

**PROCEEDINGS AND PAPER ABSTRACTS**  
**OF THE**  
**Himalayan Policy Research Conference (Fifteenth Annual)**  
**Nepal Study Center**

Saturday, December 5, 2020, Virtual

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Moderator: Veeshan Rayamajhee, North Dakota State University

### **Session 5: Environmental Pollution**

Moderator: Samrat Kunwar, College of Saint Benedict and Saint John's University

### **Session 6: Human Capital**

Moderator: Soumyajit Chakraborty, University of New Mexico

## CONTENTS

Welcome Note from Editors .....	1
Acknowledgement .....	3
<b>PAPERS AND ABSTRACTS .....</b>	<b>4</b>
<b>Violence, Disputes, and Crises</b>	
Preventing Election Violence through Diplomacy .....	5
Disputed Territories between Nepal and India: The Cases of Kalapani, Limpiyadhura and Lipulekh and Susta.....	6
The Impact of natural disasters on child health and investments in Bangladesh.....	8
Title of the paper: Liberal Socialism: Path Forward to Reset the Global Economy after the Covid-19 Pandemic.....	9
<b>Formal and Informal Institutions</b>	
Farmland Rents and the Relationship with Confidence in Local Institutions in India: A Ricardian Analysis.....	10
Why efforts to legalise harvest and trade of Yartsa gumba have failed in India? .....	12
Institutionalizing the Public Policy and Management Education in Nepal with Multiple Strategies: The Vehicle for State and Societal Transformation.....	15
Cultural attachment and pro-environmental behavior .....	16
<b>Environmental Pollution</b>	
Renewable Energy, International Trade, and Some Pollutant Emissions: Testing the Environmental Kuznets Curve (Ekc) Hypothesis .....	17
Understanding the Impact of Air Pollution Avoidance Behavior on Respiratory Health: A Study from Siddharthanagar Municipality of Nepal .....	18
Estimating the Household's Preference and spatial dependence for a Solid Waste Management System in Nepal; A Choice Experiment Approach .....	19
The Role of Water Sources and Water Treatment on Child Health in Nepal .....	21
<b>Human Capital</b>	
Earthquake Impact on the Nutritional Status of the Rural Children: Case from Nepal.....	22
Education and Labor market outcomes of Teen Mothers and Teen Fathers: Evidence from Cebu, the Philippines.....	24
Do it or Pay it: Behavioral and Economic Indicators for HPV Vaccination— Evidence from Nepal .....	25
A Marriage Story: Dowry, Hypergamy, and Human Capital .....	26

## Welcome Note from Editors

On behalf of the editorial board of the *Development Journal of the south (DJS)* and the conference organizing committee, I would like to thank all the participants at the Fifteenth Annual Himalayan Policy Research Conference (HPRC) Zoominar.

As usual, we had a very successful event with an enthusiastic participation from all over. A larger number of abstracts were carefully screened and ranked by a team of our dedicated NSC member scholars – Dr. Mukti Upadhyay, Dr. Sakib Mahmud, Dr. Prakash Adhikari, Dr. Shikha Silwal, Dr. Bishwa Koirala, Dr. Samrat Kunwar, and Dr. Veeshan Rayamajhi. NSC was established at the University of New Mexico in 2004 with the objective to promote policy research related to the South Asian region and the countries of the Himalayan region. The NSC team remains dedicated to creating platforms for the enhancement of knowledge sharing, particularly in the areas of sustainable development, environment, poverty, governance, and health. Among its other prominent activities, NSC publishes an e-portal *Development Journal of the South* which is a peer reviewed journal and maintains an electronic repository *Himalayan Research Papers Archive* to allow scholars to upload, store, and disseminate policy research, coordinates the Himalayan study abroad program, and doctoral and post-doctoral research projects.

Nepal Study Center has added a milestone by facilitating the signing of the Memorandum of Understanding (MOU) between the University of New Mexico and the Kathmandu University (KU) and the Centre for Integrated Mountain Development (ICIMOD)'s 8-country Himalayan University Consortium (HUC). On a NSF-supported exploratory research trip, NSC formed an interdisciplinary team at UNM and went to Nepal to advance understanding of the linkages and feedback mechanisms between biophysical and social factors. This is a research initiative that has led to creation of an international research hub which is Lumbini Center for Sustainability in Siddharthanagar, Lumbini, Nepal of Pratiman Neema Memorial Foundation.

Our inaugural HPRC in 2006 was ambitious in ensuring a significant convergence of researchers working on policy relevant issues on South Asia. That foundation work led to consecutive successes in the following years and has now made HPRC a durable annual event. We hope that these conferences, together with research activities performed at NSC and by its research affiliates, will culminate in the formation of an *Association for Himalayan Policy Research*. In recognition of the activities directly and indirectly supported by NSC, many scholars from North America, South Asia, Europe, the Far East, and Australia have joined this network. Our policy research association will continue to expand this global network of scholars, professionals, and policy practitioners interested in the development of the South Asian region.

The Sustainable Development Action Lab (SDAL), a new initiative from Nepal Study Center, concept builds upon the field research track record of the Nepal Study Center (NSC), a South Asia focused research center at UNM, and its various doctoral research activities over the last several years. This is an interdisciplinary approach to research, learning and problem solving by bringing together the three disciplines: *Natural Sciences, Social Sciences and Humanities*. Additionally, The Himalayan Study abroad Program initiated by NSC, which is an experiential learning experience that combines research, hands-on community service-learning projects, &

eco-adventure. This semester abroad platform will be available to other program around the country.

We are thankful to those who have provided financial support to conduct this conference. We appreciate the help from the staff and graduate students of the Department of Economics, UNM, and the goodwill and support of many friends of NSC. We particularly thank UNM students Thaneshwar Paneru, Mohammad Mashiur Rahman for their assistance. Finally, we would like to thank our guest editors Dr. Prakash Adhikari, Dr. Samrat Kunwar, Thaneshwar Paneru, Mohammad Mashiur Rahman, Dr. Veeshan Rayamajhi, and Dr. Siobhan Yilmaz for their help in preparing the HPRC proceedings.

Sincerely,

A handwritten signature in blue ink, reading "Alok K. Bohara".

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Dr. Alok K. Bohara, PhD  
Professor, Department of Economics  
University of New Mexico  
Director, Nepal Study Center

### **Acknowledgement**

NSC would like to encourage all the friends of NSC to continue their financial support so that it can successfully undertake various tasks: update software, run conferences, produce proceedings, maintain electronic research repository, advertise and publish journals (HJDD). NSC is a not-for-profit organization registered under the College of Arts and Sciences, University of New Mexico. NSC would like to thank University of Wisconsin, Madison, for providing the platform for the last 12 years to participate in the conference.

## **PAPERS AND ABSTRACTS**



# Violence, Disputes, and Crises

## Preventing Election Violence Through Diplomacy

**Bhojraj Pokharel\***

Chief Election Commissioner, Nepal (2006-2009),  
Senior Research Fellow at the United States Institute of Peace (2017)

**Background:** Violence affects a significant number of elections worldwide, posing a challenge to consolidation of democracy and curtailing free and fair expression of popular political will. Several violence prevention tools are generally applied, with mixed results, to mitigate the risks of violence in elections. Preventive diplomacy is one of such tools used commonly in various cases but its nature and usage are largely understudied areas. Against this backdrop, the author was engaged in an eight-month-long fellowship to examine the use of preventive diplomacy at the United States Institute of Peace (USIP) in 2017.

**Research Question:** This research dealt two primary questions: The first was - what does the practice of preventive diplomacy in the prevention of election violence currently look like? This research attempted to analyze the practice by mapping various dimensions in practice, contributing towards an eventual typology. The key dimensions identified through the study were the timing, message, provider, delivery, mandate and audience of preventive diplomacy. The second was - how can preventive diplomacy be applied most effectively? This tool is particularly contextual and dependent on personalities involved and the environment. However, by evaluating past applications of preventive diplomacy, the research has identified conditions common to success and failure, as well as risk factors in using diplomacy.

**Data and Statistical Methods used:** This research is largely qualitative and draws from available literature, expert interviews, roundtable consultations with academicians and practitioners, personal experience of the researcher and feedback of two workshop sessions. The research also utilized a comparative analysis conducted on presidential elections held from 2006 to 2017 in the Democratic Republic of Congo (DRC), Kenya, and Nigeria, three sub-Saharan African nations with histories of electoral violence and use of preventive diplomacy. By analyzing political/electoral contexts, the aforementioned dimensions of preventive diplomatic engagement, and election outcomes (both in-country and cross-country), the research has highlighted a number of generalizable “best practices” in the use of preventive diplomacy.

**Results:** Based on the findings of this research work, the United States Institute of Peace (USIP) has recently published a book “Preventing Election Violence Through Diplomacy”

Further details about this book is available at:

<https://www.usip.org/publications/2020/01/preventing-election-violence-throughdiplomacy>

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## **Disputed Territories between Nepal and India: The Cases of Kalapani, Limpiyadhura and Lipulekh and Susta**

**Keshav Bhattarai \***

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Nepal shares border with India in the east, west and south that extends 1,808 km long border as per the article 5 of the Sugauli treaty of March 4, 1816. Nepal also shares 1,414 km. long disputeless border between China and Nepal mainly because of the Himalayas. Though for 200 years since the Sugauli treaty, no border dispute surfaced between Nepal and India, dispute are becoming too frequent from 1962 after Indian transfix military station at Kalapani after the Sino-India war. Few rivers' courses extending up to 326 km long, serve as the international border between Nepal and India. Along the Nepal-India border, poor manmade pillars, frequently changing river courses in Susta of Nawalparasi district and Dodhara-Chadani of Kanchanpur district coupled with poor institutional border records have made the border disputes even harder to resolve.

Nepal covers a total area of 147,181 sq. km., but in reality, the territory of Nepal is gradually shrinking. Until today, India has encroached Nepal's 605 sq. km area in over 71 places of 21 districts out of 77 districts of Nepal. Nepal's government has failed to make firm stands regarding border disputes on several occasions, such as the military transfix in Kalapani since 1962, where there is barely any presence of Nepal. Many controversial views have been raised regarding the Kalapani's military transfix by India. One of such claims is the verbal green node from King Mahendra in kind favor for India's clandestine silence of King Mahendra's action of dismissing the elected government of B. P. Koirala in 1961 within 1.5 years of its five years term. One of the Nepal's foreign ministers in 2015 stated that King Mahendra traded this area with India in 3 quintals of gold. As a result, King Mahendra remained silent about Kalapani military installment by India while removing other 17 Indian military check-posts in 1969 that were installed along the Nepal-China border in 1952 as per the Indian PM Nehru's doctrine. However, none of the blames on King Mahendra has been justified with any institutional records as of today.

A review of 1816, 1819, 1827, 1830, 1834, 1835, 1837, 1846, 1856, 1860, 1879, and 1880 maps prepared by the Survey of British India clearly revealed that the Kali River bordering Nepal-India border in the west originates from Limpiyadhura (30.418658<sup>0</sup> N, 80.567745<sup>0</sup> E). This river flows east via Parvati Kunda (30.355047<sup>0</sup> N, 80.656872<sup>0</sup> E), Kuthi Village (30.307948<sup>0</sup> N, 80.760161<sup>0</sup> E), Navi Village (30.20776<sup>0</sup> N, 80.838634<sup>0</sup> E), and Gunji Village (30.179313<sup>0</sup> N, 80.858902<sup>0</sup> E). Kali River joins Tinkar Khola at Chhangru Village (30.126780<sup>0</sup> N, 80.876113<sup>0</sup> E). This Tinkar Khola originates from the Lipulekh Pass (30.232808<sup>0</sup> N, 80.921159<sup>0</sup> E) and flows west via Kali Temple (30.222454<sup>0</sup> N, 80.910658<sup>0</sup> E). Kali River with its tributaries meets Mahakali River below Chhangru Village and flows south forming Nepal-India's western border. As per the Sugauli treaty, Kali and Mahakali rivers make the westernmost border between Nepal and India. The Lipulekh Pass makes the tri-juncture point of Nepal, China and India within the Nepali territory. In 2015, India and China signed a bilateral agreement to establish Lipulekh Pass as the

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trading *entreport* between China and India without the permission of Nepal. Despite having clear evidence from the British Raj that both Kali and Mahakali Rivers form the international borders between Nepal and India and Lipulekh being an integral part of Nepal, India has been ignoring these facts. This paper provides a detail account of Nepal-India international border disputes. Though the border issues have been very serious for the integrity of Nepal, there are no options other than following diplomatic courses to resolve these crises.

**Key words:** Nepal, India, border, disputes, Kali River, Mahakali River, Lipulekh Pass, Tikkar Khola

## **The Impact of natural disasters on child health and investments in Bangladesh**

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University of New Mexico, USA

Bangladesh is located in a natural disaster-prone area. It faces many climatic shocks every year. And, the disaster occurrences are hammering the populous country more frequently than ever before. One-fourth of the population, still living in poverty, must suffer from these calamities in different channels. The children must bear a significant portion of the disaster burden. When a disaster strikes, it affects the children of a family negatively. They do not get enough food, proper treatment and medicine in the time of sickness, and, more importantly, education. Thus, a disaster has a significant impact on the health and growth of a child. This study investigates the impact of small, moderate, and even large disasters on childhood morbidity, physical growth, and immunizations by combining IPUMS Global Health data on over 36000 children from five waves of the Demographic Health Survey with an international database of natural disasters (EM-DAT). This paper uses a Linear Probability Model and, the findings highlight three facts. First, exposure to a natural disaster in the past month increases the likelihood of acute illnesses such as diarrhea, fever, and acute respiratory infection in children under five-year. Second, exposure to a calamity in the past year reduces height-for-age and weight-for-age z-scores, increases the likelihood of stunting and underweight, and third, reduce the likelihood of having full-age appropriate immunization coverage. The paper also finds that the effects of disasters vary significantly by gender, age, and socioeconomic demographics.

**Keywords:** Bangladesh, Natural disasters, Child health, Immunization, Stunting, Underweight

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## **Liberal Socialism: Path Forward to Reset the Global Economy after the Covid-19 Pandemic**

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The global economy has been locked-down due to the Covid-19 pandemic almost for four months. Some countries have formally imposed the lockdown and in some countries, people keep themselves in self-isolation, a precautionary measure. Most international flights have been shut down and production and trading businesses have been no more in operation. The human-being came back to its humane character from the robotized behavior. Till May 28, the death toll crossed 350,000 predominantly in developed countries led by the USA. Although the virus transmission is worldwide the severity of its outbreak is relatively higher in developed countries. It has reversed the world economy creating the greatest recession around the globe since 1930s. The global pandemic is the fundamental but there are multiple devastating effects on human lives and livelihoods due to the economic stagnation. The foremost impact is on the job loss and disruption in distribution chain. The health pandemic is tending towards a severe hunger epidemic. Around 265 million people could be pushed to the brink of starvation and nearly 370 million children are missing out on nutritious school meals. Massive job loss will also hard-hit to the labour-sending countries since there will be heavy fall in remittances. There are several countries suffering from multiple epidemics. WB estimates an additional 548 million people be pushed below the poverty line. The periodic recessions including present one is taken as the result of neoliberalism. Capitalism has generated massive wealth for some, but it has devastated the planet and has failed to improve human well-being. A few corporations have come to dominate entire sectors of the economy, contributing to skyrocketing inequality and slow growth.

So, the research question is what sort of economic policy would reset the global economy after the Covid-19 pandemic. The research would be based on the desk review of the literatures that are being published by national, international and academic agencies. Some close webinars, webbased meetings, intellectual dialogues, academic interfaces would be conducted while preparing paper to validate the information.

This paper basically reviews the neoliberal policy in term of economic recessions due to the pandemic and commends policy to reset global economy. The paper is oriented to the emergence of a new system that balances economic mobility and human flourishing. It focuses on the protectionism in the market mechanism that builds better welfare state in an egalitarian manner. It will see how the concept of 'Protective Liberalism' can be a path forward as the socio-economic policy for 'Liberal Socialism' to reset the 'Coronomics'.

**Key Words:** Protective Liberalism, Liberal Socialism, Neoliberalism, Capitalism

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## **Formal and Informal Institutions**

### **Farmland Rents and the Relationship with Confidence in Local Institutions in India: A Ricardian Analysis**

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#### **Research Question and Background:**

It is argued that a strong and significant presence of local governments, banks, community groups etc., which work to protect the rights of people, can play an important role in promoting social welfare. These entities uphold the rules, norms, shared strategies (Crawford and Ostrom, 1995), or arrangements that both liberate and constrain choice behavior in repeated interactions between people, by overseeing their actions or outcomes. Greater confidence in such institutional arrangements, leads to greater cooperation and increased social capital, which in-turn generates economic development. North (1990) defines institutional arrangements (institutions) as the “rules of the game, or humanly-devised constraints that shape human interaction.”

Renting out of agricultural lands is a widespread phenomenon in India. This happens mostly because landowners (traditionally known as “Zamindars” [Driver, 1949]) are averse towards the risks associated with agriculture and hence they provide their lands to farmers in return of a rent. Also, small, and marginal farmers are less likely to own lands by themselves, therefore cropping in a rented land is their only option. However, there exist significant concerns regarding whether both landowners and farmers benefit from these transactions (Tongia, 2019). While landowners can exploit farmers through a host of channels like farm output, selling of produce, availability of irrigation sources, stringent controls on type of harvest etc., farmers with greater associations with unions, political parties and other groups, may violate the informal agreements (common in rural areas) with their landowners, causing serious losses for them. In many cases, both landowners and tenants remain heavily involved in cropping on a given parcel of land, which allows both parties to share the production risk (Chaudhuri and Maitra, 2007). As well, small farmers face several challenges in the access to inputs and marketing (Mahendra Dev, 2012).

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Thus, the institutional arrangements or the rules of the game, formal and (especially) informal – implemented and overseen by organizations like courts, banks, police, panchayats etc., that exist and vary across communities/villages are especially critical in this kind of marginal agriculture setup. This implies that, confidence in such arrangements are essential for maximizing the benefits of both farmers and landowners.

The objective of this analysis is to investigate whether the level of confidence in institutions, which can vary greatly across rural agricultural villages, is reflected in land markets

(or being capitalized into farmland rents) in India. A Ricardian Analysis (analogous to Hedonic Pricing Method) is used to estimate variation in farm rents for lands dedicated towards production of three major kinds of crops (Rabi, Zaid and Kharif) produced in the country, due to confidence in local institutions in rural areas in India, while controlling for other factors such as community participation, land area, mode of irrigation and seasonal variation in rainfall. The question that is specifically asked is: Do farm rents in rural India depend on people's confidence in local institutions?

### **Data and Statistical Methods:**

The analysis uses household level data from two rounds of India Human Development Survey (IHDS, 2002 & 2011). It is assumed that the expressed rents taken from the survey adequately represent the market prices (or rents) and that rent payers or receivers of a given parcel of land can identify the land size and the primary mode of irrigation. An index of confidence in institutions (representing confidence in institutional arrangements) is constructed through the method of Principal Component Analysis, by using binary indicators of households' confidence in Politicians, Banks, Courts, State Governments, and Village Panchayats. This index is the primary explanatory variable of interest. The analysis also includes information on households' membership in community groups. Additionally, state-wise information on monthly rainfall are used from the Indian Meteorological Survey (IMS, 2002 & 2011), and rainfall in different cropping seasons are interacted with land areas.

### **Results:**

OLS results (for each survey round and for the Pooled data) indicate a significant positive relationship between farm rents and the constructed index of confidence in local institutions after controlling for other factors. Upon accounting for the endogeneity in this index, where it is instrumented by a different index of the responding household's men's exposure to mass media (newspapers, radio, and TV), an even stronger impact on farm rents is observed. In the latter case, a 2SLS strategy is adopted.

## **Why efforts to legalize harvest and trade of Yartsa gumba have failed in India?**

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Independent scholar

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Wildlife Institute of India

The Indian Himalayan Region (IHR) is spread across ten Indian States and four hill districts of the states of Assam and West Bengal, covering an area of around 5 lakh square km. The region has a discreet geographical and ecological entity and is replete with unique biodiversity values. Though sparsely populated with approximately 3% of India's population residing here, its innumerable ecosystem services and particularly that of water and forests, are appropriated by the majority of the mainland. Despite such ecological significance of the IHR, it has been largely absent from the center-stage of Indian policy in addressing a large number of developmental issues. The terrain complexity and remoteness of the IHR poses unique economic, social and environmental challenges that are very different from mainland India. More specifically, prolonged negligence towards employment and higher education of the hill population has led to economic stagnation, steady out-migration, exploitation of natural resources, eroding environmental stewardship, growing disgruntlement against governance mechanisms and a general attitude of mistrust towards those from the mainland.

In the knowledge of this backdrop, an unprecedented economic transformation of the fortunes of thousands of impoverished households, by the harvest and trade of the highly valued Yartsagumba (*Ophiocordyceps sinensis*) (henceforth cordyceps), in high altitude villages of the three states of Uttarakhand, Sikkim and Arunachal Pradesh has attracted much scholarly attention. This entomopathogenic fungus, supposedly endowed with a host of curative properties, is also found in the Tibetan Plateau and the adjoining high altitude areas in Bhutan and Nepal. Though historically it was used in Chinese, Tibetan and Bhutanese traditional medicine, presently, China is by far its largest consumer. Its high market value and the unprecedented livelihood security that it has provided led thousands of people to rake the moist alpine meadows every summer in areas of its availability to harvest it. Ever since this "gold rush" was discovered, its mycology, ecology, pharmacological functions, medicinal value, contribution to livelihoods, production and sustainability, harvest and trade and conservation implications have been substantially studied in most of the regions of its availability. It should be noted that studies regarding its sustainability and distribution, which is significant owing to its contribution to the rural economy, has been possible in all the other countries except India, due to availability of accurate government data about quantum of production annually, since its harvest and trade has been legalized.

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In this study, we interrogate four aspects with the case study of Askot conservation landscape in Pithoragarh district of Uttarakhand to understand why efforts to legalize harvest and trade of cordyceps have failed in India.

1. What is the economic contribution of cordyceps to household income among collectors?
2. Does harvest trend indicate declining or increasing productivity?
3. What has been the spatio-temporal trend since year 2000 till 2016, of suitable areas for Cordyceps, as opposed to future scenario predictions made by most studies?
4. Whether restricted access or open access methods of management provide more effective regulation and conservation of this resource for its long term sustenance?

For the first and second assessment a socio-economic survey was undertaken in the three prime valleys constituting Askot landscape from 2013 till 2017. The survey was carried out in sampled van panchayats (community forest - units of forest governance) along the elevation gradient and household was the unit of analysis therein. 81 van panchayats (66%) were samples out of the total 122 in the landscape. A semi structured questionnaire schedule was used to collect a) socio-demographic information about households, b) details of primary occupation and secondary/tertiary income sources and c) natural resource dependency for commercial purposes. Minimum and maximum harvests of cordyceps and their corresponding years was inquired from every interviewed collector and used as a surrogate to assess the trend of fungus availability. This method was adopted in order to avoid errors owing to the inability of recalling factual details from autobiographical memory spanning over long periods of time. In this fashion we analysed cordyceps availability from year 2009 till 2017. Further inquiry made from the respondents concern investments made for harvest, reliability of the occupation, alternate source of income if caterpillar fungus is not available in the future, probable reasons for declining availability and difference in lifestyle with earnings from the sale of fungus so far. Herein the respondents' perception about the short seasonal occupation is analyzed. A total of 824 interviews were conducted .

For the third assessment, field data (occurrence points) and finer resolution spatio-temporal satellite data was used to carry out Ecological Niche Modelling (ENM) to predict historically suitable areas from 2000 till 2016 aided with climate change assessments. Multiple evaluation criteria was used to select the final models and temporally transferred. Local harvesters were recruited for locating occurrence data efficiently. Information about harvest, trade, local politics and threats was also documented through harvester interviews. ENM was done in R using kuenm package. Predicted suitable area assessments were processed from final maps using ArcGIS software.

Secondary literature review on common property resource governance, international trade treaties relating to conservation of natural resources and methods of management for effective regulation of the same guide our fourth assessment.

The study reveals that majority of the households (more than 50%) among the three valleys in Askot landscape depend upon income from wage labor and harvest and sale of cordyceps. Amongst harvesters in the three valleys, income from cordyceps contribute - 52% in Byas, 68% Gori valley and 78% in Dhaulī valley – to the mean annual household income. The Mean annual household

income (INR) of households is 117367 ( $\pm 8652.5$ ) in Byas , 118048 ( $\pm 8185.2$ ) in Dhauli and 84266 ( $\pm 4053$ ) in Gori valley. Additionally mean annual household income of non harvesters in Gori is 45%, Dhauli - 52% and Byas - 20% less than harvester's incomes. Analysing trends of availability suggest that income from cordyceps is increasingly becoming unreliable even for seasoned harvesters.

Furthermore, the 17-year spatio-temporal trend indicates as high as 38% loss of suitable area in the low elevation range of 2500-3500 m. Additionally, microclimate analysis showed that extreme weather patterns contribute to a marked upward shift in the suitable elevational range, rendering its accessibility difficult and perhaps subsequently endangering the livelihood derived from it.

[Remaining results yet to be articulated]

## **Institutionalizing the Public Policy and Management Education in Nepal with Multiple Strategies: The Vehicle for State and Societal Transformation**

(Critical pedagogy and Reflective learning for impactful professional career and Societal Transformation)

**Purna B. Nepali \***

This paper attempts to reorient and institutionalize the public policy and management education in Nepal, linking it with the framework of state and societal transformation using multiple strategies such as critical pedagogy, reflective and experiential learning, impactful professional career, pragmatic analysis, design thinking, human centric innovation and action, university- community partnership, land grant institutions/missions, student led engagement etc. Firstly, it identifies the issues and challenges of public policy, governance and management for exploring the ways and possibilities of informed and evidencebased analysis and solutions. Secondly, it comprehends and analyses how this academic program contributes to address the aforesaid issues and challenges for societal transformation. Thirdly, an attempt is being made to craft/recraft the emerging and globally recognized human centric design thinking and innovative tool/approach called 'Policy Lab' to 'Discover, Design and Evaluate (DDE)<sup>†</sup>' the ways and possibilities of informed and evidence based policy analysis and solutions, decision making and implementation to ensure effective public service delivery. The lab attempts to bridge the gap between the academia and public policy mainstream and provides opportunities for the students, professors, scholars of each university and college/campus to undertake research on peoples' concerns and their livelihood considering policy avenue. They would learn, teach, support and engage the community people in policy formulation and its effective implementation, thus making the universities and their campuses/colleges not only as the ivory tower but also the agencies to learn from the community, teach and support the community, and enjoy with the community and celebrate the community. The policy outreach center and networks would bring all stakeholders (students, faculty, activists and legislators) committed to policy activism, built on knowledge, cooperation, justice and integrity devoted to growth and development of the nation, together and consider the need based engagement of civil society, business entities, and political actors in this program. Ultimately, all these consolidated efforts would contribute (through informed and critical analysis of issues and challenges, creating program, public policy analysis and management) for overall state and societal transformation through different levels of University-Community partnership.

**Key Words:** Critical Pedagogy, Impactful Professional Career, University-Community Partnership

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† DDE is based on human centric design thinking and innovation (human-focused, prototype-driven, innovative design process) which can also be expanded into five stages i.e. Empathize, Define, Ideate, Prototype, and Test for the innovation processes (Available at [https://www.interaction-design.org/literature/topics/designthinking?utm\\_source=facebook&utm\\_medium=sm&utm\\_campaign=boost&fbclid=IwAR2f57JwSYdtS6cn6\\_IQZVPD6Oepfv1b-gp-tqOKV7Mhl9ez2KPMIP9yk](https://www.interaction-design.org/literature/topics/designthinking?utm_source=facebook&utm_medium=sm&utm_campaign=boost&fbclid=IwAR2f57JwSYdtS6cn6_IQZVPD6Oepfv1b-gp-tqOKV7Mhl9ez2KPMIP9yk) and <http://publicpolicylab.org/our-methods/>)

## **Cultural attachment and pro-environmental behavior**

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Community involvement in pro-environmental activities is crucial in tackling environmental challenges. Research shows that the extent and nature of attachment can have a significant impact on attitude and pro-environmental behavior. Much of the work in the area of attachment is focused on place attachment and environmental behavior. For example, place attachment has been discussed as one of the key determinants of pro-environmental behavior. While there exist plenty of studies that examine the impact of place attachment, previous research has not explored the impact of cultural attachment on environmental behavior. Individual behavior also depends on cultural context and the inclusion of cultural attachment is critical in understanding attitude and participation towards environmental behavior. Strikingly, very little research has been conducted on this specific topic and deserves particular attention. Using survey data from Kathmandu, Nepal, this study examines the impact of cultural attachment on attitude and proenvironmental behavior.

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## **Environmental Pollution**

### **Renewable Energy, International Trade, and Some Pollutant Emissions: Testing the Environmental Kuznets Curve (EKC) Hypothesis**

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The reliance on industry and technology for economic progress has been intensive, and so does it on energy uses as human civilization advances. Global warming and climate crisis have been pressing factors to reduce the by-product of economic growth – pollutions. Renewable energy is the focus. This study investigates the dynamic causal relationships between CO<sub>2</sub>, NO<sub>x</sub>, SO<sub>2</sub>, renewable energy consumption, international trade, and economic development. The study is for 26 East, Southeast, and South Asian countries, which is an interesting region for the EKC analysis as it includes some developed, middle- and low- income countries. Studies are conducted before in the region either on the individual country basis or for few countries, not altogether. Several techniques of panel data analysis are used for the empirical estimation of the hypothesis and the impacts of other factors. The study finds that the validity of Environmental Kuznets Curve (EKC) hypothesis depends on the nature and externality-type of a pollutant. The hypothesis holds for local pollutant – NO<sub>x</sub>, and SO<sub>2</sub> while there is an N-shaped trajectory for CO<sub>2</sub> which is more dispersed. The renewable energy consumption has significant negative association with the pollutants while international trade significantly increasing pollution in the region.

**Keywords:** Environmental Kuznets Curve (EKC) hypothesis, Pollution Emissions, Renewable Energy, Economic Growth.

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## **Understanding the Impact of Air Pollution Avoidance Behavior on Respiratory Health: A Study from Siddharthanagar Municipality of Nepal**

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While several recent studies have focused on identifying the critical determinants of air pollution avoidance behavior, such as investment in facial masks and air filters, the health outcomes of the avoidance behavior, remain understudied, especially in a representative sample. This research, using data from Siddharthanagar municipality of Nepal, examines the impact of air pollution avoidance behavior on respiratory health outcomes, taking lung function as a biomarker of respiratory health. We address the endogeneity pertaining to exposure avoidance behavior by employing a simultaneous conditional mixed-process model. We also use a spatial autoregressiveIV model to control for any spatial autocorrelation. Our findings suggest that exposure avoidance behavior has a significant positive impact on lung function. Furthermore, we find that exposure avoidance is considerably low amongst farmers and daily wage laborers who are exposed the most to air pollution.

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# **Estimating the Household's Preference and spatial dependence for a Solid Waste Management System in Nepal; A Choice Experiment Approach**

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Solid waste management system in the urban cities is always considered as a prerequisite for development. However, the household waste management system in most of the developing countries' urban cities significantly lacks proper strategy. According to the World Health Organization (UN Habitat, 2017), close to 54.0% of the global population live in urban cities, and urban growth is approximately 2.0% per year. The immense pressure on cities from this emerging population creates an unfavorable condition to society and the environment especially from an upward shift of household waste production. Illegal dumping beside the river and roads, shortage of municipality resources of collection, and a lack of awareness have a great negative impact on the overall ecosystem mostly incurred by water and air pollution. Most of the municipalities are currently providing a waste management service at lower levels than the accepted standard. However, the municipalities are barely aware of the preference and opinions of the households while formulating the policies about waste management services. By including the preference of households, a better waste management service can be developed to decrease environmental degradation as well as the overall quality of life.

This study investigates the preference for a better waste management service and their willingness to pay for Siddharthanagar Municipality, Nepal by employing a Choice Experiment (CE) method. Additionally, we analyze the spatial dependence of marginal willingness to pay (MWTP) throughout the study area by employing hot spot analysis. Finally, we run a separate Spatial Autoregressive Model (SAR) to understand the neighborhood effect on MWTP for each attribute of the waste management system.

This study uses primary survey data at the household level that was conducted in Siddharthanagar municipality (13 wards‡) on 593 households in June 2019. The CE section comprises 593 household's responses from only the adults ( $\geq 18$  years in age). Each respondent was shown three choice sets and three alternatives in each choice set. In each choice set, two are the proposed alternatives (Solid Waste Management Program A and B) and one is the current management program (Status-quo). Each alternative has five attributes and they have a varying level. The attributes are recycling, composting, dumping, percent of waste collection, and price. The respondent chose 1 alternative from each of the choice set. This procedure makes a total of 1779 of observations in total. The choice sets were designed using the R (DoE. Base function), choosing from an orthogonal array from the full design. The orthogonal design provided 72 choice sets which are blocked into 12 versions of the questionnaire with 3 choice sets in each questionnaire (3 choice sets \* 2 alternatives \* 12 versions = 72 choice sets).

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‡ Wards are the administrative zone in a municipality used in Nepal.

We use the Random Utility Framework (RUM) to analyze the preference for a waste management system. As individual-level data can exhibit multiple levels of heterogeneity in making choice, we employ several models to account for heterogeneity in finding the MWTP for management attributes. A conditional Logit (CL) model is estimated as the baseline model. However, due to the two limitations of CL, Independent and Identically distributed error (iid) and Independence of Irrelevant Alternatives, we proceed to estimate a Random Parameter Logit (RPL) model which account for preference heterogeneity. Additionally, to account for the 'scale' heterogeneity, a Generalized Multinomial Logit Model (GMNL) is estimated. We also incorporate the stated level of certainty of individuals in making choices into the GMNL model to explore the heterogeneity even better. Finally, a Latent Class Model (LCM) is estimated to explore the heterogeneity over different unobserved classes in the data.

To find whether MWTP of each attribute does follow any spatial pattern, a hot spot (cold spot) analysis is used to find the spatial cluster of high (low) MWTP values over the geographic surface of the study area. To determine whether a specific spot is hot or cold, a Getis-ord  $G_i^*$  statistic is calculated whose outcome follows a Z distribution. As Getis-ord  $G_i^*$  gives a vector of points of Z values, we interpolate those points over the surface by kriging Interpolation method. Finally, we run a separate Spatial Autoregressive Model (SAR) to understand the neighborhood effect on MWTP for each attribute of the waste management system.

The MWTP of each attribute is extracted from the GMNL model with the level of certainty based on the lowest Akaike Information Criteria (AIC). We find significant positive MWTP for each attribute and the highest WTP is for the dumping attribute which is 157.86 Nepali Rupees. Individuals have the lowest level of WTP for recycling attribute which is 12.82 Rupees. The survey shows that almost 60% of household waste is organic waste. This fact explains the lower WTP for recycling. Because households prioritize the management of organic waste more than the recyclable waste, they have higher WTP for composting attribute which is 20.57 Rupees. The GMNL model shows the sign of both scale and preference heterogeneity in choices. The LCM shows significant heterogeneity. The hot spot analysis shows a significant difference spatially in MWTP values. Out of five attributes, ward number 11 (there are 13 wards in total) exhibits the hot spots in three attributes. The reason behind this fact is the limitation of access of this ward to the services provided by the municipality. The municipality currently does not provide any service to this ward which prompts households to pay higher for the proposed waste management system. Overall, this study provides ample information about the household's perspective to the municipality. The hot spot analysis has a significant implication in terms of policy perspective towards the differential provision of service or payment scheme.

**Keywords:** Solid Waste Management, Choice Experiment, GMNL, Hot Spot Analysis, GetisOrd  $G_i^*$



# **The Role of Water Sources and Water Treatment on Child Health in Nepal**

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Studies have shown that access to safe drinking water helps to reduce diarrheal diseases. There is an abundance of literature that considers piped water as a proxy for safe drinking water. However, literature does not provide a definitive answer about the health benefits of piped water. Thus, it is important to understand relative quality and health impacts of piped water, particularly in places where alternative improved sources are available. Using primary data from Siddharthanagar, Nepal, this study analyses the effect of piped water and water treatment on child diarrhea. Considering both binary and count data on child-diarrhea, this study employs the logit and the negative binomial models for empirical analysis. Results show that piped water is associated with higher child diarrhea. This analysis also finds that treatment of water before drinking significantly reduces the incidents of diarrhea. Thus, the study suggests that the water authority must work on improving quality of piped water supplied to community and encourage people to purify water before drinking.

**Keywords:** water source, water treatment, diarrhea, health, Nepal

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## Human Capital

### Earthquake Impact on the Nutritional Status of the Rural Children: Case from Nepal

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Natural disasters cause harmful effects on nutrition, education, health, and income, with some of these effects being both large and long-lasting (Baez, de la Fuente, and Santos 2010).

Nepal is the 11<sup>th</sup> most earthquake-prone country in the world (Pelling et al. 2004). On April 25, 2015, an earthquake of magnitude 7.6 stroke Nepal. The earthquake took the lives of 8,891 people and 22,302 people had sustained injuries.

The nutritional status of children is an important component of sustainable development goals in developing countries. Poor nutritional status significantly affects the human capital formation of the developing world and therefore demands to understand the impact of an earthquake on the nutritional status of children.

The objective of this paper is to identify the impact of the 2015 earthquake in Nepal on the nutritional status of the children. We use a difference-in-differences (DID) model, and also analyze the impact of the earthquake across gender, age, economic class, and caste/ethnicity groups. We use the Nepal Demographic and Health Survey data (NDHS) from the years 2011 and 2016. We also use the dataset from the year 2006 to check for the parallel trend assumption. We study the difference in the nutritional status (height-for-age Z-score) of the children below the age of 5 years old between the severely earthquake-affected area and less affected area, considering the period before and after the earthquake.

Our study finds that Nepal's earthquake decreased the Height-for-age Z-score (HAZ) by 0.335. Further, we find female children suffer much larger negative health effects relative to their male counterparts. The negative effect on female children is -1.173 more in comparison to male children. This finding infers the prevalence of gender discrimination. In older children, aged more than 2 years, there was a decrease in HAZ by 0.357. Similarly, children from poor households have 1.477 more decreases in HAZ compared to the rich households' children. Regarding the effect of the earthquake across different caste/ethnicity groups, indigenous nationalities have a significant negative effect of -0.8867.

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The contribution of this study is that the identification of the negative effect of the earthquake on the nutritional status of children can help in the post-earthquake rehabilitation program to give priority to children. Most importantly, our study finds that female children have a severe negative effect compared to male children. This gender issue can lead to the intergenerational transmission of negative consequences. We also find that older children have a negative effect whereas we do not find a significant result in younger children. Similarly, the study finds that poor household's children suffer more from the earthquake. Therefore, from these findings, we can infer that earthquakes can further widen the inequality issue of the developing countries. Hence, the policy implication from this finding is that the support program should be targeted to one who has suffered the most. Additionally, the identification of more impact in indigenous people's children underlines the existence of the marginalized situation of indigenous people in Nepal which can be relevant to the countries in the south Asian region.

## **Education and Labor market outcomes of Teen Mothers and Teen Fathers: Evidence from Cebu, the Philippines**

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Early childbearing/fatherhood has important implications for the educational and adult labor market outcomes. Teenage childbearing/fatherhood leads to human capital deficits which may adversely affect labor outcomes. While many studies have been conducted for developed countries, only little empirical evidence exists in the context of developing countries. Moreover, while many studies demonstrate that childbearing is associated with a decrease in the education attainment of teenagers, the results with respect to labor outcomes are ambiguous.

In this study, we attempt to establish a causal relationship between the timing of first birth and the education and labor market outcomes of a sample of Filipino youth using the Cebu Longitudinal Health and Nutrition Survey. This is a survey of a cohort born in 1983-84 who have been followed through young adulthood till 2009. We categorize the parental status of young women/men aged 25-26 years into two: teen parents and not teen parents, based on the age at first birth. To account for the potential endogeneity of fertility timing, we employ an instrumental variable, specifically, a Control Function approach, which gives consistent estimates in a non-linear framework. We instrument for the timing of first birth using indicators for the onset of puberty and the community level availability of supplies of contraception such as distance to family planning centers at adolescence.

We examine the effect of being a teen mother/father on the grade attainment and labor market participation. Our results suggest that, on average, teenage childbearing decreases the education attainment and increases the probability of working relative to not teen parents. To understand how fertility timing affects the quality of jobs, we use a multinomial logit model where we classify employment status into three categories: formal employment, informal employment, and nonparticipation. Teen parents are more likely to select into informal jobs relative to non-teen parents. Some suggested mechanisms include lower human capital accumulation and tradeoffs between demands for childcare and time allocation for formal jobs. One of the most interesting findings is that, overall, teen mothers are likely to be better educated and but are less likely to participate in the labor market than teen fathers.

These findings have significant policy implications for the Philippines where access to contraception is limited. It is imperative to facilitate higher educational attainment by providing better access to contraception for delaying childbirth. Policies aimed at providing support for childcare also may enable young parents to cater to the demands of a formal job and reduce the likelihood of lower quality informal jobs.

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# **Do it or Pay it: Behavioral and Economic Indicators for HPV Vaccination— Evidence from Nepal**

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**Research question with some background:** Human papilloma virus (HPV) infection is responsible for virtually 100% of cervical cancer diagnosed in the world. Yet, despite the wide suffering caused by this disease, this virus is vaccine preventable. While the HPV vaccine has been given considerable attention in developed countries, awareness and uptake in developing countries remains small. To better understand the current understanding and acceptance of HPV vaccine, as well as the predictors for the health behavior of vaccinate against HPV, we conducted a survey with adolescent girls and their mothers in Nepal and examined the influenced factors to the behavioral and economic indicators.

**Data and Statistical Methods used:** Using this primary survey data, we apply the Theory of Planned Behavior and Contingent Valuation Method to analyze mothers' and daughters' intention and willingness to pay to predict their behavior of vaccinating against HPV when the vaccine is available in Nepal. Conventional econometrics models have been applied to analyze the intention and willingness to pay respectively, while General Structural Equation Model has been applied to simultaneously examine the intention and willingness to pay.

**Results:** We find that Attitude, Subjective Norms and Perceived Control are significantly predictors of behavior intention, while willingness to pay is only significantly driven by Perceived Control. The measurement of risks for cervical cancer and the awareness of HPV are positively predicting the intention and Willingness to Pay for HPV vaccine, while socio-economic status is more associated with Willingness to Pay. As a baseline survey for further intervention to increase awareness and uptake to HPV vaccine in Nepal, practitioners may utilize these instruments for the development and evaluation of TPB-based interventions.

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## **A Marriage Story: Dowry, Hypergamy, and Human Capital**

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This paper starts its journey following a popular term often used by the American media – “success gap,” which indicates penalty associated with hypergamous marriages. In simple words, hypergamy implies that women marry up in terms of their partners’ human capital potentials (Rose, 2004). Marriage in low-income countries is different from that in developed ones in two crucial ways – (a) the ‘arranged’ nature of spouse selection, and (b) custom of dowry, i.e., transfer of financial resources and other assets from a bride’s family to the groom. The literature focuses mainly on linking female education and dowry, i.e., the supply side of dowry. However, there is a dearth of theoretical as well as empirical explanations of the demand side of dowry, i.e., how dowry is demanded as a groom’s price. The economic logic of dowry as a groom’s price suggests that campaigns to change cultural norms are likely to be ineffective in reducing dowry prevalence. Other approaches, such as increasing female labor force participation in skilled sectors, are likely to be more effective. This paper uses an intertemporal utility maximization framework to model the interlinkages among dowry, hypergamy, and human capital. The validity of the proposed theory is underway – variation in human capital and first-born’s gender in a groom’s family jointly play a significant role in the demand for dowry. We calibrate the model to India using the Rural Economic and Demographic Survey (REDS) data for 2008. The Indian government has been failing outright even after repeated legislative attempts in banning dowry. With theoretical underpinnings and empirical validity, this paper may recommend some designs of alternative approaches to anti-dowry policy.

Keywords: marriage, dowry, hypergamy, human capital, India

JEL Classification Codes: J12, J15, J18, J24, J78

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