originated in the US in the sixties and was firmly used in President John F Kennedy's Executive Order No. 10925, which directed federal contractors "to take affirmative action to ensure that employees are treated during employment, without regard to their race, creed, color, or national origin" (Kennedy, 1961; Graham, 1992). The concept of positive measures is generally referred to in international law as 'special measures.' The most widely known terms for this are: affirmative action or affirmative measures; positive action; preferential treatment; special measures; specific action; reverse discrimination; and positive discrimination (The Council of Europe, 2000; European Institute of Gender Equality, 2002).

The purpose of affirmative action, or reservation, as it is used in South Asia, is to support underprivileged people in order to level the playing field, notably in the fields of politics, employment, and education. Reservations have traditionally been supported by Nepal's socio-ethnic organizations and social activists (Gurung, 2006). Some significant policies on social inclusion are the outcome of discussions about social exclusion and affirmative action that intensified during and after the Maoists' "People's War" (Drucza, 2016). The interim constitution of Nepal, which was constructed in the wake of the 2007 People's Movement, established the system of reservations. In 2007, the Government of Nepal amended the Civil Service Act of 1993 (Second Amendment) to add what is known as the Reserve Clause. The amendment introduced an affirmative action policy, which mandated that eligible applicants from underrepresented groups would have priority in open competitions to fill 45 percent of the available seats. The reserved seats were allocated as follows: 33 percent for women, 27 percent for Adivasi-Janajatis, 22 percent for Madhesis, 9 percent for Dalits, 5 percent for differently abled people and 4 percent for backward areas. In Nepal, a regular bureaucrat has traditionally been a male Khas-Arya (Jamil and Dangal 2009). This is no longer the case, though Khas-Arya men continue to dominate top positions in the bureaucracy. While Nepal's bureaucracy remains a highly exclusive institution, with approximately 80 percent men and 70 percent Brahmans, Chhetris, and Newars represented, it has become more inclusive in recent years due to unprecedented inclusionary politics and affirmative action. After

fourteen years of application, 14,956 out of 39,979 candidates are employed by marginalized groups in the civil service of Nepal, and 88,568 people are working in the civil service (National Inclusion Commission, 2022).

In Nepal, the Hindu caste system and caste, also known as Jaat, play a significant part in a person's status in the social hierarchy and the decisions regarding their profession (Jamil, 2019). Jamil and Baniamin (2020) examined the impact of the affirmative action implemented in Nepal's civil service since 2007. They found that it has led to increased representation and inclusivity, reflecting the country's gender, caste, ethnic, regional, and demographic diversity within the bureaucracy, thereby making it more representative and inclusive to the country and citizens as a whole (Bhul, 2023). The study examines Nepal's affirmative action in public service using related literature to investigate the foundation of representative bureaucracy. The representative bureaucracy theory has been applied to the setting examined by a number of Nepalese social situations, particularly in areas like job challenges and resources. After analyzing the literature, this study examined its findings and made a number of recommendations on how to increase the policy benefits of gender and other minorities' representation in Nepalese public service.

2. Balancing Social Justice and Meritocracy in Bureaucracy

Affirmative action remains a contentious and multifaceted concept, lacking a universally accepted definition and sparking debate worldwide (Crosby et al., 2006; Holzer & Neumark, 2006; Leslie et al., 2014; Sowell, 2004). Proponents argue that affirmative action is crucial for combating prejudice and dismantling systemic discrimination, particularly against minorities and women (Rosen, 1974; Braun, 1995). They maintain that such policies promote social justice and equality by redistributing resources to historically marginalized groups (Gibelman, 2000; Gu et al., 2014; Premdas, 2016). Despite criticisms, affirmative action remains a vital tool for addressing historical injustices and ensuring the inclusion of disadvantaged groups (Premdas, 2016).

Opponents of affirmative action, such as Pojman (1998), raise several objections. They argue that affirmative action results in reverse discrimination, disadvantaging certain groups and suggesting that significant progress has already been made in combating discrimination (Seldon, 2006). Additionally, critics contend that affirmative action can promote mediocrity and incompetence by prioritizing race or ethnicity over merit, potentially undermining workplace performance (Pojman, 1998). Furthermore, they assert that affirmative action contradicts the principle of merit-based selection, noting the lack of such policies in domains where certain groups

dominate, like basketball (Pojman, 1998). In contrast, Edigheji (2007) and the World Bank (2004) argue that when implemented correctly, affirmative action policies can enhance government capacity by preventing nepotism and employing qualified individuals. Effective implementation of affirmative action involves overcoming significant challenges, as highlighted by Haider (2011), who notes that it may take time for quotas to positively impact minorities as they acquire the necessary skills and societal attitudes shift. Browne (2013) suggests that long-term and complementary special measures are essential for the success of reservation policies.

Affirmative action is critical for historically marginalized groups seeking official recognition (Moodie, 2013; Middleton, 2013). Success criteria include establishing proportional representation, which may lead to challenges in retention and advancement. Korten (2011) emphasizes that reservation policies provide minority populations with a rightful share of power, resources, and opportunities. However, they can also exacerbate societal prejudice and affect merit-based selection (Pojman, 2010; Chalam, 1990; Rai, 2022). Previous research highlights the lack of minority representation in Nepalese bureaucracy (Gurung, 2006; DFID & World Bank, 2007; Bhatta et al., 2008; Onta et al., 2008; Sunam & Shrestha, 2019; Bhul, 2021; Rai, 2022). Pradhan (2014) underscores the complex interplay of class, gender, caste, and geographic factors in social inclusions and exclusions. Dhakal (2013) notes some positive representation outcomes from the Civil Services' affirmative action but acknowledges ongoing controversies, including elite dominance within excluded groups. Paudel (2016) concludes that the government struggles to attract marginalized community members, with trends favoring elite families with prior civil service connections.

In Nepal, the necessity of affirmative action is underscored by historical social exclusion and marginalization perpetuated by the state and its institutions (Middleton & Shneiderman, 2008; Sunam & Shrestha, 2019). Khas-Aryas and Newars have historically dominated Nepalese bureaucracy, while Dalits have faced near-total exclusion (Lawoti, 2005; Sunam & Shrestha, 2019). This dominance influences power dynamics and access to state resources and perpetuates social, political, and economic hegemony. Reservation policies can yield positive societal outcomes when implemented with an understanding of intersectionality and the specific needs of excluded groups. However, improper implementation can exacerbate inequality and social conflict (Bhul, 2021). While reservations aim to transform the socio-demographics of the bureaucracy and create an inclusive nation-state, they face harsh criticism for allegedly violating equality, benefiting economic elites within excluded groups, and undermining meritocracy (Subedi, 2014; Sunam, 2018; Sunam & Shrestha, 2019).

3. Objectives and Method of the Study

The study aims to examine the impact of affirmative action policies in Nepal's civil service since 2007, focusing on the representation and inclusion of women, Dalits, and ethnic minorities. It also explores the challenges individuals face in gaining empowerment and participation in decision-making within the civil service. I used three approaches to collect data for analysis: a scoping review of the academic literature, a scoping review of the popular Nepali media, and the study of the statistics related to the presence of disadvantaged social groups in civil service in Nepal.

For the academic literature review, I searched Google Scholar and NepJol database for studies on affirmative action in Nepal between 2007 and 2024. For the scoping review of the popular media, I used Google search to collect news related to affirmative action in Nepal from Nepali media in Nepali and English between 2022 and 2024. Finally, I collected data associated with hiring from the inclusion category from the Public Service Commission of Nepal Service for the last 10 years. Information from the academic literature and the popular media was qualitatively categorized based on issues and then analyzed to draw conclusions. The statistics on the result of affirmative action in employment are presented in the table, and charts and conclusions were drawn.

4. Results

4.1 Scoping Review of Scholarly and Popular Media Articles

I searched Google Scholar and NepJol database for studies on affirmative action in Nepal between 2007 and 2024. From the initial 6088 articles, I selected 86 studies based on criteria related to civil service, reservation or affirmative action, minority and disadvantaged social groups, and representation. Then I analyzed the content and generated a matrix with nine thematic issues, studies and the major conclusions of the studies as shown in Table 1.

Table 1. Scholarly literature review matrix

Issues	Authors	Year	Major Conclusions
Affirmative Action and Inclusion in Nepal	Dhakal (2013); Drucza (2016); Gurung (2006); Bhul (2021); National Inclusion Commission (2022); Paudel (2016); Pyakurel (2011); Rai (2022); Sunam (2018); Sunam et al. (2021); Thapa (2017)	2007-2023	Affirmative action in Nepal has advanced social inclusion but faces significant challenges in implementation. Political resistance, bureaucratic inefficiency, and limited resources undermine its success, preventing full inclusion of marginalized groups. Political patronage and vested interests further hinder progress.

Issues	Authors	Year	Major Conclusions
Affirmative Action and Social Justice	Bolick (1996); Borooah (2010); Bradbury & Kellough (2011); Braun (1995); Crosby et al. (2006); Deshpande (2013); Gibelman (2000); Gu et al. (2004); Holzer & Neumark (2006); Kramon & Posner (2016); Kovacs et al. (2014); Leonard (1984); Leslie et al. (2014); Louis (2005); Marion (2009); Meier (2019); Meier & Capers (2014); Meier & Nigro (1976); Middleton (2013); Moodie (2013); Premdas (2016); Pojman (1998); Rosen (1974); Selden (2006); Shah (1991); Sowell (2004); World Bank (2004)	1974-2021	Affirmative action policies show mixed results. They have improved access to education and employment for marginalized groups but have also caused backlash and unintended consequences such as stigma, social tension, and resentment. The policies often lead to divisions within society, highlighting the challenges in achieving social justice. Gender inequalities persist in terms of political influence, and while quotas address numerical representation, they do not fully resolve underlying gendered power imbalances.
Representative Bureaucracy	Anzia & Berry (2011); Bradbury & Kellough (2011); Edigheji (2007); Ferreira & Gyourko (2014); Haider (2011); Jamil (2020); Jamil & Baniamin (2020); Jamil (2021), Jamil & Dangal (2009); Kingsley (1944); Krislov (2012); Meier (2021); Meier & Capers (2014); Meier & Nigro (1976); Rasool & Rogger (2015); Riccucci et al. (2014); Selden (2006); Tsai (2007)	1944-2020	Diverse and inclusive bureaucracies enhance policy outcomes and public trust. However, achieving true diversity remains a challenge due to systemic barriers, resistance to change, and structural inequalities. Despite efforts to improve representation, diversity in bureaucratic roles is still not fully achieved.
Social Exclusion and Jobs Reservation	Borooah (2010); Chalam (1990); Lawoti (2005); Lewis (1997); Lott (2000); Shah (1991); Shneiderman (2008); Subedi (2014)	1990-2015	Reservation policies improve access for marginalized groups but these policies also provoke social tension and stigma, especially among non-reserved groups.
Gender and Political Representation	Anzia & Berry (2011); Dee (2005); Ferreira & Gyourko (2014); Haider (2011); Kasara (2007)	2005-2016	Gender quotas increase female representation but gender disparities in political performance remain.

Issues	Authors	Year	Major Conclusions
Social Inclusion in Education	Bista (1991); Bhatta et al. (2024); Chalam (1990); Crosby et al. (2006); Jencks (1998); Leonard (1984); O'Neill (2023); Pradhan (2014); Subedi (2014)	1991-2023	Affirmative action improves educational access, but cultural and resource barriers hinder full inclusion.
Ethnic Minority Public Sector Employment	Browne (2013); Jamil & Baniamin (2020); Jamil (2020), Jamil & Dangal (2020); Kramon & Posner (2016); Lawoti (2005); Riccucci et al. (2014); Selden (2006)	2007-2020	Ethnic minorities face significant barriers in public sector employment like gender and ethnic discrimination, underrepresentation in decision-making roles continue to hinder full inclusion in the public sector.
Civil Service and Governance	Bradbury & Kellough (2011); Government of Nepal (2007); Johnson (2015); Jamil & Baniamin (2020); Jamil & Dangal (2020); Krislov (2012); Meier (2021); Public Service Commission (2023); Rasul & Rogger (2015); Riccucci et al. (2014); Rosen (1974); Selden (2006)	1993-2023	Civil service reforms have improved inclusivity, but political patronage, political influence in appointments and promotions diminishes meritocracy, limiting governance quality and reducing public trust in government institutions.
Cultural and Social Dynamics in Nepal	Bista (1991); Dahal (2003); Ghimire (2020); Bhul (2021); Korten (2011); Lawoti (2005); Onta et al. (2008); Pyakurel (2011); Sunam (2018); Tsai (2007)	1991-2020	Historical inequalities persist, limiting the effectiveness of social inclusion and governance reforms in Nepal.

The major conclusions of major thematic issues identified in the Scholarly literature review matrix above have been elaborated in conjunction with the conclusions from the media review.

A Google search for the news and op-ed related to affirmative action in civil service published in Nepalese media in English and Nepali between 2022 to 2024 yielded 978 items. I selected 45 articles from them based on the criteria similar to that applied in the review of the scholarly articles. The title and content of these news and op-eds and the major conclusion is presented in Table 2.

Table 2. Popular Media Coverage of the Issues Related to Affirmative Action in Nepal

Media/ Newspaper	Authors	Date	Title and Major Content	Major Conclusions
English language media				
Nepali Times	Dhanu Bishwakarma	2024 September 7	"Reaffirming Affirmative Action": Discusses Nepal's civil service reservation policy, the progress it has enabled, and the continued underrepresentation of certain groups.	While the reservation system has increased diversity in civil service, marginalized groups like Madhesi Dalits remain underrepresented due to socio-economic and educational barriers. The system requires further refinement.
Nepali Times		2024 May 12	"Who cares?" - Discusses a report by Amnesty International highlighting systemic caste-based discrimination against Dalits, especially women.	The report emphasizes a culture of impunity, detailing pervasive casteism and institutional discrimination. It calls for more effective measures to protect Dalits and access to justice, as current efforts are largely ineffective and insufficient.
Nepali Times	Sonia Awale	2023 March 16	Discusses the concentration of power among high-caste men in Nepal, despite constitutional provisions for inclusion of women, Indigenous people, and Dalits in governance.	Despite quotas for representation, women and marginalized groups remain underrepresented in political roles. The article argues that more effort is needed to ensure effective participation of these groups in governance beyond mere tokenism.
Annapurna Express	Jeetendra Dev	2024 June 20	"The issue of inclusion in politics": Discusses inclusion in Nepal's politics, comparing India and Nepal's progress on affirmative action and representation.	While India shows significant inclusion in its cabinet, Nepal's remains less inclusive, especially with no Dalit representation. Despite legal frameworks, implementation is lacking.

Media/ Newspaper	Authors	Date	Title and Major Content	Major Conclusions
The Annapurna Express	Jivesh Jha	2023 September 14	"Implement the constitution in true sense." This article discusses Nepal's 2015 constitution, its progressive provisions, and the challenges of its implementation.	The constitution mandates affirmative action for marginalized groups, including women, transgender individuals, and disabled persons, but implementation remains weak.
Ratopati	Mim Bahadur Pariyar, Tirupati Pariyar	2023 April 26	Unheard voices of Dalit representatives - The article highlights caste-based discrimination faced by Dalit representatives in politics. It describes incidents of abuse, exclusion, and the systematic barriers that limit their participation.	Dalit representatives face discrimination during campaigns and in office, including derogatory comments, social exclusion, and limited decision-making power. Structural caste systems and biased political parties prevent meaningful Dalit representation in governance.
The Himalayan Times	Ram Kumar Kamat	2023 February 8	"Supreme Court directs to add quota for Tharus in govt jobs": The Supreme Court ordered the government to allocate quotas for the Tharu community in public jobs.	The court mandated changes to laws ensuring proportional representation for Tharus, highlighting the lack of enforcement of previous rulings on inclusive policies.
The Kathmandu Post	Samiksha Baral	2024 January 28	"Dalit women: empowered or imperilled?" Discusses the challenges faced by Dalit women in politics, despite affirmative action and electoral quotas.	Quotas have helped Dalit women gain political positions, but social prejudices, casteism, and resource disparities limit their effectiveness and influence.
The Kathmandu Post	Sajhana Tolange	2024 May 4	"Dalit women in local governance": Discusses the challenges and discrimination faced by Dalit women in Nepal's local governance, despite quotas.	Dalit women are underrepresented in decision-making positions. Caste-based and patriarchal barriers hinder meaningful participation, even with affirmative action.

Media/ Newspaper	Authors	Date	Title and Major Content	Major Conclusions
The Kathmandu Post	Shalupa Khanal, Srijan Poudel	2023 May 22	"Point, Counter-Point: Should affirmative action be based on caste not class?" This article debates whether affirmative action should prioritize caste or class.	Khanal supports caste-based affirmative action due to historical injustices, while Poudel argues for class-based systems to tackle broader economic inequalities.
Kathmandu Post	Pradip Pariyar	2023 February 5	The article critiques the political landscape in Nepal, arguing that it hinders social justice, particularly for marginalized groups like Dalits. It discusses electoral representation and systemic discrimination.	Pariyar argues that despite constitutional provisions for social justice, actual representation of Dalits is minimal. The political parties fail to nominate Dalit candidates, and systemic barriers perpetuate inequality, reflecting a regression in social justice efforts.
The Kathmandu Post	Deepak Thapa	2024 April 3	"Of women and strongmen" discusses the challenges and perceptions around women's empowerment in Nepal, highlighting resistance from some male officials and the progress made since the introduction of quotas for women in government roles. It also examines public sentiment towards female leadership.	Despite improvements, women still face significant barriers in civil service. Resistance to women in power persists, with calls for greater representation and support.
The Rising Nepal	Umesh Raj Regmi and Rup Sunar	2024 June 9	"Legal Education Empowers Dalits": Discusses the role of legal education in empowering Dalits to fight against caste-based discrimination.	Legal education is crucial for Dalit empowerment and access to justice. Dalit representation in legal fields remains low, and more support is needed for Dalit students.

Media/ Newspaper	Authors	Date	Title and Major Content	Major Conclusions
The Rising Nepal	Bini Dahal	2024 August 9	"Review Reservation" - Discusses the importance of Nepal's reservation system for marginalized communities and the need for reforms to address its shortcomings.	The article highlights that while the reservation system has aided women and marginalized groups, issues like the "creamy layer" challenge its effectiveness. It emphasizes the need for a balance between reservation and meritocracy, suggesting that reforms should focus on economic status for better inclusivity.
The Rising Nepal	Babita Basnet	2024 September 19	Secure Gains Made In Women Empowerment	Highlights the constitutional provisions for women's rights and representation, noting that women hold 28% of civil service roles. Emphasizes the need for effective implementation of laws and concerns over potential regressions in women's rights amid ongoing constitutional debates.
The Rising Nepal	Meena Bhatta	2024 September 10	The article discusses the political upheaval in Bangladesh, focusing on the student protests against the job quota system. It draws parallels to Nepal's political instability and public discontent over governance, jobs, and corruption.	The situation in Bangladesh serves as a cautionary tale for Nepal, highlighting the need for politicians to address public grievances to avoid similar unrest.
The Rising Nepal	Narayan Upadhyay	2024 August 16	The article discusses the recent political turmoil in Bangladesh that led to the ouster of Prime Minister Sheikh Hasina, drawing parallels to	The article emphasizes that while student protests have historically been powerful in Bangladesh, similar movements are unlikely to emerge in Nepal due to its

Media/ Newspaper	Authors	Date	Title and Major Content	Major Conclusions
			Nepal's political climate. It highlights the protests against the quota system in Bangladesh, the role of various political parties, and contrasts the political stability in Nepal with the chaotic history of its neighbor.	different political dynamics, the absence of intense political rivalry, and a relatively stable economic situation.
My Republica	Ritesh Panthee	2024 January 18	Reform in reservation is necessary - The article discusses the ongoing need for reservation in Nepal and the necessity to review and reform the system for marginalized communities.	The National Inclusion Commission suggests reforming the reservation system, stressing that it is essential for marginalized groups. The Supreme Court highlighted misuse of reservations by privileged groups. Recommendations include periodic reviews, preventing repeated beneficiaries, and expanding the criteria for reservation to improve inclusivity.
My Republica	Subash Ghimire	2023 March 28	"Review the Reservation System" - Discusses the need for a periodic review of Nepal's ethnic-based reservation system, with suggestions for reform.	Proposals include limiting repeated benefits, shifting to class-based over ethnicity-based reservations, and balancing the system to avoid reverse discrimination.
My Republica	Bhuwan Sharma	2024 July 30	The article discusses the persistent misuse of reservation quotas in Nepal's civil service, which have not been updated in 17 years.	The lack of revision in reservation quotas leads to affluent groups benefiting disproportionately, while deserving individuals are neglected. Recommendations include barring high-income families from accessing these quotas to curb misuse.

Media/ Newspaper	Authors	Date	Title and Major Content	Major Conclusions
Nepali language media				
पत्रिका	**लेखकहरू**	**मिति**	**शीर्षक र प्रमुख विषयवस्तु**	**निष्कर्षहरू**
गोरखापत्र	रमेश घिमिरे	२०८० माघ ५	निजामतीमा आरक्षण र 'ब्रेन ड्रेन' - निजामती सेवाको प्रभाव र सुधार आवश्यकताहरूको चर्चा गरिएको छ ।	आरक्षणले कर्मचारी सेवामा समावेशीकरणको सुनिश्चितता गर्दछ; तर, दक्ष जनशक्ति विदेश जानु र प्रभावकारी सेवा गर्न असमर्थता प्रमुख समस्या हो ।
गोरखापत्र	तारा वाग्ले	२०८१ साउन २३	निजामतीमा महिलाको सहभागिता र नेतृत्वको स्तरमा भएका परिवर्तनहरू	महिलाले निजामती सेवामा उच्च स्तरमा नेतृत्व गर्न थालेका छन्, आरक्षणले महिला सहभागिता बढाएको छ, तर अझै धेरै चुनौतीहरू बाँकी छन् ।
गोरखापत्र	डा. खगेन्द्रप्रसाद सुवेदी	२०७९ चैत २९	आरक्षणमा परिमार्जन - निजामती सेवा, कर्मचारीको पदोन्नति, र आरक्षणको आवश्यकता ।	कर्मचारीको कार्यसम्पादनमा ध्यान दिनु आवश्यक छ । आरक्षण र सेवामा सुधारका लागि नियमहरू परिमार्जन गर्नुपर्ने कुरामा जोड दिइएको छ ।
गोरखापत्र	प्रतिभा सुवेदी	२०७९ जेठ १५	निर्णायक पदमा महिला आरक्षण - महिलाको राजनीतिक सहभागिता र आरक्षणको महत्त्व ।	महिलाको भागीदारी बढाउन आरक्षण अनिवार्य छ; यसले राजनीतिक र सामाजिक समावेशिता सुनिश्चित गर्न मद्दत गर्नेछ । विभिन्न देशहरूमा महिलाको लागि आरक्षणको सफलताको उदाहरण दिइएको छ ।

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गोरखापत्र	भरतप्रसाद कोइराला	२०७९ जेठ ११	आरक्षणमा पुनरवलोकन - आरक्षणको उद्देश्य र यसका पक्ष र विपक्षमा चर्चा ।	आरक्षणले केवल विशेष वर्गलाई मात्र लाभ दिएको छ; यसको कार्यान्वयनमा सुधार आवश्यक छ । आरक्षणलाई आवश्यकताका आधारमा पुनरावलोकन गर्नुपर्ने र सरकारलाई सीमित प्रविष्टि सुनिश्चित गर्न सुझाव दिइएको छ ।
गोरखापत्र	तारानाथ पनेरू	२०७९ मंसिर ६	कर्मचारी प्रशासनमा आरक्षण - आरक्षणको प्रयोग, यसका प्रभाव र चुनौतिहरू ।	आरक्षणले सकारात्मक र नकारात्मक दुवै प्रभावहरू पारेको छ । विशेष गरी, यसले सामाजिक समावेशिता बढाएको छ, तर सिफारिसमा योग्यता प्रणाली कमजोर बनाउने जोखिम पनि उठेको छ । आरक्षणको उचित प्रयोग गर्दै दुष्प्रभावहरू न्यूनीकरण गर्नुपर्ने आवश्यकता छ ।
हिमालखबर	धनु विश्वकर्मा	२०८० असोज २३	आरक्षण खारेजी होइन परिस्कार - आरक्षणको महत्त्व र यसको प्रभावका बारेमा चर्चा गरिएको छ, जसले दलित र पिछडिएका समुदायलाई सरकारी सेवामा अवसर दिन्छ ।	आरक्षण खारेजीको माग न्यायोचित छैन; यसले समाजमा प्रतिनिधित्व र समानताको सुनिश्चितता गर्दछ ।
मार्टिन चौतारी	जेबी विश्वकर्मा	२०८१ जेठ १	आरक्षणको संघर्ष र षड्यन्त्र - आरक्षणको आवश्यकताका बारेमा बहस, उत्पीडित समुदाय र खसआर्य	आरक्षण एउटा सहायक कार्यक्रम हो; यद्यपि खसआर्य समुदायको वर्चस्व र आरक्षणको विरोधमा षड्यन्त्रहरू छन्, जसले

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			समुदायबीचको संघर्षको चित्रण गरिएको छ ।	समावेशीकरणमा बाधा पुऱ्याउँछ ।
रातोपाटी	रितेश पन्थी	२०८१ असोज २२	आरक्षणले उब्जाएको प्रश्न - विभिन्न आयोगहरूको अध्ययन र आरक्षणको प्रभाव र आवश्यकताको बारेमा चर्चा गरिएको छ ।	आरक्षणको उद्देश्य समानुपातिक समावेशीकरण हो; यद्यपि मौजुदा आरक्षण प्रणालीले विविध समुदायको प्रतिनिधित्वलाई सुनिश्चित गर्न चुनौतीहरू छन् ।
अन्नपूर्ण पोस्ट	दामोदर रेग्मी	२०८१ असोज २०	सामाजिक विविधताको व्यवस्थापन - नेपालमा विविधता र यसको महत्त्व, र समावेशी नीतिहरूको बारेमा चर्चा गरिएको छ ।	विविधता व्यवस्थापनले सामाजिक सद्भाव र समावेशीकरणलाई सुनिश्चित गर्दै, विभिन्न समुदायहरूको अधिकारको सम्मानमा ध्यान दिन आवश्यक छ ।
कान्तिपुर	जेबी विश्वकर्मा	२०८१ भाद्र ७	निजामतीमा तरमारा कै एकाधिकार- विगत केही वर्षदेखि नेपालमा आरक्षणको पक्ष र विपक्षमा बहस चलिरहेको छ आरक्षण महिला र उत्पीडित समुदायको मुक्तिको राजनीतिक कार्यक्रम होइन । वास्तवमा राज्यले नियोजित रूपमा विभेद र बहिष्करणमा पारिएका समुदायलाई राज्य सञ्चालनमा बिस्तारै समावेश गर्दै जाने र राज्यको चरित्रलाई	२०७६ मा लोक सेवा आयोगले ९ हजार १ सय ६१ कर्मचारीको भर्नाका लागि आवेदन खुलाउँदा समावेशिताको अवधारणालाई लत्यायो । स्वाभाविक रूपमा प्रभुत्वशाली खस-आर्य नेपालका ऐतिहासिक तरमारा वर्ग हुन्, अहिले पनि यही समूहले राज्यसत्ताको दोहनलाई निरन्तरता दिइरहेको छ भने आरक्षणको विरोध गरेर एकाधिकारवादी लुटको स्वार्थ रक्षा गर्न लागिरहेको छ ।

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			समावेशी बनाउने एउटा विधि मात्रै हो ।	
कान्तिपुर	इन्द्र अधिकारी	२०८१ आश्विन ६	आरक्षण - तथ्यांकबिनाको रजाइँ	नेपालमा आरक्षणको अवधारणात्मक अस्पष्टताको बारेमा छलफल गर्दछ । यसले आरक्षण नीतिहरूको इतिहास र उद्देश्यको विवरण दिन्छ, 'अवैध' को श्रेणी अन्तर्गत कुन समूह समावेश गर्नुपर्छ भन्ने बारेमा असहमति र वर्तमान नीतिहरू लक्षित रूपमा लागू नभएको बारेमा प्रकाश पार्छ ।
कान्तिपुर	जेबी विश्वकर्मा	२०८१ जेष्ठ ४	आरक्षणको संघर्ष र षड्यन्त्र - आरक्षण उत्पीडित समुदायको समग्र मुक्तिको कार्यक्रम होइन, सुधारका लागि सहयोगी भने पक्कै हो । राज्यले त्यस्ता समुदायमाथि गरेको ऐतिहासिक विभेदको क्षतिपूर्तिस्वरूप आरक्षण दिने भएको हुदा यो अन्य जात वा समुदायको अधिकार कटौती होइन ।	निजामती क्षेत्रमा प्रवेश गर्न व्यक्ति निश्चित शैक्षिक योग्यता हासिल गरेको नै हुन्छ । आरक्षणबाट नियुक्ति पाउने व्यक्तिले त अध्ययन मात्रै होइन, अनुभवजन्य ज्ञानसमेत प्राप्त गरेको हुन्छ । जुन ज्ञान कार्यक्षेत्रमा प्रभावकारी हुन सक्छ । जस्तो, थारू समुदायकै नीति निर्मातालाई थारूको भाषा, संस्कृति र मनोविज्ञान थाहा हुन्छ, त्यो समाजका लागि थारू समाज र संस्कृति बुझ्ने कर्मचारी नै सबैभन्दा उपयुक्त पात्र हुन्छ । त्यसैले आरक्षणबाट प्रवेश गर्ने व्यक्ति कमजोर हुन्छ भन्ने भ्रमबाट मुक्त हुन जरुरी छ ।

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कान्तिपुर	तारा वाग्ले	२०८१ आश्विन २	संविधानमै सीमित समावेशिता- सङ्घीय, प्रादेशिक तथा स्थानीय सरकारले महिलाविरुद्धका विभेदको अन्त्य गर्दै आवश्यक कानुन, नीति, निर्देशिका तथा मापदण्डहरूको प्रभावकारी कार्यान्वयनमा जोड दिनुपर्छ ।	महिला सहभागिता बढाउन आरक्षणको व्यवस्था गरे पनि त्यो सम्पन्न महिलामुखी भएको आरोप पनि लाग्ने गरेको छ । विशेष व्यवस्थाको अवधारणाअनुरूप पिछडिएको वर्गलाई उत्थान गराउने विषय भने चुनौतीपूर्ण बन्दै गएको छ । राज्यका विभिन्न निकायको उच्च तहमा पुगेका महिलाको अवस्था हेर्दा महिलालाई आरक्षण मात्र नभई उचित शिक्षासँगै अवसर र क्षमता विकासका तालिमको खाँचो देखिन्छ ।
कान्तिपुर	भोला पासवान	२०८० श्रावण ८	प्रस्तावित सङ्घीय निजामती ऐन: आरक्षण र मधेशी दलित - १४ प्रतिशत जनसङ्ख्या रहेका दलितको निजामती सेवामा प्रतिनिधित्व भने ५ प्रतिशतमात्रै भइरहेको छ । अझ दलितभित्र पनि मधेशी दलित र महिलाको अवस्था दयनीय छ ।	संविधानको धारा ४० (७) ले दलितहरूका लागि प्राप्त सेवा, सुविधा र अवसरमा दलित महिला र दलितभित्रका कमजोर दलितहरूले पनि समान रूपमा पाउने सुनिश्चित गरेको छ । तसर्थ संविधानको मर्म र १५ वर्षको आरक्षण कोटा कार्यान्वयनको अनुभवका आधारमा भन्नुपर्दा अब दलितभित्र मधेशी दलितको कोटा आरक्षित गर्नुको विकल्प छैन ।
अनलाइन खबर	लक्ष्मी विलास कोइराला	२०७६ पुष २७	निजामती सेवामा आरक्षण र सकारात्मक विभेदको बहस - आरक्षण र	निजामती सेवामा आरक्षणको खाँचो छ, तर योग्यता र विभेदको सवाल उठ्दछ । सकारात्मक विभेदले मात्र

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			समावेशीकरणको महत्त्व र चुनौतीहरू ।	सजिलो बनाउन सक्छ, त्यसैले व्यवस्थामा सुधार आवश्यक छ ।
अनलाइन खबर	डा. मानबहादुर बीके	२०८० वैशाख ४	निजामती सेवा ऐन, आरक्षण र अन्तरनिहित मनोविज्ञान - निजामती सेवामा दलित समुदायको प्रतिनिधित्व र आरक्षणको प्रभाव ।	नेपालको आरक्षण व्यवस्था असफल र निष्क्रिय रहेको छ; यो संरचनात्मक परिवर्तनको अभावमा छ । जातीय विभेदले मानव विकासमा ठूलो प्रभाव पारिरहेको छ, र आरक्षणको प्रभावकारी कार्यान्वयन आवश्यक छ ।
अनलाइन खबर	डा. मानबहादुर बिके	२०७९ जेठ १७	सार्वजनिक प्रशासनमा समावेशीकरण - सार्वजनिक प्रशासनमा समावेशीकरणको महत्त्व र चुनौती ।	समावेशीकरणको प्रक्रियामा सामाजिक विविधताको समावेशले लोकतन्त्र र सुशासनमा सुधार ल्याउँछ । ऐतिहासिक जातीय विभेदका कारण भएका असमानताहरूलाई सम्बोधन गर्न विशेष व्यवस्थाहरू आवश्यक छन् ।
अनलाइन खबर	ज्ञानेन्द्र गिरी	२०७९ माघ २३	सङ्घीय निजामती सेवा ऐनमा खुम्चँदै सीमान्तकृत समुदायको आरक्षण कोटा - आरक्षणको दुरुपयोग र कोटाको लाभ ।	समावेशी समूहका लागि कोटा खुम्च्याइएपछि, समावेशीकरणको अवसरमा सीमितता आएको छ । ऐनले सीमान्तकृत समुदायका हकमा प्रतिगामी प्रावधानहरू प्रस्ताव गरेको छ । प्रशासनमा यथार्थवादी पहुँचको लागि सशक्तीकरण र वास्तविक प्रतिनिधित्व आवश्यक छ ।

Media/ Newspaper	Authors	Date	Title and Major Content	Major Conclusions
नयाँ पत्रिका	सुवास भट्ट, कमलराज भट्ट	२०८१ भदौ १	राज्यसंयन्त्रमा महिला - निजामती सेवामा महिला सहभागिता र यसको अवस्थाबारे ।	संविधानले महिलाको ३३% प्रतिनिधित्व सुनिश्चित गरे पनि, शीर्ष तहमा सहभागिता कम छ । हाल निजामती सेवामा २८.१७% महिला काम गर्दैछन् । आरक्षणको व्यवस्था र सामाजिक चेतनाले महिलाको सहभागिता बढाउन सहयोग गरेको छ ।
नयाँ पत्रिका	सुवास भट्ट	२०७६ श्रावण ११	इतिहास रच्दै लीलादेवी बनिन् पहिलो महिला मुख्यसचिव - लीलादेवी गड्तौला, पहिलो महिला मुख्यसचिवको रूपमा नियुक्त ।	गड्तौला महिला प्रतिनिधित्वको वृद्धि र समावेशीकरणको प्रतीक हो, तर उनी ३८ दिन मात्र मुख्यसचिवका रूपमा रहनेछिन् ।
नयाँ पत्रिका	सुवास भट्ट	२०७७ भदौ ३	सरकारी सेवामा आरक्षण प्रणालीको लिइँदै छ हुर्मत - आरक्षणको दुरुपयोग र कोटाको लाभ ।	आरक्षण प्रणालीको लक्ष्य कमजोर वर्गको पहुँच हो, तर एकै व्यक्तिले पटक-पटक कोटा उपयोग गर्दा नयाँ पात्रहरूलाई रोकिएको छ । आरक्षणको उचित कार्यान्वयन र पुनरावलोकनको आवश्यकता छ ।
नयाँ पत्रिका	शिवहरि ज्ञवाली	२०७८ माघ १५	सरकारको जात - दलित समुदायको भेदभाव, सामाजिक न्याय र सरकारी संरचनामा जातीय भेदभावको प्रभाव ।	सार्वजनिक संस्थाहरू दलितमैत्री छैनन्, र दलितहरूको पहुँचमा बाधा पुऱ्याउँछन् । कानूनी र नैतिक दायित्वहरूमा सुधार आवश्यक छ ।

Media/ Newspaper	Authors	Date	Title and Major Content	Major Conclusions
नागरिक समाचार	भुवन शर्मा	२०८१ श्रावण १४	आरक्षण कोटामा दुरुपयोग - आरक्षण कोटा पुनरवलोकनमा ढिलाइ र यसको प्रभाव ।	आरक्षण कोटामा पुनरवलोकन १७ वर्षसम्म नगरेकोले वास्तविक लक्षित वर्गसम्म पहुँच छैन । धनी र सहरका समुदायले मात्र यसबाट लाभ उठाइरहेका छन् । आयोगले आरक्षण व्यवस्थामा सुधारको लागि सरकारलाई सिफारिस गरेको छ ।

4.2 Major Landscapes of the Affirmative Action in Nepal

Based on the scholarly studies and the popular media reporting the following landscapes of the affirmative action in Nepal's civil service and the impact on Nepali society emerge. So, affirmative action has played an important role in increasing social inclusion among the underprivileged populace in Nepal for better access to improved educational and economic opportunities. However, these landscapes are facing vital challenges like political resistance, bureaucratic inefficiency, combined with deep-seated power relations in society. More often than not, political patronage disrupts equitable distribution and damages the influence of such programs of inclusion. Moreover, affirmative action provides significant opportunities, though lack of resources and political will impede its complete realization (National Inclusion Commission, 2022; Bhul, 2023). While such policies have opened up avenues of educational and job opportunities, the backlash of non-beneficiaries has given rise to social unrest and defaming those who are beneficiaries (Bolick, 1996; Sowell, 2004). Given that diversified civil services have been proven to enhance the public's trust and produce inclusive outcomes, representational bureaucracy is still indispensable within the public sector (Anzia & Berry, 2011; Selden, 2006).

However, due to recruiting biases and resistance from entrenched powers, the processes have been slow. Similarly, in education, affirmative action has indeed opened the doors, but there is still a way to go regarding true access because of cultural biases, lack of infrastructure, and social stigma. Bhatta et al., 2024; O'Neill, 2023). Additionally, ethnic minorities still face discrimination in recruitment and promotion within the public sector, requiring further reforms to remove systemic

barriers and ensure equity (Browne, 2013; Lawoti, 2005). These challenges are compounded by deeply rooted cultural and social dynamics in Nepal, where historical divisions based on caste, ethnicity, and geography persist, making it difficult to achieve true social justice (Bista, 1991; Ghimire, 2020).

Therefore, affirmative action policies in Nepal's civil service have come a long way in improving women's participation and making amends for historical injustices; however, quite a few challenges remain. Criticisms about the effectiveness of the reservation system, abuses of quotas, and the broader economic impact of ineffective policies form the base for urgent, comprehensive reform. As it is currently practiced, affirmative action has thus far failed in altering entrenched power relations or ushering in equitable and fair representation for all underrepresented groups. For such policies to be moved toward achieving their intended outputs, a more proactive approach to policies will be required that is transformative both in intent and character. The necessary structural reforms regarding caste-based and class-based inequalities are interlinked and fundamental to creating an inclusive, representative civil service representative of Nepal's diverse elements. Equally cardinal would be increased legal education and empowerment programs, which equip the marginalized groups to effectively handle the system for their benefit and plead their cause. Only through such comprehensive changes will affirmative action achieve its objective of a more just and equal society.

4.3 Current Implementation Achievement of Affirmative Action in Nepal

The Government of Nepal implemented affirmative action in 2007 by revising the Civil Service Act 1993 in response to the long-standing struggles of marginalized communities as well as left-wing political organizations. According to the Civil Service Act of 1993, qualified candidates from underprivileged groups will be given first preference in an open competition to fill 45 percent of the total seats. Total number of reserved seats, 33 percent are allocated for women, 27 percent for Adivasi-Janajatis, 22 percent for Madhesis, 9 percent for Dalits, 5 percent for differently abled people, and 4 percent are allocated for backward regions (GoN, 2007).

Table 3. Cluster-wise Hiring for Civil Service in two periods (F/Y 2074/75 and 2079/80)

S.N.	Cluster	2074/75			2079/080		
		Female	Male	Total	Female	Male	Total
1.	Women	1088	0	1088	500	0	500
2.	Adivasi-Janajati	212	646	858	260	479	739

S.N.	Cluster	2074/75			2079/080		
		Female	Male	Total	Female	Male	Total
3.	Madhesi	112	599	711	125	508	633
4.	Dalit	57	235	292	39	156	195
5.	Disables	28	135	163	23	100	123
6.	Remote Area	19	113	132	47	282	329
Grand Total		1516	1728	3244	994	1525	2519

Source: Public Service Commission, 2075 and 2080 Reports

Table 3 shows comparative data on hiring different marginalized groups in Nepal's civil service between 2074/75 and 2079/80. Figure 1 shows a comparison in numbers as well as gender parity in each category. The data shows a decrease in hiring from 2074/75 to 2079/80 in all categories except the Remote area. The decrease is most prominent in case of women. The gender parity is low in all groups (value range: 0.2 – 0.5). Regarding change, the gender parity has increased in Adivasi-Janajati and Madhesi groups and has remained more or less unchanged for Dalit, Differently able and remote area groups.

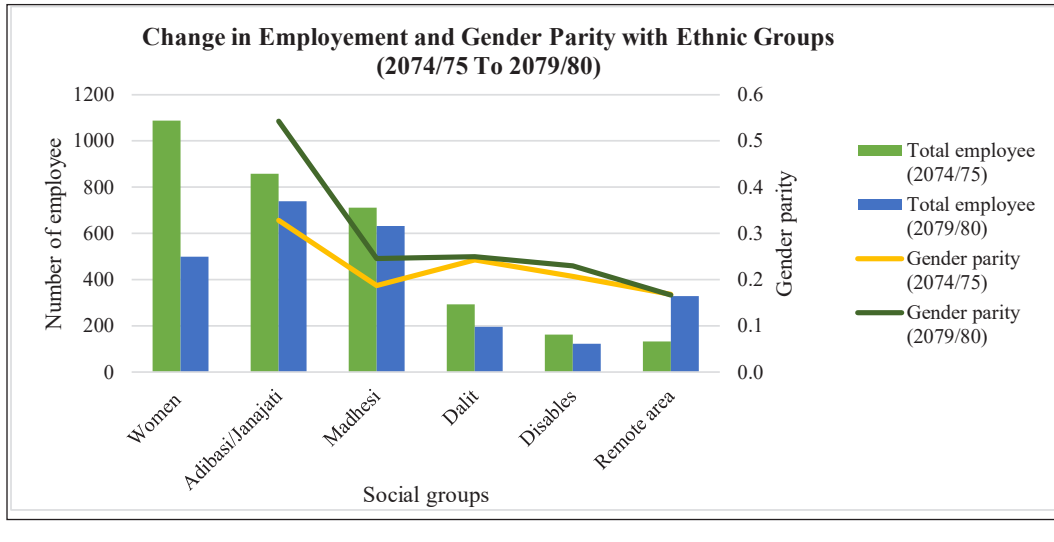

Figure 1. Five Year Change in Employment and Gender Parity among Disadvantaged Groups (Data source: Public Service Commission)

Table 4 shows gender composition of all civil servants in last 11 years starting from the year 2072/73 to 2080/81. The same data is presented in chart in Figure 2 to show the trend of gender parity.

Table 4 Gender Composition of Civil Servants for the period 2072/73-2080/81.

Year	Male	Percentage	Female	Percentage	Total
2080/81	61369	71.76%	24143	28.23%	85512
2079/80	61423	71.82%	24094	28.18%	85520
2078/79	62482	72.49%	23712	27.51%	86194
2077/78	64979	73.41%	23532	26.59%	88511
2076/77	65461	74.00%	22999	26.00%	88460
2075/76	66335	75.13%	21963	24.87%	88298
2074/75	68558	76.40%	21169	23.60%	89727
2073/74	67682	77.85%	19260	22.15%	86942
2072/73	67231	80.76%	16014	19.24%	83245
2071/72	67226	82.33%	14424	17.67%	81650
2070/71	67381	84.03%	12806	15.97%	80187

Source: Department of National Personnel Records (Civil), MoFAGA

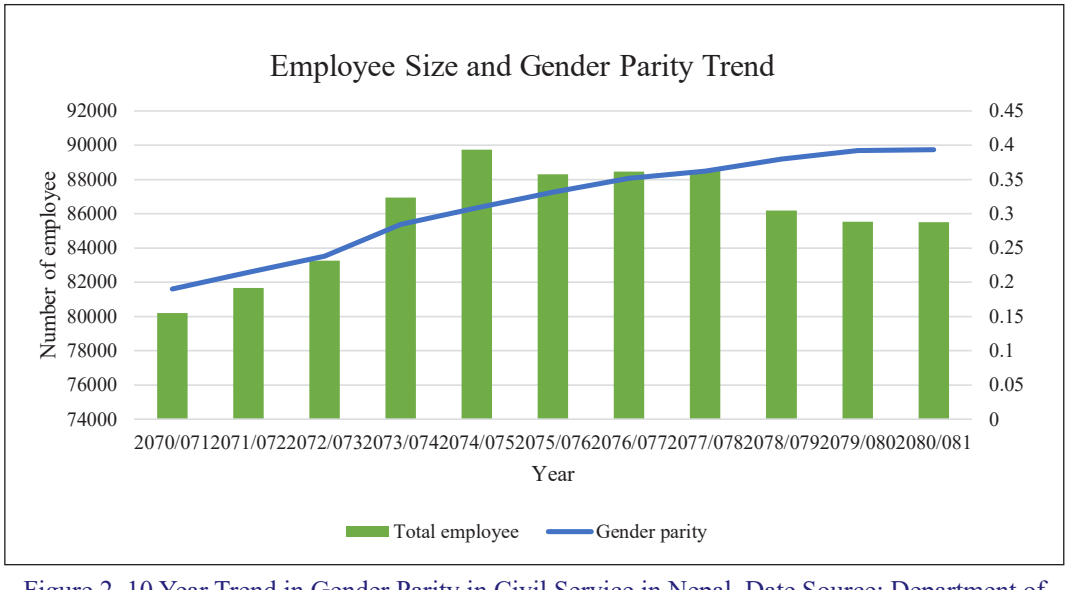

Figure 2. 10 Year Trend in Gender Parity in Civil Service in Nepal. Date Source: Department of National Personnel Records (Civil), MoFAGA

The data shows that the gender parity among total civil service is low. However it is steadily improving (Gender parity: 1.9 in 2070/71 and 3.9 in 2080/81). It indicates

a steady decrease in the share percentage of male civil servants from 84.03% in 2070/71 to 71.76% in 2080/081, with a corresponding increase in the share percentage of female civil servants from 15.97% to 28.23%. At a level of around 0.2 to 0.4, gender parity also improved over the last decade. This is an encouraging trend towards better gender balance in the civil service.

Table 5 and Figure 3 exhibit gender parity throughout the various service areas of the Nepalese public service. Despite the wide variations in the total number of workers across different organizations, the gender parity index reveals several interesting trends. For instance, the health sector has the highest employment rate and a gender parity rating of 1.0, indicating equal representation of both sexes. This contrasts with fields such as engineering and forestry, which have a lower gender equality index than the male-dominated workforce. The administrative sector scores poorly on gender equality, although there is a huge workforce. From these research results, therefore, specific actions must be taken to promote gender equality in various services, especially in the professions with low gender equality in the federal civil service of Nepal.

Table 5 Service-wise Gender Composition in Civil Service of Nepal

S.N.	Services	Male	Female	Total	Male %	Female %
1	Nepal Economic Planning and Statistics Service	327	54	381	85.8	14.2
2	Nepal Agriculture Service	2865	785	3650	78.5	21.5
3	Nepal Administrative Service	23691	5137	28828	82.2	17.8
4	Nepal Forestry Service	3978	605	4583	86.8	13.5
5	Nepal Education Service	1495	498	1993	75.0	25.0
6	Nepal Health Service	12596	12457	25053	50.3	49.7
7	Nepal Miscellaneous Service	2253	1556	3809	59.1	40.9
8	Nepal Engineering Service	9174	1734	10908	84.1	15.9
9	Nepal Justice Service	3446	1059	4505	76.5	23.5
10	Nepal Foreign Service	211	64	275	76.7	23.3
11	Nepal Audit Service	358	86	444	80.6	19.4
12	Nepal Parliament Service	188	58	246	76.4	23.6
		60582	24093	84675	71.54	28.45

Source: Ministry of Finance, Economic Survey Reports, 2080

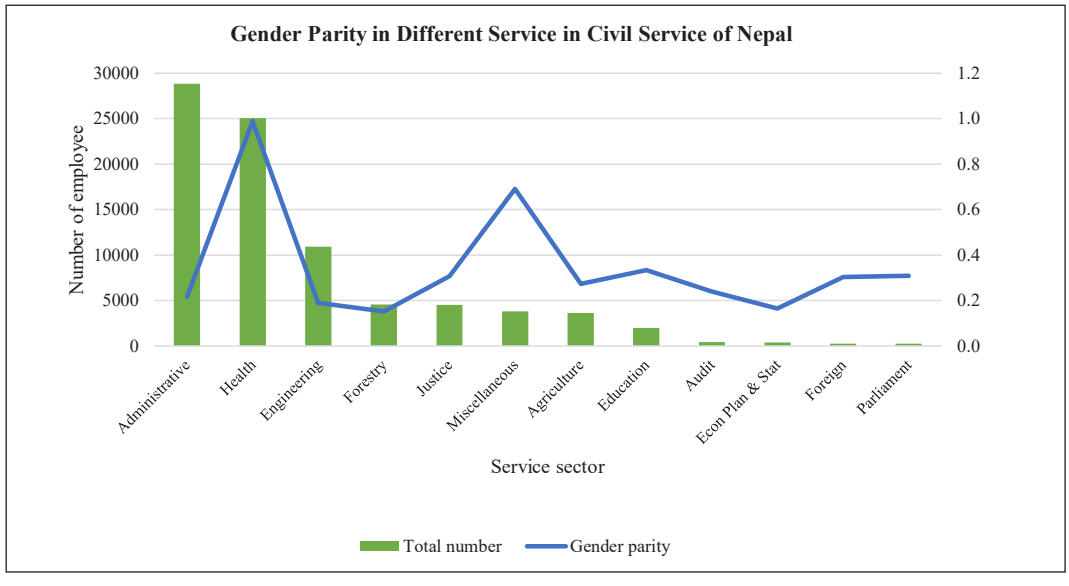

Figure 3. Gender Parity in Different Service in Civil Service of Nepal

Table 6 shows regional caste representation in Nepal's civil service. There are large differences in terms of the extent to which different caste groups are represented. The Hill Brahmins and Hill Chhetris (Khas-Arya) dominate with 39.00% and 22.30%, respectively, both achieving an index close to or at 1.00, thus their proportional representation rate as compared to their population. In sharp contrast, the Hill Dalits, Terai Dalits, and Muslims are grossly underrepresented, with indices ranging between 0.0978 and 0.2474, pointing to their relative negligibility in the civil service. The Terai Indigenous and Newars are underrepresented but to a lesser degree. What it does indicate, more generally, is that there is a need for more inclusive policies to bridge gaps and to better represent groups that have been underrepresented and marginalized in the civil service.

Table 6. Regional Representation of Caste in Civil Service (cited in Gurung, 2009)

SN	Caste	Percentage	Index
1	Hill Brahmin	39.00%	1.0000
2	Hill Chhetri	22.30%	0.9719
3	Terai Brahmin, Chhetri	3.30%	1.0000
4	Terai others	9.70%	0.3851
5	Hill Dalit	0.90%	0.0978
6	Terai Dalit	0.50%	0.2474

SN	Caste	Percentage	Index
7	Newar	9.00%	0.4227
8	Hill Indigenous	9.00%	0.4382
9	Terai Indigenous	4.60%	0.4227
10	Muslim	0.70%	0.1574
11	Others	0.4%	0.6073

5. Discussion

The review of the scholarly articles and media reports regarding affirmative action in Nepal and the analysis of the data on the diversity in civil service in Nepal have highlight the following major features and discussion on the benefits and challenges of affirmative action in civil service in Nepal.

5.1 Media Discussion

The media review highlights the critical role of media coverage in shaping public perceptions and understanding of women and other minorities' representation and systemic issues within Nepal's civil service. Analyzing these narratives, the media review underscores the importance of accurate and balanced reporting in addressing gender equality, systemic inequities, and the broader economic implications of ineffective affirmative action policies in Nepal. Major opinions are discussed as follows;

5.1.1 Gender Representation and Enactment Encounters

Though, even though the representative tendencies of some of the most marginalized groups-such as women-have increased within Nepal's civil service, equal representations remain very limited for Madhesi, Dalits and women from so-called marginalized castes. Recent reports show that, as of October 2024, women's representations in civil service have drastically increased to 28.45%, in accordance with policy guaranteeing 33% female representation in state appointments (Bhatta & Bhatta, 2024). However, the appointment of Leeladevi Gadtoula as the first woman Chief Secretary marked a milestone in women representation at higher levels of administration. The marginalized groups, however-most particularly the Dalit women and Madhesi-are still finding it hard to get meaningful representations in civil and political roles. Bishwakarma (2024) mentioned that while the reservation system improves overall representation, it has done little to overcome socio-economic inequalities impeding proper representation by the most marginalized. Baral (2024) says that even though quotas guarantee Dalit women a political

position, their prospects for effective participation remain muddled by persistent social bias and resource deprivations.

According to Jha (2023), though the Constitution of Nepal in 2015 had various progressive provisions to empower subaltern groups, its weak enforcement mechanisms had made little change in the power dynamics. The reservation policies under the Civil Service Act are termed passive in their operations and effect little change in the pattern of entrenched powers. BK (2023) identifies even after these provisions, most of the posts in civil services continue to be held by Khas-Aryaa, and hence, the reservation system has not yielded substantive alteration in power distribution, as Vishwakarma (2024) expressed. It has also failed to transform the structural inequalities in most political and civil systems, as greater representation of most marginalized communities is absent from positions of power. These critiques brought into sharp focus the gap between policy on paper and actual implementation and stressed the need for more substantial and more proactive measures that guarantee actual representation.

5.1.2 Systemic Discrimination and Glass Ceiling Effects

Regarding discrimination, "Who cares?" (2024) said that the Amnesty International Nepal report has noted that discrimination based on caste continues and has called for more stringent measures of protection against what has proved to be entrenched. What has happened is that this impunity of culture has legitimized the dominant groups to turn the systems of affirmative action to their advantage and limited benefits accruing to genuinely marginalized people. According to Panthee (2024), privileged groups will actually manipulate the reservation system by creating more disparity. More precisely, manipulating reservation quotas serving the most disadvantaged sections of society provides higher-income people from those very groups various ways to benefit from it. Sharma (2024) comments that the manipulations make affirmative action less effective, and the increased disparity is encouraged. Equivalence and sufficiency of prevailing policies are seriously questioned. Bhul (2023) argues that the glass ceiling effect in Nepal's civil service persists, hindering the upward mobility of marginalized groups despite affirmative action policies. It is evident that while affirmative action ensures entry-level positions for underrepresented groups, individuals from these groups often face significant barriers to socialization and advancement. Studies and reports indicate that employees from marginalized backgrounds in the civil service encounter institutional biases, limited access to professional development opportunities, and a lack of mentorship from senior officials, which restricts their ability to rise through the ranks. Drucza (2016) further justifies this argument by pointing to the poor

representation of lower-caste individuals in leadership positions within the civil service despite the introduction of quotas. This demonstrates how entrenched cultural and institutional biases continue to limit the effectiveness of affirmative action in providing real opportunities for marginalized groups to excel and attain leadership roles.

5.1.3 Disagreement and Area of Adjustment in Affirmative Action in Nepal

Another critical strand to the debate is whether the reservation policy has to focus on caste or class; this thread of debate has also been shaping the affirmative action discourse in Nepal. Khanal and Poudel (2023) have discussed this, indicating that as much as caste-based reservations try to address historical injustices, class-based reservations might be more effective in tackling contemporary socio-economic disparities. BK (2023) also argued that these reservations by the Civil Service Act of 1993 are unsuccessful in bringing structural change because the influential positions have been reserved by the dominant groups themselves. According to Vishwakarma (2023), the fact that continued debate goes on to prove that affirmative action policies in Nepal must be designed and accommodating in addressing caste-based and class-based disparities. The subtler the approach, the better it will work its way into the intricately connected socioeconomic challenges these underprivileged communities face.

Education, especially legal education, has a critical role it can play in empowering marginalized communities where fighting against entrenched systemic barriers mandates integrating inclusive policies. Regmi and Sunar (2024) emphasize that legal education is important in empowering Dalits and other marginalized groups regarding their representation in civil service machinery, which will help them transcend entrenched discriminatory practices. This will give them access to legal education, knowledge, and tools for better realizing their rights among the marginalized sections; thus, they can participate fully in governance and civil service. This is important in light of the persistent misuse and manipulation of affirmative action policies. Sharma (2024) points out that this quota system is utilized to benefit influential sections within the marginalized group by getting a promotion to higher levels of governance, hence diluting the benefits aimed at truly disadvantaged people. A quality legal education would open up avenues for opportunities for the marginalized people of Nepal to enter the civil service and political world that truly should be representative in asserting their rights and fighting against discriminatory practices. These issues underline the need for periodical review in the reservation system and a more stringent oversight

mechanism to ensure that the scheme reaches out to the most disadvantaged of all groups

5.2 Meritocracy versus Inclusion Dichotomy

A common argument against affirmative action policies in Nepal's civil service is that they undermine meritocracy, potentially resulting in diminished public service quality. However, this argument lacks robust evidence. Despite the absence of systematic research exploring the direct impact of bureaucratic affirmative action on meritocracy and public service quality, the available evidence suggests otherwise. The policy has been successful in fostering inclusivity, increasing the representation of historically marginalized groups, including women, Dalits, Madhesis, and Aadivasi-Janajatis. This increase in diversity has helped create a civil service workforce that mirrors the social fabric of Nepal (Sunam et al., 2021). As a result, the inclusion of diverse groups has brought valuable contextual knowledge, experience, and multicultural skills to the bureaucracy. These elements are crucial for enhancing problem-solving abilities, policy-making, and service delivery outcomes. Moreover, the greater cultural competencies resulting from this diversity have improved communication and understanding between civil servants and citizens, especially those from marginalized communities, thanks to language skills and cultural insights (Sunam & Shrestha, 2019; Sunam et al., 2021; Bhul, 2023). This fosters more effective engagement with communities and facilitates better public service delivery.

This enhanced connection has led to greater trust and cooperation between the public and bureaucratic organizations (Riccucci et al., 2014; Sunam et al., 2021). These positive outcomes challenge the assertion that affirmative action leads to diminished government services and instead highlights its broader benefits. Sunam (2018) argues that the beneficiaries of affirmative action, such as women, Dalits, Madhesis, and Janajatis, have contributed to a more diverse civil service that enhances policy-making and problem-solving by bringing varied expertise and experiences. The participation of officials from marginalized groups has also been essential in ensuring justice for those facing caste- or gender-based discrimination, as they can relate to and advocate for the concerns of their communities. Despite the positive effects of affirmative action, there are criticisms regarding its impact on meritocracy and bureaucratic efficiency. They argue this approach devalues competence, demoralizes highly qualified individuals, and enforces reverse discrimination against wealthier groups. Research on the effectiveness of affirmative action presents mixed findings. Some studies suggest these policies lower recruitment standards and harm organizational performance, while others show that

hires from marginalized groups can perform as well or even outperform their peers (Paudel, 2016). The complexity of assessing affirmative action's impact is further compounded by biases in meritocratic exams and the correlation between socioeconomic status and exam scores. Ultimately, striking a balance between inclusivity, equality of opportunity, and maintaining meritocratic standards remains crucial for ensuring societal progress.

5.3 Myth vs. Reality: Affirmative Action is not just about Quotas

One prevalent myth about affirmative action is that women no longer need such policies. However, despite gains over the last 15 years, women remain significantly underrepresented in key sectors like revenue, foreign affairs, and auditing. The Public Service Commission Report (2023) reveals that men hold 80 percent of senior positions in Nepal's civil service, while women occupy just 20 percent. Women's representation has increased from 12.5 percent in 2007 to 28.5 percent in 2024 among all 88,568 civil service professionals, yet men still represent 71.5 percent (Ministry of Women, Children, and Senior Citizens, 2024). The second myth is that affirmative action is equivalent to quotas. In reality, affirmative action sets goals to enhance the representation of underrepresented groups, ensuring fair access to opportunities. These goals are meant to be achieved through effort and are distinct from rigid quotas, which are only imposed by judicial mandate as a last resort.

Another myth is that affirmative action causes "reverse discrimination." In contrast, these policies ensure the fair evaluation of all applicants based on job-related criteria, without disadvantaging individuals based on caste, gender, or geography. A further myth claims that affirmative action compromises merit-based hiring. However, legislation such as the Civil Service Act of 1993 prioritizes qualifications over demographics, emphasizing merit while fostering inclusivity. Lastly, the myth that affirmative action undermines the self-esteem of women and marginalized groups is based on prejudice rather than the policies themselves. Affirmative action aims to promote inclusivity and diversity, which are essential for organizational success. Affirmative action in Nepal's bureaucracy is proactive, preventing discrimination before it arises and reducing reliance on costly, long-term legal processes (Marion, 2009). Nepal is recognized itself as a multilingual, multicultural, and multi-religious state (Constitution of Nepal, 2007; 2015; Gautam & Poudel, 2022). The deeply ingrained caste system, which has traditionally shaped societal hierarchies and roles, is one of the main obstacles (Thapa, 2017). The goal of affirmative action laws is to undermine these systems by giving historically marginalized and underprivileged castes chances. This may incite resistance from

those who stand to gain from current privileges (Bhul, 2021). BK (2023) mentioned that emphasis on social justice values, equitable opportunity, and inclusive development can remove cultural barriers, while Bhul (2021) argues fundamental changes with strict criteria are necessary for the dismantling of public service due to established casteism in society and its descendant's discrimination. Nepal must implement these strategies to make its affirmative action measures more effective and promote inclusion and social justice in its bureaucracy.

5.4 Major Obstacles of Affirmative Action Implementation in Nepal

Affirmative action in the past has favored exclusion, not inclusion, in Nepal (Drucza, 2016). The first challenge is the language barrier, which still poses a major obstacle even in the presence of inclusive policies and is frequently disregarded by detractors of the inclusion policy, even though scores are frequently employed to undermine it (Gurung, 2009). The civil service exams are primarily administered in Nepali and English. This is a significant obstacle for citizens of a country where there are over 124 different languages spoken out of 142 ethnic communities. Looking back, it's obvious that underprivileged communities have had challenges ever since they started schooling. The second challenge is gender inequality, where the overall percentage of female civil servants has increased from 15% in 2010 to 28.45% in 2024. The growth in female participation in Nepal's decision-making positions, particularly among secretaries and joint secretaries, it is 88 percent Khas-Arya women, or seven out of eight, under-secretaries include 90 percent Khas-Arya women or 28 of the 31, section officers also comprise 80 percent Khas-Arya women, or 2,029 out of 2,459 (National Inclusion Commission, 2023). On the other hand, various disadvantaged identities and minority groups face severe under-representation. For example, only 0.6 percent of Muslims and 2.5 percent of the Dalit population are represented in the civil service, while the actual population of Nepal comprises 4.4 percent Muslim and 12.6 percent Dalit.

Intersectionality allows for reflection on the inequities within each category of the quota system. It highlights the need to recognize intersectional complexities to revise and form more nuanced categories based on actual ground realities (Bhul, 2023). For example, women are not a homogenous category, and treating them as one entity is an inherent systemic flaw. Similarly, treating other complex structural identities like caste or ethnicity as a homogenous identity is also questionable. The assumption of homogeneity problematically comes to the fore through the flawed quota system, which has allowed specific ethnic clusters to reap the benefit of the reserved seats. For instance, Rajput, Kayastha, Yadav, and Brahmin-Tarai from the Madheshi cluster, and Newar from the Adivasi-Janajati clusters are currently over-

represented (National Inclusion Commission, 2023). This trend explains the complexity within each cluster, which should be better understood to deal equitably with quotas given to large and often diverse clusters. Furthermore, other representation issues, such as double or even triple-marginalization, for instance, Madheshi Dalit, Muslim women, or minorities with disabilities from rural settings, must be addressed to strengthen the existing affirmative action.

Research on Dalit government employees reveals that those who entered through affirmative action feel isolated and are perceived as incapable and untrustworthy (Sunam et al., 2019). Discrimination has transformed from untouchability to preventing people from accessing numerous opportunities, benefits, support, and guidance. The quota policy does not address other forms of structural bias and discrimination, nor has it resulted in marginalized communities gaining positions of power, at least those capable of making policy decisions. However, none of the state's initiatives have been successful if we were to aim for dramatic, overnight changes. On that basis, practically every policy of the state needs to be rethought. Affirmative action has, at the very least, resulted in some increased participation. Nepal has to move toward inclusion, but any concept of inclusion that requires participation in the government mechanism is unfair. A certain level of intervention and anti-discrimination measures will be necessary when citizens start unfairly. Recognizing that members of the privileged class are the ones who create affirmative action rather than doing away with them is the solution. For the ultimate justice and inclusion, there should be pivotal reform; otherwise, the fact that such policies do not address the de facto exclusion.

5.5 Issues and Effects of Affirmative Action on Nepalese Bureaucracy

Based on the above facts, there have been a few positive notes to the affirmative action policy in Nepal. This is evident from the high number of women (28.45 %) and minorities entering civil service, hence trying to break the male-dominated culture of the Nepalese bureaucracy. Such representation has not only given opportunities to the marginalized. Still, it has also empowered such people to become active, prominent agents of public service, hence elevating their self-esteem and giving them better status in society (Bhul, 2021). In addition, the civil service contains a broad spectrum of caste, tribe, and gender identities, which generate diverse perspectives and have been instrumental in enhancing service delivery concerning caste and gender discrimination through better policy formulation and problem-solving. Cultural competencies have also played a crucial role in this process, helping individuals from marginalized groups navigate complex societal

structures while contributing to the overall progress in addressing social disparities in civil service system (Bhul, 2023).

Despite few achievements, the National Inclusion Commission (2023) claimed that major positions in public service are held by those from a range of majority communities. The inaction has caused some of the reserved quota positions to remain vacant, and the quotas do not represent the groups in full. The Public Service Commission (2023) has been called for a review in its annual reports, but over the years, the government has failed to amend the Civil Services Act or bring in a new Federal Civil Service Act, hence sorting out deficiencies in the existing reservation system will continue to exist. Therefore, it has also been highly criticized that the reservation system in Nepal has failed to serve the interests of economically disadvantaged people and is being utilized as an opportunity by the rich and upper classes. The misallocations are caused by unreviewed quotas, and descendants of high-ranking officials and the rich continue to exploit this privilege at the cost of genuinely marginalized communities. The manipulation of disability and residency claims, fraudulent surname changes, and abuse of Non-Resident of remote area status for accessing reservations were pointed out by the Nepal Inclusion Commission (2023). Similarly, inconsistency in the criteria for defining disability allowed people with minor impairments to access quotas that were meant for the severely disabled. Findings like these underscore the terrible need for comprehensive reforms that rid the system of such discrepancies to serve the underprivileged, for which it was intended, and not be exploited by persons who do not fit the criteria. These findings bring out the imperative urgency for comprehensive reforms to the reservation policies to rectify these discrepancies and ensure that the system works effectively for the marginalized sections of society.

6. Summary and Conclusions

Since the second amendment of the Civil Service Act in 2007, affirmative action has significantly increased the participation of underprivileged groups in Nepal's civil service. The policy was designed to address historical inequalities and promote social justice by ensuring that women, Dalits, Madhesis, Janajatis, differently-abled individuals, and people from remote areas are represented in civil service positions. This has led to a more diverse bureaucracy that better reflects the social and cultural makeup of the country. Such increased representation brings valuable contextual knowledge, experiences, and multicultural skills into the civil service, improving communication and understanding between civil servants and marginalized communities. The inclusive nature of the policy has strengthened the state-citizen relationship, fostering trust and cooperation between citizens and bureaucratic

organizations in Nepal. On the positive side, affirmative action has achieved notable milestones, including a 28.45% representation of women in the civil service and appointing Leeladevi Gattoula as the first female Chief Secretary. However, critics argue that the reservation system has been passive and insufficient in redressing systemic inequalities despite these advances. Moreover, while affirmative action has yielded some positive results, such as fostering cultural competencies through the increased representation of women, Dalits, and ethnic minorities, substantial inequalities persist, particularly regarding equal opportunities for empowerment and active participation in decision-making processes.

Furthermore, concerns have been raised about the misuse of quotas, where influential groups within marginalized communities disproportionately benefit, limiting the system's overall effectiveness. The economic implications of ineffective affirmative action are clear, highlighting the need for more transformative policies to address human development and productivity losses. Comprehensive reforms are necessary to ensure that affirmative action in Nepal's civil service fosters genuine inclusivity and leads to equitable representation across all sectors.

While affirmative action has brought positive changes, it has also faced criticism for undermining meritocracy. Critics argue that hiring underrepresented groups without adequately considering qualifications diminishes the merit-based appointment process and could lead to reverse discrimination. Despite these criticisms, affirmative action has injected much-needed diversity into the bureaucracy, which is expected to have contributed to improved problem-solving, policymaking, and service delivery. Symbolically, the inclusion of previously excluded groups, such as Dalits, Madhesis, and Tharus, has played a crucial role in advancing social and economic mobility. The reservation system, however, reflects the deep social cleavages in Nepal, with dominant groups fearing that the policy might deprive them of opportunities. For marginalized communities, the reservation policy is seen as a fundamental democratic right and a necessary compensation for historical injustices. Despite its good intentions, the current system faces misuse and inefficiencies, as evidenced by the ongoing debates. Lessons from countries like Bangladesh stress the importance of reforming the reservation system to better align with the needs of all segments of society. Effective affirmative action policies should prioritize proportional representation and inclusion, drawing on the strengths and weaknesses of the existing system. The Federal Civil Service Bill must incorporate provisions for equitable representation, ensuring that it reflects the diverse and evolving makeup of the country. To enhance affirmative action, the policy must also expand to include underrepresented groups such as sexual minorities, as seen in Koshi Province in 2023. Moving forward, Nepal must focus

on improving and refining affirmative action, rather than discarding it altogether, to build a civil service that is truly representative and inclusive. Through continuous reform, Nepal can create a more equitable and harmonious society that contributes to the nation's overall growth and stability.

7. Policy Recommendation

Drawing from these research findings and based on a wide array of studies and reviews regarding affirmative action and its execution in Nepal's civil service, it's imperative to remember the following policy recommendations. The most crucial of these would be the need for a thorough review and necessary readjustments of existing quotas to correct imbalances in representation, such as overrepresentations found in particular gender, ethnic clusters, and other groups in which representation is lacking. That would involve revising the criteria of reservations to account for the added complexity that intersectionality brings in, such as double or triple marginalization vis-à-vis Madheshi Dalits or disabled minorities from rural areas. Second, much more investment is needed in education and capacity-building programs so that the beneficiaries under affirmative action are built with capacity and thereby have improved merit-based evaluations within the quota system. The need for more transparency in the recruitment and promotion process will further reduce perceptions about reverse discrimination and compromised merit. Any perception that diversity is instrumentally good for organizational performance must be aired. Efforts at creating awareness and imparting education on affirmative action will go a long way in dispelling myths against it and thus help build up an appreciating and supportive environment. This will, therefore, require recurrent dialogue with various stakeholders, including the marginalized communities, so that affirmative action can be relevant to changing Nepal's civil service into one imbued with sustained inclusiveness.

8. Applicable Course of Action

Based on the above findings, here are the major eight recommendations:

S.N.	Reform Activities	Responsible Agencies	Desired Results	M&E Indicators
1	Conduct a comprehensive review of existing quotas and representation criteria	Civil Service Commission, Ministry of Federal Affairs and General Administration	Equitable distribution of representation across diverse ethnic and marginalized groups	Report on revised quotas; Data on representation distribution

S.N.	Reform Activities	Responsible Agencies	Desired Results	M&E Indicators
2	Revise reservation criteria to address intersectionality, including multiple marginalization	Civil Service Commission, Ministry of Federal Affairs and General Administration	Improved support for individuals facing double or triple marginalization	New criteria documentation; Data on beneficiary demographics
3	Implement education and capacity-building programs for beneficiaries	Ministry of Education, Training Institutions	Enhanced skills and career advancement for individuals benefiting from affirmative action, fostering cultural competencies	Number of training programs conducted; Participant skill improvement assessments
4	Increase transparency in recruitment and promotion processes	Civil Service Commission, HR Departments	Reduced perceptions of reverse discrimination; Increased trust in the recruitment process	Transparency reports; Surveys on perception of fairness
5	Promote awareness and education about affirmative action policies	Ministry of Education, Media Agencies	Greater understanding and support for affirmative action policies among the public	Number of awareness campaigns; Public knowledge surveys
6	Engage stakeholders, including marginalized communities, in policy refinement	Civil Service Commission, Relevant NGOs, Community Organizations	Policy measures that are more responsive to the needs of marginalized communities	Stakeholder feedback reports; Adjustments to policies based on consultations
7	Strengthen monitoring and compliance mechanisms	Civil Service Commission, National Human Rights Commission	Enhanced adherence to reservation policies and reduction of quota misuse	Compliance audit reports; Tracking of corrective measures
8	Strengthen legal and policy frameworks to prevent quota misuse	Ministry of Law and Justice, Civil Service Commission	Prevention of quota misuse and increased accountability	Legal reforms documentation; Reports on quota misuse cases

It provides, in tabular form, a summary of key recommendations, responsible agencies, desired outcomes, and monitoring and evaluation indicators for improving affirmative action in Nepal's civil service.

Conflict of Interest Statement

The author has no conflict of interest to declare.

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