

Political Ecology of Water Governance in South Asia

A Case Study of the Koshi River Communities

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A thesis submitted in fulfilment of the requirements for the degree of
Doctor of Philosophy (Human Geography)

School of Geosciences
Faculty of Science
The University of Sydney

June 2018

Statement of Originality

This is to certify that, to the best of my knowledge, the intellectual content of this thesis is the product of my own work and that all the assistance received in preparing this thesis and sources have been acknowledged. This thesis has not been submitted for any degree or other purposes.

Kiran Maharjan

Dated 26.06.2018

Abstract

Nepalese communities around the Koshi River, a transboundary river between Nepal and India, are facing unprecedented water-related problems. They face water scarcity in dry seasons as well as recurrent flood disasters during monsoons causing soil erosion, inundation and siltation in their agricultural land and villages. This problem has largely been linked to the governance of the river via the Koshi River Agreement (1954, revised in 1966) between Nepal and India. Considering the issues faced by the riverine communities, this thesis analyses the political ecology of water governance in South Asia. Specifically, it examines how the Koshi River governance contributes to environmental injustices for the riverine communities. It uses an actor-oriented political ecological framework, integrating the concepts of governance, theory of access and environmental justice, to understand various dimensions of injustice. Using a mixture of qualitative and quantitative methods, it explores how multi-scalar power relationships and access-regulation of resources produce environmental injustice, and how communities cope with the injustice.

The thesis argues that environmental injustice for transboundary riverine communities is produced by socio-natural complexes, where multi-scalar power relationships play a critical role. It demonstrates that the hydro-hegemony of India in the forms of political, economic, knowledge-power, information, and technology has influenced the governance of the river, including the negotiation of the original agreement. Results show that the power relationships among various multi-scalar intra-national actors in Nepal have influenced the decision-making processes. The system of governance has provided the powerful with even more power for regulating the access of the local people to resources, creating different forms and degrees of environmental injustice and uneven coping capabilities. The injustices have existed not only as unequal distribution of benefits and harms, non-recognition and non-participation in the decision-making but also as a lack of responsibility and accountability on the part of the powerful actors.

Highlighting the need for enhancing environmental justice, this thesis proposes an alternative governance framework by considering various roles, rules and relationships among actors with differential powers across different scales and places. It suggests a need for the formulation of comprehensive research backed policies that facilitate the weaker government to strengthen its existing institutions and take effective actions to cope with the problems of irresponsibility and unaccountability of the powerful nation, enhancing livelihoods of the riverine communities. This thesis has produced the evidence-based local knowledge regarding governance and environmental justice and enhanced the science-policy interface by the grassroots-nested environmental movement. Overall, it has advanced the evidence, narratives, insights and the discourse on political ecology.

Acknowledgements

I waited long for the moment to write this part of the thesis, and the time has finally come. I want to acknowledge the people who have helped and supported me in completing this study. While recalling the names of the people, it appears that so many in Nepal and Australia have contributed to this study in different ways. First of all, I would like to thank all the questionnaire and interview participants for their voluntary participation and hospitality. Their interest, openness, patience and invaluable time for my research made this study possible. Their precious information and stories have enriched this study. My special thanks go to Chandra Sigdel and Lal Bahadur Limbu from Prakashpur, and Ghana Shyam Paudel from Mahendranagar for their hospitality and sharing important information related to my study.

I am deeply grateful to my friendly and honest research assistants - Amrit Kumar Kabirath, Olin Kabirath, Laxman Kabirath from Prakashpur; and Dipesh Khadga, Dharendra Yadav and Nagendra Yadav from Hanumannagar and Gobargadha. They introduced me to many interviewees and skilfully set up interviews with a lot of them. I would like to thank them for patiently helping me in collecting data, accurately translating interviews wherever needed and accompanying me while walking, especially, to Srilanka Tapu and Gobargadha during the hot summer of around 38⁰C. Dipesh Khadga also sent me some photographs from my field sites taken during monsoon floods.

I would like to express my special thanks to my friend Raj Kumari Gurung, who gave an overview of my fieldwork sites and introduced me to her contacts in different I/NGOs in Biratnagar. I would also like to thank Krishna Bhattarai of Abhiyan Nepal, Itahari and Dil Bahadur Nepali of Action Aid International Nepal, Biratnagar for providing valuable information regarding my fieldwork sites and providing me important contacts of key-informants from the sites. I am also grateful to Chiranjeevi Bhattarai, Itahari, a brother of my friend Chudamani Bhattarai, for accompanying me to Prakashpur and introducing me to some key-informants there. My special gratitude also goes to Paras Sir, a teacher at a school in Prakashpur, for finding accommodation for me in Hanumannagar. I would also like to thank Chakra Timsina, Prakashpur and Raj Kishor Singh, Hanumannagar for providing me with accommodation during my fieldwork. I am also grateful to the family, especially the mother, of Chakra Timsina for the nice cooking and the hospitality.

I would also like to thank some of my friends for providing me with emotional support and helping me in various aspects - Ananda Raj Pokharel for translating and certifying the translated documents for submitting to the Human Research Ethics Committee; Roshna Maharjan and Bipin Maharjan for helping me in data entry; and Susheel Dangol, Basanti Kumpakha and Sudarshan Pokharel for collecting, creating and providing me necessary maps. I would like to express my special thanks to Rita Mastrantone for the thorough editing of this thesis.

I am grateful to my former colleague, also a fellow PhD student, in the Department of Political Economy, Toby Rogers for his continuous moral support and encouragement to complete my thesis.

I would like to express my gratitude to Elizabeth Hill, my supervisor while I was in the Department of Political Economy, for accepting me as one of her PhD students and providing me suggestions in improving my capacity in writing a thesis. My gratitude also goes to Joy Paton and Gavan Butler, my former associate supervisors in the department.

I owe my supervisor, Phil McManus, a debt of gratitude for accepting me as his PhD student in the School of Geosciences during the critical moment of my candidacy, providing me with constructive comments and suggestion, and supporting me in getting completion scholarships from the university and the Faculty of Science. I would also like to express my sincere gratitude to Krishna Shrestha, the University of New South Wales, for helping me in completing this thesis by providing me with his continuous moral support and constructive suggestion. I am also indebted to Bob Fisher for providing invaluable feedback on my thesis in the capacity of associate supervisor.

I would like to appreciate and acknowledge the University of Sydney for providing me with the University of Sydney International Research Scholarship (USyDIS) for four years, the Faculty of Arts and Social Sciences for providing me with the Doctoral Research Travel Grant for covering my field expenses and the Faculty of Science for the completion scholarships.

Last but not least, I would like to thank my family and relatives for always being by my side through all ups and downs. I would like to express my deep gratitude to my sister Sita, brother in law Ramesh and other relatives for taking care of my daughter, parents and grandmother during the massive earthquake in Nepal, which was worst time I've ever faced in my life, while I was in the eastern Terai region of the country collecting data. I am also grateful to my cousins Bikash and Prakash for providing me with emotional and other necessary support whenever needed for completing this thesis. I would also like to thank my good friend, also a sister, Roshna Maharjan for providing emotional support and encouragement for completing the thesis.

My father Krishna, mother Krishna Maya and grandmother Kanchhi's blessings, unconditional love and support and continuous encouragement for my studies have made me what I am today. It was my father's dream of getting tertiary education for me and my sister since he was unable to pursue his study despite a great deal of interest and passion, due to financial and family reasons. I want to proudly tell him, "Dad, I have done it now." I also remember my grandmother always telling me to give attention to my studies, since my childhood until I finished my undergraduate degree. Now 95, she is waiting to welcome me back home after three years. Likewise, this thesis would have been incomplete without the endless love and emotional support of my wife, Krishna Devi. She provided me with continuous encouragement and took care of me well all the time, especially during sicknesses, despite losing her mum and dad during the PhD. I also want to remember my adorable daughter, Kahiran, who was a five-month-old baby when I started my thesis. During my final phase of PhD, she (a four-year-old) used to say, "Did I allow you to work today dad?"

Thank you all!

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Acronyms

ADB	Asian Development Bank
CA	Constituent Assembly
DPR	Detailed project report
INGO	International Non-governmental Organisation
IRAs	International River Agreements
KHD	Koshi High Dam
KHDP	Koshi High Dam Project
KRA	Koshi River Agreement
KRP	Koshi River Project
MoHA	The Ministry of Home Affairs, Nepal
NGO	Non-governmental Organization
PDA	Project Development Agreement
R&AW	the Research and Analysis Wing

Glossary

Adhiya:	This is usually an informal oral contract between the landowner and the tiller. Under this kind of contract, the land tiller needs to provide a certain portion, usually half, of the crops harvested from the land to the landowner. <i>Adhiya-batiya</i> is also interchangeably used just with <i>adhiya</i> .
Bhujia	It is a crispy snack prepared by using rice that is popular in the Terai region of Nepal.
Bigaha:	It is a unit of measurement that measures the area of land in the Terai region of Nepal. It is usually used in the Terai region of Nepal. 1 Bigaha = 20 Kaththa = 6772.63 m ² ; 1 Kaththa = 20 Dhur
Birta:	It is the land tenure system in Nepal in the past. Under this system, the government would provide land to individuals on meritorious performance or some other reasons. Such land was virtually free from any taxes. The system was abolished in 1959.
Crores:	It is a unit of measurement that is used for counting. It refers to 10 million, e.g. NRs. 1 crore = NRs. 10,000,000.
Cusec:	It is a unit of measurement for measuring the volume of liquid flowing per second. 1 cusec = 1 cubic foot per second
Dhur:	It is a unit of measurement for measuring the area of land in the Terai region of Nepal. 20 <i>Dhur</i> = 1 Kaththa = 16.93 m ² (see Bigaha and Kaththa)
Hatiya:	Hatiya is a local market organized by people living in the local areas in rural parts of Nepal, where people trade local agricultural products, daily consumable items, utensils, make-up items and

clothes. The market is open once or twice in a week depending upon the trade volume and location of the market.

- IRs.: It is the abbreviation for the Indian currency. IRs. 1 = NRs. 1.6
- Kathmandu-Terai Fast Track: It is a proposed fast-track highway, which, when completed, will connect the capital of Nepal, Kathmandu with the Terai region in Nijgadh of Bara District. It is expected to reduce the travel distance and time between Kathmandu and Terai significantly. It would be a track of 76.2 km and the travel time will be reduced to just 3 hours, which otherwise is taking more than 8 hours currently. It is considered as a national-pride development project by the government of Nepal.
- Kaththa: It is a unit of measurement of land in the Terai region of Nepal; 1 Kaththa = 338.63 m²
- Koshi Victims Society: A Saptari-based non-governmental organization working for the river communities who have been victimised by the KR
- Lakh: Lakh is a unit used for counting numbers in Nepal. 1 lakh = 100,000.
- Machan: A *machan* is a wooden or bamboo structure built by the villagers for a living, cooking food and looking after their homes, cattle and property during inundations.
- Maund: It is a unit of measurement. Generally, 1 *maund* = 37.3242 kg; but in practice, people in Nepal use *maund* to indicate one typical sack of grains used in the area.
- Narayani River: It is one of the major rivers of Nepal that is also known as the Gandaki River, and it is a tributary of the Ganges.

NRs.:	It is the abbreviation for the Nepalese currency. Generally, NRs. 100 = 1 USD (Approximately)
Panchayat:	The term “Panchayat” was used for a village level administrative unit during the Panchayat era, which began in 1960 and lasted until the 1990 revolution in Nepal. It was later changed into VDC. (see VDC)
Postal Highways:	The Postal Highway is also called <i>Hulaki Rajmarga</i> in Nepali. It is the highway constructed in the Terai belt of Nepal for facilitating postal services in the country, and it runs across the entire Terai from Bhadrapur the east to the west of Nepal.
Pradesh:	It means a state or a province in the Nepali language.
Raj Kulo	It is a canal irrigation system established by Kings that first appeared in the country in the seventeenth and eighteenth centuries.
Rana Rule:	It refers to the rule of Nepal by the Rana family; The rule lasted for 104 years from 1846 to 1951.
Rural Municipality:	Currently, the constitution has restructured the country into a federal republic, which has also upgraded a VDC to a Rural Municipality. A Rural Municipality has been created by merging several VDCs.
VDC:	A VDC used to be the smallest local administrative unit in Nepal that was in use until the current constitution was promulgated in 2015.

Chapter One: Introduction

1.1 Introduction

While walking through a rural village in the southern plain of Nepal along the Koshi River, one can see many people living in misery. Compact, illegally built, tiny thatched houses beside a road along the river bank, describe the general settlements in the village. Scorching heat in the summer with many floods in the monsoon exemplify the place, while illiteracy and poverty signify the people. The people live with the fear of being bitten by deadly snakes, the King Cobras, while also fearing being flooded in the monsoon season. In the dry seasons, they are not able to water their plantations, despite the continuous flowing river. Some even do not have their farms as the river has taken their land during heavy floods. (Field notes, 2015)

The above short story demonstrates that the people living in the village do not have the ability to break the vicious circle of poverty, illiteracy and misery. Although it seems that their suffering is the result of the characteristics of the place and natural hazards, there are many hidden causes. This thesis sees the governance of the river as a major problem.

According to the Global Water Partnership (2002, 14), water governance is defined as:

The range of political, social, economic and administrative systems that are in place to develop and manage water resources, and the delivery of water services, at different levels of society.

This definition refers to a process of decision-making that articulates who, how, and why decisions are made. In the case of river governance, the definition should also encompass the protection of people from hazards and disasters, apart from the distribution of water. In this way, addressing the underlying causes of the people's misery in the above story becomes possible by analysing various aspects of the governance of the Koshi River (KR). The injustice for the people produced in the process of the governance is referred to as environmental injustice in this thesis, and the central argument of the thesis is that the cause of injustice is explained by the multi-scalar power relationships among different players involved in the Koshi River Governance (KRG).

This Introduction states the problem that necessitates the undertaking of this thesis. In the second section, the rationale for carrying out this thesis will be presented. This will be followed by the statement of aims and research questions of the thesis. The fourth section presents a summary of

the research methods used for the collection and analysis of data, and the last section provides a summary of the materials that will be discussed in each chapter of this thesis.

1.2 Problem Statement

1.2.1 Water Conflicts and Governance in the South Asian Context

Situated along the Himalaya, South Asia is a haven for a vast network of rivers flowing from the mountains in the North to the plains in the South. The region harbours three major water abundant river network systems: the Indus, the Ganges and the Brahmaputra. All countries in the region reap the benefit of these perennial rivers, except Sri Lanka and the Maldives which lie outside of the river networks. Most of the tributaries of these rivers are transboundary in nature. Among them, the Indus River flows through Tibet, the north-western part of India and Pakistan; the Ganges flows through Tibet, Nepal, northern India and Bangladesh; and the Brahmaputra flows through Tibet, north-eastern India and Bangladesh. Besides the immensity of the river networks, the Indo-Gangetic basin is also the most intensely-used freshwater resource in the world (“Hydrology: South”, 2016)¹. This is also because of the enormous population, i.e. around 800 million people (Nath et al. 2017), living in a basin that is a little bigger than the size of France. Due to the heavy use and transboundary nature of the river networks, conflicts within and between the countries in the region continue to grow.

There are two main categories of water issues producing water conflict in the region. First, the region faces water scarcity in dry seasons, which raises the issue of equitable water sharing between the countries. Second, the region suffers from water abundance during monsoons, causing havoc to the river communities in the form of flood disasters, soil erosion and landslides. This generates disputes about effective management of river water and built structures such as embankments and dams on rivers. This leads to the understanding that disasters, which people face frequently in the region, are not always due to natural hazards but are also the result of human interventions in the river’s environment. In other words, disasters do not take place in a social, economic, political and institutional vacuum (Seeger et al. 2016; Hobson, 2014). For instance,

¹ The citation is based on the APA 6th style of referencing for a journal article or a newspaper article without an author.

construction of a dam in a river affects the water flow in the river, and that, in turn, impacts millions of people both upstream and downstream.

Water-related disasters in South Asia have been frequent and severe in recent years and have affected millions of people. By utilising the composite indicator developed by the Asian Development Bank (ADB) in the *Asian Water Development Outlook 2016*, which uses five strategic dimensions of household water security, economic water security, urban water security, environmental water security and resilience to water-related disasters, Kaur and Kaur (2016) calculated the national water security index of all countries in the region. They found that all the countries have an index of less than 2, (on a scale where a national water security index of “5” is the ideal situation, and “1” is the lowest) which indicates the severe water insecurity situation. Afghanistan, Bangladesh, India and Pakistan have an index of 1. Flood disasters devastate the lives of people in South Asia, especially Bangladesh, India, Nepal and Pakistan, every year. In Pakistan, the 2010 floods, which were the worst recorded in the country’s history, took the lives of over 2,000 people and affected over one-tenth of its population i.e. around 18 million people (“Pakistan floods 2010,” 2013). Similarly, monsoon floods killed 42 people and affected 3.2 million people across 16 districts of Bangladesh in 2016 (Davies, 2016; “ACAPS Briefing Note,” 2016). Floods and droughts are recurring events in case of almost all countries in the region and are an increasing trend.

While water-related problems are escalating in South Asia, water conflicts among countries in South Asia are not a new phenomenon. Just after the separation of Pakistan from India in 1947, the issue of the division of water resources between them emerged. The Indus basin was divided between the two countries in such a way that India, as an upstream country, acquired the upper hand of controlling the water flow into Pakistan (Haines, 2014). The conflict between the two countries started when India cut off the water supply to Pakistan, citing that Pakistan did not renew an agreement on sharing water with India. There was conflict even over delineating the international boundary between India and Pakistan at the place of Indus waters dispute until 1960 (Haines, 2014; Chester, 2009). Whereas in the east, India’s plan to construct the Farakka barrage in 1950-51 to affect the then East Pakistan, now called Bangladesh after its separation from Pakistan in 1971, demonstrates the conflict between India and Bangladesh. The purpose of the barrage was to divert water from the Ganges into the Bhagirathi-Hooghly River in India, affecting

the usual water flow to Bangladesh. The then Pakistan government objected to both acts of India for disturbing the water flow to Pakistan (Haines, 2014; Gulati, 1988). To minimize the conflict between them, India and Pakistan negotiated and signed the Indus Water Treaty in 1960, whereas India and Bangladesh negotiated several agreements, including the Ganges Water Sharing Treaty of 1996. Despite having negotiated several agreements, conflicts between India and these countries over water sharing issues still exist.

1.2.2 Water Governance and Conflicts in the Context of India and Nepal

Unlike the cases above where India is in the beneficial position for being the upper riparian country with Bangladesh and Pakistan, India lies downstream of Nepal. Conflicts with Nepal started with the construction of dams and barrages by India on the Nepalese side along the India-Nepal border in the 1950s. The two countries signed agreements and treaties for water cooperation rather than for the minimisation of conflict between the two. Conflicts between the two emerged after the agreements were signed and dams and barrages were built. Several agreements and treaties exist between the two countries for different tributaries of the Ganges flowing from Nepal into India. The contracts have formally addressed various issues such as irrigation development, energy production, flood management and erosion control.

There are several reasons why mutual water cooperation between India and Nepal via agreements and treaties is desirable. First, Nepal is endowed with abundant freshwater resources in its dense network of about 6,000 tributaries of the Ganges River (Bastola, 1997). Second, despite the richness, Nepal has been incapable of developing sufficient hydro-power generation plants and irrigation infrastructure in the country, due mainly to a lack of financial resources and technical capability. For instance, Nepal has irrigated only 52.06 percent of its total arable land (Ministry of Finance, 2016) that includes various types of irrigation such as shallow and deep tube-well and improved canal²; and generated only 784.499 MW (DoED, n.d.) of hydro-electricity out of its huge potential. Third, in contrast, India has the financial capacity for investment in water and energy development projects but has been suffering from water scarcity. So, it has been struggling to provide enough water and energy to its people. According to the United Nations World Water

² More information on Nepal's irrigation will be provided in chapter three.

Assessment Programme (WWAP, 2015), 22 out of 32 major cities of India face water scarcity daily. These circumstances are enough to induce the countries to cooperate in sharing the river resources for mutual benefit.

The two countries negotiated several International River Agreements (IRAs) over a long period of time in different socio-political contexts, especially when there were major political changes in Nepal or there was political instability in Nepal. The signing of the first IRA, the Sharada Treaty, took place between British India and Nepal during the autocratic Rana regime in Nepal in 1920. The countries negotiated the second IRA, the Koshi River Agreement (KRA), in 1954 just after the Rana Rule was overthrown in Nepal. Similarly, the Gandak Treaty, the third IRA, took place when the first democratically elected government came to power in 1959. Lastly, they inked the controversial Mahakali Treaty (1996) just a few years after the restoration of multi-party democracy in Nepal in 1990. The players involved in the negotiation of the agreements and the time periods when the agreements took place carry a significant importance, and this will be discussed in detail in Chapter 3. They signed the Project Development Agreement (PDA) of the Pancheshwar Multipurpose Project, an important component of the Mahakali Treaty, in 2014 when Nepal was busy making its new constitution. Yet India's hunger for negotiating additional agreements on other river waters of Nepal continues, in order to meet the huge water and energy demand of its gigantic population.

Despite having negotiated several river agreements between India and Nepal, the distribution of benefits have not been equitable, resulting in intense internal conflicts, particularly in Nepal. The negotiations of the agreements have taken place mainly for two reasons, which are irrigation and flood control in both countries. Nepal accepted the Indian agreement proposals mainly with the hope of getting irrigation and flood control infrastructure in the country when it did not even have the capability to think of such giant infrastructure. But there were more adverse impacts on the Nepalese side than benefits. This produced disputes within the country. Two main issues created the tensions. The first is related to the nationalistic view of the political parties in opposition and some politically aware people in Nepal. The agreements skewed towards India, and it was viewed that the government sold Nepal's sovereignty to India by agreeing that the rivers be directly governed by India. The other issue is related to the adverse effects of the river projects, which are carried out as a result of the agreements, on the people living in and around the rivers on the

Nepalese side. Because of these issues, various protests have taken place in Nepal, including demonstrations against the negotiating government, acts of bringing down governments, and acts of splitting the political parties. For instance, the 40-point demand of the then Maoists with the then Nepal government that was published a week before declaring the People's War (on 13 Feb 1996) also included revoking of the Mahakali Treaty (concluded on 29 January 1996), stating that the treaty carried anti-nationalist sentiment ("40 Point demand," n.d.). As evidence shows, the transboundary river issues between the countries affected the national politics of Nepal. However, as all the agreements and the internal political conflicts produced in Nepal are not possible to incorporate in this research, this thesis only focuses on the case of the KRA.

The Koshi River Agreement

Among the Indo-Nepali IRAs, the KRA was the agreement that took place between the countries in 1954 and was revised in 1966. It has been continuously governing the KR until today. The terms and conditions of the agreement negotiated in 1954 were totally skewed towards India. For example, the agreement allowed India the right to regulate all the water supplies in the river at the barrage site; it obliged Nepal to allow India without objection to carry out future investigations related to storage or retention dams and soil conservation works on the river and its tributaries; it allowed India to own all the land leased to it for the Koshi River Project (KRP) by the Nepal government; and it did not mention the time period of the validation of the agreement. This is why Nepal felt the need to revise the agreement, which occurred in 1966. The revised agreement improved some clauses and included the validity period of 199 years. Besides, the main purposes of the agreement, as noted in the actual document, were to control flood hazards, to avail water for irrigation, to generate hydro-power and to prevent erosion in Nepal. The reality, however, is far from the promises made in the document. Neither the distribution of irrigational benefits is equitable, nor have the flood and the soil erosion control measures been effective. Therefore, Nepal and its local people residing in the riverine communities have lost from the deal. Despite this inequity, the agreement is still in place governing the river.

A glimpse of the terms and conditions of the revised KRA still shows a gloomy picture for the Nepalese side. Besides acquiring a large area of land and constructing the barrage in the Nepalese

territory, some clauses of the agreement show that the agreement favours India. For example, India controls the water-flow through the barrage; and it does not specify the amount of water allocated for both countries, although one of the main intentions of India was to provide irrigation. Details regarding the terms and conditions of the KRA will be presented in chapter three.

The riverine people living around the KR have faced many repercussions of the KRP since the project commenced. Firstly, many of them lost their houses and land during the expropriation of the land necessary for constructing the barrage and embankments. Secondly, floods displaced many of them after the construction of the barrage that also eroded and inundated their land. Erosion, inundation and siltation of agricultural land and settlements are occurring at present. Thirdly, the people, particularly in the downstream, still suffer from lack of irrigation-water during dry seasons despite the construction of irrigation canals close to their settlements. Finally, many of them have not received compensation for the loss that they incurred due to the KRP, and are living miserable lives – being landless, without stable employment and with a low level of education. Despite the impacts on the people, the Indian and the Nepal governments have been trying to conduct a detailed project report (DPR) study of a newly proposed project, the Koshi High Dam Project (KHDP), upstream of the KRP. They, especially India, envision building one of the highest dams in Asia. The local people have organised protests and demonstrations demanding compensation and a stop the KHDP.

The Environmental Injustice

The local riverine people have been facing various unwanted consequences, as noted above, as a result of the inappropriate governance of the KR. One reason for the consequences is the inequitable distribution of benefits and disadvantages among different stakeholders that are produced by the KRP. Besides the distributive injustice, the people also face procedural injustice through lack of participation and recognition of the people by the KRG. Several studies have discussed distributive and procedural injustices (see Schlosberg, 2013 and 2007; Martin, 2013). This thesis will interrogate these aspects of injustice in detail in the case of the KRG.

The production of environmental injustice occurs because of various factors involved in the governance processes. Firstly, power relationships among all parties involved in the process across

scales are the major factors in influencing the governance and producing the injustice. Asymmetrical power relationships among various stakeholders play a crucial role when they compete for access to and control over natural resources (Mathis & Rose, 2016; Vaccaro et al. 2013; Blaikie & Brookfield, 1987). Powerful players gain access to the resources by controlling the access of others to the resources (Ribot & Peluso, 2003). Secondly, the scales at which various actors operate are also important in determining the injustice because many are involved in the KRG. The parties are involved in the process at a range of scales, such as international, national, regional and local. India and Nepal are the international players, whereas the government agencies, central-level political party leaders of Nepal and experts working on water issues in Nepal are the national players. Regional organisations and political leaders play the role of the regional actors, and local people, local political leaders and local community organisations are the local stakeholders. As argued by Moore (2013), it is very important to understand the perspectives of all parties across and within different scales. Therefore, understanding scalar perspectives helps us to understand governance processes and injustices produced. Lastly, the role of “place” is also crucial in the governance and the production of various injustices. As interactions among various actors occur in relation to “place”, the context in which resources are governed also affect the governance. Thus, power relationships, scale and place are major factors that influence governance processes and produce injustices.

Thus, this thesis argues that environmental injustice is produced by the interaction between society and nature, and by multi-scalar power relationships among various players involved in the governance.

1.3 Rationale

The current research examines various multi-scalar aspects of Transboundary Water Governance (TWG) in the South Asian context and their impact on riparian communities. By studying the river governance and its implications on environmental injustice for people living in riparian river communities, this thesis will contribute knowledge in terms of conceptual, empirical and policy debates on transboundary river governance. At the conceptual level, it will strengthen the discursive knowledge generation process of the actor-oriented political ecological framework by

integrating with the concepts of governance, theory of access and environmental justice. At the empirical level, it will enrich knowledge on the political ecology of water governance and will use the knowledge in verifying the ground reality. The conceptual and empirical knowledge thus produced helps to inform policy debates on water governance.

Regarding the contribution of this thesis to theory, it will contribute to the political ecology framework by incorporating the “theory of access” and “environmental justice” as the theoretical tools within the framework to understand various empirical multi-scalar transboundary river governance processes. Few studies have used the amalgamation of the above-mentioned concepts in understanding environmental issues (e.g. Montgomery et al. 2015; Jennings et al. 2012; Curry, 2001). Montgomery et al. (2015) studied people’s access to a public beach in Miami, Florida by using the concept of environmental justice. This thesis will analyse the multi-scalar linkage of environmental injustice with power-relationships among various actors and their access to resources coupled with various contextual factors by depicting the winners and the losers at different levels of governance empirically. Thus, this research will provide a deeper understanding of the production of environmental injustice for the people living in riparian communities in the context of transboundary river governance. Furthermore, there are few studies on water governance in the context of South Asia, and specifically in the governance of the KR. Most of the studies on transboundary water issues have focused either on the conflict dimension between nations for gaining control over water (e.g. Howden, 2016; Kehl, 2011; Tir & Ackerman, 2009; Zeitoun & Mirumachi, 2008) or on the discourses of building dams (Tur et al. 2018; Yong & Grundy-Warr, 2012). Political ecological studies aiming at explaining the injustice of people on the basis of multi-scalar reasoning are scant in South Asia. The current research contributes to filling this gap by adopting the multi-scalar analysis of the KRG.

In the wake of the unequal agreements and their harmful consequences on the people living in the riparian communities in the weaker nations, the hitherto dominant approaches to analysing the governance outcomes have largely focused on the asymmetrical power-relationships between the nations. The literature on transboundary resource governance identifies the power-relationship between nations as the main factor behind the harmful impacts of the governance of the resources. Many studies on the transboundary resource governance have focused on power-relationships between nations (e.g. Zeitoun & Allan, 2008; Zeitoun & Warner, 2006). Some studies have also

considered the role of other parties (e.g. NGOs) on transboundary resource governance, but they are few (Warner, 2012; Zawahri & Hensengerth, 2012). Besides, in the case of the KRG, many people in Nepal believe that the unequal power-relationship between India and Nepal is the main reason behind the sufferings of the people. They believe that the government of Nepal, mainly the politicians, acquiesce to what their Indian counterparts say, so the government is unable to care about their people. Both the literature and the people, however, have largely neglected the role of other actors in the governance process. Thus, there is a need to question the dominant narratives and assumptions related to the power relationships only between nations in the governance of transboundary resources. This thesis attempts to contribute to the critical understanding of the role of other actors, apart from the nations, in the KRG.

Although it was noted in Section 1.1.1 that disasters take place due to social, economic, political and institutional reasons, the major actors consider that the people are themselves responsible for their sufferings because they choose to live in the flood-vulnerable areas. The disasters are understood as natural events, and the Nepal government does not think that the people live there because of the wrong policies of the government. Further, the government has been indifferent towards working for the protection of the people despite the people being frequently affected. Instead, they spend a huge amount of money on the embankments every year. Therefore, there is a need to question the government regarding the governance of the river, and it is very important that decisions be guided by adequate research with empirical evidence. This research attempts to provide empirical evidence on the disasters' link with socio-political factors so that it would be easier for the policy-makers to formulate policies accordingly.

1.4 Aims and Research Questions

The aim of this thesis is to study the political ecology of water governance in South Asia. This thesis examines the implications of the IRAs, specifically, the KRA negotiated between India and Nepal, on the riverine communities residing in Nepal. This study acknowledges that the riverine communities in India also suffer from the KRG, however, this thesis focuses on the riverine communities on the Nepalese side. The research questions that support the aim of this research are:

- How does the governance of a transboundary river between Nepal and India produce environmental injustice for riverine communities in Nepal?

Based on this main research question, this thesis addresses several sub-questions. The first sub-question focuses on the international scale where the negotiation of IRAs takes place:

- a. What roles do multi-scalar power relationships among various actors play in the governance of a transboundary river?

The purpose of this research question is to examine how power relationships among various actors across multiple scales affect the governance of the river and to explore how negotiations of the IRAs have taken place.

- b. How does such governance of the river impact access of people in the riverine communities of Nepal to resources?

This question focuses on the crisis produced at the local scale due to the negotiation and implementation of the IRA. It explores the impacts of access control by the powerful actors on the people's access to the river and land resources.

- c. How does restriction on access of the people to the resources shape environmental injustice? And how do the people cope with the injustice?

This question interrogates how environmental injustice is produced for the people due to the regulation of access to the resources by the powerful actors, coupled with other socioeconomic circumstances. It also explores how the people, living in different settlements, cope with the harmful impacts of the governance.

1.5 Research Methods

The current research applies the actor-oriented approach of political ecology for understanding the role of various actors involved in KRG. For understanding these actors, fieldwork was carried out in the KR communities to understand the agency and action of the people in these communities and in Kathmandu, the capital city of Nepal, to understand river governance issues in the country. This helped in understanding various aspects of the KRG both at policy and practice levels.

The research examines TWG in and around the KR. As depicted in the problem statement above, the water governance produces winners and losers during the process brought about by the power relationships among various actors. In order to understand the process, the actor-oriented approach of political ecology best suits in identifying the root of the problem. The actor-oriented political ecology approach, introduced by Bryant and Bailey (1997), provides an understanding of the degree of power, drives, interests and activities of various actors involved in shaping their environments through political and ecological processes. Applying the approach in the current research helps in understanding the complex roles of all the actors involved in the KRG, such as politicians, bureaucrats, experts, local people, NGOs and community organisations.

Fieldwork was conducted in Nepal from 30 March to 7 August 2015. The fieldwork included data collection from the people in the KR communities from three Village Development Committees (VDCs)³ during April-May 2015; one upstream-VDC and two downstream-VDCs from the Koshi Barrage, which was constructed after the negotiation of the KRA. The main data collection techniques involved a questionnaire survey, structured and semi-structured interviews and participant observation. I also felt some challenges while collecting data. The fieldwork sites were rural, very different from my hometown in the Kathmandu valley. Apart from the socio-economic differences, some of the communities, mostly in the downstream villages were also different from my ethnicity, and there was also the Hill-origin and Terai-origin disparity, which was exposed by the Madhesh uprising⁴ in January-February 2007. Some preliminary data for familiarising with the villages were collected through key-informant interviews and focus-group discussions. The massive earthquakes in Nepal that occurred in April 2015 affected the fieldwork to some extent. During June-July 2015, interviews were conducted in Kathmandu with individuals of various capacities: high-level bureaucrats, retired government officials and ex-ministers from the ministries related to irrigation and energy, and the Water and Energy Secretariat; national-level political party leaders who are familiar with and working in the field of water and energy; and various experts related to water, irrigation and energy. More details regarding the data collection

³ A VDC used to be a smallest local administrative unit in Nepal that was in use until the current constitution was promulgated in 2015. Currently, the constitution has restructured the country into a federal republic, which has also upgraded a VDC to a Rural Municipality. A Rural Municipality has been created by merging several VDCs.

⁴ It was a 21-day mass movement organized by Madhesi people in the Terai of Nepal. The main demand of the people was to declare Madhes (Terai) as an autonomous region, with the rights of self-determination. It raised the voice for restructuring the state on the basis of ethno-nationalism (see Hachhethu, 2007; and Upreti et al. 2012)

procedures, techniques and people from whom the data were collected will be explained in a chapter on research methods.

Although a comprehensive study of water governance in the transboundary KR requires fieldwork on both sides of the India-Nepal border, the nature of the current research and practicalities requires this thesis to focus only on the Nepalese side of the river.

1.6 Outline of the Thesis

The thesis is organized into nine chapters including this introduction. Other chapters include a review of literature in Chapter Two, the contextual background in Chapter Three, the research methods in Chapter Four, the major findings in Chapters Five, Six and Seven, the discussion in Chapter Eight, and the conclusion in Chapter Nine. The following paragraphs describe the content of each chapter.

Chapter Two provides a critical review of the literature on water governance, TWG, the theory of access, political ecology of water and environmental justice. This chapter will identify key debates, gaps and silences in the existing literature. The conceptual framework of the thesis will also be presented in this chapter.

Chapter Three provides a general overview of water governance in Nepal, particularly the governance of the KR. It digs out the policy and political aspects of water in the country, and finally presents the key challenges and opportunities in the governance of transboundary-rivers.

Chapter Four explains the research approach and methods used. It also introduces the case study communities in Nepal, and data collection and analysis techniques used. The final parts of this chapter present the research rigour and identify the limitations encountered.

Chapter Five highlights how geopolitics and water politics between India and Nepal affect each other, and how the geopolitics creates a favourable environment for negotiating river agreements, particularly the KRA. It also underscores various issues related to the execution of the KRA. Finally, it describes the provisions made for the people in the riparian communities regarding their livelihoods in the KRA and presents their perceptions on the KHDP.

Chapter Six describes how the governance of the KRP affects the people in the riparian communities and portrays the consequences that they face. It explores the history of the formation of the settlements and the experiences of the people with the subsequent exposures to floods and irrigation problems after the implementation of the KRP. It also provides the impact of the governance on educational and land-ownership situations of the people.

Chapter Seven examines how the people coped with the floods and irrigation problems produced by the KRG. It investigates the response to floods and the livelihood strategies pursued by the people in the aftermath of the unwanted situations. It then describes the compensation issues raised mainly by the people who lost their land in the process of the KRG and presents the movements organised by the people for the compensation and against the KHDP.

Chapter Eight discusses how environmental injustice is produced via the governance of the KRP. It begins by illustrating how the multi-scalar power relationships among the actors involved in the KRG, along with the regulatory instruments, define the roles and responsibilities and access of the actors to the river resources. It also discusses the types of environmental injustices which are faced by the people that include both distributive and procedural injustices. It then discusses how people cope with the injustice, and what justice movements are carried out towards maintaining their access to the resources. Ultimately, it discusses how the existing water governance can be transformed into an alternative framework that produces environmental justice to the people.

Finally, Chapter Nine revisits and summarises the key findings of the research and presents its practical and theoretical contributions. It then provides limitations of the study and suggestions for future study. The chapter concludes by presenting the final comments on the research.

Chapter Two: Political Ecology of Water Governance

2.1 Introduction

This chapter discusses various literature relevant to this research. The literature includes the concepts of water governance, political ecology, theory of access, and environmental injustice which inform this thesis. By examining the literature, this chapter will situate the research questions, provide justification for the importance of the study and provides a conceptual framework, which will be used for analysing the data collected from fieldwork as well as relevant policy documents. In the thesis, TWG will be analysed in terms of access to resources, which will be investigated using Ribot & Peluso's (2003) theory of access. In addition, the concept of environmental injustice will be used to understand the mechanisms and processes causing injustice to the KR communities. The framework will be guided by the actor-oriented political ecology approach. This chapter is divided into five sections, followed by a summary. The first section of the chapter reviews the literature on water governance and then water governance in the transboundary context. The second section discusses the literature on political ecology, which narrows down to political ecology of water. The third section discusses the theory of access to understand the consequences of water governance related to access of various actors to resources. The fourth section presents the concept of injustice and environmental injustice to understand the disadvantages faced by the people in the river communities. The penultimate section discusses the gaps and silences in the literature, which will be followed by a summary.

2.2 Water Governance

Water governance can be defined as how actors make decisions regarding the regulation, development and management of water resources (e.g. Budds & Hinojosa, 2012; Bakker, 2007). The concept of water governance has been used mainly by practitioners in planning water-related projects and by scholars in studying its different aspects, such as the role of different actors, aims, mechanisms and the politics of water governance (e.g. Daniell, Coombes, & White, 2014; Valdés-Pineda et al. 2014; Grigg, 2011). This section outlines and reviews some of the key aspects of the literature on water governance to understand the key debates and major issues.

The literature on governance basically involves two types of conceptions, which are analytical and normative. The analytical concept relates to understanding the actors involved and decision-making processes regarding a resource. According to Bakker (2007, p. 16), governance denotes decision-making processes and determining who is to decide among a number of actors by using models, principles and information. According to Reed & Bruyneel (2010, 647),

Environmental governance involves a range of formal and informal institutions, social groups, processes, interactions, and traditions, all of which influence how power is exercised, how public decisions are taken, how citizens become engaged or disaffected, and who gains legitimacy and influence.

Specifically, in terms of governing resources, Budds & Hinojosa (2012, p. 121) have argued that environmental governance “concerns the organisational structures, institutional arrangements and decision-making processes and practices through which environments and resources are accessed, used, managed and regulated, which involves multiple formal and informal actors at different scales”. The analytical concept of environmental governance includes the actors, institutions, processes, interactions and practices that revolve around regulating or gaining access to resources. The use of this concept in the thesis will help identify what kinds of decision-making structures are present and how decisions related to the KRG are made by the actors involved in various related-processes. By examining the decision-making structures and processes, analysing the KRG becomes easier.

The normative concept of governance is related to views regarding how governance should be and concerned with the inclusion of various actors in decision-making processes regarding resources. Despite extensive research, there is no universally agreed upon definition of normative governance, and it generally means a shift from government to inclusion of a range of other actors such as civil society, non-governmental organisations (NGOs) and private sector actors (e.g. Moore, 2013; Turton et al. 2007; Lemos & Agrawal, 2006; Bulkeley, 2005). The reason for this way of conceptualisation of governance was to tackle the failures in the previous models of public administration governance (Ioris, 2014). In the case of water governance, which emerged in the 1990s (Schulz, 2017), the normative concept discourages the rigid top-down model of governance and advocates for the joint management of water resources by government agencies, local people and other stakeholders involved in the process (Schulz, 2017; Castro, 2007). Various normative concepts have emerged in the process of identifying a good governance concept.

The concept of good governance has been used widely in the literature of water resources governance. Good governance generally relates to transparency, accountability, participation and decentralised decision-making (Biswas & Tortajada, 2010). There are several definitions of water governance in terms of good governance (e.g. Pahl-Wostl, 2009; Global Water Partnership (GWP), 2002). According to the Global Water Partnership (GWP) (2002, p. 14), “water governance refers to the range of political, social, economic and administrative systems that are put in place to regulate the development and management of water resources and the provision of water services at different levels of society”. Araral & Yu (2013), however, find the GWP (2002) definition too broad and contend that the definition does not provide mechanisms for developing and managing water resources. This makes it ambiguous for use in both research and governance reform. These weaknesses have been overcome in the explanation of good water governance by (UN-Water, 2014, p. 13) in the following text.

Good water governance enables people to participate in decisions affecting their lives. To ensure this, accountability mechanisms need to be in place. There is a broad stakeholder consensus that the water challenge goes well beyond access to drinking water and sanitation services for all, to envelop water resources, wastewater management and related issues of water quality, as well as addressing both man-made (sic) and natural catastrophic events.

UN-Water (2014) not only prescribed participation of people in the decision-making processes but also suggested incorporating accountability mechanisms. It has also pointed out the importance of natural and human-made water-related disasters, apart from the distribution of drinking water. Thus, the explanation of good water governance helps this thesis in identifying problems associated with the smooth governance of the KR, both in the allocation of water and in the analysis of water-related disasters, such as floods, erosion and inundation.

Various normative frameworks on water governance provided by the scholars and programmes related to the United Nations provide prescriptive ways of governing water resources and are meant to solve existing problems. Lautze et al. (2014) argued that the employment of the concept of water governance in prescriptive ways has dissolved the actual meaning of governance. Moreover, prescriptive framings, unlike analytical conceptions, do not help in delineating the existing nature of governance structures and processes.

Several concepts of water governance have focused on solving the water crises issues with the realisation of the fact that water is a political issue. As GWP (2000, p. 16) claimed that the “water

crisis is mainly a crisis of governance”, Baird et al. (2016, p. 224) argued that the introduction of the water governance concept was to re-orient the “understanding and solving the water crises”. Therefore, the aim of developing the concept was to provide water services to all people by developing and managing water resources. In addition, De Loë & Kreutzwiser (2007) argued that the problems related to water are actually not related to scientific knowledge or technology, but to the acts of people. This means problems related to water depend upon human behaviours, and this realisation necessitated the conceptualisation of water governance. This thesis will give emphasis to the actors involved in the KRG and study their behaviours in finding out the problems related to the process.

The literature on governance of water has expanded rapidly over the past two decades and has covered a variety of perspectives. Water governance has largely been studied in the disciplines of Environmental Sciences (e.g. Karar, 2017; Pahl-Wostl, 2015; Kuzdas & Wiek, 2014), Economics (e.g. Schulz et al., 2017; Grafton et al., 2011), Engineering (e.g. Neto, 2016; Molden et al., 2014), Geography (e.g. Bakker, 2007; Linton & Budds, 2014); and Political Science (e.g. Garrick et al., 2016; Partzsch & Ziegler, 2011) among others. Two types of literature prevail on water governance: practitioner-oriented and theory-oriented. The practitioner-oriented literature provides the position and viewpoints of water professionals and policy makers and focuses on improving policy and practice of water governance (e.g. OECD, 2015; Molle et al. 2009). The theory-oriented literature focuses on various theoretical aspects of water governance from different disciplinary perspectives (e.g. Suhardiman & Giordano, 2012). Additionally, some literature focuses on the actors of water governance, and this has given rise to different forms of governance. For example, Baird et al. (2016) have distinguished studies based upon a single actor (e.g. state-centred, civil society based and market-based) with hybrid (e.g. state-civil, state-private and civil-private) forms of governance. These forms of governance, however, do not incorporate governance of transboundary waters which are governed by international or transboundary agreements involving two or more states.

2.2.1 Transboundary Water Governance

TWG involves governance of shared water resources between two or more nations connected by various water bodies, such as rivers, lakes and seas. The review of the literature on TWG aids in understanding various actors, structures, processes and mechanisms involved in governing a shared water resource and analysing if the resource is governed well. Thus, the literature helps us in understanding both analytical and normative, i.e. good governance, aspects of the KRG. It will also be helpful in reflecting these issues in understanding the current study of the KRG. This section discusses various debates and issues of TWG.

The literature on TWG is a subset of water governance and has focused on various issues, including conflict and cooperation (e.g. Howden, 2016; Tir & Ackerman, 2009; Zeitoun & Mirumachi, 2008), water resource management institutions (e.g. Meissner, Funke, Nienaber, & Ntombela, 2013); politics of deliberation, scales and levels (e.g. Dore & Lebel, 2010); legal framework for good water governance (e.g. Schulz, 2007); and the effectiveness of transboundary river governance (e.g. Evan Garrick et al., 2016). There have also been studies on resilience and adaptation (e.g. Cosens & Williams, 2012; Akamani & Wilson, 2011); comparative approaches to water governance (e.g. Araral & Wu, 2016; Araral & Yu, 2013); and multi-scale governance (e.g. Yang et al. 2014). It is apparent that the number of studies on conflicts and cooperation between neighbouring nations related to TWG surpasses studies on other aspects of governance. Further, most of the studies on TWG have concentrated on water scarcity or drinking aspects of water, and the literature on water-related hazards such as floods in transboundary rivers is scant.

Much of the literature on TWG has focused on the issues of power asymmetry and hydro-hegemony, giving emphasis to the role of nation-states in the negotiation of agreements and governing water resources. Several studies have found that a powerful state obliges a weaker state to negotiate a deal that further marginalises the weaker state (e.g. Kehl, 2011, Zeitoun & Warner, 2006; Elhance, 1999). For example, Kehl (2011) argued that power asymmetry plays a critical role in the negotiation of transboundary water agreements, and powerful riparian nations are often able to force weaker ones to accept water-sharing policy agreements that are hostile to them. According to Kehl (2011, p. 221),

Structural, political, economic, and environmental inequalities are exacerbated by power asymmetry in hydropolitical complexes and affect the type of leverage riparian states use to negotiate water-sharing arrangements.

In hydropolitical complexes with relative inequality and asymmetrical power, leverage is asserted through the geographical location of riparians, financial resources, commerce, access to information, technology transfer, military capacity and mobilisation, and other sources of power that vary widely between riparians.

Based on various dimensions of power, several scholars have studied the concept of hydro-hegemony in relation to TWG (e.g. Menga, 2016; Zeitoun & Allan, 2008; Zeitoun & Warner, 2006). Zeitoun & Warner (2006) introduced the concept of hydro-hegemony, which is related to water issues and defined in terms of power relations between actors, especially between nations in the case of TWG. The hydro-hegemony framework focuses on the underpinnings of hegemony, power and political-economy processes in defining transboundary water relations. Hydro-hegemony is defined mainly in terms of three dimensions of power - structural or force, bargaining or deals and ideational or ideas (Zeitoun & Allan, 2008; Zeitoun & Warner, 2006). Building upon the concept of hydro-hegemony, Menga (2016, p.411) introduced the concept of the circle of hydro-hegemony and defined hydro-hegemony as “the success of a basin riparian in imposing a discourse, preserving its interests and impeding changes to a convenient status-quo.” Besides, some scholars presented the concept of counter-hegemony by taking the example of the Grand Ethiopian Renaissance Dam (Zeitoun et al. 2014), in which they argued that the framework of counter-hegemony helps riparian nations to maintain equitable control and benefit-sharing of a TWR. This thesis also investigates if hydro-hegemony is present in the case of KRG and how the powerful riparian nation has maintained its interests.

Several studies have explored the strategies used by nations in attaining cooperation with other nations regarding TWRs (e.g. Kehl, 2011; Zeitoun & Warner, 2006). For example, as noted above, Zeitoun & Warner (2006) provided the hydro-hegemony framework in analysing how powerful nations control TWRs and used the three dimensions of power in doing so. Kehl (2011) examined the strategies that weak riparian nations use in fostering cooperation with more powerful nations in international river systems. In contrast to Zeitoun & Warner (2006), the study analysed four different types of hard and soft power - structural power, sticky or economic power, political power and ideational power – used by the weaker nations for directing negotiations towards cooperation with the stronger ones. Hard and structural powers include military might, international military

support, mobilisation of the military, the geographic positioning of the state and hydro hegemony. Political power refers to the influence over political decisions, and ideational power relates to the dissemination of ideas, values, technology and culture. The authors have examined how the weaker states have used these leverages for directing the negotiations towards cooperation with the stronger ones. Nevertheless, it does not give any idea of what factors help both parties in achieving cooperation. These studies have also ignored the question of why cooperation between nations takes place.

Despite less emphasis of the literature on TWG in investigating cooperation between nations, few studies have attempted to explore why agreements between nations take place (e.g. Tir & Ackerman, 2009; van der Zaag & Vaz, 2003; Elhance, 1999). Elhance (1999) argued that power asymmetry between the riparian states is the necessary condition for any agreement to take place. LeMarquand (1977) and Biswas (2001) however argued that agreements take place due to neoliberal policies. Other studies (e.g. van der Zaag & Vaz, 2003; Amery & Wolf, 2000) found that rapidly increasing water demand and the learning from increasing cooperation elsewhere necessitated transboundary cooperation on water. Tir & Ackerman (2009) found that factors such as asymmetrical power distribution, economic interdependence, democratic governance and scarcity of water were the reasons behind the negotiation of formal water agreement deals. Unfortunately, this study has not incorporated the details of the negotiation processes that took place on both sides. It is, in fact, important to find out the reasons for both the riparian nations in negotiating agreements on TWRs. This thesis will investigate this issue in the case of the KRA.

Apart from the role of states in the governance of TWRs, the literature shows that third-party actors play a crucial role. Sneddon & Fox (2006) argued that it is important to involve the sentiments and views of local non-state actors along with the state in the TWG. Zawahri & Hensengerth (2012) examined the role of domestic NGOs in shaping the decisions taken by states while negotiating international agreements in the Ganges and the Mekong Rivers. In a similar study on Turkey's Ilisu Dam, Warner (2012) studied the role of international non-governmental organisations (INGOs) in influencing the basin level politics by stimulating the anti-dam discourse. Despite underscoring the influence of different actors, states have been the principal actors in taking major decisions while governing TWRs. Furthermore, the literature has largely ignored the role of local people in the governance of transboundary rivers (Do Ó, 2012). Thus, it is important to examine

the roles of all the relevant actors, including the local people, in the negotiation as well as the governance processes.

A normative framework provided by the World Commission on Dams (WCD) in the report, *Dams and Development*, in 2000 is relevant in the case of TWG and forms the basis for a model that is introduced in chapter eight of this thesis. The framework was built upon five core values of effective decision-making in relation to commencing new or existing projects by considering the benefits, harms and risks. The core values are based on providing environmental justice to stakeholders, particularly the weak ones, and include equity, efficiency, participation, sustainability and accountability. The framework also provided seven strategic points, including public acceptance for projects, sustenance of rivers and livelihoods, and ensuring compliance, among others. The values and strategies were then developed into a set of criteria and guidelines for making important decisions in various stages of water and energy development projects so that harms due to the construction of dams could be reduced. The development of criteria and guidelines means that the WCD attempted to make rules for the dam-building world. Although the rules raised awareness among various actors in the international arena, the powerful actors who are often the dam-builders (e.g. powerful countries building dams on transboundary rivers or governments building dams within their national territories) have hesitated to follow the rules because the framework was introduced to benefit and protect (from harm) those affected by the construction of dams. The framework has also been ineffective in serving the affected ones, as the rights of the affected people, as indicated in the rights and risks approach of the WCD (2000), have often been neglected in dam-building projects. For example, the participation of affected people is limited in the decision-making, and in cases where they have participated, their participation has not been meaningful (Chen et al. 2016; Middleton & Dore, 2015; Mirumachi & Torriti, 2012; Hirsch, 2010). This may be because of the non-binding nature of the report.

The WCD framework was introduced with multi-stakeholder engagement, as such engagements are believed to improve the impacts of constructions of dams. Wasimi (2010) found that semi-structured multi-stakeholder engagement enhanced the clearer articulation of various perspectives in the case of a proposed large dam project, the Traveston Crossing dam in Queensland, Australia. Likewise, Dore & Lebel (2010a) identified the role of various institutions and organisations while identifying the ideal state-society elements for gaining public acceptance, a strategic point of WCD

(2000), of projects to enhance the governance processes. The WCD report firmly suggested ensuring participation of all project stakeholders in decision-making processes and accountability in terms of compliance with existing policies and agreements. The report also suggested the inclusion of various measures such as incentives, penalties, institutional capacity building and other options in the contract between dam developers and government, and the provision of compliance plan guidelines accordingly for developing dams. The compliance plan guidelines are also useful in the governance of resources, but the guidelines do not provide measures of compliance for actors, who deliberately do not comply with agreements and the decisions made. Besides, conflicts, either intra-national or international, especially on compliance and accountability issues between actors still exist, apart from the non-representation of stakeholders from all interest groups, despite the suggestion and the provision of mediation and arbitration in various water or energy-related agreements. The neglect of the framework by major stakeholders and the weaknesses in its adoption, thus, necessitate alternative mechanisms of monitoring, evaluation and control for governance processes.

Although the WCD framework was believed to be comprehensive, some scholars have pointed out some deficiencies in the framework. Dore & Lebel (2010a) identified that the WCD framework included only the procedural justice principles, which are the inclusion of all stakeholders in decision-making, access to information, provision of legal and other support, demonstrable public acceptance and “free, prior and informed consent of affected indigenous and tribal peoples”. Therefore, the authors added the distributional justice principles in their new framework, which include equitable sharing of benefits, avoiding unfair and involuntary risk-bearing, protection of livelihood security and provision of compensation, insurance and welfare support where necessary. Kirchherr & Charles (2016) found that the WCD framework lacked sufficient consideration of relationships between various actors in its analysis, which left out social impacts on communities such as cultural change. They also identified that necessary spatial dimensions were not sufficiently analysed; the framework did not consider the downstream impacts of dams, while the upstream impacts were emphasised in the analysis. This means the WCD framework is silent on the power relationships among various actors at different places and across multiple scales that define the multi-scalar connections and influence the decision-making processes for the actors at local scales. The relationships between various actors will be analysed by introducing a component, the PSP (Power, Scale and Place), in the proposed framework (see section 8.6.1.1).

Besides, Bird et al. (2005) found the rights and risks approach introduced by the WCD 2000 was not sufficient so added a new component, i.e. responsibilities. The authors believed that the new component was vital, and the setting of roles and responsibilities of various groups of actors would foster engagement of the actors in a constructive dialogue based on fairness and openness. The deficiencies in the framework discussed above, thus, necessitate an alternative framework of water governance, which is introduced in the new framework in chapter eight (see section 8.6.1). The new model will be based on the roles and responsibilities, rules, relationships among actors across scales, and both procedural as well as distributional components of environmental justice, and provide alternative governance control mechanisms (see section 8.6.1.3).

Scalar aspects of governance issues have also received attention in the literature of TWG. Studies have analysed the role of actors or stakeholders operating at local to regional scales. Gerlak (2015) explored the role of a transnational network in ensuring participation and evidence-based governance in TWG in the Colorado River Delta region. However, powerful riparian nations can minimise the role of such regional organisations, and the organisations do not exist everywhere. As TWG includes multi-scalar governance structures and thus, actors as well, Suhardiman & Giordano (2012) argued that there is a scalar disconnect in transboundary decision making due to the recognition of the role of non-state actors and fragmentation of the state administration at different levels in the process. The authors further argued that this scalar disconnect has obscured the decision-making process as the actors find difficulty in recognising the main actor. Further, Moore (2013) argued that the literature has ignored the different perspectives of all relevant actors across scales regarding water governance. According to Moore (2013, p. 501), “Existing literature is unclear on whether the increasing complexity is understood to involve the same issues across different scales. Therefore, an identification of the perspectives within different scales is needed.” More scalar issues will be explored in the political ecology literature in section 2.3.

2.3 Political Ecology

Political ecology (PE) is an important approach of inquiry in human geography and other disciplines used to understand various environmental issues. The approach “classifies non-human nature as a space of political significance” (Mathis & Rose, 2016, p. 66) that emerges due to

competition among various social actors with asymmetrical political power for having access to and control over natural resources (Mathis & Rose, 2016; Vaccaro et al. 2013; Bryant & Bailey, 1997).

According to Robbins (2012, p. 8),

Political ecology is not a method or a theory, nor even a single perspective. Rather, I suggest, political ecology is an urgent kind of argument or text (or book, or mural, or movie, or blog) that examines winners and losers, is narrated using dialectics, begins and/or ends in a contradiction, and surveys both the status of nature and stories about the status of nature.

It is “a field that seeks to unravel the political forces at work in environmental access, management, and transformation” (Robbins, 2012, p. 3). Thus, it is helpful in understanding the production of spaces based on various social and ecological processes. This section outlines and reviews some of the key aspects of the political ecology literature to understand how the approach of political ecology has evolved and how it has been used by a wide range of disciplines in interrogating problems related to the environment.

The approach of political ecology emerged in the 1970s as a challenge to the orthodox conceptualisations of environmental problems, which were largely apolitical in nature. The coining of the term “political ecology” occurred in 1935 in Thone (1935) entitled “Nature Rambling: We Fight for Grass”. It was the anthropologist, Eric Wolf, who reignited the term by using it in his research, “Ownership and Political Ecology” in 1972 (Scoones, 1999). The research discussed the role of local rules or ownership and inheritance in facilitating between necessities of the larger society and the needs of the local ecosystem (Wolf, 1972). The conceptualisation of the approach gained momentum from the 1980s onwards when the linkage between nature and the political economy started being explored. The publication of the book, “Political Economy of Soil Erosion”, by Piers Blaikie in 1985 on neo-Marxian development critique became fundamental in popularising the approach at a broader scale. This study by Blaikie used the lens of political economy in investigating the issue of soil erosion in developing nations, questioning its occurrence solely from technical errors as believed previously. In their seminal work - “Land Degradation and Society”, Blaikie & Brookfield (1987, p. 17) delineated political ecology as an approach that “combines the concerns of ecology with a broadly defined political ecology” and used political ecology to scrutinise the issues of access, command over and management of resources by giving

due importance to the persistently changing dialectic between society and resources. The authors introduced the concept of marginalisation in the book that demonstrated how the powerless or marginalised people who were forced to occupy ecologically marginalised spaces, contributed to environmental degradation. These ground-breaking works provided a framework for interrogating the complex interrelations among local people, their ecosystems and political economies at national and global levels from a new perspective.

The beginning of the approach of political ecology was simply to produce knowledge based on environmental narratives of local people. It was because the “local voices were not given much space to construct their own subjective (‘emic’), realities” (Blaikie et al. 2002, 1258). By emphasising the local perspectives, Blaikie & Brookfield (1987) challenged then prevalent theories, such as Neo-Malthusianism, while studying the environmental degradation of the Himalayan landscape. Such a study was only possible through the incorporation of a political dimension. The field of political ecology evolved as a response to fulfil this void of the absence of politics in the previous environment related studies (Nygren & Rikoon, 2008). Later (Blaikie, 2012, 2014) opined that political ecology should engage with key government actors, civil society and various other actors and provide evidence-based statements as proof for audiences outside the academy. This notion of political ecology has been termed as the engaged political ecology. Regarding the engaged political ecology, Blaikie (2012, p. 234) argues “The importance of evidence-based statements, and some sort of proof and reference to observable phenomena are an important part of both PE and its strategic communication to others, especially to those outside the academy.”

Blaikie (2012; 2014) also sought to utilise political ecology theories by linking PE with policy building practices for working towards creating just societies, which is an important but underutilised aspect of studies carried out in academia.

The linkages between better PE theory and outcomes assumes a degree of instrumentality of research in policy making and that better theory and empirical information resulting from research leads to better practice at the other end of the (long and dark) policy tunnel. (Blaikie, 2012, p. 234)

Firstly, it is necessary to understand what political ecology is in order to understand the underpinnings of the approach. Swyngedouw (1999, p. 461) argued that the focus of political ecology revolves around “questions about who controls, who acts, and who has the power to

produce what kind of socionature". Similarly, Robbins (2012, p. 3) also argued that political ecology investigates winners and losers among a range of actors in the struggle for “environmental access, management, and transformation” by identifying various social and political factors in the process. Political ecology is “empirical, research-based explorations to explain linkages in the condition and change of social/environmental systems, with explicit consideration of relations of power” (Robbins, 2004, p. 12). According to some scholars (e.g. Zeitoun & Allan, 2008; Swyngedouw, 2005; Forsyth, 2003), political ecology offers an analytical framework that envisages and confirms that powerful actors have predominant access to natural resources.

Although political ecology as a research approach is not very old, the literature on political ecology is abundant in diverse disciplines (e.g. geography, ecology, anthropology, environmental science, agriculture etc.) interrogating a wide range of issues from deforestation and soil erosion to environmental justice and liberation ecology. Moreover, some studies have introduced a different approach within political ecology i.e. actor-oriented political ecological approach (e.g. Adjei, 2012; Bury, 2008; Adger et al. 2001; Bryant & Bailey, 1997) which provides an understanding of all the stakeholders involved in social, political and environmental processes of environmental change. This approach helps in understanding the incentives, interests and actions of the actors, which are defined by the power relationships among them (Adjei, 2012; Bryant & Bailey, 1997). This approach is also useful in understanding how people negotiate their livelihoods and resist and adapt to powerful external forces (Turner, 2012). It is relevant to this thesis as it also helps in analysing complex interactions among actors across various multiple scales (Wilson, 2010; Finnis, 2006). Thus, an actor-oriented political ecological approach is useful in this thesis in understanding the socio-environmental spaces produced by the inter-scalar power relationships among various actors involved in the KRG. This approach is also discussed in section 4.2.

2.3.1 Political Ecology of Water

The literature on the political ecology of water emerged when geographers, anthropologists and historians recognised and challenged the conceptualisation that water is not only “a material and politically-neutral resource” that is objectified by different actors (Jackson & Barber, 2016, p. 386). Examination of social aspects integrated with water helps in understanding the production and transformation of spaces related to water. This section outlines and reviews the literature on

political ecology related to various aspects of water and political ecological aspects of water governance.

Political ecological studies related to water appeared almost immediately after Blaikie (1985) and Blaikie & Brookfield (1987). Although few texts on the political ecology of water were published before the 2000s, a significant number of publications in this field occurred only after 2010. This may be because the focus of political ecological studies was on other resources such as land and forests. Furthermore, most of the texts on the political ecology of water have been written in the discipline of geography, while some have been written in Environmental Science, Agriculture and Anthropology. The issues on water that have attracted the attention of political ecologists are: urban water governance (Cornea et al. 2016; Bell, 2015; Swyngedouw et al. 2002); water-related disasters (Marks, 2015; Padawangi & Douglass, 2015); ecological and social impacts of various water-related developmental projects (Siciliano et al. 2016; Baird & Quastel, 2015; Matthews, 2012); internal water conflicts (Palomino-Schalscha et al. 2016; March, 2015; Otero et al. 2011); impact of neoliberal economic activities on water resources (Larsen et al. 2014; Camacho, 2012); neoliberal commodification of water resources (Williams, 2018; Minoia, 2012; Swyngedouw, 2005; Bond, 2004); and, last but not least, study of political ecology of scales (Cohen & Bakker, 2014; Kohl, 2013; Molle, 2007). The literature on water-disasters, impacts of developmental projects and scalar aspects of political ecology are important for this study.

The literature on the political ecology of water suggests that water is shaped by social power relations. Perreault et al. (2012, p. 489) argued that water is “a form of hybrid socio-nature, at once natural and social produced, and which both embodies and reproduces forms of social power”. This realisation of social production of water has resulted into the creation of several concepts such as waterscape (Budds & Hinojosa, 2012; Loftus 2007; Swyngedouw, 1999; Hundley 1987), waterworld (Orlove & Caton, 2010) and hydro-social cycle (Boelens, 2016; Palmer, 2015; Swyngedouw et al. 2002). Scholars have used these concepts to capture the socio-political dimensions of water, thus water cannot be isolated from social and political contexts in the process of generating knowledge.

Furthermore, there is limited literature on linking culture with power and water governance. However, some scholars have established linkages between culture, power and the governance of

water (e.g. McLean, 2017; Boelens, 2014). By conducting a case study in the Andes, Boelens (2014) argued that cultural identities and meanings of water are important in determining the nature and infrastructure of water, ultimately shaping water struggles of people. In a case study of the Ord River catchment, northern Australia, McLean (2017) demonstrated how water cultures are produced and co-produced as a product of power negotiations. Thus, it is important to understand how culture matters in the political ecology of transboundary water governance.

While the initial decade of political ecological studies on water resources focussed on agriculture and irrigation related aspects, the focus is evolving. Several studies (e.g. Mustafa, 2002; Zimmerer, 2000; Swyngedouw, 1999; Gelles, 1996) gave emphasis to water issues that were directly related to land degradation. For instance, Zimmerer (2000) studied the role of social-political factors in characterising irrigation systems at two different scales of canal and basin. In the meantime, the neoliberal commodification of water resources attracted the attention of the political ecologists after the occurrence of privatisation of public enterprises and trade liberalisation in the crisis-ridden developing nations brought about by the Washington Consensus in the early 1990s. The Washington Consensus is a set of 10 economic policy prescriptions that was promoted by the Washington DC-based economic institutions, The International Monetary Fund (IMF), the World Bank and the US Treasury Department. With the introduction of neo-liberal policies globally, a major portion of political ecological studies then shifted to the interrogation of the impact of the neo-liberal water policies on people (e.g. Padfield et al. 2016; Palomino-Schalscha et al. 2016; Urteaga-Crovetto, 2016; McLean, 2012; Swyngedouw, 2005; Budds, 2004; Derman, 2003). Along with the neoliberal water issues, recent studies have given emphasis to urban water governance issues. Many such studies have emerged only in the current decade (Finewood, 2016; Bell, 2015; Otero et al. 2015; Ranganathan, 2015; Ioris, 2012; Truelove, 2011). However, most of the political ecological studies related to water are concentrated on water scarcity or water stress, but less on the hazard aspects of water.

While there is a huge body of literature on the political ecology of water related to dam building on rivers, few studies have focused on the impacts of water agreements on the governance of water bodies. Nüsser (2003) reviewed the debate on large dams and explained some key environmental and developmental aspects by taking the case of the Lesotho Highlands Water Project in Africa. The author argued that different perspectives of actors involved in the development of dams and

balance in costs and benefits must be considered when making decisions on constructing large dams. In a different study on dam building, McCulloch (2004) applied a historical political ecology approach to explore the reasons for deciding to build big dams in the period 1894-1970 in Upper Teesdale in North East England while other less destructive alternatives were available, and to study socio-environmental impacts of the dams and reservoirs on drinking water and fish population. Regarding political ecological studies related to water agreements, McLean (2012) reviewed an agreement between the government, traditional owners of water resources and private enterprises in Australia. The main aim of the agreement, the Ord Final Agreement, which took place in 2006, was to include the indigenous people who were affected by dam building, in the management process. The author found that the people were denied the indigenous water rights although they were permitted to co-manage the land and waterscapes. This study found that reviewing the contract is not enough to identify the real impacts faced by people, as impacts also depend upon the practice of the agreement.

Some studies on the political ecology of water have focused on the implications of environmental discourses in building large dams (Palomino-Schalscha et al. 2016; Islar & Boda, 2014; Mehta, 2007). These studies have focused on the use of predominant developmental discourses in defending the construction of large dams despite these dams having undesired consequences. For example, Sofoulis (2005) explains how the construction of “big water”, i.e. large-scale engineering projects, are justified by centralised public or corporatized utilities in Australia in the name of an endless supply of municipal water, ignoring water scarcity in some parts of the country and the large-scale wastage of water after a single use. Mehta (2007) explored how the environmental narrative of scarcity was socially created and justified the construction of large dams at the expense of societal peace, cultural and symbolic aspects of water. A study on inter-basin water transfer in Turkey by Islar and Boda (2014) argued that the framing of water problems and solutions by policymakers for the construction of mega-dams sidelines crucial issues of unsustainable use of water and livelihoods of rural communities.

Some studies on the political ecology of water have analysed the involvement of a different nation in the development of dams in a nation (Siciliano et al. 2016; Baird & Quastel, 2015; Matthews, 2012). For example, Siciliano et al. (2016) have analysed the impact of large dams built using the foreign investment from China, on access to water and energy resources by the government, dam

builders and the local communities around the Kamchay dam in Cambodia. Some studies have focused on hydropower development issues between neighbouring nations. For example, Matthews (2012) studied, by taking a case of hydropower development in Lao PDR by Thailand based on power purchase agreements, how water grabbing becomes possible when powerful state and private enterprises control the benefits of hydropower development at the expense of socio-environmental impacts. In another study in the same geographical location, Baird & Quastel (2015) analysed the impact of Thailand's energy demand driven hydropower generation by the Nam Theun 2 power project in Laos on the downstream community and hydrology of the river. As the studies are related to hydropower development, the studies do not investigate sharing of water resources in the transboundary rivers, and they also fail to analyse various scalar and spatial dimensions of access and distribution of benefits due to the manipulation of water resources. Most of these studies are based in the Mekong basin region.

A crucial issue in studying the political ecology of resources is to understand various local to larger-scale social and politico-economic relations of resource control and the ways different actors benefit from the resources. This can be done by studying different access control mechanisms of social identity and authority by using Ribot & Peluso's "theory of access", as argued by Daur et al. (2016).

2.4 Theory of Access

The "Theory of Access", in which Ribot & Peluso (2003, p. 153) defined access as the "ability to benefit from things" and the "things" referring to various material objects, symbols, persons and institutions, is useful in this study in various ways. The authors categorised access into three components: gaining access, access control and access maintenance. These components are helpful in identifying the types of injustice that people face and understanding their responses to the injustices. The first component, i.e. gaining access, explains the "process by which access is established" (Ribot & Peluso, 2003, p. 153) which is important in explaining how access to resources is established by the powerful actors and then how these actors control and manipulate resources, e.g. water. The second component, i.e. access control, explains how an actor or a group of actors control the access of other actors to the resources. This component is helpful in analysing

how the powerful actors limit access of the river communities to the river water and thus, produce injustice to the communities. And the third component, i.e. access maintenance, explains how other actors gain access to the resource by expending their resources (Ribot & Peluso, 2003; Ribot, 1998). Although the concept of access maintenance has been used to explain how the weaker actors regain access to the same resources, this thesis uses this concept in explaining how these actors cope with the injustice by expending their resources.

The literature on access to resources shows that access largely depends upon power relations among various actors involved in a process (e.g. Asiyambi, 2016; Felipe-Lucia, 2015). For example, Swyngedouw (2009, p. 57) argued that “the power geometries and the social actors carrying them that ultimately decide who will have access to or control over, and who will be excluded from access to or control over, resources or other components of the environment”. While studying a case in north-eastern Spain, Felipe-Lucia (2015) found that power relations play a crucial role in generating benefits from ecosystem services by powerful actors and controlling access of the powerless actors. In a political ecological critical review of REDD+ in Nigeria, Asiyambi (2016) has demonstrated how elites continuously accumulate capital at the expense of the locals in the forest communities through militarised protectionism by introducing the concept of ‘carbonised exclusion’. These studies, however, have been conducted in different contexts, so they do not explain how power relations work in the case of transboundary resources, for example, transboundary river water, which is the focus of this thesis. This thesis uses the concept in analysing the role of power relations among various actors in gaining access to and having control of access to the riverine resources in the KRG.

2.4.1 Gaining Access and Access Control

Various scholars (e.g. Leach et al. 1999; Ghani, 1995; Berry, 1989; Schaffer & Wen-hsien, 1975) conceptualised the ways of achieving the above-mentioned three components of access before Ribot & Peluso (2003) introduced the concept. Schaffer & Wen-hsien (1975) emphasised social structures of access to analyse access of the rural poor to markets in India for influencing the political as well as bureaucratic system to get loans provided by their government. Later, Berry (1989, p.49) stressed “channels of access” in gaining access to resources while analysing the

strategies of enhancing agricultural productivity from a historical perspective in Africa. According to Berry (1989, p.41), “Access depends... on participation in a variety of social institutions, as well as on material wealth and market transactions”. Ghani (1995) conceptualised “the bundles of power” that refer to a wide range of social and political relationships that either comfort or hinder the process of generating benefit from the use of resources. Then Ribot & Peluso (2003, p. 153) drew upon Ghani (1995) and termed the bundles as “mechanisms”, which normally refer to various means, processes and relations that can be used by actors in order to “enable actors to acquire, command, sustain access to resources”. Referring to this concept, Selfa, Bain, & Moreno (2014, p. 457) argued that it even identifies those material, political, economic and cultural aspects of power, which are not voluntarily visible but are still used to gain access, such as corruption or theft; and therefore, it “has important implications for well-being, justice, equity and sustainability”. Similarly, Lu, Ocampo-Raeder, & Crow (2014, p. 131) found the concept useful as it “allows for consideration and examination of the ways people and communities access resources that are not dependent upon formal or legal rights”. In fact, this component of gaining access to resources by powerful actors overlaps with the ways the actors attain cooperation with the weaker ones.

According to the theory of access as proposed by Ribot & Peluso (2003), there are two main categories of mechanisms, direct or “right-based and illicit mechanisms”, and indirect or “structural and relational mechanisms”. The right-based mechanisms provide sanction-based access such as laws, regulations, policies, customs, institutions and conventions while illicit mechanisms offer access through illegal means such as violence, theft, corruption, burglary etc. Although right-based mechanisms provide access to resources lawfully, the mechanisms are almost similar to illicit mechanisms in some cases where people are affected alike in both cases. For example, Marin, Lovett, & Clancy (2011) discovered that state laws and policies formulated to promote the biofuel industry in Columbia played a crucial role in allowing the industry’s access to the sugarcane industry, which affected the local peasants, indigenous people and the Afro-Colombians. Similarly, Levidow (2013) argued that certification of biomass aided in legitimising land and water grabbing by elites that badly affected rural communities in the global south.

In contrast, structural and relational mechanisms differ from right-based mechanisms in that these mechanisms support the access gained through direct mechanisms. These mechanisms include but

are not limited to; access to information and technology, market, capital, labour, authority, knowledge, identities and social relations. Fairbairn (2013) explored the causes of dispossession of peasants in Mozambique, despite having land property rights, and found that the access control was in the hands of elites through various mechanisms. These included previously acquired land holdings, being customary leaders, having access to government authorities of land administration and access to local business knowledge. The land is then handed over to foreign investors. Similarly, Selfa et al. (2014) emphasised how multi-stakeholder initiatives, which involve environmental organisations, NGOs, corporations and governments in some occasions, gain access to land, water and labour in Columbia. The concept of “water grab” used in the article is related to appropriation of river water for irrigating cane plantations, leading to problems of salinisation, drainage and contamination, and often water shortages for small-scale producers and households. While access to mechanisms can help actors boost their strategies to generate more and obtain benefit from the use of resources, most of the studies have used mechanisms as the means of gaining access to resources by the poor people or the affected people, but not for making a base for manipulation of resources by the powerful actors. The mechanisms discussed here are almost like the ways of establishing cooperation between nations for governing transboundary rivers, which has been mentioned under the TWG above.

Apart from the types of mechanisms that Ribot & Peluso (2003) identified while explaining the theory of access, various studies have added other mechanisms to the list (e.g. Milgroom et al. 2014; Ginger et al. 2012; Langridge et al. 2006). For example, Langridge et al. (2006, p. 3) argued that access to resources is not only determined by social relations and processes but is also governed by “the geographic location, climate of a region and the ecological integrity of the resource base”. Ginger (2012) outlined additional mechanisms that are determined by biophysical factors, such as environmental conditions and spatial proximity. Besides property ownership, permits and licenses play the role of rights-based mechanisms in accessing non-timber forest products in northern Maine in the United States. Ginger (2012, p. 712) found that “access...extends beyond rights of entry to include the wider array of social and biophysical factors that affect people’s ability to derive benefits from resources”. But lack of access reduces their benefits and threatens their livelihoods. In the same way, Milgroom et al. (2014) have added “customary institutions” as a category of rights-based mechanism to differentiate these as informal rights-based mechanisms from the formal ones, i.e. recognised by the law. These mechanisms are helpful

in the current study in explaining the livelihoods of the river communities from flood disaster perspectives.

Though the theory of access has been much-admired for its robust and broad framework, the concept is not free from criticisms (e.g. Pedersen, 2016; Marino & Ribot, 2012). For example, Marino & Ribot (2012) argued that the concept is not universally supported because of the spatially and temporally contingent access categories, and because of its nature in not being able to understand the role of the local agency. Access categories must be contingent to include more categories of access depending upon the context of the resources. Pedersen (2016) has criticised the concept for limiting their analyses to the local levels and making suppositions about the role of national and international actors. However, the current study will also include the role of national as well as international actors. The actual analysis of socio-political, institutional and ecological issues from the local to international scales makes the “theory of access” conceptually strong.

The literature on “theory of access” mainly focuses on the impacts of having or not having access to resources on weaker actors but rarely gives attention to these issues from the perspective of injustice (e.g. Daur et al. 2016; Adam et al. 2012; Marin et al. 2011). For example, Daur et al. (2016) have examined the progress of long-term forest governance and studied its impact on access to and the use of forest resources on the forest-dependent people in Sudan by using a historical political ecology approach. The study finds that unequal access to forest resources, along with skewed institutional arrangements, badly affected the forest-dependent poor and increased forest degradation. Adam et al. (2012) used the theory of access in exploring how the development of roads affects the socio-environmental and the social relations of a Canadian Aboriginal community in gaining access to forest resources. But the literature on the theory of access, especially in political ecology, being used for studying injustice issues is scant as few studies have used the concept of access from the perspective of injustice. Besides, it is also important to understand how the weaker actors respond to the injustice. The third component of the theory of access, access maintenance, will be discussed in section 2.6, but first, it is important to discuss the concepts of injustice and environmental injustice to understand the injustice issues present in the KRG.

2.4.2 Access Maintenance as a Response to Injustice

As noted earlier, this study uses the concept of access maintenance to explain how the powerless actors cope with injustice by expending their resources. In other words, access maintenance is helpful to understand various aspects of justice. Batterbury (2015) argues that a study on political ecology starts with studying the tactics and strategies that people use for their livelihoods in a specific environment. This thesis uses access maintenance to understand two aspects: firstly, the strategies that the people affected by the governance use to cope with the undesired consequences; and secondly, the justice movements that they organised to fight the injustice and resist further probable damages. To understand this component of the theory of access, it is essential to understand the concept of injustice and environmental injustice to analyse the kinds of injustices faced by the riverine people residing close to the KR.

2.5 The Concept of Injustice

Although the term “injustice” has widely been used by various actors ranging from lawyers and policymakers to ordinary people, the conceptual domain of injustice is very complex. In the book, “The Concept of Injustice”, Heinze (2013) analysed many historic as well as contemporary conceptions of injustice and demonstrated that the concept of injustice is contested in both its theorisation and ordinary perceptions. Usually, injustice has been defined in terms of justice, and the contemporary conceptualisation of social justice has been done by John Rawls in the field of political philosophy. According to Rawls (1999), the meaning of justice is fairness. Sen (2009) extended Rawls’s concept from the humanitarian viewpoint and argued that justice cannot be served without considering humanity, so both logic and humanity are necessary for ensuring justice. Similar should be the way of conceptualising injustice, which should be determined by the institutional limits and public perception of unfairness. This section discusses the literature on environmental injustice. This will be followed by the interpretation of environmental injustice in terms of access to natural resources, particularly focusing on Ribot & Peluso’s (2003) “Theory of access”. Under the theory, environmental justice movements will also be discussed.

2.5.1 Environmental Injustice

Most of the environmental injustice literature originated in the name of environmental racism with the rise of pollution and health-related issues in the ethnic and racial communities in the United States (e.g. Leguizamón, 2016; Eckerd, Campbell, & Kim, 2012; Schlosberg, 2007). The literature on environmental justice has its roots in the unequal treatment of predominantly African-American minority ethnic communities living in rural areas by disposing of hazardous industrial waste close to their settlements (Buckingham & Kulcur, 2009; Bullard, 1999). The phrase “environmental injustice” has been mentioned in studies to denote the uneven suffering of marginalised people based on racial and ethnical discrimination. However, the concept of environmental justice has now been used in interrogating various issues related to nature and environment beyond America (e.g. Adeola & Picou, 2016; Hernandez, Collins, & Grineski, 2015; Clark, Millet, & Marshall, 2014).

The literature on environmental injustice has predominantly focused on two aspects, i.e. first, impacts of pollution on health; and second, racially and ethnically marginalised people. Firstly, many studies have equated environmental injustice to the issue of industrial hazards of pollution (e.g. Vaz, Anthony, & McHenry, 2017; Kelly-Reif & Wing, 2016; Campbell et al. 2016; Hernandez, Collins, & Grineski, 2015; Clark, Millet, & Marshall, 2014; Chaix et al., 2006). For example, Hernandez, Collins, & Grineski (2015) studied environmental injustice, i.e. cancer risks, of Hispanic people in Greater Houston, Texas that is produced due to their exposure to hazardous air pollutants. There are a few studies that have focused on different issues other than chemical pollution, such as climate change impacts (e.g. Grineski et al., 2012) and impact of disasters such as Hurricane Katrina (e.g. Adeola & Picou, 2016). In contrast, Heynen (2003) used the concept of injustice and studied the production of urban environmental injustice related to access to resources exploring the approaches of capitalistic production of urban forests through creation, commodification, consumption and reforestation of the forests.

Secondly, the focus of the literature on environmental injustice has been primarily on people with minority racial and ethnic backgrounds (e.g. Adeola & Picou, 2016; Hernandez, Collins, & Grineski, 2015; Clark, Millet, & Marshall, 2014; Deacon & Baxter, 2012). This was because the US Constitution only recognised race as a category, but not class. However, a few studies have expanded the literature to other groups of people such as socially and economically disadvantaged

people (e.g. Adeola & Picou, 2016; Gleeson & Low, 1999) and people living in rural areas (e.g. Kelly-Reif & Wing, 2016). In fact, justice conceptions should include all groups of people, unlike racial minorities which is the category recognised by the US Constitution, as injustice may be faced by many groups of people.

The literature on environmental justice has mostly been carried out in the developed world, and it is expanding towards the developing world only recently. Researchers on environmental justice have concentrated on different parts of the USA and other developed nation such as the UK, Canada and France, and most of these studies have focused on the issues of racial and ethnic minorities, hazardous wastes and health issues. Studies carried out in India, China and Indonesia, also show that the focus of the literature on environmental justice is similar to that of developed nations. As the concept of environmental justice has not been largely expanded across various environmental issues, groups of people and geographical space, it is important in understanding the injustices occurred in the case of TWG in developing nations. The use of the concept will help this thesis in exploring and understanding the environmental justice movements which have taken place on various issues related to the KRG but have yet to be brought forward.

While the literature on environmental justice discourse has moved away from the notion of distributive justice, there is still a debate regarding whether to include or exclude procedural justice. Distributive justice refers to the principles and outcomes of resource distribution (Sabbagh & Resh, 2016), so it relates to the distribution of cost, benefits and rights in resource governance processes (Paloniemi et al., 2015). Unlike distributive justice, procedural justice is concerned with the fairness in the institutional processes and procedures while making decisions related to people's access to environmental resources (see Holland, 2017; Young, 1990). Various scholars argued that distributional justice alone is not sufficient to respond to environment-related injustices (e.g. Schlosberg, 2004; Schroeder, 2000). For example, Schroeder (2000) rejected distributive justice in environmental justice discourse by arguing that everything, e.g. lost livelihoods and cultural resources, cannot be compensated in monetary terms. This comprehension led to the dismissal of distributive justice as a complete and fundamental aspect of environmental justice for Schroeder. Due to this realisation, Schlosberg (2004) later included the notions of recognition and participation along with distribution in the theoretical approach of environmental justice. Schlosberg (2004, p. 521) argued that "they are three interlinking, overlapping circles of concern".

Before Schlosberg (2004), Fraser (2003) provided the concept of “participation parity” in explaining the theory of justice, which also included redistribution, recognition and representation as crucial justice components. Further, Fraser (2005) argued that participation parity cannot be achieved unless all of these components of justice are fulfilled. However, Schlosberg (2007) argued that environmental justice should not be limited to the distribution of costs and benefits of environmental projects so added an extra component of justice, i.e. capabilities, to the three existing components framework of environmental justice (Schlosberg, 2007).

2.5.2 Environmental Justice Movement

As noted earlier, environmental justice movements were first documented in the United States in the 1980s. According to published documents in the US, it originated as activism in 1982 in Warren County, North Carolina when an area close to African-American communities was chosen by the state as a landfill site for disposing of hazardous industrial waste (Draper & Mitchell, 2001; Cutter, 1995). This led to protests by national civil-right and environmental groups and others, including the communities themselves (Cutter, 1995). The incident was followed by other protests for environmental justice in different parts of the nation (Pulido, 2000). Some of these protests were successful as the government administrations responded to the movement with public environmental policies. In 1994, the then President of the USA signed Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations” by recognising the environmental and health concerns of marginalised people (Cox, 2006). As justice movements have been successful in grabbing the attention of concerned authorities, such movements are expanding in many parts of the world for providing justice to the affected people. DuBois (2016, p. 32) argued that “Environmental justice movements are grassroots efforts that respond to the unequal distribution of environmental bads”. The literature has spread recently to a range of issues around the world. Nevertheless, there is scant literature in the realm of TWG. This thesis will investigate different environmental justice movements that have taken place on the issues of the KRG. But before moving on to the investigation, the following section presents the existing gaps and silences in the literature discussed above.

2.6 Gaps and Silences

This section presents the gaps and silences in the literature of water governance, political ecology of water and injustice theories.

The literature on TWG has largely focused on how cooperation and negotiation of agreements between countries take place, but the empirical scrutiny of why such treaties take place is limited (Tir & Ackerman, 2009). Most of the studies (e.g. Tir & Ackerman, 2009; van der Zaag & Vaz, 2003; Biswas, 2001; Amery & Wolf, 2000; Elhance, 1999) have failed to identify the agencies and interests of both riparian nations for negotiation of treaties while having cooperation on TWRs. The focus of much of the literature is on water scarcity or drinking water (e.g. Gerlak & Mukhtarov, 2016; Soliev, Wegerich, & Kazbekov, 2015; Keller, 2012; Tir & Ackerman, 2009; Zeitoun & Mirumachi, 2008), while the TWG literature has largely ignored water-related hazards such as floods in transboundary rivers. Besides, the literature that has identified different perspectives of various actors that exist across different scales is scant (Moore, 2013). Furthermore, the use of actor-oriented political ecology approach in interrogating TWG is very limited in the literature.

The literature on environmental injustice originated and evolved from environmental racism. The focus of the literature is predominantly on ethnicity, race and industrial hazards (e.g. Vaz, Anthony, & McHenry, 2017; Adeola & Picou, 2016; Hernandez, Collins, & Grineski, 2015; Higginbotham et al. 2010; Chaix et al. 2006). The literature is mostly concentrated on issues related to the developed world, with few studies focused on developing nations. Among the studies on environmental injustice related to water issues, most are related to the quality and scarcity of water, but the literature has largely ignored many other aspects of TWG. Some literature on political ecology has explored access to natural resources from the perspective of justice, but very few studies have used both access and justice theories (e.g. Montgomery et al. 2015; Jennings et al. 2012) Curry, 2001). Furthermore, the studies that use the “theory of access” have rarely given attention to the issues of injustice (e.g. Daur et al. 2016; Adam et al. 2012; Marin et al. 2011).

Much of the literature on the theory of access has investigated the three components; gaining access, access control and access maintenance of resources. The third component has been used to explain the regaining of access to a resource by weaker actors that was previously controlled by

the powerful ones. But the component has not been used widely to explain how weaker actors cope with and respond to the environmental injustice which they face due to the access control by the powerful actors. In other words, there is a little conceptualisation of the component in terms of the concepts of coping strategies to injustice and environmental justice movements.

2.7 Summary

Water governance refers to the decision-making process regarding the regulation, development and management of water resources by considering all relevant actors and institutions including policies and laws. The development of the concept lies in the understanding that water is a material as well as a political element. The literature on water governance has developed many analytical and normative frameworks. Analytical frameworks are useful in understanding aspects of governance such as various actors involved and decision-making processes, whereas normative frameworks provide prescriptive ways of governing water resources by advocating for good water governance. Regarding the literature on TWG, many studies have concentrated on conflict and cooperation between riparian nations, but most studies are limited to the perspective of only one nation. The literature tends to focus on asymmetrical power relations between nations and hydro-hegemony. Therefore, the focus of the literature is mainly on the role of governments rather than on other actors. Several studies have investigated the role of third-party actors in the process of negotiation of agreements. Multi-scalar analysis of various social and political aspects of all the actors is lacking in these studies and is something that will be addressed in this thesis.

Political ecology is an important approach of inquiry in understanding the production of environmental spaces by scrutinising political actors and processes which define access to and control over resources. Based on the strengths and weaknesses identified in the above review of the literature, this thesis uses the actor-oriented approach in analysing agency, interests and actions of the actors across various scales of the KRG. The approach, in conjunction with the concepts of TWG and Ribot & Peluso's (2003) theory of access, will explore how powerful actors gain and have control over access to resources. The approach will be useful in investigating winners and losers among a range of actors who struggle for the access and management of environmental resources. This will be helpful in filling the gaps identified in section 2.6.

This study investigates the impacts of the water governance on river communities in terms of injustice, but the concept of injustice is contested in both its theorisation and its everyday perceptions. The literature on environmental injustice and environmental justice movements, along with the actor-oriented political ecology approach, will be used in this thesis to understand the impacts of the KRG on the riverine people, their coping strategies and their responses to injustices. Before presenting the fieldwork, it is important to understand some background on water governance in Nepal in general. The next chapter will discuss Nepal's various water governance efforts, policies, internal as well as international politics and issues, particularly focusing on its transboundary rivers.

Chapter Three: Water Governance in Nepal

3.1 Introduction

This chapter provides the necessary background for understanding the context of this thesis. It focuses on the governance of water resources in Nepal in the context of IRAs with India. Firstly, it provides general information about Nepal. The second section describes the water resources available in the country, focusing on the major rivers. This is followed by an overview of how these water resources are governed. The fourth section outlines the policies regarding water resources in the country and the water politics between India and Nepal in the context of the transboundary nature of the rivers. This will be followed by the specific case of governance of the KR, key underlying challenges and opportunities for the country and then a summary.

3.2 The Federal Democratic Republic of Nepal

Geographically the Federal Democratic Republic of Nepal (hereafter called Nepal), is a landlocked Himalayan country in South Asia situated between Tibet in the north and the Republic of India in the south, east and west. The land area of Nepal is 0.03 percent of the total land area of the world. It is 0.3 percent of Asia and Nepal has an average of 885 kilometres of East-West and 193 kilometres of North-South elongations (Central Bureau of Statistics [CBS], 2016; KC, 2003). The country is divided into three ecological belts stretching along the East-West extension: the northern - Mountains, which extend from 4800 to 8850 metres, is a continuous Himalayan range that includes Mt. Everest and other snow peaks; the mid - Hills, which range between 600 and 4800 metres and consist of numerous mountains, hills, valleys and lakes; and the southern - Terai, which is less than 600m above mean sea level and stretches to the Indian Gangetic plains. The Terai is the fertile lowland plain known as the grain store of the country. Nepal consists of varying climate zones from the southern plains to the northern high mountains ranging from subtropical to arctic, including temperate and alpine in between (Chaulagain, 2003).

Politically, the Federal Democratic Republic of Nepal is currently divided into seven states and seventy-seven districts (see figure 3.1). The country gained its new federal structure from its new constitution, which came into effect on 20 September 2015. Each district, the middle tier administrative units below the states, is governed by the District Coordination Committee and is

further divided into the lowest administrative units - villages and municipal units. These villages and municipal units are governed by the Rural Municipalities and Municipalities. On 10 March 2017, the Ministry of Federal Affairs and Local Development, Nepal divided the districts into 744 local units, which include 4 Metropolis, 13 Sub-Metropolis, 246 Municipalities and 481 Rural Municipalities. Prior to the new constitution, Nepal had been divided into five development regions, fourteen zones and seventy-five districts. The districts had been governed by District Development Committees (DDCs) while the villages had been governed by Village Development Committees (VDCs) respectively. Whilst acknowledging this change, this thesis uses the former concepts of DDCs and VDCs as the data was collected from these administrative units.

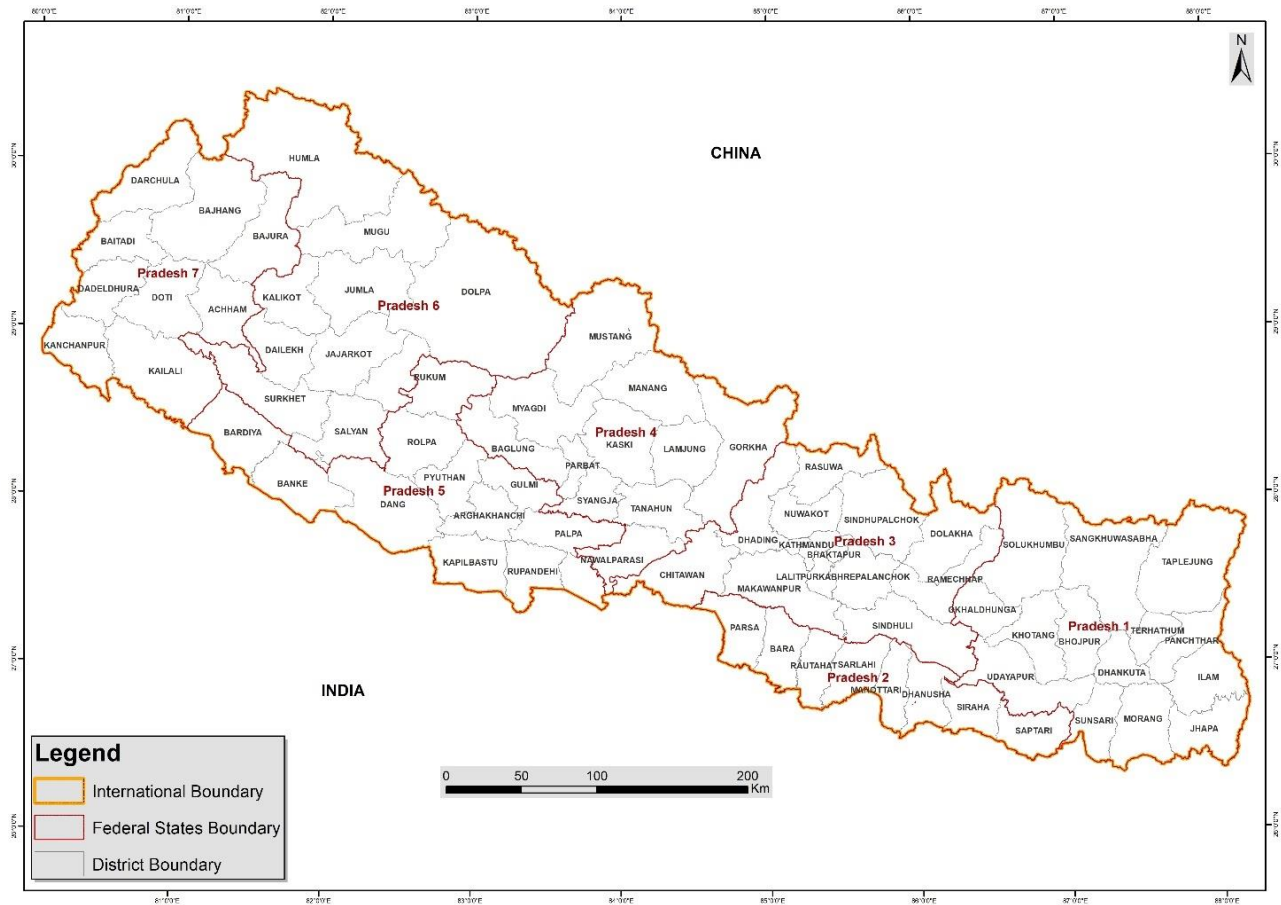


Figure 3.1: The map of Nepal showing its seven states and seventy-seven districts (Source: Federal Boundary map – Survey Department of Nepal, 2017; Boundary and District Administration maps – Survey Department, 1996)

Demographically, the population of Nepal in 2017 was just over 29 million according to the *World Population Prospects 2017* (UN DESA/PD, 2017), which means that the population has tripled since the 1960s. The rate of annual population growth decreased from 2.25 percent in 2001 to 1.35 percent in 2011 (Gyanwaly, 2014). With newly declared urban centres after May 2014, 59.3 percent of the population lived in urban areas in 2016 (CBS, 2016), compared to 17 percent in 2011 (CBS, 2012), 13.9 percent in 2001 and 8.9 percent in 1991 (Sharma, 2003). The population distribution according to ecological zones has changed since the 1960s; in 2011, the populations that lived in mountains, hills and plains were 6.71, 43.01 and 50.27 percent respectively (CBS, 2012). The population in the plains has increased sharply from 35 percent in 1952/54 to more than 50 percent of the total population in 2011, but the proportion of the population in both the mountains and the hills has declined from 65 percent in 1952/54 to 50 percent in 2011 (Pathak & Lamichhane, 2014). The major reasons for this change are fertile agricultural land, rapid urbanisation, comfortable transportation and other facilities in the plains whereas there is rugged topography, sloping terrain, low agricultural productivity, difficulty in getting transportation and other facilities in the mountains and the hills. The movement of population within and to the plains will be elaborated in the KRG section of this chapter (see Appendix A).

Nepal is one of the least developed countries in the world. According to the Human Development Report 2016, it is ranked 144th among 188 countries with the Human Development Index (HDI) of 0.558. However, the HDI values for the urban and rural areas are different. In 2011, the HDI was 0.579 for urban areas and 0.464 for rural areas when the value for the country was 0.490 (National Planning Commission, 2014). Similarly, it is also different for the people living in different ecological belts. The values in the mountains, the hills and the plains were 0.440, 0.520 and 0.468 respectively for the same year. This gives a general idea that development is not uniform in all parts of the country. According to the report, the average life expectancy at birth is 69.6, and the population living below the poverty line is 23.7 percent. The country's total gross domestic product (GDP) by purchasing power parity (2011 PPP) is USD 2,313. The unemployment rate in 2014 was 3.1 percent, and among the employed population, the rate of employment in the agriculture sector was 66.5 percent. This statistic shows that many people are underemployed in agriculture; this is because employment is seasonal. Due to the high level of unemployment and the resulting poverty, many people opt for foreign employment (Piya & Joshi, 2016; Seddon, 2005).

Remittances from migrant workers have become a major contributor to the Nepalese GDP. Nepal's average remittance reached 32.1 percent in the fiscal year 2015/16, up from 23.4 percent in 2011/12. Mostly, people have gone to the Gulf countries, Korea, Japan and Malaysia for foreign employment. There are also a large number of people going to India for casual employment, and most of the remittance sent from India are not included in the national remittance, because the money earned from India is not sent through formal banking channels. In a study carried out by Nepal Institute of Development Studies and the World Bank (2009 in Adhikari, 2012), it was estimated that about 880,000 Nepalese people were working in India.

Traditionally, Nepal's international trade has been taking place mainly with India, meaning that Nepal's economy is highly dependent upon India. But recently, Nepal's trade with India is declining while it is increasing with China, according to a report published by the Ministry of Finance, Government of Nepal (MoF, 2016). According to the report, in the fiscal year 2011/12, Nepal's import from India was 64.8 percent, but it decreased to 59.3 percent in 2015/16. The import from China was 11.7 percent in 2012/13 but increased to 16.1 percent in 2015/16. Similarly, Nepal's exports are mostly towards India i.e. 56.0 percent in 2015/16. Comparatively, China imports very little from Nepal i.e. only 2.4 percent of Nepal's total export. Despite Nepal's increasing trade with China, Nepal's economic dependence over India is still very high.

3.3 Water Resources in Nepal

As noted in chapter one, Nepal is a rich country in terms of water resources endowment, in both groundwater and surface water resources. The estimated water availability per capita per annum for the year 2011 was 8,900 m³, which far exceeds water needs for drinking water, sanitation, agriculture, energy and the environment. This section will present information on the water resources available in the country and will provide information about how water resources have been utilised.

Regarding the groundwater resources, the Terai is among the most productive aquifers in the Indian subcontinent. About 450 mm is estimated to be a recoverable recharge figure for all of the

plains, and the rechargeable groundwater in the belt is estimated to be between 5.8 and 11.5 billion cubic metres (BCM) (Aryal & Rajkarnikar, 2011).

Surface water resources are mostly comprised of a dense network of more than 6,000 rivers and rivulets running through deep gorges from the mountains as high as 8,000 metres towards the plains as low as 60 metres from the sea level within a span of 200 kilometres. Most of the rivers are transboundary in nature flowing from the northern mountains to the southern plains to India. There are three types of river systems, based on the origin of the rivers (Aryal & Rajkarnikar, 2011). The first is comprised of major river systems such as Saptakoshi, Gandaki, Karnali and Mahakali which originate directly from the Himalayas (see figure 3.2). The second type of river system includes medium rivers which originate from the mountains or the Mahabharat Range such as Kankai, Kamala, Bagmati, West Rapti and Babai. The third type of rivers originates from the southern Chure Hills. These rivers carry little water or no water during the dry season but have the potential to cause flash floods during the monsoon. The total average annual runoff from all the river systems is estimated to be approximately 225 BCM (Poudel & Sharma, 2012). However, the vulnerability of the Himalayas to the effects of climate change will impact the water discharge in these rivers, particularly the Himalayan snow-fed rivers (see Nepal, 2016; Ahlers et al. 2015). Currently, the water flowing through Nepal's rivers contributes to about 40 percent of the mean annual flow and 70 percent of the dry season flow of the Ganges (Rai, Wolf, & Sharma, 2017).

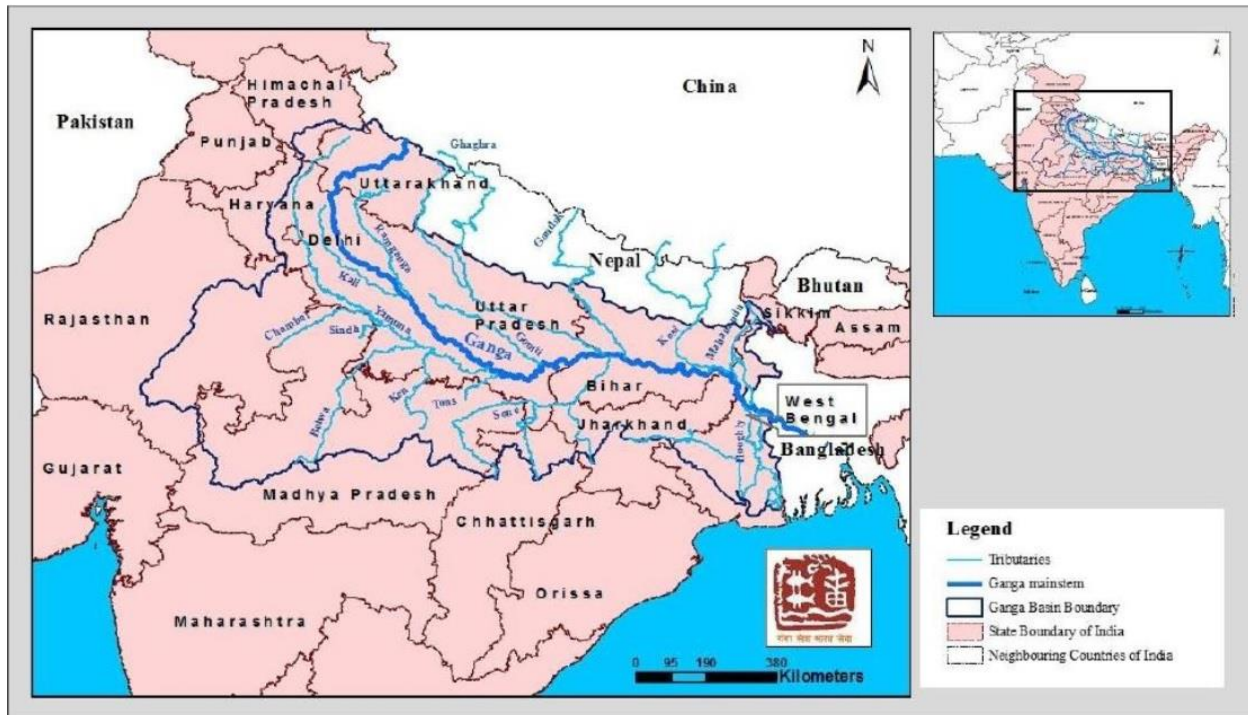


Figure 3.2: The Ganges River network. Source: Ministry of Water Resources, River Development & Ganga Rejuvenation, Government of India, 2018

3.3.1 Uses of Water in the Country

According to Department of Water Supply and Sewerage (DWSS) of Nepal, about 86.45 percent of the total population had access to basic water supply in 2015 (Ministry of Water Supply and Sanitation, 2016). Basic water supply includes piped water, covered wells and open wells. However, only 48.1 percent of the total population had access to tap or piped water in the year 2011, according to the Census 2011 (Central Bureau of Statistics [CBS], 2014). The population having access to piped-water was followed by tube-wells i.e. 35.3 percent (CBS, 2014). Other sources of drinking water were covered and uncovered wells, spouts, direct rivers and streams. According to a study carried out by the CBS (2011), the source of water for almost 80 percent of people living in the plains was covered wells and tube wells. According to the World Health Organisation (2015), there are around 40,000 water supply schemes of different types present in the country.

Though Nepal has a long history of irrigation development (Gyawali, 2009), its irrigation capacity has not increased sufficiently for irrigating the available irrigable land in the country. Of the 2.641

million hectares of arable land of the country, only 1.766 million hectares i.e. 67 percent of the cultivable land are irrigable (Ministry of Finance, 2016). However, irrigable land area differs among the ecological belts, with only about 24 percent land in the mountains, about 34 percent in the hills and almost the entire land in the plains being irrigable. But the country has been able to irrigate only about 1.375 million ha, i.e. 77.86 percent of the irrigable land, with some kind of irrigation facilities (Ministry of Finance, 2016). These facilities include shallow tube-wells, deep tube-wells, improved canal and other unknown irrigation sources. As all of the available facilities are not capable of providing all-year-round irrigation, the land-area that receive perennial irrigation is less. According to Pradhan et al. (2017), based on a survey of two basins intended to address concerns about resilience to climate change impacts, around 30 percent of the irrigable land has the potential of irrigation in winter, while only about 18 percent receives year-round irrigation. Both groundwater and surface water have been used for irrigation in the country. Groundwater irrigation has been achieved through deep and shallow tube-wells and is mostly carried out in the plains. Because of the relatively cheap cost in comparison with canal irrigation, the government of Nepal has been promoting groundwater irrigation through deep and shallow tube-wells (Poudel & Sharma, 2012).

The irrigation systems in Nepal have been divided into at least three categories based upon the development, management and coverage of the irrigation systems (Poudel & Sharma, 2012). First, based on the development of irrigation systems, there are four types of irrigation, which are: a. Traditional farmer irrigation systems developed, owned and managed by communities themselves; b. Traditional irrigation systems developed with support from the government; c. Surface irrigation systems developed by the government; and d. Tube-well irrigation systems developed by the government, but managed and owned by individual farmers. Second, based on the management of the irrigation systems, there are also four types of irrigation, which are: a. Farmers (Users) Managed Irrigation Systems; b. Agency Managed Irrigation Systems (for instance, operated by the government through the Department of Irrigation (DoI)); c. Jointly Managed Irrigation Systems jointly operated by the government and the users; and d. Private Irrigation Systems operated and maintained by farmers themselves. Among them, over 70 percent of the irrigation facilities are managed by water user associations, and these kinds of irrigation systems are more efficient than the government, the DoI, managed facilities according to the National Water Plan, 2005 and Lohanee (2011). Third, based on the coverage, irrigation systems can be divided into two types -

large area and small area coverage. AMIS is a large area coverage irrigation system while FMIS is a small area coverage irrigation system. FMIS largely uses small irrigation systems, i.e. less than 200 ha coverage area in the plains and less than 25 ha in the hills, in the country because of fragmented land ownership and thus small area coverage. Small area coverage is easy to be managed effectively and efficiently by the community, which is also confirmed by a study by Lam (1998) which found FMIS to be better than AMIS in various aspects such as crop yield, cropping intensities etc. Thus, the government is supporting and promoting small irrigation systems in the country instead of irrigation systems with large area coverage, like AMIS.

The governance of irrigation systems in the country is weak as it has not been able to provide year-round irrigation, as promised in the NWP 2002. An overview of the irrigation situation of Nepal is presented in table 3.1.

Table 3.1: Irrigation Overview of Nepal

Land Type	Area	Percentage Out of the Total Arable Land
Total Arable land	2,641,000 ha	100.00
Irrigable land	1,766,000 ha	66.87
Shallow tube-well irrigation	779,694 Ha	29.52
Deep tube-well irrigation	391,080 Ha	14.81
Improved Canal irrigation	198,140 Ha	7.50
Unknown irrigation sources	5,955 Ha	0.23
Total irrigated land	1,374,869 Ha	52.06

Source: Adapted from the Ministry of Finance, Government of Nepal. (2016)

As noted earlier, the topography of the country, connecting mountains to the plains in less than 200 kilometres, and the availability of an immense quantity of water create great potential for generating an enormous amount of hydro-electricity. Apart from run-off-the-river electricity production, there is also great potential for many reservoir sites to not only produce electricity but also provide benefits of flood control, irrigation and navigation. Nepal has the potential of producing 84,000 Mega Watt (MW) of hydro-electricity from its rivers, out of which 43,000 MW is economically feasible (Das, Shakya, & Bajracharya, 2014). However, the country has been able

to generate only 964.709 MW of hydro-electricity through its hydro-power projects, the capacity of which are over 1 MW (Department of Electricity Development [DoED], 2018).

According to the Nepal Electricity Authority (NEA), a total of 468.635 MW (DoED, 2017; Nepal Electricity Authority [NEA], 2017) of hydro-electricity has been produced by various private electricity producers, whereas 496.074 MW has been produced by the NEA (DoED, 2017). There is a mismatch between the data in two government-based websites of the Department of Electricity Development and the NEA that do not provide accurate data on the total amount of hydroelectricity produced in the country. According to the NEA, hydro-projects with a total capacity of 2004.388 MW are under construction on behalf of the private hydropower project developers with financial closure, whereas a total of 638.241 MW is under construction without financial closure (Nepal Electricity Authority, 2017)⁵. Apart from these, the NEA has terminated power purchase agreements with eighteen electricity project developers that are worth a total of 79.341 MW of electricity (DoED, 2017) because they hold licenses but do not actually start the projects.

On one hand, the development of hydro-electricity in the country is slow while on the other hand, the demand for electricity is increasing rapidly. The total high energy demand in the fiscal year 2010/11 was 946.10 MW whereas the demand increased to 1385.00 MW in the first eight months of the fiscal year 2015/16 (Ministry of Finance, 2016). This is the reason why the Nepalis are facing long hours of power cuts every day. In response, the current government of Nepal has been improving the situation by checking the power leaks and importing energy from India. Recently, the government has subsequently announced power-cut-free cities and then rural areas.

3.4 Water Governance in Nepal: An Overview

Nepal's water resources have been governed in different ways based on the type of water resource and the purpose of their use. The governance of major rivers varies from the governance of medium and small rivers while governance also varies based on their use i.e. either internal or shared. Similarly, the governance of water resources used for drinking contrasts with the governance of

⁵ The capacity of Lower Modi-2 has been deducted from the total electricity under construction without financial closure because its construction has already completed as shown by the Department of Electricity Development in its website.

water resources used for irrigation or hydropower generation. This is because of the involvement of different national and international institutions from different sectors in the governance process. This section provides an overview of governance processes related to water resources of the country.

The governance of drinking water in Nepal has come a long way from the traditional local community governance to recent public-private mode of governance. Traditionally, Nepalis have been drinking water from spouts, wells, ponds and rivers, and the uses of shallow and deep tube-wells and piped water for the purpose are comparatively recent phenomena. Currently, there exist three types of water supply schemes in the country based upon the operation and management of the schemes. Firstly, there are water supply schemes operated and managed by the consumers themselves. These are the community-based schemes that are governed by Water Users and Sanitation Committees (WUSC). WUSC governs most of the rural and semi-urban schemes. Secondly, there are water supply schemes operated and managed by a semi-government agency, the Nepal Water Supply Corporation (NWSC). The NWSC currently governs water supply schemes in twenty urban areas of the country, except Kathmandu, and it distributes piped water to households in those areas. Thirdly, the water supply scheme in the Kathmandu Valley is operated and governed in a public-private partnership model by the Kathmandu Upatyaka Khanepani Limited (KUKL or Kathmandu Valley Drinking Water Limited – in English). The KUKL is responsible for distributing drinking water only to the residents of the valley. Currently, the KUKL is carrying out a highly anticipated drinking water project, the Melamchi Water Supply Project, under the funding of the Asian Development Bank (ADB). The project started in 2001, and its aim is to transfer 170 MLD of fresh water from the Melamchi River in Sindhupalchowk district, east of Kathmandu, to the Kathmandu Valley to solve the problem of water scarcity faced by the people in the valley. But the project was not completed as of March 2018, with over 200 meters of the tunnel yet to be constructed (Melamchi Water Supply Development Board, 2018).

Basically, the Department of Irrigation, the Groundwater Resources Development Board and the Department of Agriculture, on behalf of the government, are involved in promoting and conducting groundwater irrigation schemes in various parts of the country. Traditionally, people have been irrigating their agricultural lands with water from streams, lakes and ponds. Historically, the construction of the first large public sector irrigation canal system i.e. the Chandra Canal System

took place in 1922. It has a net command area of 10,000 ha (Poudel & Sharma, 2012) and is still in operation. Apart from the canal system, Raj Kulo⁶ irrigation systems existed prior to 1800, and are still in use (Poudel & Sharma, 2012). Surface water irrigation has used water only from small and medium rivers of the country because of riparian issues raised by India (Dhungel & Pun, 2009). The country has not been able to develop sufficient irrigation infrastructure despite the huge potential of surface water irrigation also because it lacks financial resources and technology needed for hydropower development (Swain, 2008). As the small and medium rivers have been used only for catering for the internal needs of the country, these rivers have been operated and managed by government agencies, communities and agencies and communities jointly. Since this thesis is related to the governance of the major transboundary rivers, it does not provide details on the governance of small and medium rivers.

As noted earlier that the governance of major rivers has been affected by riparian issues, almost all these rivers are governed by agreements or treaties between the two countries. However, the Government of Nepal governs other medium and small rivers of the country. The Department of Electricity Development, on behalf of the government, has been playing a significant role in distributing licenses to the hydropower developers in the country. The Nepal Electricity Authority, on behalf of the government and other various private hydropower developers, is engaged in the development of micro and small hydropower projects. To mobilise funds from domestic and international resources for investing in the generation, transmission and distribution of hydroelectricity in middle to mega hydroelectricity from various rivers in the country, the government of Nepal established the Hydroelectricity Investment and Development Company Ltd. (HIDCL) on 11 July 2011. In the case of the major rivers, Nepal and India have already negotiated five major agreements for governing the three major transboundary rivers, the Koshi, the Gandaki and the Mahakali. Politicians and political parties of Nepal have played a significant role in making decisions regarding international agreements and treaties related to water resources. The governance of the KR will be presented in section 3.6, while the other agreements will be presented in Appendix B.

⁶ Irrigation canals established by Kings, which first appeared in the country in the seventeenth and eighteenth centuries

Besides the treaties and agreements, the two governments have also formed some high-level bilateral committees that discuss and solve any water issues across the border. The committees include: the Indo-Nepal Joint Ministerial Commission on Water Resources headed by Minister of Water Resources on the Indian side and Minister of Energy on the Nepalese side, the Joint Committee on Water Resources headed by Water Resources Secretaries of both the countries, the Joint Standing Technical Committee, the Joint Committee on Inundation and Flood Management, and the Joint Committee on the Kosi and Gandak Projects. Bilateral meetings on various issues related to water at different levels from the ministerial to joint secretary level take place through these committees. These platforms also include the water issues under all the bilateral treaties and agreements. Therefore, these committees are also parts of the governance of the transboundary rivers.

The water resources of Nepal are also governed by some policies and strategies. Among them, some of the important ones are the National Water Plan 2005, the Water Resources Strategy 2002, the Irrigation Policy 2013, National Energy Strategy 2013 and the Hydropower Development Policy 2001. The government of Nepal established the Water and Energy Commission (WEC) in 1975 for fast and integrated development of water and energy resources in the country and established a permanent secretariat of WEC i.e. Water and Energy Commission Secretariat (WECS) in 1981. The main duty of WECS was to assist the government, ministries and other government agencies related to water and energy resources in formulating necessary policies and planning projects accordingly.

3.5 Policy and Politics of Water

Almost a century before any water-related policies was developed, Nepal had already negotiated three IRAs with India. The treaty-related documents exchanged between the Indian and Nepalese governments reveal that the deals were made under India's initiative. For Nepal, the agreements were undertaken on a contingent basis without providing sufficient time for prior planning. It is evident that Nepal's interest in these agreements was just to obtain some benefits out of the projects developed by India. The information regarding the negotiations of agreements will be discussed in detail in chapter five. After signing the agreements, however, Nepalese people gradually felt

that they were cheated in the deals, and this led to various conflicts in the country. This section reveals some existing policies related to water resources and the politics of water between the countries that have determined the fate of water resources development in the country.

Though some voices were raised against the Koshi and Gandak treaties in the Panchayat Era (1960-1990), the voices resurfaced only when the Memorandum of Understanding (MoU) to construct a part of a barrage at Tanakpur was signed between the countries in December 1991. The MoU was about providing Nepal's consent in allowing India to use 2.9 ha of its land for supporting an already and unilaterally built hydro-power project by India. This had become a big issue and created political turmoil internally as well as bilaterally with India during that time. This was because the then Prime Minister of Nepal did not obtain the consent of the Nepalese parliament before taking the decision (Dhungel and Pun, 2009), which was against an article of the then constitution (described later in the section).

Later in February 1996, the countries signed a new treaty, The Mahakali Treaty, which became a multipurpose project, incorporating three different benefit sharing projects. Swain (2008, p. 279) terms the treaty as “a solution to the legacy of disagreement between Nepal and India over the Tanakpur Barrage Project”. The treaty was ratified by the joint session of the parliament under Article 126 of the Constitution of the Kingdom of Nepal 1990 on 20 September 1996. Dhungel and Pun (2009) argue that the treaty provided threefold benefit to India. According to the authors, the treaty legitimised the unilaterally constructed Tanakpur Barrage, renewed the terms and conditions of the already existing Sarada Treaty, and received approval for preparation of the Detailed Project Report (DPR) of the proposed Pancheshwar Multi-purpose Project. Besides these, India was also successful in mentioning the quantity of water that Nepal gets from the project while it cleverly did not mention the quantity for India. This was, and is still, the major issue of contention between the two countries. As of today, the project has not started. This is why, Dhungel & Pun (2009, p. 56) claim that India's policy is to have “a hold on all the major rivers of Nepal.”

With the intent of availing water for its people, India has forwarded an ambitious and huge Inter-Linking of Rivers Project. The aim of this project is to transfer water from areas of water surplus in the eastern parts of India to the water-deficient western areas of the country. For the success of the project, the water resources of Nepal must be regulated for having sufficient water in its linked

rivers annually. The project envisages linking five major rivers of Nepal; the links include the Mechi with the Koshi, the Koshi with the Karnali, the Gandaki with the Ganga; the Karnali with the Yamuna and the Mahakali with the Yamuna. This is why Pun (2006) argued that the future of Indo-Nepal water resources relationships would focus on these five important river links. However, India has not formally informed Nepal about this project. Pun (2009) also argued that all the storage projects proposed in Nepal are components of the Indian project.

Besides partnering with India in developing its water resources, Nepal has made multiple efforts in getting funding for its projects from other donors. Most of these attempts have failed to bear fruit. Evidence shows that India's interest has played a crucial role in deterring most of these proposals. For example, Nepal proposed to construct the Kankai Multi-purpose Project in eastern Nepal in 1978 and sought financial support from the ADB, but the ADB advised Nepal to consult with India because India was already using the river water for irrigating Bihar. India, on the other hand, asked Nepal to submit a formal project report for evaluating its impact on Indian water users (Verghese, 1999). Similarly, Nepal's hope of constructing an irrigation scheme by utilising water from the Babai River was dismantled when India objected to the project, citing that the project adversely impacts the downstream flow which ultimately affects its irrigation projects downstream (Dhungel, 2009; Bhattarai, 2009). India has been citing lower riparian rights with Nepal whenever Nepal tries to use water in the upstream, but it does not allow lower riparian rights to Bangladesh in similar cases (Pant, 2012). It built the Farrakka Barrage that diverted water from the Ganges to the Hooghly River in India, thereby affecting the water flow to Bangladesh (Poudel, 2009). Because of India's dual nature of bargaining for riparian rights with the upper and lower riparian countries, Nepal has not been able to make solid decisions for its water resources development.

Regarding water-sharing treaties with neighbouring countries, the 1990 Constitution and later the Interim Constitution post-2006 seek parliamentary oversight. Article 126 of the 1990 Constitution and Article 156 of the Interim Constitution stipulated parliamentary consent for any water-related agreements to take place. But the then government in 1991 did not go through this process before signing the MoU related to the Tanakpur barrage with India that led to chaos in the country. Nepali people believe that India did not want the Nepal government to go through the process. Later in 2008, the Nepalese government negotiated two agreements with a private institution and a public entity from India for exporting electricity to India. Even on this occasion, the political parties did

not gain the parliamentary ratification of the agreements. For this reason, Gyawali (2013) attributes the political parties as the “grateful political parties” to India for violating the article of the constitution. Water activists, including former high-level government officials, wrote an objection letter to the then prime minister for signing the power trade agreement with the government of India for the Arun-III project and project development agreement with the GMR Group for the Upper Karnali project. In relation to the objection, Suhardiman et al. (2015) argue that participation of key stakeholders should have been ensured in managing water resources of Nepal.

Within Nepal, two discourses dominate hydro-power development in the country. The first one opines that Nepal should develop hydropower for exporting to develop its economy, as the country would not be able to consume the power generated. According to Swain (2008), India is the only country that can help Nepal in constructing big multipurpose projects and importing surplus electricity from Nepal. Mostly the policies of the government of Nepal, such as the Electricity Act 1992 and Hydropower Development Policy 1993, convey a similar message of exporting electricity. As this policy has a stronghold in the government offices, two hydropower projects – the Upper Karnali and the Arun-III have been designed as export-oriented projects (Gyawali, 2013).

The second discourse opines that hydropower development in the country should be used for internal consumption at first, rather than export, for the development of the country. This view is put forward mostly by water activists in the country as the country had been and still is, facing long hours of power cuts, up to 18 hours a day in the dry seasons in previous years, due to a lack of sufficient energy sources in the country. There is also a third view that lobbies for multipurpose projects rather than hydropower only projects. Gyawali (2013) opines that whether it be a drinking water project e.g. Melamchi, or a hydropower only project e.g. Upper Karnali, Nepal should utilise them as multi-purpose projects to get the maximum benefit. Whatever the views are, Nepal needs to have uninterrupted electricity for fulfilling the demands of its citizens.

Unlike the Mahakali Treaty, the riverine communities along the KR are still facing various problems a half-century after the negotiation of the KRA and the construction of the barrage and embankments. Therefore, this thesis explores the governance of the KR, which is the focus of the next section.

3.6 The Koshi River Governance

As noted earlier, the governance of the KR is currently based upon the KRA negotiated between Nepal and India in 1954 and revised in 1966. As it was a benefit-sharing treaty, the objective of the agreement was to construct a barrage and other necessary structures for “flood control, irrigation, generation of hydroelectric power and prevention of erosion of Nepal areas on the right side of the river, upstream of the barrage” (The Koshi River Agreement, 1954, p. 1; see Appendix C). This section presents various aspects of the KRG.

The agreement that took place in 1954 provided many rights to India in governing the river. The agreement provided India with the right to regulate all the water supplies in the KR at the Barrage site, and India would become the owner of all the land acquired by the Nepalese government for the purpose of the project, and the duration of the agreement was not fixed. It also allowed India, without any obligation, to study, in future, storage or detention dams and other soil conservation strategies on the river and its tributaries. It also did not allow fishing within 2 miles of the barrage and the site of headworks. However, it provided Nepal with the entitlement to use 50 percent of the hydropower generated at the barrage site on payment of certain tariff rates but does not specify the capacity of the power to be generated. The terms of the agreement show the one-sidedness of the agreement, and how Nepal lacked negotiation skills.

In 1966, the two parties revised some of the terms of the agreement. Dhungel (2009) argues that the then King Mahendra took advantage of a geopolitical scenario i.e. the 1962 Indo-China border conflict and was successful in changing the terms. In the revised agreement, the changes were mainly related to Nepal’s right to withdraw water from upstream and ownership of all lands acquired by the government. It provides every right to Nepal to withdraw water from the KR and its tributaries for irrigation and other purposes and provides India only the right to regulate the balance of supplies in the river at the barrage site. It also provides the right to have 50 percent of power supply from the powerhouse located within a radius of 10 km from the barrage site and also obliges India to build transmission lines to the Nepal-India border if the powerhouse would be built in the Indian territory. Instead of providing the ownership of the acquired land to Nepal, the revised agreement provides the land to India on lease for 199 years. It also provides fishing rights

to Nepal within two miles of the barrage and head-works but with special permits that would be issued by the competent government authority of Nepal in consultation with the executive engineer of the barrage. It also does not include the provision for future studies on storage or detention dams in the river and its tributaries. It also changed the location of the barrage site, proposing to build the barrage 3 miles upstream of the Hanuman Nagar town, instead of the original intention to build 8 miles upstream of the town. Lastly, it envisages the formation of the Indo-Nepal Koshi Project Commission, the purpose of which is to coordinate and cooperate between the two governments regarding the matters related to the agreement.

The construction of the Koshi barrage, along with the flood embankments on both sides that are 146 km and 123 km long, was completed in 1962 (Pun, 2009). The then government of Nepal acquired and provided about 10,000 ha of land and millions worth of forest products for the project (Dhungel, 2009). Because of the construction, the project displaced around 45,000 people (Pathak, 2008). Besides, the then government of India completed the construction of the Kataiya powerhouse in Indian territory (Bhimnagar) in 1977 (see Dhungel, 2009). A timeline of the events is presented in table 3.2.

Table 3.2: Timeline and Events regarding the Koshi River Agreement

Year	Events
1954	The signing of the Koshi River Agreement
1958	Start of the construction of the Koshi barrage
1958-1962	Completion of the construction of the Barrage
	<ul style="list-style-type: none"> “Designed to hold 9.3 lakh⁷ cusecs of water, the barrage’s total irrigation capacity was estimated at 1.5 million acres, of which around 29,000 acres lay in Nepali territory. The project was supposed to generate 20,000 KW from the Eastern canal, of which around fifty percent was to be sold to Nepal.” (o, 2008) The eastern canal has a discharge capacity of 455 cubic metres per second (16,100 cu ft/s) to irrigate 6,125 square kilometres (1,514,000 acres) in India;

⁷ Lakh is a Nepali term, which is used for counting numbers. 1 lakh = 100,000.

- The western canal has a discharge capacity of 210 cubic metres per second (7,400 cu ft/s) to irrigate 3,566.1 square kilometres (881,200 acres). (Irrigates land in Nepal as well as India)

1963	Breach of the western embankment at Dalwa, Nepal
1965	Start of the second phase of the project
	Amendment of the Agreement
1966	<ul style="list-style-type: none"> • One significant addition to the new agreement was the definition of the lease period – for 199 years • India reduced the capacity of the power plant from 20,000 KW to 13600 KW and both countries were supposed to inform the other if their power consumption exceeded 6800 KW.
1968	Breach of the western embankment at Jamalpur in Bihar, India
1971	Breach of the eastern embankment at Matniyabandha in Bihar, India
1980	Breach of the eastern embankment at Baharawa in Bihar, India
1984	Breach of the eastern embankment at Hempur in Bihar, India
1987	Breach of the eastern embankment at Gandaul and Samani in Bihar, India
	Starting off the Third phase of the project
The 1980s	<ul style="list-style-type: none"> • Indian government proposed to build an alternative to the Koshi Barrage i.e. the Koshi High Dam in the lower hills of Nepal upstream of the barrage. • The Indian government in 1981 had proposed the construction of a 269 metre-high dam on the Koshi River
1991	<ul style="list-style-type: none"> • Secretary level talks on conducting the feasibility study of the Koshi High Dam • Breach of the western embankment at Joginiya, Nepal
2008	Breach of the eastern embankment at West Kusaha, Nepal – displaced 50,000 people in Nepal and affected over 3 million people in Bihar, India
	Koshi High Dam feasibility study obstruction from the political wings and locals –
2012	<ul style="list-style-type: none"> • The Maoist Party’s sister organizations obstructed the study of the Detailed Project Report of the Koshi High Dam

2016 (July)	Tilathi Incident – the Violent clash between locals across the border on the issue of construction of a bund along the border by the Indian side to protect its citizens from floods, but that would submerge many villages in Nepal
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Source: Author compiled

Although the revised agreement somewhat balanced the one-sided agreement, scholars highlight remaining inequalities in the agreement (e.g. Dhungel, 2009; Pradhan, 2009). The Koshi Project irrigates 612,500 ha of land solely in India through the eastern main canal and 356,000 ha through the western main canal, but the western canal irrigates only 11,300 ha by gravity flow and 13,800 ha through lift pump in Saptari, Nepal. The western canal was actually designed to irrigate land in Nepal, but it hardly irrigates 25,000 ha of land in the Saptari District because it travels only 35 km in Nepal. The project also constructed the Chatara Irrigation Canal, which was designed to irrigate 66,000 ha of land in Sunsari and Morang districts of Nepal, to be handed over to Nepal in 1974 (Pradhan, 2009). Unfortunately, the irrigation canal was capable of irrigating only 20,000 ha of land when it was handed over (ibid.). The government of Nepal then had to seek financial loan support from the World Bank for the full construction of the project.

Though the Koshi Barrage project was envisaged to control floods in the KR, it has not been able to significantly minimise soil erosion and flood-related disasters. Floods in the KR affect thousands of people and erode large chunks of fertile land every year, both upstream as well as downstream of the barrage. For example, the breach of the eastern embankment of the river at Kushaha of Nepal in 2008 affected millions of lives, cattle, crops, houses and other infrastructure both in India as well as Nepal (Pathak, 2008). The incident killed a few hundred people and affected 2.64 million people, including 65,000 in Nepal, and affected 700 ha of fertile land in Nepal (Kafle et al. 2017). In 2011, the floods in the river eroded a 15 metre-long fertile land lying on the eastern bank of the river in the Prakashpur VDC of Sunsari District (Jha, 2011). The 2016-flood affected many riverine villages, including Hanumannagar, Gobargadha and Rajabas (in Prakashpur) (Upadhyaya, 2016). Further, severe floods in 2017 killed over 120 people and affected many riverine communities by destroying their houses and displacing them (Gill & Paswan, 2017). As the Koshi basin is vulnerable to the effects of climate change, the increase in precipitation and

the decrease in the snow cover in the Himalayas due to increasing temperature (Nepal, 2016) may have serious impacts on the communities in future.

Apart from the Koshi barrage, the government of India also envisages constructing the Koshi High Dam in the hills of Nepal upstream of the barrage. The Government of India originally proposed to construct the high dam in 1950. Originally, the high dam was proposed to be 239 m high; with the storage capacity of 850,000 cubic metres; to generate 1,800 MW of electricity; to irrigate large areas of land in India and Nepal; and would reduce the peak flow from 24,050 m³/s to 5,660 m³/s largely having the flood control benefit (Rao & Prasad, 1994). However, instead of constructing this project, the Government of India chose to construct the existing Koshi Barrage. According to Sain (1978 in Chaturvedi, 2012), the reason for abandoning the high dam was the then weak economy of India was not capable of consuming the huge amount of electricity generated and utilising the enormous irrigation potential created. But Verghese (1999) argued that the reason was that of a terrible flood-disaster in 1954, which alarmed the then Government of India to take immediate steps. As a result, the Koshi agreement was negotiated. Later in 1985, the Japanese International Cooperation Agency (JICA) conducted a complete study of the high dam. The study estimated that the dam could be as high as 269 m, and the project would have the potential of generating 3,897 MW and irrigating 546,000 ha of land in Nepal and 976,000 ha of land in India (Bhattarai, 2009). In order to pursue this project, India and Nepal signed a MoU on 9 January 1997 to initiate a joint detailed (DPR) study of the dam as well as the diversion scheme (ibid.). But as of December 2017, the study has been suspended due to frequent obstructions from the locals.

3.7 Key Challenges and Opportunities

The governance of rivers through international agreements has raised many opportunities but also challenges to Nepal as well as its people. Such governance has, on one hand, provided, to some extent, the development infrastructures to the country with hydropower, irrigation and other infrastructures such as bridges and roads, while on the other hand, it has invited many challenges to the country and its people. This section presents some of the key challenges and opportunities ahead of Nepal and its people.

The key challenge for Nepal has been the utilisation of its water resources for the maximum benefit of the country, which has hardly been successful via the agreements. Nepal needs to have sufficiently developed hydropower for preventing the daily long-hours of power cuts. In the first quarter of 2017, the government of Nepal has been able to distribute uninterrupted electricity to its people in Kathmandu and other major cities by efficiently managing power leaks and importing about 1,971 GWh of electricity from India. However, the country still needs to develop a large amount of electricity for meeting its current and future domestic and industrial needs. It also needs to ensure sufficient irrigation infrastructure and regular water-flow for its agricultural land. For ensuring however adequate production of electricity and provision of irrigation-water for its people, Nepal must first overcome the riparian issues raised by India.

The next challenge for Nepal is to reap the maximum benefit out of the already existing agreements with India. These existing agreements cannot be scrapped easily, therefore it would be wise to work on finding ways to get maximum benefit from what already exists. For this to happen, Nepal will have to overcome the challenges of making India responsible and making it maintain timely compliance with the terms and conditions of the agreements. Besides, it is also a challenge to move ahead with the already negotiated but sluggish projects like Pancheshwar due to lack of political will.

There is also a challenge of making decisions regarding the need for agreements in future and if required, negotiating future agreements that would safeguard the interest of Nepal and also the livelihoods of people. As many people in Nepal believe that they have been cheated every time it has negotiated agreements with India (Dhugel, 2009; Upreti, 1993), with India pushing for new deals on its major rivers, it is a challenge for Nepal to make decisions regarding the need for new agreements. Again, it is also challenging for Nepal which is economically dependent upon India to negotiate deals that equitably benefit Nepal and its people, and that does not become the subject of dispute within Nepal.

The ultimate challenge for Nepal is to provide better livelihoods to its river communities specifically and to all the people, with better governance of water resources. This is possible only if the economic benefits of the projects do not undermine communities and their peace and justice. Since there have been unsolved issues related to compensation still remaining under the Koshi

Agreement and proper relocation of the displaced people from various water-related projects, the governance of water resources, as has been done before, would be difficult to provide better livelihoods to people.

Besides having challenges in the governance of water resources of the country, there are also opportunities for Nepal. The past failures have been good learning experiences that can be utilised for taking critical decisions regarding its water resources in future. Decisions taken in such a manner also safeguard the interests of Nepal and its people. This would also make the country self-sufficient with power and irrigation facilities.

3.8 Summary

Nepal is a small landlocked Himalayan country with abundant groundwater in the plains and a dense network of more than 6,000 rivers and rivulets. However, it has neither been able to provide reliable irrigation to all the irrigable land in the country nor develop a significant amount of hydropower from its huge potential. Although the Ministry of Finance (2016), Nepal claims that the irrigation in the country has reached approximately 78 percent of the irrigable land of the country with some type of irrigation, not all the land receives year-round irrigation. In the case of hydro-electricity, only 0.02 percent i.e. 886.76 MW of its economically feasible hydro-electricity, i.e. 43,000 MW, has been generated. Due to such poor development, it has not been able to meet the electricity demand of its people, and the people have been suffering from long hours of power cuts.

Depending on the type of water resources and the purpose of using them, the water resources have been governed differently. Various government institutions, politicians, communities and policies have governed the available ground and surface water for irrigation and hydropower generation. However, in the case of most of the major rivers of the country, international agreements with India govern them due to their transboundary nature. Apart from the agreements, there are also a few agreements for power generation in the mountains that govern the concerned rivers. Many people in Nepal feel that they have been cheated in the deals made with India and believe that India has been proactively engaged in controlling the major water resources of the country. The River Linking Project of India that also envisions five major links within Nepal verifies India's

policy on Nepal's water resources. In the case of the KRA, Nepal has received fewer benefits in comparison to India. India envisages building the Koshi High Dam which serves the purpose of irrigating large areas of land both in India and Nepal, generating a huge amount of hydropower, and providing enormous flood control benefits. Local protests, however, have hindered the process of DPR study. In the context of such shared water governance, there exist several challenges, but also opportunities for Nepal. One such challenge and opportunity is the Koshi River, to which we turn in the next chapter when the research methods are presented.

Chapter Four: Research Methods

4.1 Introduction

This chapter outlines the methodology employed to obtain data on TWG of the KR and its impacts on the communities residing around the river and to analyse the data. This study has followed a mixed research paradigm and applied a case study approach. It has used semi-structured and unstructured interviews and participant observation as the data collection tools and techniques. Semi-structured interviews and participant observation were undertaken with households and individuals in the KR communities; and unstructured interviews were carried out with high-level bureaucrats and retired officials, national-level political leaders and water experts in Kathmandu. The fieldwork in the communities focused on collecting data on the impacts of the governance and on their lived experiences with disasters in the river. The fieldwork in Kathmandu focused on gathering data on various transboundary river governance issues at the national and international level. This chapter presents the tools, techniques and approaches used for data collection and analysis in the thesis. The first section provides the research approach adopted i.e. the actor-oriented political ecology approach in the methodology for the study. This will be followed by an explanation of my personal context for this research under which I decided to undertake this study. In the third section, the research design of the study will be presented, whereas the case study site and rationale are presented in the fourth section. Data collection and analysis methods will be presented in the fifth section, which will be followed by an explanation about the rigour of the research. The penultimate section describes the limits and boundaries of the methodology, and the final section presents the summary of the chapter.

4.2 Research Approach – The Actor-oriented Political Ecology Approach

The worldview of a researcher is important because it directs the researcher to choose suitable ontology, epistemology and methodology for conducting the study. The literature on disasters can be summarised, perhaps simplistically, into three main worldviews. The first worldview believes that only god or nature determines everything that happens in the universe. Mainly it is the

religious people who have this worldview. The second worldview argues that disasters occur due to structural inadequacies and faults. People with this worldview believe that only structural or engineering designs can save people from disasters. According to the third worldview, disasters are socio-politically constructed and cannot take place in a socio-political vacuum (Seeger et al. 2016; Hobson, 2014). The current research is based on the third worldview, so a mixed research method using both qualitative and quantitative methods is used in the study to integrate physical and social considerations. The study uses the “Actor-oriented Political Ecology” (see section 2.3) as the research approach for guiding the research through the process of data collection and analysis. As mentioned in section 1.5, the approach helps in understanding various aspects of all the actors involved in political and ecological processes in shaping and reshaping environments (Bryant and Bailey, 1997). This approach will be used to understand agency and power relationships among all the actors involved in the process of the KRG in shaping the environment of the people in the riverine communities. This section explains how the approach is relevant to the current thesis.

The actor-oriented political ecology approach basically relates to a comprehensive understanding of actors in various political and ecological processes of environmental change (see Adjei, 2012; Bury, 2008; Bryant & Bailey, 1997). In-depth understanding of the actors involved in a process provides an understanding of the overall process as well. A clearer understanding of actors basically lies in identifying their incentives, interests and actions based upon power relationships among them (Adjei, 2012; Bryant & Bailey, 1997). That is to say, this approach comprehends that the nature of environmental issues is shaped by social and political processes, along with power relationships among actors at various scales (Wilson, 2010; Robbins, 2004). It also encompasses the “complexities and contradictions” that emerged from the actions of the actors (Bryant & Bailey, 1997, p. 25). As the process of the KRG is also highly politicised and is shaped by power relations and the agency of all the actors involved in the governance process, the approach is highly relevant in this thesis.

An important aspect of this research approach is that it can be applied for analysing complex multi-scalar interaction among various actors in the governance of environmental resources (see Wilson, 2010; Finnis, 2006; Adger et al. 2001; Bryant & Bailey, 1997). According to Wilson (2010, p. 35), the approach “is relevant to understand how the behaviour of social actors operating at different

scales influences local interaction with resources”. This interaction is useful in tracing direct causal relationships between actions carried out by the actors involved in the process (Bury, 2008). Therefore, it is important to conduct a detailed analysis of the actors involved at various scales, their characteristics, needs, interests and ends. In this thesis, the approach will be used to identify and examine all the stakeholders involved in the KRG from local to international scales; and explore their interaction with each other. By adopting this approach, it minimises the possibility of focusing on actors only at a particular scale (Wilson, 2010, 2011).

The approach is also useful in the critical analysis of resource conflict and cooperation (e.g. Adjei, 2012; Becerra, 2010; Wilson, 2010; Bury, 2008; Jewitt, 2008). According to Finnis (2006), the approach scrutinises the role of every actor in managing resources and producing resource conflicts. In fact, resource conflict or cooperation is an outcome of the interaction of various actors that is influenced by power relationships among them. The relationships that guide the interaction are determined by “elements of structure and agency across multiple analytical scales” (Wilson, 2010, p. 34). Therefore, it also analyses “environmental outcomes, struggles over resources, and political and social change” which are brought about by such interactions (Wilson, 2010, p. 36). Such analysis helps in examining people’s access to resources and the social and political changes brought about by environmental governance. This is what the current research attempts to study. This study analyses the power relationships among the actors involved in the KRG, local people’s access to the river and land resources, and the changes that have taken place at the local level. In doing so, it also helps in “deconstructing various institutions” established through the governance processes (Becerra, 2010).

4.3 Personal Context of Research

While I was studying for my Master’s degree in 2008, a deadly Koshi Flood took many lives and affected thousands in both Nepal and India. I had just finished the coursework and decided to study the vulnerability of people to floods for my thesis. I undertook my research in a village along the Narayani River⁸, in which I studied how people were vulnerable to floods by analysing the socio-economic factors in the local context. While undertaking the fieldwork, I felt that I needed to do

⁸ Narayani River is one of the major rivers of Nepal and also a tributary of the Ganges.

further research on the issue so that I could understand the complex phenomenon underlying the vulnerability of those people. This increased my interest in contributing something to the field.

With the intent of extending the research, I came to pursue my PhD degree in the Department of Political Economy at the University of Sydney. While studying various concepts and theories on political economy, I realised that I also needed to include the political aspect apart from economic aspects, so I decided to include the negotiation process of the KRA and its subsequent impact on the KR communities. I also realised that my research interest actually lay in human geography and moved to Geography. While studying theoretical concepts such as political ecology, I felt that I needed to apply a multi-scalar approach of transboundary river governance to understand the suffering of the river communities. Seeing that the possibility of contributing to the national level policy debate in the field of transboundary river governance would help many people in different countries, I became more eager to work on the current project.

4.4 Research Design

This study has followed the critical pragmatist paradigm. According to Forester (2012, p. 6), “critical pragmatism appreciates multiple and contingent or evolving forms of knowledge, local or scientific, initial opinion and considered judgement”. Critical pragmatists believe that principles of truth cannot be absolute, and knowledge generation takes place at the sites of experience and interaction (Vannini, 2012). Thus, critical pragmatism “embraces an understanding of multiple realities as the tool for a participatory orientation toward praxis and change.” (Vannini, 2012, p. 3). Under the paradigm, this study has used a case study design to understand the impact of the TWG of the KR on the riverine communities on the Nepalese side. The case study design is suitable for this thesis because it conducts an in-depth study of the KRG so that it becomes easier to understand the multi-scalar transboundary governance of the KR, the winners and losers in the process; the dynamics of access of all the actors to the riverine resources; the kinds of injustice produced because of the governance, and the coping strategies of the riverine communities. Regarding case studies, Creswell (2014, p. 14) stated:

Case studies are a design of inquiry found in many fields, especially evaluation, in which the researcher develops an in-depth analysis of a case, often a program, event, activity, process, or one

or more individuals. Cases are bounded by time and activity, and researchers collect detailed information using a variety of data collection procedures over a sustained period of time.

4.4.1 Actor-Oriented Method

By taking the case of the KRG, this research studies the stakeholders associated with the governance and various other aspects associated with them, such as their discourses, actions and outcomes, in the process. As the stakeholders related to this case involve actors from the local to the international level, an in-depth analysis of data collected from these actors portrays the governance and its impacts. According to Labaree (n.d.), “A researcher using a case study design can apply a variety of methodologies and rely on a variety of sources to investigate a research problem.” Therefore, this study has used the actor-oriented method within the case study.

4.5 Case Study

As noted earlier, the current study focuses on examining the case of the KRG. Firstly, it conducts the in-depth study of the riverine communities to understand multiple aspects of the injustice which they are facing. Secondly, it also studies other related actors at the upstream or the downstream settlements, the constituency or the district level for understanding the reasons for the injustice and the existing situation in the study area. Thirdly, it investigates the geopolitical scenario in the South Asian region and its effect on the TWG. This inquiry has been done in Kathmandu with national level politicians, high-level bureaucrats and retired officials from various government agencies and water experts. This section outlines the rationale for selecting the case of the KRG and a general description of the research site.

The rationale for selecting the case of KRG as the appropriate case study for this research are as follows:

- Firstly, as noted earlier in chapter one, floods in the KR affect many people in Nepal every year. It is important to know how and why the KR communities are recurrently affected by floods and lack of irrigation water. By taking the case of the KR, it is also easy to compare the impacts between the upstream and the downstream communities in relation to the Koshi barrage.

- Secondly, as the KR is governed by the KRA between India and Nepal, it provides a suitable case for analysing how the negotiation of the agreement has occurred and understanding the dynamics of the governance process of the river. It also helps in understanding how power relations between the countries play a role in the governance process.
- Thirdly, it also provides information on the perception of the river communities towards the ongoing river project. Besides, the Indian government has proposed to construct a dam, the KHD, which is supposed to be 289 metres⁹ high and lies upstream of the existing Koshi barrage. The river communities along the KR in Nepal have already organised several protests for compensation for the losses occurred by the construction of the Koshi barrage and against the KHDP. Thus, the study also helps in understanding the perception of people towards the KHDP and reasons for the protests.

4.5.1 The Research Site

For this study, I have chosen the people living in the riverine communities in two districts, which lie upstream (north) and downstream (south) of the Koshi barrage (see Figure 4.1). The districts are the upstream Sunsari and the downstream Saptari districts. In Sunsari District, I have chosen Prakashpur VDC, which lies on the eastern side of the river and includes a part of a river island, Srilanka Tapu, which is a locally given name because its shape resembles Srilanka (Figure 4.2). The southern part of the Srilanka Tapu lies in the Prakashpur VDC while the northern part lies in its neighbouring VDC. In Saptari District, I have chosen Hanumannagar VDC (Figure 4.3), which lies on the western side of the river, and Gobargada VDC (Figure 4.4), which is also a river island similar to Srilanka Tapu. This selection is because these VDCs are affected by monsoon floods almost every year.

⁹ Source: Sapta Kosi High Dam, Multipurpose Project, Nepal, retrieved from: <https://ejatlas.org/conflict/sapta-kosi-high-dam-multipurpose-project-nepal>, accessed on 9 March 2017

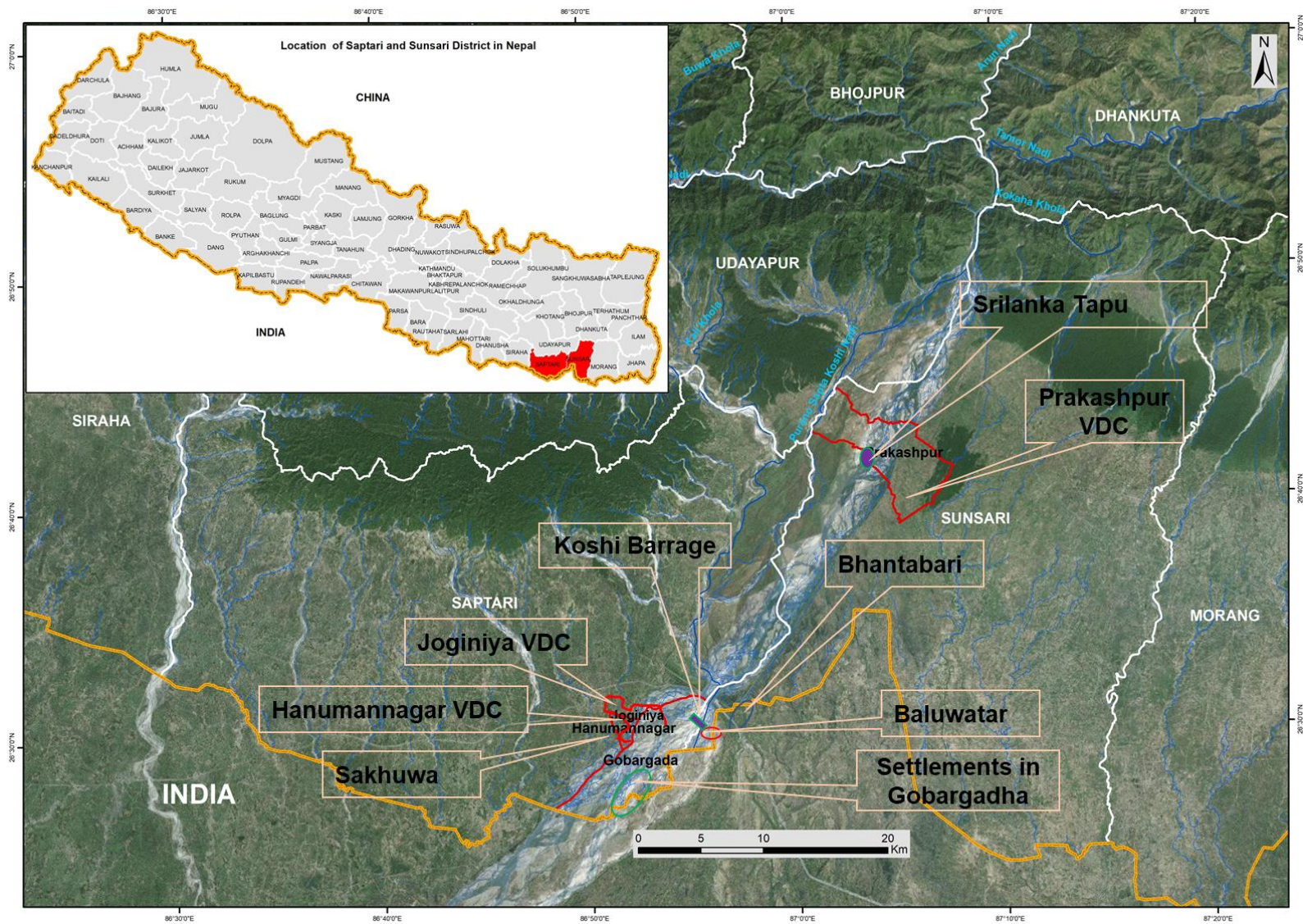


Figure 4.1: The Fieldwork Sites (Sources: the background image - Google Image, 2017; Boundary map and administration map of Nepal – Survey Department of Nepal, 1996)

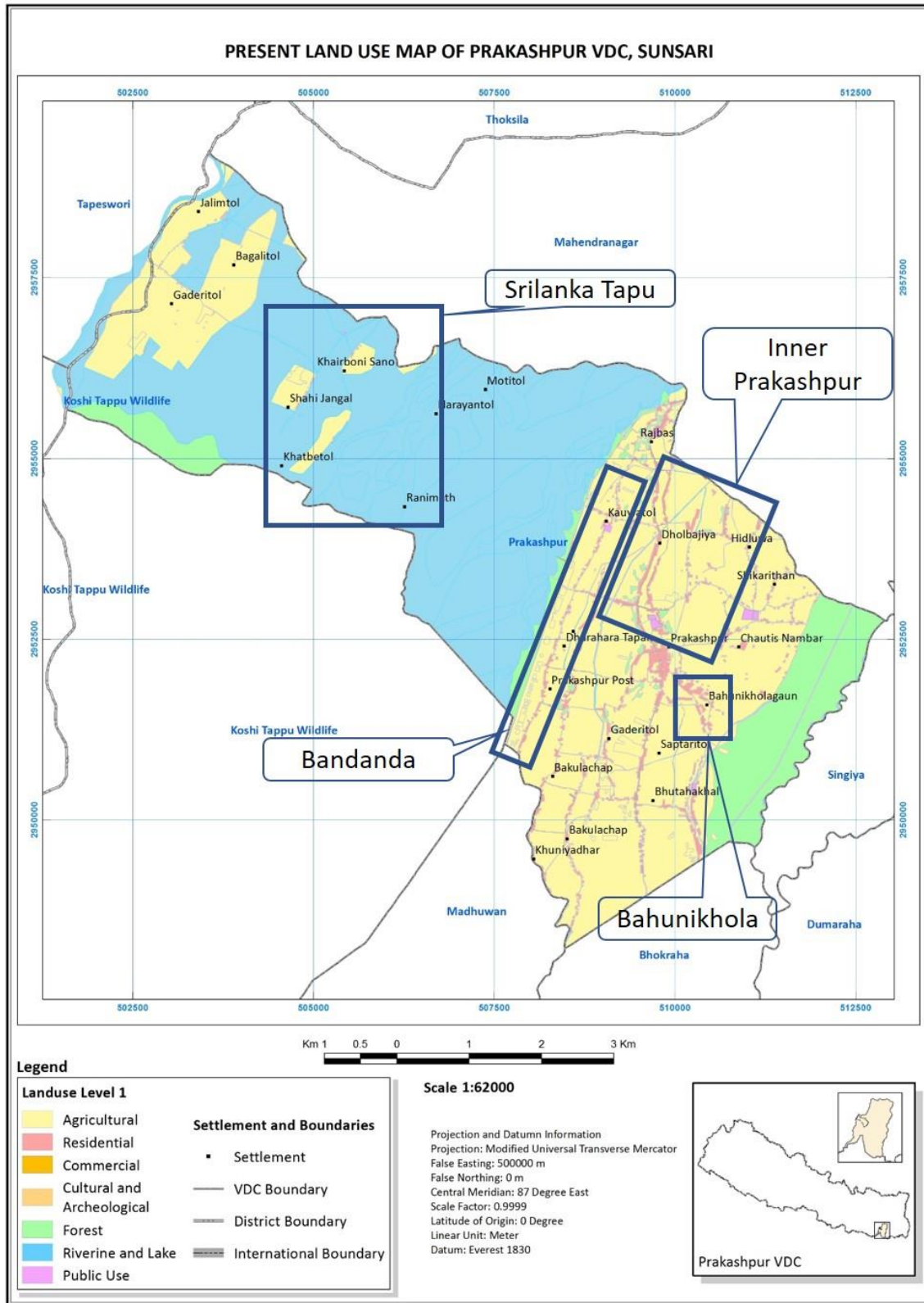


Figure 4.2: Fieldwork sites in Prakashpur VDC (Source: National Land Use Project, 2017)

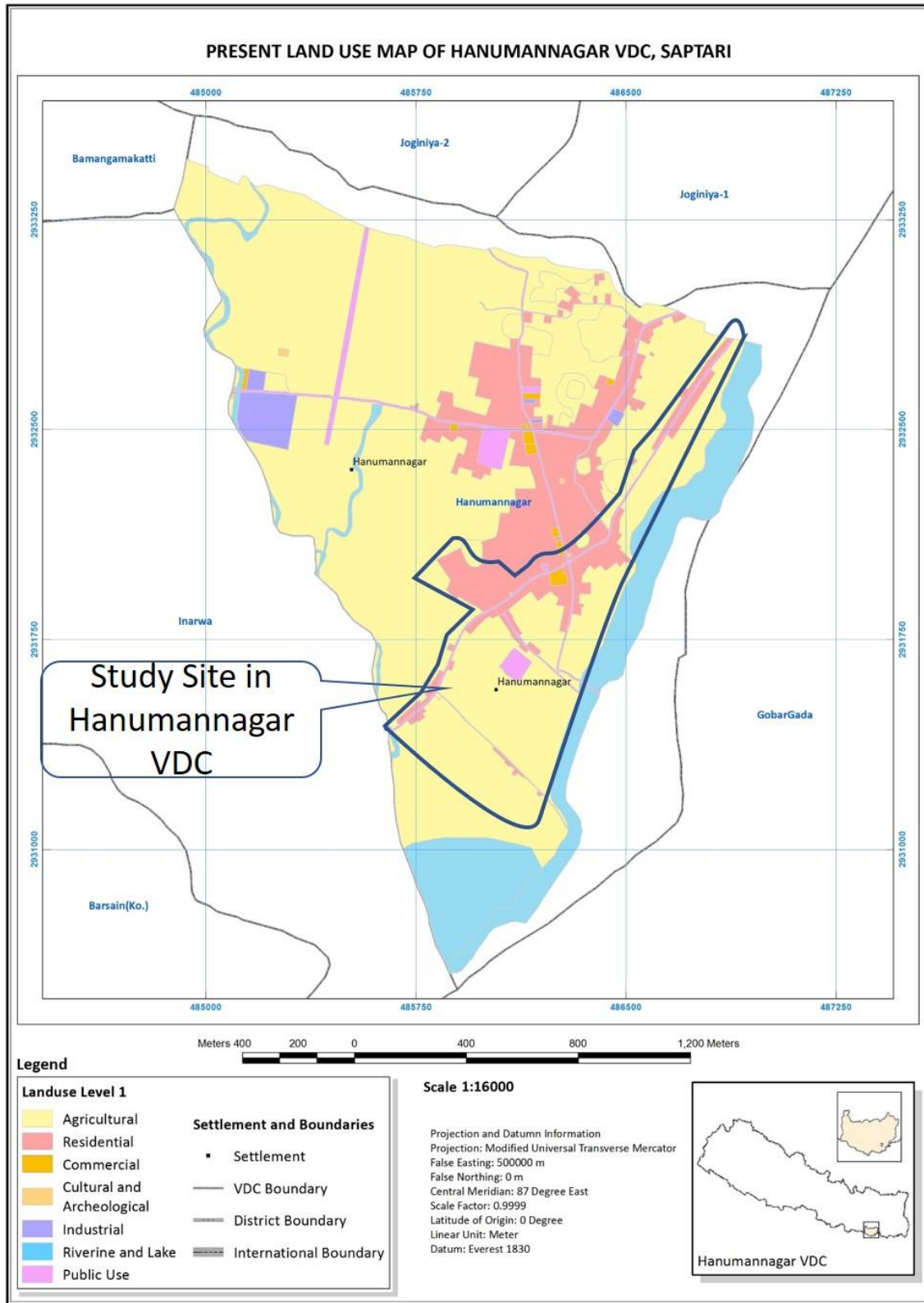


Figure 4.3: Fieldwork sites in Hanumannagar VDC (Source: National Land Use Project, 2017)

Land Cover Map: Gobargada VDC

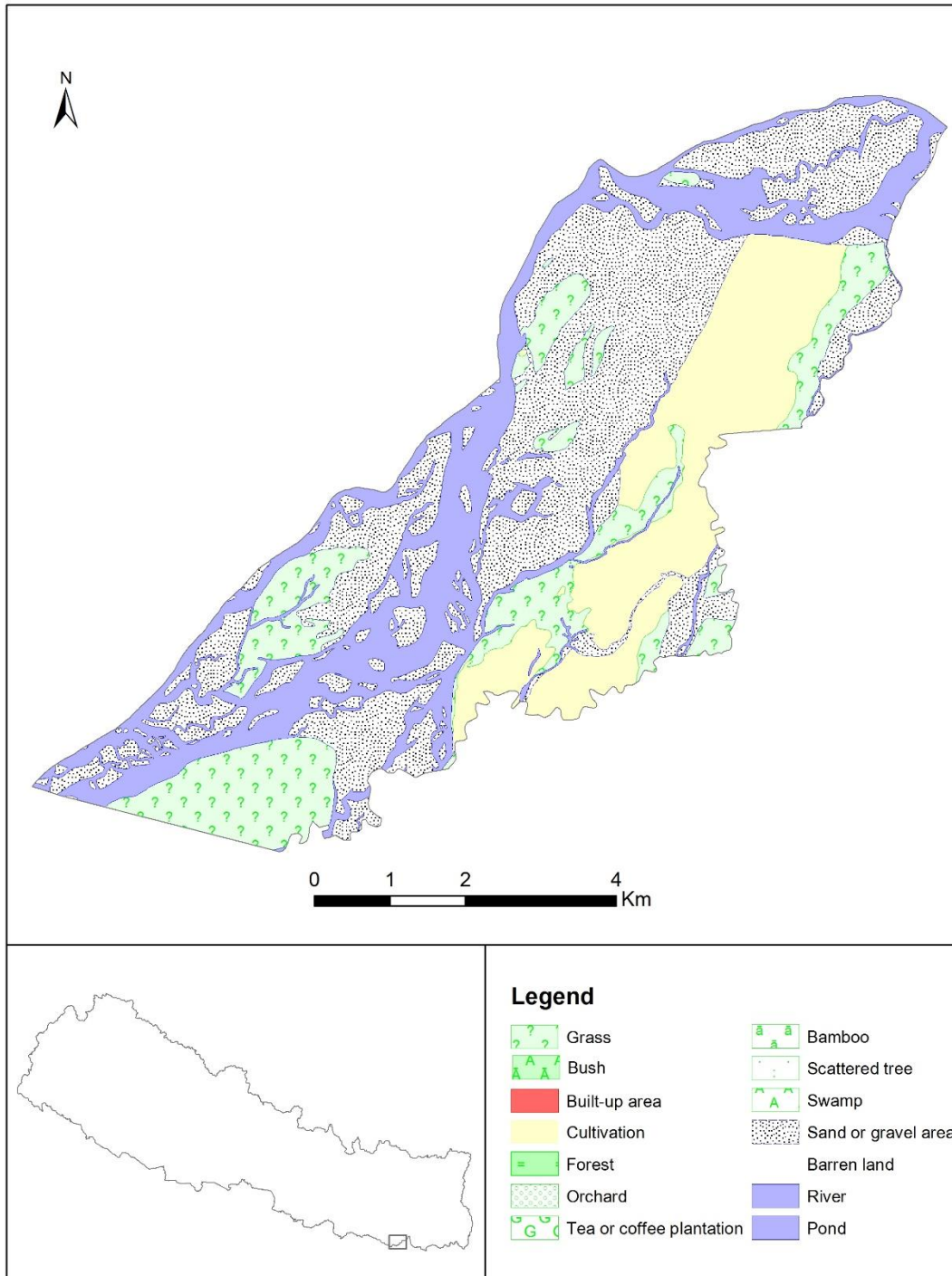


Figure 4.4: Fieldwork sites in Gobargadha VDC (Source: Survey Department of Nepal, 1996)

I have purposefully chosen the settlements affected by the KR floods in the past. The settlements were scattered around different locations within the VDC and even outside the selected VDCs, but this study includes only settlements which were within the territory of the VDCs. The settlements which I have chosen from the Prakshpur VDC are Bandanda, Bahunikhola, Srilanka Tapu, Dholbajja, Rajabaas, Kali Mandir Tol, Kauwatoli, and Jungechowk. For ease of analysis, the settlements were categorised into Bandanda, Bahunikhola, Inner Prakashpur, and Srilanka Tapu based on their locations. Likewise, in Hanumangar VDC, I have chosen the settlements that are close to the western embankment of the KR. The settlements I have chosen from Hanumannagar are Hanumannagar Bazaar, Police Tol, Godiyadi Tol, Pandit Tol, Hatiya Tol, Miya Tol, and Malaha Tol. As there is no significant difference in the locations of the settlements, I have included the settlements into a single category. This study includes almost all the settlements from Gobargada VDC because the whole VDC is affected by floods annually. As some settlements have been displaced to nearby VDCs, they are also included in the study. The settlements which have been included in the study are: households from each ward¹⁰ of Gobargada village and also several households having houses both in Nepal as well as India just across the border; and displaced settlements living in Musahari Tol and Miya Tol in Joginiya VDC (Figure 4.5 and 4.6), and Baluwatar (in Sunsari district), which lies on the eastern side of the river but on the southern side of the barrage.

¹⁰ In Nepal, VDCs at the time of research were divided into 9 wards based upon the density of population and the geographical location of settlements.



Figure 4.5: Fieldwork sites in Joginiya VDC (Source: Google Image, 2017)



Figure 4.6: Baluwatar, Hariipur (Source: Google Image, 2017)

4.6 Data Collection and Analysis

4.6.1 Preparation for the Fieldwork

I applied to the Human Research Ethics Committee (HREC) on October 10, 2014, for permission to conduct the fieldwork. Along with the application, I submitted a summary of my research project, participant information statements (PIS) for both questionnaires and in-depth interviews, questionnaire and checklist for oral histories, and the safety protocol (see Appendix D). I received the HREC approval on December 1, 2014.

4.6.2 Fieldwork Experience

I conducted fieldwork in Nepal from the second week of April to the first week of August 2015. I completed the fieldwork in two phases: firstly, in Sunsari and Saptari Districts with the rural riverine communities for two months; and secondly, in Kathmandu with bureaucrats, retired officials, political leaders and experts, as noted in section 4.5, for the remaining two months. Within the riverine communities, I carried out formal and informal key-informant interviews with local respected people such as teachers and former VDC chairs. I collected household information from 230 households via semi-structured questionnaire interviews and conducted in-depth interviews with 25 household heads.

I was also directly involved in the everyday lives of some of these households through participant observation. I also visited the proposed construction site of the KHD, and the India-Nepal border to understand water-related issues around the border. In Kathmandu, I interviewed 22 individuals related to the international water issues of Nepal.

The fieldwork with the riverine communities was completed in two phases. The first phase started with the upstream communities in relation to the Koshi barrage i.e. communities from Prakashpur VDC of Sunsari District; and the second phase with the downstream communities i.e. people from Hanumannagar and Gobargada VDCs of Saptari District. I was unfamiliar with the place and people living in these locations before I conducted this research.

My point of entry to the field sites was via a friend, who used to work with an INGO, *ActionAid* Eastern Regional Office, Biratnagar. She was also involved with some of the flood risk reduction projects around the KR that were undertaken by the organisation. As she had worked with local NGOs and local communities, she introduced me to two contacts: one person working in the same INGO; and the other working in a local NGO, *Abhiyan Nepal*. These individuals provided me with information regarding the field sites and some more contacts of local key-informants in my research sites. The contacts were helpful in contacting additional people in the sites.

It is most difficult to get accommodation in unknown areas of Nepal. However, finding a place to live in the Prakashpur VDC, where my actual fieldwork began, was aided by a contact of mine who was also a teacher previously teaching in one of the schools in the adjoining VDC of Prakashpur. This man accompanied me to the village and introduced me to his colleagues, who are also teachers in the local schools and local community leaders. Meeting with them was very helpful in building rapport with locals, identifying flood victims living in the VDC and beginning the fieldwork in a favourable way. It was also easy to get accommodation in the river island, Srilanka Tapu, because of a contact provided by the owner of the house, where I lived, in Prakashpur.

However, it was difficult to find accommodation in Hanumannagar VDC. I eventually found a room close to the market at Hanumannagar through a primary school teacher at a local school who is a respected man in the locality. I received accommodation and assistance from him in arranging meetings with the villagers and getting contacts of local leaders. As this new residence of mine was close to the former secretary of the Hanumannagar VDC, it became easy to get information about the various issues related to the KR; and on getting contacts of many relevant people in the VDC and surrounding VDCs.

Another major hurdle that I faced while conducting the fieldwork was the big earthquake that devastated several parts of the country. The earthquake hit when I had just started my fieldwork in Prakashpur village. Two major earthquakes, 15 days apart, also shattered the people of Kathmandu as many buildings collapsed and many people died. Since my parents, daughter (18 months old) and grandmother (93 years old) were living in a home in Kathmandu, it was a terrible experience, and I was unable to continue my research for a few days. Frequent and scary aftershocks occurred every day. Despite the devastation and the tremors, I decided to keep on continuing my research.

Emotional support from my family made me strong enough to carry on the fieldwork during the entire period until I completed it. Despite the massive devastation in Kathmandu, my family assured me that nothing had happened to them, and they insisted I finish my fieldwork and return home. I returned home after completing the fieldwork as per the advice.

4.6.3 Research Assistants

For conducting the semi-structured interviews with the riverine households, I recruited some research assistants. I employed three local research assistants each in the upstream and the downstream settlements. The research assistants were not available every day due to their other commitments. The hired assistants were local teachers and were the most highly educated people in the villages who were available for the job. There were multiple reasons for employing them:

- a. Some of the villagers were not able to communicate in Nepali, which is my native language. In the upstream villages, some of the respondents spoke Bengali while others spoke *Chandrabanshi* language, whereas, in the downstream villages most people spoke the *Maithili* language with little Nepali. Though I was able to understand the essence of their languages most of the time, I was not able to understand every word;
- b. The time periods that I had allocated for the upstream and downstream settlements were short, but I had to conduct many household interviews. When I conducted the interviews alone, it was difficult to locate the houses of the disaster-affected people because they were scattered. At the same time, the earthquakes increased my fear of not being able to carry out and complete my research work on time. I, therefore, recruited research assistants to conduct the survey questionnaires;
- c. Although the villagers were informed about the nature and purpose of the research before giving their consent, they were still suspicious of my research and were hesitant to reply to some of my questions. In addition to the HREC documentation, I felt that they needed somebody to assure them that their information would not be misused;
- d. Travelling to the river islands both upstream and downstream of the barrage was challenging due to security-related issues. Therefore, to ensure safety it was necessary for me to be accompanied by the locals to conduct the surveys and the interviews.

Before recruiting the assistants, I explained to them about the nature and purpose of my research and that the research ethics needed to be followed properly. While conducting the interviews, they asked the respondents and translated to me whenever I felt difficulty in understanding them. At some points of data collection, they helped me in the process of triangulating the collected data.

4.6.4 Key-informant Interviews

Key-informants played an important role, helping me in recognising, knowing and collecting data from the river communities. I approached four levels of key-informants for reaching the respondents in the communities. The first was the contact that I knew previously. As noted above, she is a friend of mine who worked with an INGO, ActionAid at the Eastern Regional Office. As she had just left the organisation where she worked in the field of disaster risk reduction directly and indirectly with the river communities, she provided me with a general overview of the projects being carried out by her organisation during her tenure and the communities that the organisation was working for. Most importantly, she also provided me with further contacts who were still working with the communities. One of them was from the same organisation and the other was from a local NGO, and they became the second level of key-informants for this study. They explained to me about their projects at my research sites and surrounding areas and provided me with some related documents. Besides, they also provided me with some contacts from the research sites who were directly working with these organisations. These contacts turned into the third level of my key-informants. As they were the locals from the research sites, they gave a general overview of the villages, the people living there, the brief history of the KR disasters and the whereabouts of the disaster-affected people and their situations. They also provided me contacts of teachers and the local community and political leaders, who served as the fourth level of key-informants. Among the local political leaders, almost all of them had been the chair of the VDCs. Therefore, they had good information regarding many aspects of VDCs, including the KR disasters. I also attempted to interview the VDC secretary, the local government official of Prakashpur, but he informed me that his office did not have information regarding the KR disasters. However, in the case of Hanumannagar VDC, it was a former government official who provided much valuable and relevant information on the history of the KR barrage construction, the disasters in the KR, the whereabouts of the disaster-affected people and their situation. I also conducted an

interview with the president of the Koshi Victims Society, which was established in 2003 to work for justice for the victims of the KR disasters. I also interviewed a high-level politician who was involved in protesting the proposed KHDP.

Altogether I conducted 23 key-informant interviews in the riverine settlements, among which 10 interviews were conducted from the upstream settlements, and 13 from the downstream settlements. All the key-informants were male except one from the downstream settlements. The duration of the interviews averaged 45 minutes, with the shortest taking 12 minutes and longest lasting one hour 17 minutes. All the interviews with the key-informants from the communities were audio recorded.

4.6.5 Semi-structured Questionnaires

Most of the interviews conducted with the river communities were semi-structured interviews. Semi-structured interviews were conducted with 230 households from both upstream and downstream villages, being 111 households from the upstream settlements and 119 households from the downstream settlements (see table 4.1).

Table 4.1: An overview of the semi-structured interviews

Location	Number
1. Upstream (Prakashpur, Sunsari District)	
Prakashpur VDC	
Inner, Prakashpur	33
Inner Bund Side, Prakashpur	11
Bandanda, Prakashpur	8
Bahunikhola, Prakashpur	29
Koshitappu, Srilanka Tapu, Prakashpur	30
Sub-Total	111
2. Downstream (Saptari District)	
Hanumannagar VDC	
	56
Gobargada VDC	
	30
Joginiya VDC (Migrated from Gobargadha VDC)	
Musahari Tol, Joginiya	13
Miya Tol, Joginiya	8
Baluwatar, Haripur VDC, Sunsari (Migrated from Gobargadha VDC)	12
Sub-Total	119
Total	230

Before conducting the interviews, the respondents were selected through a systematic sampling technique, selecting every third or fourth household from the disaster-affected settlements, depending upon the size of the households in those settlements. Most of the settlements comprised extended families, which included brothers and uncles, in separate households. As the histories related to disasters were the same, only one household was selected from those families to avoid repetition. The interviews were conducted with the household heads, who are either the main earners or the elder member of the households. The selection of respondents was based on their length of stay in their households so that they could share their past lived experiences. Therefore, elder respondents were preferred over younger ones, especially the young married females were not chosen unless married in the same village, because they had migrated from their parental home to their husbands' home only after marriage. Therefore, some female household heads have been interviewed for this study. The duration of the interviews was on average 45 minutes but varied between half an hour and one and a half hours.

Diverse population characteristics have been considered for recruiting the interviewees. A brief overview of the age, gender and marital status of the participants is provided here. First, the age of the respondents varied from their early 20s to late 80s, and most of them were aged between 41 and 65 which is 62.6 percent (n=144, N=230) (see table 4.2). Second, there were a significant number of female participants, although males dominated the interviews. About 22 percent (n=50, N=230) females participated in the interviews. Lastly, the number of married participants was very high compared to widowed and separated (from husbands but not divorced) women. Almost 87 percent (n=200, N=230) were married, while about 12 percent (n=27, N=230) were widowed women.

Table 4.2: Distribution of Participants by Age

SN	Age Groups	No. of Participants	Percentage
1	21-25	7	3.04%
2	26-30	8	3.48%
3	31-35	11	4.78%
4	36-40	17	7.39%
5	41-45	28	12.17%
6	46-50	32	13.91%
7	51-55	29	12.61%
8	56-60	29	12.61%
9	61-65	26	11.30%
10	66-70	21	9.13%
11	71-75	10	4.35%
12	76-80	8	3.48%
13	80-90	4	1.74%
Total		230	100.00%

4.6.6 In-depth Interviews/Oral histories within the River Communities

In the second phase of the fieldwork with the river communities, I conducted in-depth interviews based on the information received from the semi-structured interviews. The selection of the households for the interviews depended upon the relevance of the information and its importance to the research. Therefore, the interviews were conducted with the same respondents, who had provided the information. The reasons behind conducting interviews were to gain insights into the

respondents' individual life-stories and the historical contexts, events and situations of the KR disasters. Altogether I conducted 41 interviews with the riverine communities, being 24 interviews in the upstream settlements and 17 interviews were conducted in the downstream settlements. Although I attempted to ensure gender balance in selecting the participants for the interviews, it was not possible due to the hesitation of the women in the communities. I was successful in interviewing a total of five women. The duration of the interviews with these women averaged 15-20 minutes, with the shortest one taking about 10 minutes and the longest one taking about 35 minutes. All in-depth interviews were audio recorded.

4.6.7 In-depth Interviews in Kathmandu

In the second phase of my research, I conducted in-depth interviews with various people related to national and international water issues in Kathmandu. A set of open-ended questions were used for the interviews. As noted in section 4.5, I interviewed some higher level bureaucrats from Nepal working in the Ministry of Irrigation, the Ministry of Energy, the Department of Irrigation, the Water and Energy Commission; some former ministers and central level leaders of political parties such as the Nepali Congress, the Communist Party of Nepal- United Marxist and Leninist (CPN-UML), the then Communist Party of Nepal-Maoists (currently Maoist-Centre), the *Rastriya Prajatantra Party* (National Democratic Party) and the Communist Party of Nepal – Maoist – Revolutionary; prominent water experts; and retired higher-level government officials who have worked on issues related to water and hydro-energy. I completed 22 interviews, 7 with politicians, 5 with bureaucrats, 4 with experts and 6 with former government officials. The interviewees will be identified with various codes in chapters five to eight. The Politicians are coded as P1 to P7; the bureaucrats as B1 to B5; the experts as E1 to E4; and the former government officials as R1 to R6. The purpose of the interviews was to understand the historical trajectory of transboundary water issues between India and Nepal, the underlying role of geopolitics in water conflicts between the countries, the governance of transboundary rivers, the processes of negotiation, signing and implementation of international water-related agreements and treaties between the countries and the existing situations of different aspects of Nepal in the aftermath of the agreements and treaties. The duration of the interviews ranged from 25 minutes to 2 hours 20 minutes, and almost all the interviews were audio recorded.

Some government officials shared bitter stories about the India-Nepal water relations yet hesitated to speak on those issues when the audio recording was on. One of the government officials even withdrew from the audio recording and was not even ready to sign the participant consent form, even though I explained everything to him about maintaining confidentiality. Some government officials just talked about technical aspects of the India-Nepal water relation, leaving behind the political and social aspects. Besides, many of the officials in the ministries were new and inexperienced. Many officials in the Ministry of Irrigation had just been transferred from other ministries. In the Ministry of Energy, very few officials had worked for more than a few years. This made me find interviewee officials from the respective departments of the ministries for the interviews.

Similarly, it was not easy to interview experts and political leaders. It took a long time to gain appointments with the experts. Among them, one expert postponed his appointment with me seven times. The case was similar for the political leaders. They were in the final days of drafting the new constitution of Nepal, which was promulgated on September 20, 2015. Therefore, they wanted me to interview them in the final days of my departure to Sydney. Most of the interviews with them took place in the last week, with one interview on the day of my flight to Sydney.

Besides, I have also used some secondary data such as newspapers (including online news), and websites of various organisations, along with a piece of information from a Facebook page of one of the interviewees for analysing the interviews in relation to the geopolitical context of transboundary water in South Asia, particularly between Nepal and India. The secondary information was basically related to disasters related to floods and droughts, irrigation and electricity-related data and cross-border incidents, which are related to Nepal-India water relations. Likewise, I noticed important information in a Facebook page of a high-level official of Nepal, which I have quoted in this thesis. The information is related to the compliance of an agreement between Nepal and India, which was useful in informing the existing compliance issues in the Nepal-India water relations.

4.6.8 Participant Observation (PO)

An important qualitative data collection technique while doing fieldwork is participant observation (PO), which allows for data collection from both etic, views from outside, as well as emic, views

from within as an insider, aspects (Morris et al. 1999). Apart from gathering data, PO can also be employed to triangulate data by comparing interview data with observed data. During my fieldwork, I employed PO as a technique of collecting as well as triangulating the collected data. This is why I lived in the communities instead of staying in hotels with facilities during my fieldwork.

One of the benefits of PO is that it enriches the data collected by providing a nuanced understanding of the matter under study. For example, when I travelled to the river islands and lived with the villagers in both the upstream and downstream villages, I learnt many things that were not possible if I had decided to stay in comfortable hotels. While travelling to and from the islands, I gained the understanding of what modes of transport the villagers use while crossing the KR; the things that the villagers transport across the river; the distance people walk for gaining access to market; the daily activities of people in the villages.

4.6.9 Data Analysis Procedures

The collected data has been analysed in different ways. Most of the household level data collected through the semi-structured interviews were analysed by using descriptive statistics such as cross-tabulation, graphical and frequency distribution, pie charts and bar diagrams. The qualitative data collected from the in-depth interviews were analysed by using content, narrative and discourse.

Before the data were analysed, they were prepared for analysis. Firstly, the household level data gathered through the semi-structured interviews were sorted according to the questions in the questionnaire. Then, they were coded and entered into different categories in an Excel spreadsheet, and thematically dissected so that different aspects could be comprehended and compared. Simple descriptive statistics were generated in the form of tables, graphs, charts and diagrams. Secondly, the audio records of the interviews in different languages were transcribed in English, and the field notes were expanded and described. These data have been analysed by using content and discourse analyses. Some of the direct quotes from the interviews that have been used in this thesis are translated by the author, except where indicated.

Content analysis has been used in this thesis to analyse and interpret texts. The texts comprise of both primary and secondary sources. It may be the texts in the questionnaire, transcribed in-depth

interview materials, field notes, and secondary literature such as official government documents, newspaper materials, speeches and reports related to the transboundary river governance in Nepal. Therefore, the texts are associated with the India-Nepal geopolitics, negotiation of IRAs, hydro-power development, irrigation, floods and inundation in Nepal.

Discourse analysis is widely used in social sciences. Phillips & Hardy (2002, p.3) define discourse as “an interrelated set of texts, and the practices of their production, dissemination, and reception, that brings an object into being.” Texts may be embodied and enacted in different forms such as written documents, spoken words, visual pictures and symbolic artwork (Fairclough, 2013). This is to say, discourse analysis takes into account the words or speech or statements or thinking or conception or observation that are put forward by actors in various forms and gives them meanings. According to Hajer (1995, p. 44), discourse is also "a specific ensemble of ideas, concepts, and categorisations that are produced, reproduced, and transformed in a particular set of practices through which meaning is given to physical and social realities". This basically means that discourse “defines and produces the objects of our knowledge” (Hall, 2001, p. 72). Thus, discourse is closely related to the ideas or conceptions of various actors. This study analyses texts or ideas produced by the actors involved in the KRG during the fieldwork interviews, media interviews, public speeches and other information dissemination occasions in the form of documents.

In the process of producing the objects of people’s knowledge or social realities, discourse guides the mode of the debate or the discussion. According to Hall (2001, p. 72), discourse ““rules in’ certain ways of talking about a topic, defining an acceptable and intelligible way to talk, write, or conduct oneself.” Conversely, it also rules out other ways of talking on the same topic. Therefore, van Dijk (2008) argues that there exists a relationship between discourse and power that demonstrates how discourses enact, reproduce and resist exploitation, dominations and inequalities. A powerful actor’s individual agency plays a key role in determining the discourse. Thus, in the current study, discourse analysis is helpful in scrutinising how various actors attempt to control and maintain access to the river resources through the interplay of power and socio-political interaction among them. By using the discourse analysis, this thesis specifically focuses on how the powerful actors attempt to regulate the river resources before introducing new projects, and how the weaker actors put their effort in maintaining their access to the resources.

4.7 Research Rigour

Rigour in research denotes cautious following of rules, procedures and techniques that are built and approved by the scientific community while conducting research (Taylor et al. 2017; Thompson, 2000). It is needed to follow the systematic procedures to ensure the trustworthiness of a research project. There are four ways of ensuring the trustworthiness; they are credibility, transferability, dependability and confirmability (Watkins & Gioia, 2015; Watkins, 2012; Ulin et al. 2005). Firstly, credibility, the term used in a qualitative research, indicates the firmness in the truth of the findings of research (Watkins & Gioia, 2015). That is to say, credibility enhances the confidence of the researcher in discovering the truth. Secondly, transferability means the applicability of knowledge acquired in qualitative studies to other situations (Watkins & Gioia, 2015). Thirdly, dependability relates to the consistency of research with regard to following the rules and procedures of qualitative methodology (Watkins & Gioia, 2015; Watkins 2012; Ulin et al. 2005). Lastly, confirmability is an aspect of qualitative research that is considered to show that the research undertaken is not influenced by the researcher while collecting or analysing data (Watkins & Gioia, 2015). To achieve rigour in the current research i.e. to ensure credibility, transferability, dependability and confirmability, this study draws on the following procedures: triangulation, member checking, searching for alternative explanations, and researcher reflexivity.

Triangulation is one of the most frequently used tools for validating data in research, and it was also very useful for the current research during data collection. This study used two strategies of triangulation while collecting data – the first was collecting information on a phenomenon by asking the same question to multiple respondents, and the second was gathering information on the same phenomenon by using several methods. While collecting data on a phenomenon related to a group or a large number of respondents, the same question was asked to as many respondents as possible to find out a pattern of different perspectives of the respondents. The data collected on the same phenomenon by using different techniques, such as semi-structured interviews, in-depth interviews and observation, were compared wherever possible, and the mistakes were immediately sorted. These strategies were very helpful in minimising inaccuracies in the data gathered. Triangulation is important because it enhances the transferability of the research finding (Marshall & Rossman, 2011; Creswell, 2007).

Member checking is another important procedure used for minimising errors while collecting data. This research also used this technique while collecting data. After collecting data from the respondents either via questionnaire surveys or interviews, some important or interesting or doubtful issues were re-visited with them to make sure that the information they provided did not diverge from the previous ones. With few exceptions, almost all information collected previously was accurate, as their response did not change. In cases where information did differ from previous responses, they were asked to clarify their previous information. This happened only on a few occasions, and their explanation justified the clarification. Performing member checking helps in confirming the credibility of the study findings and interpretations (Creswell, 2007; Lincoln & Guba, 1985).

Apart from these, I also kept records of how and in which circumstances the interviews were done with the household members from river communities. This helped me in asking some of the questions that were not answered, or the respondents felt were difficult to answer due to the presence of other people in later meetings with them.

Finally, researcher reflexivity is another important procedure that has to be taken into account while conducting qualitative research. A researcher's subjectivity shapes the overall nature of his/her research. In other words, the subjectivity of a researcher guides him/her through all the processes of the entire research, from choosing a particular research topic to data analysis and interpretation (England, 1994; Valentine, 2002; Billo & Hiemstra, 2013). However, if a researcher is unable to give attention to control his/her subjectivity, it spoils the whole research project. For resolving this issue, conscious reflexive efforts are essential while carrying out research. Reflexive efforts are vital for maintaining the ethics of conducting a good qualitative research (Lincoln & Guba, 1985). Therefore, this research has given due importance to complying with researcher reflexivity practice. I have been aware and so monitored my own assumptions, biases, prejudices, preconceptions, preferences and values throughout this study through conscious reflexive work.

Generally, reflexivity is critical in knowledge production, in that the subjectivity and positionality of a researcher influence both research decisions taken by the researcher and power relations with respondents and research community (see England, 1994; Rose, 1997; Valentine, 2002; Billo & Hiemstra, 2013; Kohl & McCutcheon, 2015). Fieldwork is a part of the personal experience of a researcher, and the researcher's instinct, senses and sentiments are strongly embedded in the

process (Madison, 2002). It is therefore important to acknowledge and reflect the researcher's own voice, position, power, intuitions and feelings in the research. The positionality of the researcher also influences his/her power relations with his respondents and the community being researched. Thus, giving attention to reflexivity evades false neutrality and universality of much of academic knowledge (Rose, 1997).

My fieldwork in Nepal, my home country, created dilemmas for me. Although it was my home, the field sites in riverine communities were away from my hometown and are rural areas. I was therefore not in my home, though it was my home country. My positionality with my respondents was dynamic, often contradictory, changing from community to community and from location to location. I was at times an insider, outsider and both during my fieldwork. In the upstream settlements, it was comparatively easier to get accommodation than in the downstream settlements. The ease with which I was accepted by the community was defined by three factors. The first was my introduction to the place by a local contact. The second was that I am an educated person from Kathmandu, the capital city. The third was the existence of educated people who knew the importance of my research. However, my positionality as an educated person from the capital city did not work in the downstream settlement of Hanumannagar in finding accommodation for me. This is probably due to my ethnicity, which differs from that of local residents. The people living in the VDC are mostly of Madhesi origin, but I am a Hill-origin individual. As Saptari district was one of the most affected districts of Nepal by the Madhesh uprising in 2007 and subsequent violent activities targeted against the Hill-origin people, which made many Hill-origin people flee Terai, I might have been considered as an outsider by the people. They were probably sceptical about a Hill-origin person. Even my educational background did not help me in finding accommodation. Luckily, a local contact of a teacher from the upstream VDC helped in getting accommodation.

My positionality as an educated man from the city was evident during interviews with the respondents, especially among the uneducated and less educated ones. Many participants were deferential towards me, which is usually the case with educated people from the city. Some provided me chairs or stools to sit as soon as I arrived at their place, while some invited me to sit on their beds in their rooms, as they did not have other spaces to offer. Some even offered food, tea and curd. These all were the hospitality and generosity shown towards a guest from the participants. Being an educated person from the city also posed a challenge for me, as most of them expected some material benefit from me. This may also be because most of the I/NGOs

provide daily stipends while conducting interviews. Some of them, mostly from the downstream settlements, even asked me compensation for their lost assets, thinking that I was a government official. I had to constantly negotiate my multiple positionalities in order to have ethical relations with them.

Apart from the riverine communities, I was also “othered” by some of the respondents from Kathmandu. It was mostly the politicians, bureaucrats and experts who rejected and postponed my meetings and rushed the interviews with them. This made me negotiate my research ethics on a continuous basis.

While discussing reflexivity, it is also important to consider the power relation with research assistants during data collection. According to Anwar & Viqar (2017, p. 115), “ethnography in risky places demands collaborative engagements with RAs [research assistants] on practical issues of safety, and on ethical and epistemic difficulties that compromise and enable productive research outcomes.” Similar to Anwar & Viqar’s (2017) ethnography, I also employed research assistants, as noted in section 4.6, while collecting data from the respondents living in the remote areas such as Gobargadha and Srilanka Tapu and for overcoming the difficulty in understanding their local language. Recruiting the local research assistants became a good strategy for getting information from the people as they became open to me in their presence.

4.8 Limitations

Apart from the limitations of time and financial resources, this study has a number of constraints. The major methodological limitations are outlined below.

First, a limitation of this study is that it is inclined towards studying flood disasters, though the aim of the study is also to study the issues related to irrigation. As it was more focused on floods, much of the data collected are related to flood disasters while data on irrigation-related issues is scant. This study has collected most of the data related to the issue of water sharing at the international level but lacks sufficient data on irrigation issues at the local level. Though some data has been collected in the downstream, not much data on irrigation was available from the upstream. This is because my research settlements did not need irrigation as they did not have sufficient land for cultivation, and those who owned land were not reached by the irrigation benefits.

Second, although I was collecting data on floods from the communities, I was not able to experience the lives of the villagers during floods, which would have provided me with the firsthand experience of the lives of people and the strategies that they used during floods. The timing of my fieldwork did not allow me to experience flooding, which was good from a researcher safety perspective.

Third, another limitation of this study is it has been unable to include river communities from the Indian side. Though my initial research design included data collection from the Indian communities, it was changed due to the unpredictable and unavoidable earthquakes which occurred during my fieldwork. I was not able to work for some days due to the tremors. This limitation has restricted this study from portraying a complete picture of the KRG issues.

Fourth, one more limitation during data collection was the use of the research assistants. Though they were helpful in triangulating data at times, their presence in the river islands became a hurdle in collecting some sensitive data from the respondents. Some of the respondents hesitated to provide the information regarding their income and property ownership in their presence. Some of them provided reduced income, and some reduced their owned land area. However, triangulating the data with the research assistants revealed that they had not reduced their income largely, and only a few did not reveal that they owned land. Much of the triangulated data was corrected during the data entry from the field notes, but a few cases may be unrevealed. This may have slightly affected the analysis of income and property in the thesis.

Lastly, some bureaucrats were hesitant to provide what they perceived as sensitive information regarding India-Nepal water relations. Some of them agreed to provide some information with the audio recorder off, and some provided the information informally without being officially interviewed as they did not want to expose themselves to such matters. I suspect from their gestures that they still hid some issues with me. This may have limited necessary data for my study. This issue was overcome by getting as much information as possible from the ones who were open, and by comparing the data with the available grey literature.

4.9 Summary

This chapter has outlined the overall methodological approach, design and methods used to empirically address the research questions raised in chapter one. The methods used in this research

are both qualitative and quantitative, as part of an actor-oriented political ecology approach. The study has employed a case study method and has used methodological tools and procedures such as a questionnaire, key-informant interviews, semi-structured household interviews, unstructured in-depth interviews and participant observation for collecting data. The next chapter presents the results obtained via the use of these methods.

Chapter Five: Geopolitics and the Koshi River Agreement

5.1 Introduction

This chapter presents the geopolitics between India and Nepal and its effects on water-related agreements between the countries. It is argued here that the geopolitics influences the views of the people of Nepal regarding the transboundary water development projects in Nepal. This chapter is based on interviews with the current and the former government officials working in the field of water, high-level politicians and water development experts based in Kathmandu, Nepal and secondary literature which includes newspaper articles, reports and documents. The first section presents the geopolitics and the water politics between the countries in the past and now. This is followed by a section on the impetus for the KRA that took place in 1954. The section presents how agreements, including the KRA, are executed. The penultimate section presents the agreements from the perspective of the provision of livelihoods and security of the people living in riverine communities of Nepal. The last section provides a summary of the chapter.

5.2 The Geopolitics and the Water Politics

Geopolitics plays a significant role in TWG. Geopolitics between India and Nepal is vital in the governance of the rivers flowing from Nepal to India. This section presents the geopolitics and the water politics between these two countries in the past and in the present. It focuses on the influence of India in the internal politics and water politics of Nepal. It is divided into three sub-sections. The first sub-section presents the geopolitics prior to the Comprehensive Peace Accord in 2006 between the Communist Party of Nepal – Maoists and the seven-party alliance for the restoration of peace in the aftermath of the violent 10-year People's War. The second sub-section presents the water relations between the two countries, and the third sub-section presents the geopolitics and the water politics that have taken place in recent years.

5.2.1 Geopolitics in the Past

The land-locked nature of Nepal and its trade-dependency upon India have enabled India to influence the everyday lives of Nepalis and the Nepalese politics, particularly after Indian independence in 1947. In 1950, the last Rana government signed the currently much disputed-treaty of Peace and Friendship with India on 31 July just three months before the Rana regime came to an end. The Nepalese side has termed the treaty as unequal, and many Nepalis have been objecting to the treaty. They are most concerned about two of the ten articles of the treaty. First, the people have raised their voice mainly against Article 5, which requires Nepal to inform India while importing arms, ammunition or war-materials and equipment from a third country. India has punished Nepal for violating the clause on several occasions, which will be discussed later in this chapter. Next, some people, especially the supporters of the Greater Nepal movement, find article 8 controversial because it cancels all previous treaties and agreements that have taken place between the then British government in India and the Government of Nepal (“Three Greater”, 2018). They are of the view that the statement should also cancel the Sugauli Treaty (signed in 1815 and ratified in 1816), which made Nepal lose two-thirds of its territory to colonial India and present-day India in the aftermath of the Anglo-Nepali War of 1814-1816, believing the lost territory should be returned to Nepal. The people have currently been carrying out campaigns and demonstrations in raising this issue in the name of The Greater Nepal. As the people’s resentment has grown, and voices have also been raised officially by political leaders of Nepal, a high-level bilateral group, the Eminent Persons Group (EPG) on Nepal-India Relations, was formed during the Indian PM’s official visit to Nepal in August, 2014 (Ministry of External Affairs, 2014), primarily for reviewing all the treaties between the countries. The EPG has already undertaken seven meetings so far, and it is expected to publish a final report after the final meeting is held (“Acceptable final,” 2018).

India’s influence in Nepalese politics intensified after the first declaration of democracy in Nepal on February 18, 1951, after the abolition of the Rana regime. Even the agreement, between the King, the Rana Prime Minister and the representatives from the Nepali Congress party, negotiated for the establishment of democracy took place after an agreement in Delhi that was moderated by India. As noted in chapter three, this was the period when the Koshi and Gandak Agreements took place. The democracy did not remain for long as the late King Mahendra seized power in 1960.

The King's direct rule, popularly known as the Panchayat Rule after the promulgation of a new constitution in December 1962, was a party-less political system in which the people would elect their local representatives, while the real power remained with the monarch. Panchayat Rule continued for nearly 30 years until 1990, when popular democracy was reinstated via a mass movement triggered by internal politics and inspired by the disintegration of the Soviet Union in 1989. No additional water-related agreements with India occurred under Panchayat Rule.

An important event that occurred during the Panchayat Rule was India's refusal to endorse the late King Birendra's proposal to declare Nepal as a Zone of Peace in 1975. The main proposition of the proposal was to institutionalise peace for security, independence and development of the country amid increasing belligerency and war-related activities in the world. One of the reasons behind the proposal for the zone of peace was the King's assessment of the threat to his throne by seeing the activities being carried out by India in Sikkim for its integration with India (Muni, 2009). It is now evident in a book by a former officer of the Research and Analysis Wing (R&AW), the primary foreign intelligence agency of India, that the annexation of Nepal's Terai (the southern plain) was also part of the plan of the former R&AW chief, who masterminded the annexation of Sikkim (Yadav, 2014). The probable reasons behind India's rejection of the proposal might be a foreseeable end to its influence and China's increasing influence in Nepal.

Just before democracy was reinstated in 1990 by the abolition of the Panchayat Rule, India imposed an unofficial economic blockade over Nepal in 1989. There were several reasons for the blockade, but the main reason was Nepal's increasing intimacy with China, demonstrated by the purchase of arms from China by Nepal in August 1988 against the 1950's Peace and Friendship Treaty (Crossette, 1989). The other reason was the disagreement over the mode of renegotiation of the nearly expiring trade and transit treaties (Bhattarai, 2015). Nepal wanted to separate transit rights from trade ties with India, which was refused by the latter. As a consequence of the blockade, the situation of the Nepali people deteriorated due to the unavailability of fuel and food. The then government had to import petroleum products from Bangladesh and Singapore. The blockade remained for 13 months.

Many interview-respondents, specifically the retired officials, the experts and the political leaders, believed that India has been engaging in creating instability and is involved in the

micromanagement of Nepal's internal affairs after the restoration of democracy in Nepal. They see India as the major actor in changing the governments in the smaller nation. They claimed that India used its power, both political and economic, to bring favourable politicians to power in Nepal. They also believed that India played a crucial role in purchasing the votes of members of parliaments either for choosing the prime-minister or passing a specific important bill in the Nepalese parliament. They criticised the suddenly increased activities of the officials of the Indian Embassy in Nepal during major political events in the country. One of the retired officials (R6) even believed that India provided shelter to the Maoists during the "people's war" which was carried out for 10 years. New Delhi also played an active role in making the 12-point agreement happen between the then Communist Party of Nepal - Maoists and the then seven-party alliance, which favoured the parliamentary system in Nepal, in New Delhi in November 2005. The 12-point agreement was the basis for the initiation of the peace process in Nepal after the war, which took place by signing the Comprehensive Peace Accord in November 2006.

5.2.2 India-Nepal Water Relations

The India-Nepal water relationship is very complicated and asymmetrical in nature according to the interview respondents. Almost all the respondents agreed that there is power asymmetry between the two countries that define the water-relationship. A water development expert (E1) opined that the relationship is "defined by the power asymmetry, the asymmetry in military power, the asymmetry in economic power and the asymmetry in knowledge power"; and it is the "hegemon at play". Another water expert (E2) called the relationship "Highly Unsatisfactory" and guided by "a neo-colonial approach" of India because of the non-implementation of the treaties. The issues will be discussed in the succeeding sections.

It's a complicated subject. Water politics between the countries is obviously complicated ... sometimes, water politics eases the relationship and sometimes, it affects other overall politics between the two countries ... Obviously, from the Sharada Treaty to the Integrated project in Mahakali, as Nepal has always been weak in comparison to India, which is reflected in the water agreements. It's seen that Nepal has not got its due share ... More or less, the powerful nation controls water ... So, water politics is related to the overall politics. (A Current Government Official (B2), The Department of Irrigation)¹¹

¹¹ All quotes have been translated from Nepali to English unless otherwise specified.

According to a former government official at the Ministry of Water Resources (R6), “there was an asymmetrical relationship at that time [in the past]; and it is [the same] at present as well.” According to almost all respondents, the power asymmetry is visible in the Big-brother attitude of India. Because of this attitude of India, the experts, the former government officials and the politicians argued that the formation of new governments, their sustenance or endurance and downfall are defined by whether the acts of the governments are viewed favourably by the Indian establishment or not.

Politicians are guided by the phone-call from the second secretary of the Indian Embassy ... Becoming prime minister or minister is dependent on the Indian goodwill. That’s where the problem is. (A Water Development Expert (E2), in English)

Because our avenues are limited, there is instability in Nepal mainly due to India; and many Indians are residing in Nepal by becoming Nepali citizens ... What history shows whatever happens here and happened in past have been done by India. This is the fact ... Either the trade or on the frontier, the border, or on the water resources or on the investment, not a single field has shown a success as regards to cooperation between the two countries. It has been a relationship, very asymmetrical situation, and a relationship dictated by the powerful country. (A Former Government Official, the Ministry of Water Resources (R6), in English)

In the experiences of some of the respondents, India’s behaviour with Nepal is more or less like its behaviour with its states.

In many cases, India behaves [towards] Nepal as one of its states (sic). If it needs to give something to us, it takes Nepal as a foreign country; and if it needs to get something from us, it takes Nepal as one of its states. (A Former Minister for Water Resources (P5))

However, Indian dominance over Nepal also depends upon the behaviour of the Nepalese politicians. Almost all of the respondents felt that the Nepalese politicians are not strong enough to put their words in front of their counterparts from India. The respondents have provided various reasons which make the politicians inferior while sitting at the negotiation table. The major reason provided is that the politicians fear about the short-life of their reign in power, or an interruption in their journey to power if India does not support them. Another reason provided is almost all the leaders of the country are involved in politics with only a goal of earning money. According to the respondents, it is very easy to make money if they follow whatever India tells them to do. Some of the examples that were provided by the respondents were: opening of political parties in Nepal with support from Indian politicians; providing funding for political parties of Nepal by India and providing study scholarships to the children of Nepalese politicians. The respondents believe that

the cupidity of the politicians then is translated into the negotiation of unequal or inequitable agreements.

Nepal's negotiating position is [should have been] determined by the patriotism. Unfortunately, there have not been any patriotic leaders in Nepal. What has been seen until today is, they have been motivated by getting admission in good academic institutions for their children, good employment opportunity, study scholarships for their children. Even some sign the agreements just for providing the service of wining and dining in India. They don't have a love for the country ... If the leaders can't make Lainchaur (the Indian Embassy in Nepal) or New Delhi happy, they can't keep on staying in power. They work in a way that would make India happy, and they commit this kind of anti-nationalist treaties for making them happy ... Until today, what we have been seeing consistently is, [raising the issue of] nationalism in the case of water resources has been the ladder to succeed to power. (A Water Development Expert (E4))

5.2.2.1 Indo-Nepal Water Agreements and Disputes

All the agreements and the treaties between the two countries have been disputed by the political parties and the people of Nepal. This is because they perceived that the agreements are unequal in terms of the benefits – irrigation, hydropower, and flood control; and losses – inundation, erosion, floods and sovereignty of the land on which the projects are built. A former government official from the Ministry of Water Resources (R6) argued (in English), “There is not a single agreement, which you could cite as a successful and satisfactory to both parties.” Because of the unequal provisions in the case of the Koshi and the Gandak treaties, there is growing mistrust between the countries.

In the case of the Koshi agreement and the Gandak treaty, Nepal has received only the negative externalities while India has received only the positive externalities. As the Koshi barrage has been constructed close to the border, the land lying in the north of the barrage is not irrigated, which means the barrage does not irrigate Nepali land. In the case of the Gandak barrage, the western canal irrigates Nepali land, but it first goes to India and then only comes to Nepal in Bara district. But the canal has been destroyed by the Indians, which does not allow water to enter Nepal ... That's why Nepal has not been benefited in terms of water resources development historically. (A Water Development Expert (E4))

In the experience of the respondents, they have felt that India only carries out those works that are beneficial to them. They do not execute works that benefit Nepal.

What I feel is, the works that provide benefit to India are going to be done, but the ones that benefit Nepal are stalled. For example, India is getting water from the Gandak barrage and has also channelized water for irrigation from the Koshi barrage by inundating the upstream areas. But we

are not benefited to that level. (A Current Government Official (B4), The Water and Energy Commission Secretariat)

The Mahakali Treaty (1996)

In the case of the Mahakali Treaty, the respondents had mixed responses. Some bureaucrats and political leaders were happy with the treaty as they found that the treaty is much improved and more balanced compared to the previous agreements. For them, the dispute on the clause related to the water distribution between the countries is not a big issue. In their terms, the clause for distribution of water with the phrase “without prejudice to the prior water use”, in relation to the water being used by the existing Sarada Barrage (India), does not affect Nepal as there is no place in Nepal where the water could be used. They are of the view that the water needs to be provided to India after all, and the price of the water can be negotiated later. But the former officials, most experts and many politicians were of the view that the treaty itself cannot be said to be fair. They were of the view that the treaty should not have included the provision of prior water use rights¹², and the allocated amount of water for each country should also have been explicitly mentioned. A former government official (R2) who was involved in the negotiation of the treaty repented for making the deal and for not being able to make it equal. Moreover, all the respondents doubted that the project would be implemented according to the agreement.

We [only] have a small conflict of prior water-use. As we will not be transferring the water from Mahakali to Karnali because Karnali contains sufficient water, so we will have to provide it back to India; and we will only need to work on pricing later. So, for me, this is a much better treaty ... I don't see any reason to stall the project just because the amount of water for India is not mentioned. (A Current Government Official (B4), The Water and Energy Commission Secretariat)

The politicians [were] of the view that the treaty should occur at any cost. As we, the bureaucrats agreed to what the politicians said, we are also responsible for that ... As I was also in the team of negotiation [of the Mahakali Treaty] at that time, I should take the responsibility too. But, that clause was included in the treaty after it was decided at the political level at the later stage. That clause was the major constraint in the negotiation of the treaty at the later stage. As the politicians agreed on the clause, it was included, and this clause has been controversial. I accept that ... I am responsible for the treaty; I don't run away from it. If the politicians had asked us (bureaucrats) to study some specific issues, we would have definitely done. But I don't run away. We were driven by the mindset of anyhow completing the treaty, and the basis of the negotiation was the draft

¹² The provision of prior water use right refers to not counting on the amount of water that has been used previously and been continued at present. According to Nepali officials, India wants to have control over more water than Nepal, as it has been getting more water from the Sarada barrage after the irrigation canals were constructed.

prepared by the CPN UML ... I take the administrative responsibility of the weaknesses in the treaty. (A Former Government Official (R2), The Ministry of Water Resources)

Regarding the Mahakali Treaty, one of the water experts (E4) argued that “the Mahakali Treaty is bad while the revised Koshi and Gandak treaties are good”. He was of the view that 45 percent of the inundation would occur in the Nepalese territory and 55 percent in the Indian territory due to the Pancheshwar dam. He questioned:

If there is no much land for irrigation in Nepal, why would they allow to inundate that much of land? And why not to construct a dam that is just sufficient to irrigate the available land? Otherwise, why should they inundate the land in Nepal? If we should get more inundation, we should also get paid for the water. (A Water Development Expert (E4))

As noted above, many of the respondents believed that the Mahakali Treaty would not be implemented. As per their prediction, the works related to the treaty have not been satisfactory as it has been already 21 years from the date of signature. They argued that the treaty is very good on paper, but nothing related to the project has moved forward.

In the case of the Mahakali Treaty, there is everything on paper, but we have not received anything. It's already almost 20 years, we have not got anything. Even the head regulator has not been built that was included in the agreement. A head-regulator from Tanakpur should have been built. We have been fighting for the seal level in the head regulator. India also has not built a head regulator for building a 3-km canal for Chandani-Dodhara. We have got nothing in the last 20 years. (A Current Government Official (B2), The Department of Irrigation)

Almost everybody believed that the treaty was negotiated just to legalise the Tanakpur Barrage built by India prior to any agreement with Nepal. The interviewees also blamed India because it does not implement the projects that are beneficial to Nepal. Instead of moving forward with the project, India is just controlling the project so that no other actors could come there. One of the water experts (E2) argued that the treaty is already dead as its completion time of 8 years has elapsed. In his opinion, it is time for renegotiating the treaty.

In black and white, Mahakali [treaty] is better, but nothing has been done yet. It has legalized Tanakpur [barrage] ... Good projects have not been implemented, and implemented projects have not been good. (A Former Government Official (R5), The Ministry of Water Resources)

The construction of the Tanakpur Barrage by India and the negotiation of Mahakali Treaty created a mess in the political arena of the country and defamed India among the Nepalese people. India began building the barrage shortly after the visit of the then PM of Nepal, Girija Prasad Koirala, to India in December 1991 in which he consented to construct it. As the construction work changed

the border and the territory of the country, the political parties in the opposition and people objected to the work. Because of his act, his party lost the mid-term election, which he declared shortly afterwards. Later, the treaty also caused a split in the opposition party, the Communist Party of Nepal, United Marxist-Leninist, into two when it voted for endorsing the treaty. The then constitution had a provision to pass any transboundary river-related project by the two-thirds majority in the parliament.

The former government official (R2) from the Ministry of Water Resources argued that he proposed to separate the Tanakpur barrage from the Mahakali package, and only negotiate an agreement regarding the former. But he was convinced that all the three major parties had built-up a consensus regarding the treaty and was presented with the consensus paper. The parties were of the same voice because they wanted to end the chaos created by the Tanakpur issue. This incident proved that transboundary water-related issues are very sensitive, especially in Nepal.

As the agreements have various consequences, the current bureaucrats argued that the agreements are contextual individually. So, all the agreements should not be weighed on the same scale. One of the officials (B2) from the Department of Irrigation opined, “It’s not sufficient to judge a treaty just by looking at the language of the treaty”. According to him, it also depends upon the implementation aspect of the treaty.

After the agreements, particularly the Mahakali Treaty 1996, had taken place, blame games started in Nepalese politics. The political parties in the opposition criticised the governing political party which negotiated the treaty by accusing that party of bowing to India. Some members of the parliament were also accused of taking bribes for endorsing the treaty. The issues also became influential in bringing down governments and were used as political agendas for elections, especially in the late 1990s.

5.2.2.2 India’s opposition to the development of irrigation projects for Nepal

Apart from the projects noted above, India has been pushing Nepal to negotiate additional projects in Nepal for some time. In most of the projects proposed by India, it gets most of the irrigation and flood-control benefits. However, according to all the respondents, India is not willing to construct

multi-purpose dams in the hills of Nepal as it fears that it will lose control over water as Nepal will benefit more by diverting water from the dam. A current official (B4) from Water and Energy Commission, Nepal argued that India does not want Nepal to use water for irrigation purposes, so it does not want third-party investors to come into Nepal. As India opposed the irrigation and basin-transfer projects of Nepal, the investors like the World Bank (WB), the ADB and other funding agencies, dropped their plans to develop the projects. According to the international norm, the investors should get consent from the downstream countries, which might be affected by a project, to develop a water consumptive project in a different country. This is the reason Nepal alone invested in irrigation projects like Babai, Sikta and Bagmati.

Let's take the case of Kankai [Project], the ADB was interested in Kankai River in the 1970s. Biratnagar was an industrial town, the ADB wanted to construct a 50-60 MW power plant with irrigation in Biratnagar. But India opposed it as the ADB is a multilateral institution ... In the case of Bagmati also, Saudi was interested. India again opposed, and they walked away ... Bagmati and Kamala barrages have been constructed by Nepal's own money. In the case of Kankai, the weir was constructed from the fund from the ADB to divert water only in the months other than the dry season. Now we are left with two rivers ... In the case of Babai, the WB agreed to support for irrigation, but India opposed. Then it was cancelled. (A Former Official (R4), the Nepal Energy Authority)

The informants believed that India's main interest in Nepal is to have control over Nepal's water resources although it proposes Nepal for hydropower projects. It wants to use the resources for the benefit of its own people. According to the respondents, it is not the hydropower that India wants from Nepal. A former Minister (P2) for Water Resources argued that India wanted to have flood control, irrigation and power in the past, but it wants drinking water at present as some of its major cities are suffering from a lack of drinking water. However, another former minister (P5) of the same ministry argued that India wants a monopoly over Nepal's water resources. Furthermore, a water development expert (E1) argues that India wants to exercise control and domination over Nepal and get water as a by-product without needing to pay for it and without externalising the cost.

Basically, I may be biased, but the major interest of India is in water resources of Nepal rather than in electricity. It wants to use all the water resources of Nepal and wants Nepal to be under its control. (A Former Government Official (R2), The Ministry of Water Resources)

Basically, India's main intention is water. It's not concerned with energy. In near future within 20-25 years... its energy demand will be so high that all Nepal's energy of 40-45000 MW if developed will only make about 2 percent of India's total demand. So, it will not depend upon Nepal for energy in that situation. But energy for India is directly or indirectly related to water security. In

my opinion, it's all for guaranteeing or ensuring water for India as the production of energy needs a continuous flow of water downstream. If we could develop regulated projects - multi-purpose, it would benefit us. Primarily, India's interest is in water. (A Current Government Official (B4), The Water and Energy Commission Secretariat).

5.2.3 Geopolitics and Water Politics at Present

5.2.3.1 *Indian Interest in Nepal: The Energy Discourse*

While Nepal has been facing serious power deficits for over a decade, India wants involvement in the development of big water projects in Nepal. India wants Nepal to export power generated from the hydro-power projects in Nepal to its territory. As Nepal is not able to invest in big power projects, India wants involvement in the development and intends to export to its territory. Regarding the export of electricity, the major stakeholders of energy development in Nepal are mainly divided into two groups. One group is for the export of electricity produced in Nepal. A discourse is being popularised by this group that Nepal can become rich by exporting electricity. The supporters argue that Nepal's development is only possible via the export of the electricity as it will be able to get power instantly, then fully own the projects after a certain period when Nepal itself is not able to invest in mega projects. A current government official (B4) is of the view that Nepal should develop projects that export electricity for revenue generation. Another official (B2) and a former minister (P5) argued that Nepal should export electricity, but only when it is sufficient for Nepal. But the other group argues that Nepal will not develop by developing water projects in such a model. Most of the respondents were of this view. They say that Nepal should not focus on exporting electricity when it is facing a huge power deficit, so it needs to develop power for its own consumption. It can export energy only when energy becomes surplus for Nepal. Some of them argued that we should not follow the Bhutanese model of electricity production, in which India heavily invests in the projects and all the energy is exported to India even without providing energy to the Bhutanese people. Some even argued that exporting electricity is a kind of neo-colonialism. Others say that India does not develop projects, and it will take a long time to develop them if it must do because it just wants to capture the projects so that it could have control over them.

We also need financial revenue ... It's simply that if we value-add electricity, revenue would increase. But certain environment should be created for value-addition. If energy is produced at the

rate of the growth of the industrial sector of Nepal, they can't consume the electricity. And one thing that we should note is it's [the agreement] only for 25-30 years, then it's all ours ... I feel that it is appropriate when it is seen holistically than one-sidedly. (A Current Government Official (B4), The Water and Energy Commission Secretariat)

No any country has become rich by exporting electricity ... And projects are basically controlled by an external power; everyone is seeing Nepal as a power exporting nation - how does that help? ... Many want Nepal to take Bhutan's position. (A Water Development Expert (E1), in English)

India will not pay more than the cost of electricity. (A Water Development Expert (E2), in English)

5.2.3.2 Indian Prime Minister Modi's State Visit to Nepal

The state visit of the Indian Prime Minister to Nepal took place after a long time when PM Modi visited Nepal in 2014. He was heartily welcomed by Nepal and its people. The PM's visit was taken positively by the political parties and the people of Nepal, with not much objection when the agreements on the Project Development Agreement (PDA) and the Power Trade Agreement (PTA) took place during his visit. The PDA was related to the development of the Upper-Karnali Hydropower Project, and the PTA was related to trading power between the countries. His address speech in the Nepali parliament was welcomed by political parties and people.

The PDA was also not far from the dispute. Firstly, a group of experts denounced the government for keeping the agreement secret for some time. Secondly, they doubted that the Investment Board of Nepal, the authorised agency of Nepal, incorporated the 23-points suggestion that was submitted to the government by the group via some members of the parliament. Their main objections were: a. the project should have been carried out by Nepal itself as it was regarded as the "Crown-of-a-Jewel" project because of its natural setting for electricity generation; b. it was unnecessarily upgraded to 900 MW, and now it will kill other projects close to the project site. Thirdly, they denounced the provision in the agreement that Nepal would bear all the cost if the project cannot go ahead due to security or other reasons. The former government officials, the experts and the former politicians feared that the project would harm Nepal more than it would benefit.

However, the current government officials were of the view that the experts should not oppose the project because it has already been given to a private company for execution. One of the officials (B4) aggressively questioned the experts,

If they had been right in their positions (with the decisions that they made in the past when they were in the high-level positions), would the country's situation be like this?

Another official (B1) argued that the experts have not consulted recent studies, and they have been opposing the project on the basis of a 10-year old study. A current government official (B2) shared that he had demanded the project to carry out a study of its repercussions on the irrigation projects downstream of the project site. The study was carried out for 6-months and necessitated the change in the operation model of the project. He opined that there was no alternative now except continuing the scheme.

The major concern of the former officials and the experts was that the project would not be executed because it was awarded in 2008 to an Indian company, after bidding in 2006, to be completed within 84 months. They did not do this work on time but upgraded the project and the PDA was done in 2014.

Nepal has negotiated these projects by bowing down (to India). Nepal could be spoiled financially by these projects because we have guaranteed many things to them. Our country is in political instability, and when we have even guaranteed to pay fines of the political instability... But if the project is obstructed, I think the country will not be able to bear the cost. (A Former Government Official (R5), The Ministry of Water Resources)

The former government officials, the experts and some politicians argued that the signing of PDA violated the constitution as such projects of national interest should have been endorsed by a 2/3rd majority of the parliament. They also argued that only because of this constitutional barrier, India came forward with its semi-private and private companies to deal with Nepal. But, the current officials argue that such constraints push the economic development of the country backwards.

5.2.3.3 Promulgation of the new Constitution and Indian Objection

Although India has very close ties with Nepal and its people, Nepal's relationship with India has always been sensitive and critical. During the massive earthquake in April 2015, India was the first country to send disaster support materials to Nepal. It helped many earthquake-hit people during the disaster-emergency, but the acts and attitude of Indian relief workers and media became highly disputed among the Nepalis. Many Nepalis condemned the Indian side for only carrying its media persons instead of rescuing very few victims in the Indian helicopters ("#GoHomeIndianMedia: Here's why", 2015). Thousands of Nepalis also poured their anger over the Indian media for being

“insensitive and jingoistic”, and they tweeted the hashtag #GoBackIndianMedia, which became a top social media trend in Nepal (Biswas, 2015, para. 3).

Just after the earthquake, political turmoil in Madhes (the southern plain Terai-belt of Nepal) erupted against the inequality that the Madhesi people perceived while drafting the ongoing new constitution in the constituent assembly (CA). They had two demands, among others, which were considered sensitive by the major political parties. They were: a. to declare the whole Madhes as a single autonomous province; and b. to make electoral constituencies solely based on the population, but not based on the geographical area. During the protests, altogether 45 people, including police officers and the public of Nepal, were killed in August and September 2015. Amid the protests, the CA promulgated the newly drafted constitution on September 20, 2015, without addressing the issues of the Madhesi people.

In response to the newly promulgated constitution, the Indian government issued a statement indirectly suggesting Nepal address the issues disputed by the Madhesi people but did not welcome the constitution. Because of the issuance of the Indian statement, many Nepalis strongly reacted on social media. People from Nepal and around the world tweeted the hashtag #BackOffIndia more than 70 thousand times that became the top worldwide trend in twitter on September 22, 2015 (#BackOffIndia trending, 2015).

Following the promulgation of the constitution, the protests led by the Madhes based parties became violent in the Nepal-India border as their clashes occurred with the government security forces of Nepal. As a result, India halted the supply of fuel and other daily essential products to Nepal, citing security reasons. The Nepal government accused India of intentionally imposing the embargo because the supply was stopped even from the transit points which were peaceful, but India denied its role in creating the situation. As a result of the embargo, Nepal and its people, especially in the Hills, suffered severely for not getting access to the supply of their daily needs, such as important fuel, petroleum products, and daily essential food items, as they were in the process of recovering from the consequences of the devastating earthquake which occurred a few months earlier. This led to the initiation of the process of importing fuel from China, despite the geographical difficulty. It was because India had the monopoly over the distribution of petroleum products to Nepal until now. Although Nepal signed a deal with China on October 28, 2015, to

import one-third of the country's fuel demand from China, Nepal has not been able to do so till today, apart from some fuel sent by China on a grant. Nepal also imported food and other items during this period to offset the unfeasible import from India. Currently, Nepal is also in the process of opening as many trade routes as possible with China.

Many interview-respondents argued that India has begun its engagement in the micro-management of Nepal while it was only involved in the macro-management in the past. Previously, they have been involved in the issues related to policy, security and in having Nepal's support in the world level undertakings. According to a political leader (P3), they are engaged in changing governments, forming a ministerial cabinet, installing their people in high-level positions and recruitment and transfer of bureaucrats at present.

Due to the unofficial Indian blockade, many Nepali people resent India. During the blockade, then PM of Nepal K.P. Oli firmly stood against India. The resolute nationalism shown by the PM has been taken as one of the main reasons for the landslide victory of his party in the recent local, provincial and federal elections held in 2017 (Bhattarai, 2017). The party, in alliance with the CPN Maoist-Centre, bagged the two-thirds majority in the first-past-the-post voting in the first federal parliamentary election.

5.2.3.4 Incidents in Tilathi and Mahendranagar

Some incidents around the Nepal-India border have been violent, involving the people across the border, particularly in areas bordering Bihar and Uttar Pradesh states of India. In July 2016, a clash occurred between the people across the border in the Saptari district when the people in the Nepalese side demolished a makeshift levee constructed (in place of a dam destroyed by a flood in the Khando River) along the border in the no-man's land by the Indian side ("12 injured", 2016). The reason behind the demolition according to the people was the possibility of inundation of the Nepalese settlements due to the diversion of water from the levee towards the Nepalese side. The destruction was followed by pelting stones across the border by the locals on both the sides that injured 12 people in the Nepalese side. This was the first time that the people across the border clashed with each other in relation to flooding and inundation issues, despite the construction of many embankments along the border by the Indian side.

In March 2017, a Nepali man was allegedly killed by the Armed Border Force (Seema Sashastra Bal) of India in relation to a dispute over construction of a culvert in their locality (“Nepali killed”, 2017). The people in the Nepalese side argued that the site where they were carrying out the construction was in Nepal, while the Indian authorities claimed that the site was in the no-man's land. Many Nepalese people gathered and protested the act of the Indian security personnel, but the Indian side denied any firing by the security force (Giri and Laskar, 2017).

These kinds of incidents have increased resentment in the Nepalese people against India. For instance, Nepali people pressured the Nepal government to construct one of its national-pride projects, the Kathmandu-Terai Fast-Track¹³, to be seized from the Indian company and be built by Nepal. In November 2016, the then government declared that the highway would be built by Nepal. The people have also been demanding the revision of all the treaties and agreements negotiated with India.

5.2.3.5 The recent flood in Nepal in 2017

After the devastating floods in the 2017 monsoon, the locals from Susta of Nawalparasi district attempted to breach the Gandak canal. The main reason behind the incident was the destruction of 300 *bigaha*¹⁴ (203.18 ha) of agricultural cultivation, but neither Nepal nor the Indian governments were ready to compensate them for the loss, according to the locals (“Gandak bandh”, 2017). Another reason given by the people was the flooding of their settlements every year by the overflow from the canal (Paudel, 2017). This shows anger accumulated in the people affected by floods every year by the Indian-constructed flood control and irrigation structures.

The recent flash flood in August 2017, a result of 400 mm of rainfall within 24 hours and continued rain for a few more days, caused extensive flooding and inundation in almost all parts of the Terai region (see Photograph 5.1). The flood killed 159 people, injured 45, and resulted in 28 missing people according to the Ministry of Home Affairs, Nepal (MoHA) as of 27 August 2017 (Rural

¹³ It is a proposed fast-track highway, which will connect the capital of Nepal, Kathmandu with the Terai in Nijgadh of Bara District. It is expected to reduce the travel distance and time between Kathmandu and Terai significantly. It would be a track of 76.2 km and the travel time is just 3 hours. It is considered as a national pride development project by the government of Nepal.

¹⁴ 1 Bigaha = 6772.63 m² = 0.677 ha

Reconstruction Nepal, 2017). According to the MoHA, the floods also destroyed 43,000 houses and displaced about 21,000 families as per the Ministry of Home Affairs, Nepal (United Nations Office of the Resident Coordinator Nepal, 2017). The floods also destroyed NRs.¹⁵ 8.11 billion (AUD 101.37 million) worth of crops according to the Ministry of Agricultural Development, Nepal (Practical Action, 2017).



Photograph 5.1: Inundation in Hanumanagar during 2017-floods (Source: Dipesh Khadga, Hanumannagar)

Resentment against India increased among the Nepalis when they believed that the barrages and embankments, dams and dykes built along the border caused the havoc on the Nepalese side. During the August 2017-flood, an incident in Saptari attracted the attention of many people. The incident was related to a man from Saptari district, who performed the last rites of his dead 3-month old baby, killed by the flood, by releasing the dead body in the Koshi River as he did not

¹⁵ Nepali Rupees; NRe. 1 = 0.0125 (Approximately)

get dry land for the burial (see Photograph 5.2). The story went viral on Facebook after the incident. Many people raised many questions during and in the aftermath of the floods on Facebook and Twitter. Many of them criticised the government for not being able to respond to the disaster on time, while many people in the eastern region of the country demanded the government ask India to open all the barrage gates. Some showed their anger -on social media, especially on Facebook, over not opening the gates of the barrages on the Koshi and Gandak rivers. The sentiment against India during the disaster was so high that some people even demanded the government take control of the barrage by itself, while some even demanded the Koshi Agreement be scrapped. There were also calls via Facebook for the radical political party, the Nepal Communist Party, to bomb the barrage (“Viplav aau,” 2017). In response, the communist party also warned India, in a press conference, of destroying the Koshi barrage and the Indian Embassy in Nepal if it did not open the barrage instantly (“Koshibarrage lagaayekaa”, August 2017). The resentment was also the outcome of a 3-month long unofficial blockade faced by the people. The story was the same in the Gandak barrage site.



Photograph 5.2: A man burying his child in the Koshi River (Source: <http://myrepublica.nagariknetwork.com/news/award-winning-photographs-of-2018-photo-feature/>)

However, experts working in the field of disaster management argued that the disaster was not due to the barrages. The former secretary of the Ministry of Energy, Nepal, Sheetal Babu Regmi, in an interview, argued that the Koshi barrage played no role in the disaster, as the barrage gates were opened according to the available norm (Kantipur TV HD, 2017). However, he argued that the infrastructure such as embankments, dykes and roads, built by India along the border was the major cause of the disaster. He also criticised the Nepal government for not having any plan to respond effectively to such disasters.

5.2.3.6 The voice for demolishing the barrage

In the visit of Nepali PM Sher Bahadur Deuba to India in August 2017, the prime minister and the Indian prime minister agreed to expedite the preparation of the DPR for the KHDP. Several parties have demanded the scrapping of the agreement. The Nepal Communist Party demanded the scrapping of the agreement in a statement by the Koshi Bureau in-charge (“Koshi Uchcha”, 2017). The party claimed that the agreement is anti-nationalistic as it is based on India’s plan to have control over both water and energy by inundating land in Nepal. A leader of the party warned that they were ready for any kind of war with India if it forcefully attempts to construct the dam. Similarly, the Federal Socialist Forum, Nepal has demanded to drop the agreement by issuing a statement (“Sapkoshimaa Baandh”, 2017). The Chairman of the CPN (Maoist Centre), one of the main allies of the current coalition government, also expressed his dissatisfaction with the agreement saying that proper study should be carried out first to go ahead with the project (“Extensive homework”, 2017).

5.3 The impetus of the Koshi Agreement: The Antecedents

This section presents the scenario and the stimulating factors that created the favourable situation for the signing of the Koshi Agreement in 1954. As the people who have negotiated water development projects between Nepal and India in the past have knowledge on the process of negotiations, this section has relied on interviews with current and the former bureaucrats.

The negotiation of the Koshi Agreement took place within two days. The Indian Minister for Planning arrived in Kathmandu on April 23, 1954, with the proposal, and the agreement was finalised on April 25, 1954 (Joshi and Rose, 1966). According to the then Finance Secretary of Nepal, Himalaya Shamsher Rana, the process of negotiation was very simple.

You see, I was in the government when the Kosi project [the KRP] was discussed. The Prime Minister who signed the treaty was criticized. But I remember when the Indian delegation came, the Nepalese Prime Minister set up a committee comprised of all the senior engineers: They examined the proposal, and they said it was OK. What can be done? (Dunham, 2007)

This statement demonstrates that the Indian side came to Kathmandu with full confidence of successfully finalising the negotiation of the agreement while the Nepali side was weak in terms of the negotiation capability. A water expert (E1) also argued in an interview that “all proposals on water came from India, and we essentially reacted” (in English). According to a current bureaucrat (B2), the engineers during the agreement were very young, so they were inexperienced and did not have the capability to negotiate the deal. In fact, there were not many engineers in Nepal during the Koshi and Gandak agreements, according to a current government official. The literacy rate was very low during that period, as many people were deprived of education due to a lack of schools and various other reasons such as economic backwardness and culture.

We did not know how to construct huge structures related to water. We didn't know the negotiation processes; we even didn't know why doing negotiation is important. We didn't have information and data. We didn't have the basis for negotiation. We didn't have any alternative except accepting their proposal. (A Bureaucrat (B2), Department of Irrigation)

It would be very difficult to negotiate an agreement without having proper guidelines and knowledge on the matters to be discussed. However, the Nepali side negotiated the deal even without knowing what the negotiation meant. A prominent former government official (R6), who worked in the Ministry of Water Resources, also argues the same.

There was an asymmetrical relationship at that time [during the Koshi Agreement], and it is the same at present as well. In such a situation, we had to negotiate deals, and we did. Therefore, it feels that we didn't understand what we were doing. (A Former Government Official (R6), the Ministry of Water Resources, in English)

After the signing of the agreement in 1954, the political parties and media criticised the prime minister for forfeiting extraterritorial sovereignty of the project sites for an indefinite period of time without gaining sufficient compensation and without allocating equitable benefit from the

project (Joshi & Rose, 1966). When the political parties and media interrogated the then PM of Nepal regarding the agreement, he revealed the reasons for accepting the Indian proposal. The prime minister disclosed that:

It would save annually about 2,000 acres of fertile land from erosion by the Kosi river and also dwelt at length on the irrigation facilities and hydroelectric power that would accrue to Nepal from the project. (Joshi & Rose, 1966, p. 163)

It seems that the prime minister and his team only evaluated the benefits that were being provided to Nepal, but they failed to carry out a comparative analysis of the loss and benefits of the project for Nepal and India. This may be either because of the weakness of the team in their capability or the pressure that they had from the Indian side or the time constraint. The then Finance Secretary also guessed that it might be due to the lack of experience and tactical knowledge in dealing with such situations with the close neighbour (Dunham, 2007). The prime minister and his team only saw the benefits in terms of prevention of land erosion, irrigation facility and hydro-power, and that too without investing a single Rupee.

A former Minister for Water Resources (P5), Nepal argued that the reason for accepting the Koshi Agreement is simple. In his words,

The revolution of 2007 BS [1950] [in Nepal] was guided and directed by India. That sympathy of India was paid by giving [handing over] the KR by Matrika Koirala [the then Prime Minister of Nepal].

The Nepali government during the agreement was new within a new system of governance. The revolution of 1951 overthrew the 104-year old Rana Rule in Nepal, and the power was reinstated in the hands of the then Shah King. The revolution was also inspired by the freedom movement in India that freed itself from British Rule and was also supported by the Indian establishment. This is why many argue that the then government was sympathetic to Delhi.

For India, the KRP was critical during that particular point of time because Bihar state was heavily affected by a huge flood in the previous year. The then Indian Prime Minister had an aerial visit over the affected area and decided to provide immediate relief to the people affected. On December 14, 1953, the then Indian Minister for Planning presented the outline of the KRA to be negotiated with Nepal in the Indian parliament. Within 4 months of getting the approval from the Indian parliament, the Indian delegate arrived in Kathmandu with the proposal.

According to the then Finance Secretary of Nepal, it is also the attitude of the Indian side that played a role in the quick and successful negotiation of the agreement. Regarding the negotiation of the treaty, he said that "... Once they have designed the project, they freeze on that and they will not change. It's a big country." (Dunham, 2007, para. 62) A former Minister for Water Resources of Nepal (P5) also shared his experience in an interview in a similar way - "Their mentality is that whatever they say, we need to accept them; and whatever we say, they need to analyse them."

Even in the case of the Mahakali Treaty, the then bureaucrats faced a bitter experience. A former government official (R2), who was present during the negotiation process, was not satisfied with the process.

I think the politicians were of the mindset that they must finalize the negotiation just anyhow ... And I think we all helped them in achieving it ... I think the bureaucrats were not provided with the environment to negotiate the deal in their own style. (A Former Government Official (R2), Ministry of Water Resources)

The negotiation was easy also because the Indian side was strategically sound, and the Nepalese side was too weak to handle the process. One of the former government officials (R2) who took part in the negotiation of the Mahakali Treaty disclosed, "The Indian side always looked from the broader perspective, but we only saw it from the perspective of finalizing the treaty". This also reveals that the Nepali side was still not strategically and tactically sound even during the Mahakali Treaty, so they were focused on only the issues put on the table for discussion by the other side.

5.4 Execution of the Agreement

Implementation of already negotiated agreements has been a major issue in the TWG in between the countries. All the interviewees, the current bureaucrats, former government officials, politicians and experts working on water-related issues in Nepal, all agree that implementation of the agreements is the major challenge that the countries are facing. A water expert (E1) finds that there is "no continuity between what has been said before and now". Most of them have argued that the treaties, in the case of India and Nepal, themselves cannot be evaluated on the basis of the contract without evaluating its implementation part.

The treaty [negotiated between the countries] may be good on paper but are not implemented. Treaties cannot be evaluated based upon the treaty paper. By looking at the implementation in the

field and in the paper, I think, the treaties in between Nepal and India are unique in the whole world. We have moved backwards from the clauses in some cases; some things have happened other than the clauses of the treaties, and it's not even easy to ask each other to comply with the clauses. Therefore, the treaties should be explained in terms of the implementation rather than looking at the black and white paper. (A Former Government Official (R5), The Ministry of Water Resources)

Another important thing relating to Indian side is they do the agreements but don't implement them. Indians have been occupying the projects without implementing them. (A Former Minister for Water Resources (P2))

The argument of the former Minister for Water Resources (P2) is that the main intention of India is just to occupy the projects, hence the project sites, without executing the project. All the interviewees argued that India wants to have control over Nepal's water resources. This helps India in preventing third-party investors around the site so that it can control the resource for a longer period of time. The minister doubted that India would implement the current and prior negotiated projects such as Arun-III and Pancheshwar. A prominent leader (P4) argued that India does not carry out its responsibilities related to the already implemented projects such as the Koshi because of its intention of only having control over water resources of Nepal.

Although everybody argued that the implementation of projects is poor, the bureaucrats, however, have been content with the benefits that Nepal has received in the case of the KRP. A government official from the Ministry of Energy, Nepal (B1) believed that Nepal received some significant benefits that otherwise would cost billions of Nepali Rupees at present value. The benefits include the Koshi bridge; the irrigation as well as the irrigation system built under the Sunsari-Morang Irrigation Project, also called the Chatara project; the Koshi distribution system that irrigates about 10,000 ha; and the pump canal system that also irrigates about 10,000 ha. He argued that Nepal received all these facilities without investing a single Rupee during that time when the country had no financial capacity to build such structures. Despite these benefits, he was not happy that "the project also inundates a large part of the country just for the sake of irrigating Indian land". A government official (B2) from the Department of Irrigation argued that the practical aspect of the KRP was good as it handed over the Sunsari-Morang Irrigation Canal to Nepal in 1975; a lot of things, which benefit Nepal, started only after 14-15 years; it has been managing all the river training works on the Nepalese side; and it has also provided water rights to Nepal in the tributaries. He asked, "what harm does the KRP have?"

Although Nepal received benefits from the project, and even if the inundation problem is ignored, a question still remains unanswered. Did Nepal get the benefits on time? The answer is no. It is because Nepal received the Chatara Canal in 1975, over a decade after the barrage and embankments were built. The bureaucrats and many others might say that it was normal to get the benefit by that time. The construction of the embankments was completed in 1959; the barrage was completed in 1962 and was inaugurated in April 1965. However, the construction of the Western Canal started only after 1978, though the foundation stone was laid in 1965, because Nepal demanded irrigation from the canal as the canal was going to be built through Nepali land (Dhungel, 2009, p. 19). The Indian side intended to channel water to India without providing any irrigation facility to Nepal (ibid.). The western canal began operation in 1982, and the pump canal was finalised in 1985. While constructing the barrage, the embankments and the Eastern Main Canal, India showed its capacity to work rapidly, but its work became very slow while working for irrigation in the Nepalese side.

Nepal's weakness and its capacity of negotiation for implementation become clear from the Facebook post of a high-level government officer of Nepal. The officer updated a Facebook status on September 17, 2016, which is as follows:

I am happy for addressing the issue of providing irrigation facility of 40,000 acres of land, out of which only 25,000 acres have been irrigated, from the western canal by India as per the Gandak Treaty, 1959 during the bilateral meeting of prime minister Prachanda with the Indian prime minister, in which I was also present. The issue was first raised during the meeting of JCKGP (Joint Commission on Koshi and Gandak Projects) which took place under my chairmanship.

Although the issue was related to the treaty that took place in 1959, India has not fulfilled its responsibility of constructing the irrigation facility for over 55 years; and Nepal was not able to raise the issue for 55 years. The government official became happy for addressing the issue on paper 57 years after the negotiation of the agreement, but he was happy despite the inability of the Nepal government to ask for compensation for the loss that Nepal has borne for not getting the irrigation benefit for so long.

The government officials also argued that the grievances related to the KRP were also addressed by the Indian side, but the process was very slow. A government official from the Department of Irrigation, Nepal (B2) said:

There were so many resentments and grievances, which were presented in interactions from time to time at different forums at the political level, public level and technical level that all were addressed gradually.

According to the current and former government officials and former Ministers for Water Resources, who have worked with their Indian counterparts, the attitude of the Indian government and the work attitude of the Bihar Government were the main constraints in the implementation of the negotiated agreements. Firstly, they argued that the Indian side presents themselves in “big-brother attitude” during bilateral meetings. According to one former official from the Ministry of Water Resources (R2), “I feel from my experiences in meetings with the Indian side that they intentionally dominate the Nepalese side.” Regarding compliance with agreements in practice, the Indian side intentionally neglects them. One of the former government officials (R5) from the Ministry of Water Resources accused India of not taking Nepalese projects as prestigious international projects, but they are taking them as their own “inter-state projects and carrying out lethargically”. “When I went to Mahakali [River] last year, [I found that] the Indian side had not left 10 cusecs of water downstream [as per the agreement]”; a former government official (R2) poured out his unhappiness. Secondly, they also questioned the Bihar Government’s work attitude for not implementing the Koshi agreement related repair and maintenance works. A former official from the Nepal Electricity Authority (R4) replied that “I think that’s got more to do with culture and mentality of the Bihar state” when asked about the implementation of the necessary works.

It’s the responsibility of Bihar [for carrying out the repair and maintenance related to the KRP], and the efficiency of Bihar government is very low. In 2002, the Nepalese side requested India to do the maintenance of the barrage as it would not be able to sustain even simple floods in the river. It’s also written in the minute. The Bihar government says that the central government didn’t provide a fund for it, but the Central government says that the money provided to the state government has been corrupted. (A Former Government Official (R5), Ministry of Water Resources)

We have all the things in the paper [all the minutes of the meetings related to the inundation issues], but they are not doing. What should we do? And where should we go for this? I don’t see ... If we ask them through the Foreign Ministry of Nepal, they say that they are doing. That’s it. (A Current Government Official (B4), Water and Energy Commission)

A former Minister for Water Resources (P5) also argued that the Indian side does not do the necessary things, even if they are requested. He said, “They blame Patna, and Patna blames Delhi.” A former Minister for Water Resources (P2) asserts that this may be because they think that the KRP is a dead project as per the studies carried out by them. He argues that:

They are spending crores¹⁶ of money annually for cleaning the siltation in the eastern canal. That is the reason for insisting on the KHDP. On the one hand, they think that they are spending too much money on the dead project, but they should do the repair and maintenance until an alternative is prepared. Secondly, they must repair the cutting and erosion of land upstream and downstream. This is the problem. (Anonymous Former Minister for Water Resources (P2), Nepal)

The current and the former government officials also find problems on the Nepalese side too for the implementation of projects and repair and maintenance works on different projects not moving forward. Firstly, there are problems in coordination among the government line agencies. A former official from the Water Resources Ministry shared his experience that the Ministry of Finance did not provide a necessary fund for projects that stalled the project.

In Mahakali, we did the treaty, but we have not been able to construct the canal because the government didn't provide money. It's our mistake. And, we didn't provide money for carrying out the DPR on Pancheshwar. Won't India despise us when we do like this? (A Former Government Official (R2), Ministry of Water Resources)

An official from the Water and Energy Commission, Nepal (B4) shared his bitter experience regarding the bilateral meetings of the Joint Committee on Inundation and Flood Management with India. According to him, one of the causes of floods in Terai is the construction of the Postal Highways¹⁷. On the one hand, the Nepali side has been raising the issue of inundation in the meetings, but on the other side, the lower administrative units have been granting permission to construct the highways.

Apart from the coordination among the government line agencies, there are other socio-political reasons as well. One of the reasons according to an official from the Department of Irrigation, Nepal (B2) is that the Wildlife Reserve, close to the Koshi Barrage, does not allow the workers to enter the reserve and that delays the work. According to the official, the Indian side also faces problems due to the reserve in the extraction of materials, carrying out the maintenance works and transportation.

The water experts also see the problem in Nepal's politicians and the bureaucrats. One of them (E1) criticises the bureaucracy for being "weak, not doing sufficient homework, reactive, passive

¹⁶ One crore is 10 million. NRs. 1 crore = NRs. 10,000,000.

¹⁷ The Postal Highway is also called *Hulaki Rajmarga* in Nepali. It is the highway constructed in the Terai belt of Nepal for facilitating postal services in the country, and it runs across the entire Terai from Bhadrapur in the east to the west of Nepal.

perhaps, no proactiveness” (in English) during negotiations. In such a situation, they will not be able to strongly negotiate with the other party. Another expert (E3) condemns the acts of the politicians for nominating the secretaries of the ministries based on their affiliation with certain political parties. As they are nominated, they are transferred from one ministry to another, which incapacitates them from performing well due to a lack of knowledge of the issues in the ministries. This makes their agenda weak and they are unable to match up with the other party during negotiations.

5.5 Water Agreements and the People: Probability of Future Water Agreements

This section presents the issues in the river agreements related to people living around the rivers. The views of the respondents regarding the issues related to the livelihoods and security of the people are presented here. It also presents the perceptions of the respondents on the KHDP, and Nepal’s probability of future water agreements with India.

Regarding the provision for the people living in the communities in and around rivers, the views of the experts and the current and former government officials are different. According to the experts, there are strictly no provisions for the security of people in any agreements. An expert (E1) argues that the provision of ecosystem flow in the Mahakali Treaty is just to make it look nice, and it was introduced in the treaty only because it took place in such a time period when the debate on the Commission of High Dam was escalating. He argued,

Nepal's bureaucracy is not interested in, for example, equity; it's guided by particular guided-values, perceptions, notions ... Guaranteeing livelihoods and human security is not included in the negotiations. (in English)

He argued that the Government of India has been providing the Nepal Government with millions of Rupees every year in the name of repairing and maintaining embankments because livelihoods and the security of people are not included in the agreement. He asked, “Why is India providing money for embankment every year?” He wished the money be provided for livelihoods of people, weather and flood forecasting, and rain gauge installations. He argued that India is providing the money to the Nepal Government only because it needs to sustain its own embankment building bureaucracy.

According to another water expert,

People and communities don't exist. Our official structure is blind to it completely ... It doesn't even exist [with a laugh]. I have never heard about the concerns of river communities in any meetings in Nepal. (A Water Development Expert (E2), in English)

He argues that the Department of Irrigation does not do anything for the betterment of farmers regarding water-related matters. For him, the department is all about contracts and corruption. "It's about cement contract. They just concern about contract and money, but not the river communities." These statements demonstrate the perception of rampant corruption in the name of flood and inundation fighting.

But the current and former government officials see that the human security aspect of the people has been well incorporated in the recent agreements. For most of them, the provision of leaving some water for downstream ecosystems is the major achievement in addressing the concerns of the people. According to a former government official,

We didn't think from that perspective [the perspective of human security of people in the river communities] in the past in the Koshi and the Gandak projects. We have provisioned to leave 10 cusecs of water downstream on this basis – for the ecosystem in the Mahakali Treaty. It's been attempted in the Mahakali treaty. (A Former Government Official (R2), Ministry of Water Resources)

Some interviewees also argued that there is a provision of resettlement for the riverine communities affected by development projects in the recent agreements, for example - the Mahakali Treaty. But there is the fear that the resettlement modalities in the future projects will be the same as that practised in the KRP (see chapter seven); it was not the actual resettlement but relocating people from their homes for a project without proper compensation. Apart from resettlement, there are also various socio-cultural aspects of the people that are not given proper attention by most of the projects.

In Koshi and Gandak treaties, we didn't have expertise at that time, but by the Mahakali agreement, we improved and have incorporated the process of resettlement of the communities affected by the project. And I am sure that the current projects – the Arun-III and the Upper Karnali have also incorporated these things. (A Former Minister for Water Resources (P2))

5.5.1 The Koshi High Dam Project

Although different Nepalese governments have agreed with India to conduct the DPR study of the KHDP, none of the interviewed bureaucrats, former government officials, experts and politicians were enthusiastic about the project. All of them had the same voice regarding the construction of the high dam, and they argued that it is the necessity of India and will only benefit India. According to them, the high dam has been envisioned by India primarily for flood control and irrigation in Bihar, India. However, some of them are positive about the project with certain conditions.

KHDP is important primarily for India ... If we can get the navigation right because of KHDP, that will be a significant gain for the country; because then, we will no longer be landlocked. You know the whole economic structure; the transfer cost of goods decreases significantly; that will be a great advantage ... The high dam project is primarily in India's interest ... If we are going to construct it then we must ensure that Nepal also benefits, in terms of navigation, in terms of power-sharing. (A Former Minister for Water Resources (P6))

For the former minister, the benefits that Nepal gets from the project must be clear at first; the benefits may be especially in terms of power and the navigation right to Kolkota. He would accept the project if it would ensure Nepal's freedom of navigation to the sea via the river. But since the experiences have shown that the implementation of projects is not reliable, as noted in the previous section, a water development expert (E4) puts different but strict conditions for developing the project. He has opined that the project should be developed under Nepal's control, unlike the existing KRP, and India should agree to pay for the downstream benefits and compensation for the negative externalities brought about by the project.

It has to be under the control of Nepal and should be developed only if it agrees to pay for the augmented water flow in the dry season ... If we get the compensation for the negative externalities, it can proceed. Otherwise, we don't need a huge dam and that much of energy from the dam. We can develop a small dam that would produce about 4-500 MW of energy and exclusively irrigate the land (5-600,000 ha) in Terai (in the dry season), and the water would flow to India. That's not a problem ... we can't undermine industrialization of the country despite lying in the seismic zone. (A Water Development Expert (E4))

A former government official from the Ministry of Water Resources (R2) was confident that the local people in the high dam project site would not allow India to build the dam unless their legitimate demands of livelihoods are fulfilled by the previous project. He was of the same opinion that the legitimate demands of compensation should be provided to the people affected by the existing project before the dam can be built. A former Minister for Water Resources (P5) feared the locals in the project site would chop-off the legs of the project officials, who visit the site for

conducting the DPR study, as they have claimed in the media. Showing such fear by a high-level politician raises a serious question on the law and order of the country and his silent approval to the issues raised by the people.

Some interviewees also opined that there must be a detailed study of the project by Nepal itself before agreeing to the proposal of India. A former government official from the same ministry (R5) argued that decisions cannot be taken based on previous studies because the bureaucrats were lazy at that time and they did not carry out a detailed study. According to him, new optimised studies of all probable reservoirs should be undertaken, by using modern tools and various parameters such as electricity generation, irrigation, drinking water, navigation and tourism, for enabling the government to take the reliable decision.

The respondents have provided various reasons for accepting the Indian proposal of conducting the DPR study of the KHDP by the Nepali governments. Almost all of them argued that Nepal does not have the capacity to say “No” to India. According to a former government official from the Ministry of Water Resources (R5), “The people in the government think that the project should be good as it has been introduced since the period of British India before 1947.” A water development expert (E2) argued that the Nepalese politicians are after the KHDP “only for money”. A former minister (P5) also argued to an extreme that it would be a life-threat to the politicians if they deny India’s proposal. He accused the Indian government of assassination of the political leaders who do not do what it wants by giving examples of some of the well-known national leaders who died in accidents.

However, many of the respondents do not see the probability of future agreements on river water between the countries. Almost everybody, except the current government officials, believes that the agreements negotiated in the past including the Mahakali Treaty are not fair for Nepal. Many of them doubt that the currently finalised projects, the Arun-III (project development agreement (PDA) signed in November 2014) and the Upper Karnali projects (PDA signed in September 2014), would be implemented smoothly. One of the reasons given for this doubt by a former government official from the Ministry of Water Resources is that too many mistakes have been made in the past, and further agreements cannot happen unless the mistakes are corrected. According to him,

Because of historical legacy, we have become too sensitive to the matters of water. India does not need to be that sensitive as the issues may be only for either UP or Bihar only, but for us, water is the lifeline. We too much politicized water. Therefore, we always think, while doing a treaty, that India is going to cheat us ... Our mindset is that – Nepal always bow down to India and always spoils things. So, Nepal should not do any kind of treaty now, but to sort out the previously done treaties by consciously studying them – gathering data. Strongly put things with India... and do a hard talk. If you have made mistakes, admit them, and we will do the same if we did. (A Former Government Official (R2), Ministry of Water Resources)

Another reason provided is that it is too hard to comply with the social and environmental guidelines to develop a big water project, and the resulting politicisation of the issues over social media.

I say that we had developed and standardized our negotiating capacity, so we were not weak. This has benefitted or harmed us in our water resource development. The 30 years from 1966 to 1996 has not been able to create a situation of just, reliable and equitable resource distribution. But at the same time, it is very difficult to say that we will develop big water projects in future. The need for a huge sum of money from donors around the world, complying with social and environmental guidelines obscures the water resource development. This situation has been produced now. If we had signed agreements in the 1970s, there would not have been problems in developing big dams, but it will be a very big issue at present. Therefore, from the benefit aspect, we have increased our bargaining power; and from the harm aspect, we might have lost the opportunity to construct big water projects. It was very easy to decide and construct projects during the King's regime. (A Current Government Official (B2), The Department of Irrigation)

5.6 Summary

The geopolitics between India and Nepal has been influencing the TWG of the rivers flowing across the countries prior to, and since the independence of India from colonial rule. The asymmetrical power relation between the two countries has provided India with the upper hand in its relationship with Nepal. The big-brother attitude that India has developed due to the asymmetry has played a key role in negotiating agreements with the micro-management of the tiny country. The asymmetry has also produced many issues regarding the governance of rivers via water agreements. Most of the benefits of the agreements have been skewed towards India, while Nepal has received fewer benefits. The people in Nepal have not been happy for the embankments, dams and dykes built along the border with India to protect its citizens. The past and present acts and attitude of India have irritated many people of Nepal working at different levels – from the high-level bureaucrats and politicians to the ordinary people. Such irritation may become the major constraint in the future joint-governance of the available water resources.

While the irritation does not directly impact the bureaucrats and politicians, the ordinary people suffer from problems such as flooding, inundation, erosion, loss of lives and loss of livelihoods. These kinds of crises are also evident in the case of the KRG. The next chapter deals with the crisis faced by the people in the KR communities produced in the course of the governance of the river.

Chapter Six: The Governance Driven Crisis in the Koshi River Communities

6.1 Introduction

My and my children's lives have been pushed 50 years back by the floods in the KR ... Because of the barrage, because the gates in the barrage were not opened, our lands were turned into sandbank due to the accumulation of silt. Our land was covered by about 5-7 feet of siltation. This made the land useless. On top of that, the floods that occurred every year eroded away all the land. Currently, the Koshi is flowing over the fertile land. As we [my family] lost all our belongings, our plight began. After becoming economically, psychologically and physically weak, there was too much difficulty in the household. Because of the incident, my father became sick. He was sick for 12-14 years and then died. When there is not a single earner in a household, it is very hard to survive. I was studying at 6-7th grade during that time ... When my father became ill, I could not continue my study. There was nobody at home to earn ... Where could one get employment without education?! What [job] could one get? In such a situation, neither the government nor any organizations helped us ... Consequently, I didn't get employment and had to do wage labour. How strong would be the economic condition of a wage labourer! So, we have been pushed much backwards. I haven't been able to improve that situation till now [after almost 22 years]. I was not even able to go overseas for employment because money is needed for going overseas. How could one arrange money when there is no property! Now, I have enrolled my children in a simple school instead of enrolling them in a good one because I don't have the capacity to enrol them in highly rated schools. That is why, it's not only by 50 years but by 100 years, our lives have been pushed behind because of the KR-flood. (Anonymous male, aged 45-50 years, Inner Prakashpur)

The KR has ruined the lives of many people from the riverine communities by erosion, inundation and siltation of their land and houses. The above story of a man from Prakashpur VDC shows how the flood in the Koshi River affected his family. This chapter presents the analysis of data gathered from the river communities. The next section describes the river communities from VDCs upstream and downstream of the Koshi barrage; this will provide a general overview of both the history and the present situation of the communities. This will be followed by the river communities' experiences of floods in section 6.3. A section on the irrigation situation in the communities will follow the flood experiences. This will be followed by the perception of the communities on the KRP, including the Koshi barrage, the embankments and the irrigation structures, and the reasons behind the people's suffering from the river. After this, the perception of the communities on the benefits of the river will be presented in section 6.5.4. The penultimate section will present the overall economic situation of the river communities, before a summary of the chapter is provided.

6.2 The Koshi River Communities

The Koshi barrage has mainly affected the people living in three administrative districts of Nepal, namely – Udayapur, Sunsari and Saptari. The former two districts are upstream of the barrage while Saptari is downstream. For the purpose of this thesis, the term “river communities” refers to the people in the upstream and the downstream districts in relation to the Koshi barrage living in Sunsari and Saptari districts respectively. As noted in chapter three, data collected from Prakashpur VDC of Sunsari district and Hanumannagar and Gobargadha VDCs of Saptari district are analysed and presented here. The results are presented under the headings of upstream settlements and downstream settlements.

6.2.1 The Upstream Settlements

Sunsari consists of different Village Development Committees (VDCs) along the eastern bank of the river. The most river-affected VDCs in the district are Barahkshetra, Mahendranagar, Prakashpur and Kusaha. For the purpose of this study, as noted in chapter four, this sub-section describes the situation of the flood-affected river communities from Prakashpur VDC only.

Prakashpur VDC lies about 25 kilometres north-east of the Koshi barrage along the eastern embankment of the river. The population of the VDC was about 14,000 in 2011 according to the census data (CBS, 2012). As a reliable published source of the population history of the VDC could not be found, this thesis has used the information gathered from the respondents. Based on the fieldwork data, there were no settlements in and around the VDC until the 1940s, and the area was covered with forests. In 1944-45 (2001 BS), the then King of Nepal, Tribhuvan Bir Bikram Shahdev divided the land close to the river in Sunsari District into 66 different plots with the intention of distributing the land to his close relatives, government officials and priests. During the king’s regime, such distribution of land legitimised by an order of the king to his companions was known as “Birta”. Around the same time, people from surrounding districts, mostly from the neighbouring Hill districts of Dhankuta and Bhojpur, gradually began to clear the forest areas and lived by cultivating the land. Due to the high fertility of the land and the availability of sufficient

grazing area, people from the eastern neighbouring districts also arrived there and began to settle. But when the legal landowners came to demarcate their land plots in 1948-49 (2005 BS), they saw people occupying their land, which led to conflict between the owners and the tillers. It is said that the issue was fought in a court by the locals against the owners. In 1955-56 (2013 BS), the court gave the verdict that the land tillers would get the two-thirds of the tilled land while the owners would get the one-third of the land. But, it took time to be implemented, while the migration of people from the Hills to the plains continued, especially after the eradication of Malaria.

In the meantime, the KRA was signed between the then Nepalese and the Indian governments in 1954. Consequently, the Indian government started constructing the Koshi barrage and the embankments on both sides of the river. Those participants in this research, who are over 70 years of age, said that the construction of the embankments did not displace people in the upstream locations as most of the areas were still forests, and the embankments were built along the forest areas. Later in 1977-78 (2034 BS), a team led by the then Assistant Land Reforms Minister surveyed the land and distributed land certificates to the landowners and tillers based on the verdict of 1955-56. The distributed land certificates also included some areas of land between the two embankments of the river but close to the eastern embankment. During that time, two wards (lowest administrative units, i.e. ward numbers 4 and 5 of the then Prakshpur Panchayat¹⁸, but Prakashpur VDC at the time of research) were in this land. When people outside the area heard that the government provided land certificates to the tillers, many people arrived there with the expectation of getting land, and the population increased again.

Most of the people, who resided in the wards 4 and 5 and Srilanka Tappu of Prakashpur VDC, were previously poor and landless families. Many of them arrived there just for the sake of gaining the opportunity to cultivate large areas of land so that they could feed their families comfortably. For this, some of them had sold all their property in their previous places of residence while others had just left their houses and degraded land, as seen below;

We [my family] had come there [west of the eastern embankment] from Bhojpur district [in the Hills]. The agricultural production was low there, but we wanted to eat rice. So, we came here [Prakashpur VDC]. (Anonymous male, aged 60-65 years, Inner Prakashpur)

¹⁸ The term Panchayat was used for a village level administrative unit during the Panchayat era, which lasted until the 1990 revolution in Nepal.

The main occupation of people living in the VDC in the 1970s was agriculture. For the people living in the two wards of the VDC on the western side of the embankment, their occupation was also to raise a large number of cattle along with agriculture. Many people, who did not have land, lived there by farming other people's land on a special kind of contract, which is called *adhiya-batiya*¹⁹. The people said that this was the golden age for the people living in the two wards as the agricultural production was very high with minimal labour and without the input of modern fertilizers and improved varieties of seeds. However, this situation did not last long. The floods in the years 1980-85 (2037-42 BS) gradually eroded all the settlements in these wards and displaced all the people living there. The displaced people were scattered and are currently living in different areas of the VDC and outside the VDC as well, but only the information collected from the river affected people living within the VDC is presented in the study.

6.2.1.1 *The Koshi Tappu or Srilanka Tapu*

Koshi Tappu, which is also known as Srilanka Tapu because of its resemblance to the island nation of Sri Lanka, is a river island lying between the embankments and to the west of current main channel of the KR. Before the two wards of the VDC were eroded away by the river, the river flowed through the western channel from the west of the island. The evidence lies in the erosion of a hill, which lies towards the west of the island and is close to the western embankment of the river (see Photograph 6.1) in Udaypur District. As the erosion of the hill made it look red, locals call it "Lalbhitti" in the Nepali language. There is a narrow stream of the river flowing from that channel at present.

¹⁹ This is usually an informal oral contract between the land owner and the tiller. Under this kind of contract, the land tiller needs to provide a certain portion, usually half, of the crops harvested from the land to the landowner. *Adhiya-batiya* is also interchangeably used just with *adhiya*.



Photograph 6.1: The remnant of the western channel of the Koshi River and the erosion of a hill (distant) by the river in the past

Adjoining the island to the South is a national wildlife reserve, the Koshi Tappu Wildlife Reserve, which is renowned for wild buffaloes and is a sanctuary for migratory birds. The island also includes some portion of a ward of the adjoining VDC on the North, i.e. Mahendranagar. For travelling to the island from Prakashpur, people use boats at two places as there are no bridges (see Photograph 6.2). In between, they need to walk through sandbanks and long grasses, and it takes about 1.5 to 2 hours to reach the settlements.



Photograph 6.2: People travelling to Prakashpur village from Srilanka Tapu by crossing the Koshi River

The people living on the island are the past flood-displaced people and other people who have migrated from different parts of the eastern region of Nepal. The land which these people are living on is public land, but they have demarcated it as per the area of their occupation and are using the land as their private land. The land area is based upon their time of arrival and the capacity to

occupy the land by clearing the forest. Though the settlements are sparse, hundreds of households are living on the island. The main occupation of the people is agriculture, and some of them have raised a high number of cattle – buffaloes and cows - ranging from 20 to 60. Most of the houses are made of mud and reed and are thatched (see Photograph 6.3), while some are made of wood. The people do not have the electricity connected to the national grid as there is no regulation for connecting national grid electricity to such houses that are not built on private land. However, most of them light their bulbs with solar electricity provided by NGOs. Most people have shallow tube wells for drinking water, but some of the tube wells contain excess iron. The sanitation is also poor as most of the people do not have toilets. There are few shops, selling basic items for rural areas, such as ready-made instant noodles, biscuits, soaps, chocolates and cigarettes. The people need to travel to Prakashpur for other facilities, including medication if anybody becomes sick. There is no presence of government offices and national security personnel.



Photograph 6.3: A typical house in Srilanka Tapu

6.2.1.2 Bahunikhola

The Bahunikhola community is an elongated settlement located in the south-west direction of the VDC beside a small stream, known as Bahunikhola (see figure 4.2 in chapter four). Unlike other settlements within the VDC, it comprises of houses built in comparatively smaller areas of land i.e. 1.5 to 5 *kaththa*²⁰ (0.051 to 0.17 ha). The building materials of the houses in the settlement vary; a few houses are made up of bricks and cement; some houses are built using wood; and most houses are constructed of mud, reed and are thatched. Not all people in the settlement were displaced by floods as some other people are also residing there.

In the past, the settlement area was pasture land used for grazing cattle owned by the people in the market area of Prakashpur, especially during monsoon because the area was higher ground in comparison to the surrounding areas. This characteristic of the land was sufficient to protect cattle from the problem of inundation during the rainy seasons. Some residents even remembered that the place was also used to bury the dead children of the people living in the market area. As this was the only area vacant, the then president of the Prakashpur Village Panchayat took the initiative of settling the flood-displaced people in the area almost after one year of the major flood disaster. After the decision of settling the people was made, they, along with other landless people in the village, started occupying as much land as they could without exceeding the area of 5 *kaththa* (i.e. 0.17 ha). It was not until 1995-96 (2052 BS) that the land was surveyed, and the people were provided land certificates for the occupied land. Not all the people accepted land certificates because they expected appropriate compensation from the government for the loss incurred during the flood disaster. (The details regarding the denial of the land certificate will be presented in chapter seven).

6.2.1.3 Bandanda

The meaning of the word “Bandh”, in the Nepali language, is an embankment, and “Danda” means a hill; but Bandanda particularly refers to the embankment on the eastern side of the KR lying west of the village. Bandanda lies close to the KR at present and is located adjacently north of the Koshi

²⁰ Kaththa is a unit of measure of land in the Terai region of Nepal; 1 Kaththa = 338.63 m²

Tappu Wildlife Reserve (see figure 4.2 in chapter four). The embankment serves multiple purposes of the people of Prakashpur. Firstly, it is a safety protection structure that protects the whole village of Prakashpur from being inundated and flooded by the KR. Secondly, it also serves as a road linking the VDC to the main East-West Highway of Nepal in the south and the villages of Mahendranagar and Brahkshehra VDCs in the north. Thirdly, it has also provided safe refuge to the villagers, especially those living west of the embankment, during flood disasters.

Among the multiple usages of the embankment, many people have been using it as a place to live. After being displaced by the floods in the 1980s, almost all the displaced people took refuge on the embankment. Although many of these people lived there for 3-4 months and moved elsewhere, some still reside on the land on both sides beneath the embankment. Previously, the Indian government had demarcated some land on each side of the embankment as the property under the regulation of the KRP during its construction. Most of them have built temporary houses made up of mud and reed, but a few have also been made of wood. Though there is no government rule of providing electricity to the people living on non-private land, most of these people are fortunate to have received electricity directly from the national grid.

6.2.1.4 Inner Prakashpur

Besides the settlements in public places, some of the flood-displaced people are also living on their private land within the Prakashpur village. The places, where these people are living include - Dholbajiya, Kauwatoli, Junge Chowk, Kalimandir and Rajabas (see figure 4.2 in chapter four). Some had bought the land before being displaced by the flood while others bought the land afterwards. However, the area of their land varies from a few *kaththas* to some *bigahas*²¹. The people living in these places are comparatively better-off compared with the people living on the previously mentioned public land. Most of these people have houses made of wood; some have brick houses; and, some still have reed and mud houses. They are close to the local market; and most importantly, they are safe from the unwanted hazards in KR, unless the embankment is breached as occurred in 2008.

²¹ 1 *bigaha* = 20 Kaththa

6.2.2 The Downstream Settlements

Similar to the upstream district (Sunsari), the downstream district of Saptari, lying on the west of the river, also comprises different VDCs. The river-affected VDCs of the district in the order of North to South are Joginiya, Hanumannagar, Gobargadha, Inarwa, Kobarsain and Rampurmalhaniya. While Gobargadha VDC is directly affected by the river, other VDCs are affected in different ways. The information collected from the flood-affected communities from Hanumannagar and Gobargadha VDCs in the downstream area is presented in the study.

6.2.2.1 Hanumannagar

Hanumannagar VDC lies about 7 kilometres south-west of the Koshi barrage (see figure 4.2). Hanumannagar was a renowned and densely populated town in the eastern Terai region until the early 1940s. In 1942, the KR, which was flowing from the east, suddenly swerved towards Hanumannagar due to a flood (Mishra, 2008). This abrupt turning of the river affected many houses in Lilza village of Hanumannagar. Later the construction of the Koshi embankment in the 1950s displaced the people, and they were relocated to Rajbiraj, Saptari. Because a large number of people moved to Rajbiraj, Hanumannagar became almost empty; and the administrative headquarter of the district was also shifted from Hanumannagar to Rajbiraj. The population of the VDC was about 6300, according to the national census of 2011 (CBS, 2011). Currently, the river is flowing from the east of Gobargadha VDC.

Most of the people living in Hanumannagar have their land located between the embankments, close to the western embankment. Although they had owned land for a long time, they had not received the land certificates before the initiation of the KRP. A land survey had been carried out by the Nepalese government in 1947-48 (2004 BS), but the owners were provided with land certificates only in 1971-72 (2028 BS). Though the people own land on paper, some of their actual lands are under the river; and some parts are inundated every year (see Photograph 6.4).



Photograph 6.4: Land under anabranch of the Koshi River close to the western embankment on the opposite side of Hanumannagar

As in Bandanda in Prakashpur VDC, many flood-displaced people are living beneath the western embankment in Hanumannagar. There are still some dense settlements on the east of the embankment towards the river. Among them, a number of households have migrated from India some time ago. The following narrative provides information on the type of migrating people and confirms the movement of people across the Nepal-India border, which is also the case in some of the households living in Gobargadha VDC.

I have migrated from Supaul, India to Hanumannagar because Koshi eroded away 3 bigaha [2.03 ha] of [public] land 27 years ago. Here also, we are living on public land. We took citizenship here in 2064 BS [2007]. (Anonymous male, aged 60-65 years, Hanumannagar)

The settlements which are close to the river and are most affected by the River in the VDC include - Shiv Mandir, Pandit Tol, Godiyadi Tol, Police Tol, Hatiya Tol, Musalman Tol, and Mukhiya

Tol. The information collected from the river communities in these settlements in Hanumannagar has been presented in the study.

6.2.2.2 Gobargadha

Gobargadha VDC is also a river island lying in between the embankments of the river and is about 7 kilometres downstream of the Koshi barrage (see figure 4.2 in chapter four). The river surrounds the VDC from the east and the west, and the south and the south-east of the VDC extends to the border with India. The mainstream of the river is flowing from the east of the island at present, and a remnant of the stream channel that flowed closely from the western embankment close to the Hanumannagar town until the 1990s is flowing from the west. During the dry seasons, people can walk across this stream from Hanumannagar with water up to the knees, but they must use boats during rainy days to travel across. It takes about 30 to 45 minutes on foot to reach the closest settlements from Hanumannagar.

The settlements on the island are typically rural with scattered houses, and predominantly in an agricultural setting. All the houses on the island are made of reed, mud and are thatched. Much of the land on the island is public, but some people do have land certificates. This is because the island was declared a village Panchayat in 1979 during the visit of the late King Birendra Shah. The government authorities provided land certificates to those people who were present on the island at that time. As in Srilanka Tapu, there is no electrical connection to the national grid, but almost all the houses have access to electricity through solar panels for lighting purposes. They have shallow tube wells for accessing safe underground drinking water. The sanitary condition is poor due to the lack of toilets in the houses, and the provision of health services is very primitive (see photograph 6.5). The residents need to travel to Hanumannagar for accessing almost all facilities such as health, market and education.



Photograph 6.5: Storage of the government provided health-related materials in Gobargadha

Most of the people, who were and are still living in Gobargadha VDC, have been living in the VDC for a long time, and some have moved there from the surrounding areas. Some families had migrated from India. The main reason for their migration is the poor economic conditions at their previous residence. The following narrative represents the types of people who migrated to the VDC:

I have come here from Sunsari. My father and grandfather sold all the land holdings i.e. 7 bigaha [4.74 ha] there. So, we didn't have anything there. Later, as a relative of mine was here in Gobargadha engaged in agriculture, I also shifted here and started cultivating 3 bigaha [2.03 ha] of [public] land. I lived there for 35 years before being displaced by floods. (Anonymous male, aged 60-65 years)

Just after the signing of the KRA, the people in Gobargadha were offered some land in Bhandabari, Sunsari, which lies on the other side of the river in the east of Gobargadha (see figure 4.1). However, the people did not like the place as the land allocated to them was degraded sandy land without an access road. Some were also relocated to Sakhuwa, Saptari, but many later returned to Gobargadha due to the hard life there too.

In the late 1990s, floods eroded a large area of land and many houses in the eastern part of the Gobargadha VDC. The floods also displaced many people from the VDC. The flood-displaced people are currently living mainly at Musahari Tol and Miya Tol in Joginiya VDC and Baluwatar, Haripur VDC, Sunsari. A few of them are also living in Hanumannagar and other surrounding VDCs. The information gathered also from the people living in these areas is presented in the analysis.

6.2.2.3 Baluwatar

Baluwatar is a settlement of flood-displaced people from two wards of Gobargadha VDC (see Photograph 6.6). It lies close to the Koshi barrage in the east and beside the eastern canal in the north in Haripur VDC of Sunsari District (see figure 4.2 in chapter four). It gets its name from the nature of the land on which it is located; in the Nepali language, “Baluwa” means sand and “Tar” means land, so the meaning of Baluwatar becomes sandy land. As per its name, the settlement and its surrounding lands are sandy and are regulated by the Indian government under the KRP.



Photograph 6.6: Settlement in Baluwatar, Haripur, Sunsari

Traversing the canal, a road extends across the border towards a town in India, Bhimnagar, where the powerhouse for generating electricity has been built. Due to its sandy nature, the land is neither useful for agricultural purposes nor for grazing cattle (see Photograph 6.7). When the residents were displaced by floods from Gobargadha in the 1990s, they arrived here and built temporary houses. The settlement began in 1998 and expanded gradually as more households kept coming until 2004 after both their house and land were eroded away while living in Gobargadha. As the flood-displaced people occupied the project-regulated land, one of the participants revealed that they were being called refugees by the locals.



Photograph 6.7: A flood-displaced woman sitting in front of her house

The settlement is too congested in a rural setting as 41 households are living in an area of approximately 9000 square metres. All the houses are made up of reed and mud and are thatched huts, which are built by sharing small pieces of the available degraded land. The settlement was being extended even during the fieldwork (see Photograph 6.8). Residents have solar electricity in each household distributed to them by an NGO, and some tube wells for the whole settlement. Apart from these, the major benefits which the residents get by living in this settlement are that they can get wage-work in the surrounding areas; have easy access to the barrage for fishing, and access to markets both in India and Nepal because of the strategic location of the settlement.



Photograph 6.8: Residents constructing a new house in Baluwatar

6.2.2.4 Joginiya

There are two settlements of the people, displaced by floods from Gobargadha VDC, in Joginiya VDC that lie in the north of Hanumannagar VDC. The settlements lie close and to the west of the western embankment (see figure 4.2 in chapter four). The settlement which is close to the Hanumannagar village is inhabited solely by Muslim people while the other is occupied by the low caste Musahars. In the former settlement, houses have been built on public land surrounding a pond, which is almost in the shape of a square and is of approximately 4,000 square meters. Altogether 35 households were living in the settlement during the fieldwork. As in Gobargadha, the people have thatched houses made of reed and mud that are built in small pieces of land.

The settlement of Musahars is built along a canal, known as the Chandra Canal, which was built in 1926 under the initiative of the then Prime Minister of Nepal (Poudel & Sharma, 2012). Altogether 25 households were residing in the settlement during the fieldwork. After being

displaced from their previous location, they filled in the canal and built their houses over it. As in other settlements, the houses are thatched huts made of reed and mud. Some have started building their houses by using cement pillars on its sides and corners but using mud and reed for the walls (see photograph 6.9). They have also attempted to connect electricity from the national grid to their houses several times but failed. They have already fixed the necessary electricity poles and wires in place but have not been connected to transformers because of the objection of the locals. This is because the transformers are of low capacity, which increased anxiety among the locals that they would not get electricity of the required voltage in their houses. Apart from the electricity issue, the locals also want the canal to be rebuilt so that they could irrigate their land as they have been facing water scarcity during dry seasons.



Photograph 6.9: A family engaged in constructing a house in Musahari Tol, Joginiya

The locals are saying that they are facing water shortage, so they want to demolish our houses now. We have been given a notice for that. We are also Nepali citizens, where can we go if we leave

from here? [with anxiety and a bit of anger]. (Anonymous male, aged 45-50 years, Musahari Tol, Joginiya VDC)

6.3 Experiences of the River Communities with Floods

This section provides a history of flood events, which were experienced by both the upstream and the downstream river communities, along with a present scenario of the effect of floods in the communities. It describes how people were affected by floods before and after the start of the KRP.

6.3.1 The Upstream Settlements

Although floods occurred frequently in the KR, they became harmful to the people living upstream of the Koshi barrage only after 10-15 years of construction of the barrage. Respondents mentioned that floods in the KR started from the year 1965 (2022 BS); this flood inundated the settlement lying in the west of the eastern embankment in the upstream. Though the flood was not that big, it kept inundating the land for the whole month. Due to this flood, some previous Hill dwellers turned back while some stayed on the eastern side of the embankment until the flood ceased. There was also a big flood later in 1968 (2025 BS), but its intensity lasted only for some hours. People thought that the flood would penetrate through the embankment, but it brought alluvial soil. The quality of soil attracted many people from the Hills after this event, and the local population increased substantially. There was also a flood in 1970 (2027 BS), but it also benefited people similar to the previous flood. But after this flood, the river gradually began to make its way towards the east. In 1976 (2033 BS), erosion of land lying within the embankment, which was also called Dhararatapan by the locals, started from the north of Prakashpur. This was triggered by the locals' attempt to irrigate their land using river water by making a small channel into their farms. In the following years, the channel became bigger, and the floods, along with erosion, started damaging land and crops. By 1980 (2037 BS), floods had started eroding large areas of land (i.e. 3.35 to 5.02 acres which are about 2-300 *bigaha*). The consecutive floods in the following years were too heavy and created havoc among the people living both within and outside the embankment. By 1985 (2042 BS), the floods eroded away all the settlements and the cultivated land in Prakshpur-4 and 5. These floods also displaced all the people living in the settlements.

Though there were floods following the devastating floods in the early 1980s, the floods did not harm the people of Prakashpur as they had already moved to safer places i.e. outside the embankment. The floods in 2007 and 2008 were also heavy. The 2008 flood created havoc by breaching the eastern embankment at Kusaha, Sunsari, but it did not affect the people of Prakashpur. Millions of people downstream of the Prakashpur VDC, both from Nepal as well as Bihar, India, were affected by this flood, as noted in chapters one and three.

6.3.1.1 Effects of Floods on the Upstream River Communities

As noted earlier, the river communities have mostly been affected by either inundation or erosion of houses and land during floods, but they have been affected in other ways. The household survey showed that about 65 percent of the participants living in the upstream lost their houses due to floods, and about 67 percent lost some portion, or all, of their land due to floods. Inundation affected about 34 percent of the people and damaged the houses of about 31 percent of people. Besides, floods have also taken away livestock or cattle of around 35 percent of the people and displaced 41 percent of the people. About 27 percent of the people were also left jobless, and 10 percent faced drinking water scarcity during floods. Moreover, one man reported that the floods also took the lives of his household members.

In the 2040 BS-flood [the 1983-flood], people started crossing the river towards Prakashpur by using a boat provided by the government. While crossing the river, the boat capsized, and my parents and a son, including livestock, were killed, and the flood took other properties too. There were about 6-7 people in the boat, but others were able to swim across. (Anonymous male, aged 60-65 years, Prakashpur VDC)

Currently, the people living on the riverside or the western side of the embankment fear erosion and inundation due to floods every year. The men in these settlements stay awake in nights during floods; they often stay awake for a period of a whole month in a year. Moreover, the people on the other side, including people from Bahunikhola, fear the probable breach of the embankment during floods. In Srilanka Tapu, floods erode houses and land from the eastern areas close to the river every year, so the people living in the area fear erosion and inundation. Inundation of the settlements in Srilanka Tapu has been rare in recent years.

6.3.2 The Downstream Settlements

Rampant floods used to affect the people living downstream of where the barrage is currently located long before it was built. As noted in the previous section, a big flood in 1942 eroded away much of Hanumannagar town. Apart from this flood, there used to be the problem of inundation in both Hanumannagar and Gobargadha before the construction of the barrage and the embankments, and people used to have boats as the mode of transportation. There was also a heavy flood in the year 1948 (2005 BS) that also eroded some portion of Hanumannagar. After the construction of the embankments, Hanumannagar, particularly the settlements lying west to the western embankment, became safe as the embankment stopped water from entering. Later in 1968 (2025 BS), a heavy flood damaged crops, took away cattle and even washed away elephants from the wildlife reserve upstream. Before the river completely changed its main channel, which is close to the western embankment, to the current channel close to the eastern embankment, people living in the east of the western embankment in Hanumannagar used to face the problem of inundation of their houses and agricultural land every year in the monsoon. Apart from the inundation, the western embankment has been breached several times in Nepal; the last in Joginiya in 1991. However, the breach was not destructive.

Although floods used to inundate the settlements and the land in Gobargadha before the barrage was built, the problem of erosion scaled up after the construction of the barrage. After the construction of the embankments, floods in the river eroded the western part of the agricultural land in Gobargadha. But when the floods in the late 1970s and early 1980s started changing the course of the river from the side of the western embankment to the eastern embankment as in the upstream, the erosion of the eastern part of Gobargadha started and continued annually. The erosion of land and settlements of Gobargadha in the late 1990s displaced many people, most of whom are currently living in Baluwatar and Joginiya.

6.3.2.1 Effects of Floods on the Downstream River Communities

Floods had various effects on the people living in the downstream settlements too. Erosion of houses and land was a major concern for the people living there. About 70 percent of the people had their houses eroded away while 75 percent had their land washed away by floods. Inundation

was another problem that affected about 39 percent and destroyed the houses of 32 percent of them. Another problem was a loss of cattle and livestock, which accounts for about 24 percent of them. Floods also took away employment of about 21 percent while almost 48 percent were forced to migrate from their place of residence. There were also two households from Hanumannagar that reported casualties from their family due to floods.

6.4 The situation of Irrigation in the Communities

This section provides the irrigation scenario in the river communities in the context of the KRP. It presents the perceptions of the river communities about how the irrigation is benefiting or not benefiting them in the upstream from the Chatara irrigation and in the downstream from the irrigation canals extended from the Koshi barrage.

6.4.1 The Upstream Settlements

As noted in chapter three, the Chatara canal irrigates the eastern areas of the Sunsari District, which includes Prakashpur VDC. But according to the people living in the VDC, canal water does not reach all the agricultural land in the VDC. This means people are not getting sufficient water for irrigation even though a bulk of the water is flowing in the nearby KR.

Canal has not reached all the areas of Prakashpur, and water is distributed only in [farming] seasons. So, people mostly use water from bore wells for irrigation. Therefore, there is no sufficient canal water for people in Prakashpur. (Anonymous male, aged 45-50 years)

Unavailability of irrigation is problematic for most of the people living in Bahunikhola as well, though they do not have large areas of agricultural land. This scenario does not even allow them to do *adhiya* or cultivate land on contract as they do not have their own land. Such a situation forces them to engage in wage labour within the VDC, its surroundings and overseas.

Even now, people do not want to live here [Bahunikhola]. It's because we do not have irrigation here, so there is no production. Then, what would one eat to survive! Either one should go overseas or have a government job or pension. Most of the people have only the house but nothing to eat. Some rich [people] might have things to eat, but the poor must do wage labour. Some have been to overseas for employment; some are drivers; some are masons; most people are wage labourers here. (Anonymous male, aged 60-65 years)

Due to the unavailability of irrigation facilities, some people in Bahunikhola use rented water pumps for irrigating their farms, drawing water from a nearby rivulet. They rent the pump because most of them cannot afford to buy a pump, and some do not bother to buy it because they have only small areas of agricultural land. For them, it is convenient to pay the owner of the pump on an hourly basis.

Apart from the agricultural land in the eastern areas of the eastern embankment in the VDC, people in Srilanka Tapu do not get water for irrigating their agricultural land, though the river is flowing from both sides. They do not have an irrigation facility for their settlements. They need to either wait for the rain or irrigate small areas of the land by using the tube-wells, which they use for drinking purposes.

6.4.2 The Downstream Settlements

In the downstream, people in Hanumannagar complained that the Nepalese side is not benefitting as per the KRA in terms of irrigation. They argued that sufficient area of the Nepalese land is not irrigated through the irrigation canals extended from the Koshi barrage. Nepalese land is irrigated only from the western canal as the eastern canal is solely constructed for irrigating India and for generating electricity in the powerhouse in Bhimnagar, India. Only a very small area is irrigated from the western canal, and that too does not receive water on a timely basis. People also argued that the canal does not irrigate agricultural land lying in the northern part of the canal, despite the land being close to the canal, because of the elevation difference of the land in relation to the canal. So, the canal mostly irrigates the land in the south.

Only a very little land in Nepal has been irrigated with the western canal, and most of the water flows towards India ... We face drought and can't irrigate our land, though the Koshi is so close to us because the western canal doesn't reach here. (Anonymous male, aged 60-65 years, Koshi Victims Society)

It only irrigates the southern areas of Rajbiraj due to the level of water which is lower than the agricultural fields. VDCs like Hanumannagar and Kobarsain, though in the south, do not benefit from the irrigation ... The barrage doesn't provide water as per the need of the Nepalese people, but it serves the need of the Indians only ... The northern side of land beside the canal is not irrigated at all by the canal because of the elevation; and on the other side, irrigation is done by the pump canal, which is not suitable ... There is no benefit to Nepal at all from the irrigation canals

... In fact, we are at a loss instead due to the western canal. (Anonymous male, aged 60-65 years, Hanumannagar)

The people claim that India benefits much more than Nepal in terms of irrigation. The simple reason given is that the western canal does not traverse through a long distance on the Nepalese side before entering India. This allows the maximum amount of water to flow into India. The Nepalese side loses when water flows in the western canal for two reasons; firstly, the water is not opened into the canal when the people actually need it; and secondly, water is opened when they do not need it, which damages the crops.

The Indian government reaps more benefit from the western canal as water flows to India after it serves about 30-40 km of Nepalese side, and the eastern canal solely serves India. (Anonymous male, aged 55-60 years, Hanumannagar VDC)

The people are in a predicament. The water in the western canal also damages crops during the rainy seasons from [June/July till October/November] (From the Nepali month, Asadh till Kartik). In these months, the canals become full of water, and water enters agricultural fields through the pipes as there is no lock system. It [water] damages the ready-to-harvest crops. But there won't be water in the canals during the dry seasons. (Anonymous male, aged 50-55 years, Hanumannagar VDC)

The problem with the pump canal, according to the executive director of an NGO, the Koshi Victims Society, Nepal²² is that technical problems always occur in the pump. Another problem is that Nepal has been facing power outages for long hours in recent years, which does not allow the pump to be operated. Due to the non-functioning of the pump, there is no water in the canal when needed, thereby preventing people from irrigating their farms. In order to receive timely irrigation, people have protested several times in front of the barrage and the Chief District Officer's office.

6.5 Perceptions of the River Communities on the KRP

Perceptions of the river communities are important in finding whether they could feel that their misery caused by the river was related to the activities carried out by the KRP. This section presents perceptions from both the upstream and downstream communities on the Koshi barrage, the

²² A Saptari-based non-governmental organization working for the river communities who have been victimised by the KR

embankments and other structures and the activities of the project officials regarding the floods, which they faced before and are currently facing.

6.5.1 The Upstream Settlements

During the semi-structured interviews, most of the people in the upstream denied that there was any link between the flood events and the barrage. Only about 32 percent (n=35) of the people contended that the barrage and flood events were related (see table 6.1). Many people (about 66 percent; n=73) did not believe that there was an effect of the barrage on floods because most of them said that the barrage was too far away downstream while the flood water directly came from the Hills and flowed downstream. Most of them said that it was because of nature while some of them attributed the events to the acts of god. More than 50 percent (53 percent; n=16) of the people in Srilanka Tapu argued that the barrage caused the floods, but about 93 percent (n=27) in Bahunikhola denied it. This is because the people in Srilanka Tapu have seen and experienced floods every year while the people in Bahunikhola have been living far from the river for over three decades (see the distance of Bahunikhola from the KR in figure 4.3). In other words, most of the people of Srilanka Tapu understand the phenomenon while it was not a concern for the people in Bahunikhola.

Table 6.1: Is there a link between flood events in the river and the barrage in the upstream?

Settlements	Yes		No	
	No.	%	No.	%
Bahunikhola	1	3.45%	27	93.10%
Bandanda	3	37.50%	4	50.00%
Inner Prakashpur	15	34.09%	28	63.64%
Koshitappu	16	53.33%	14	46.67%
Average		31.53%		65.77%

Of the people living in the upstream settlements who saw the link between the floods and the Koshi barrage, most identified this barrage as the main cause of the erosion and inundation. They contended that the closing of the barrage gates caused the water to rise in the upstream, which in turn inundated the settlements and the land within the embankment. Some elderly people also pointed out that the removal of stones from the rivers and the banks of the river during the beginning phase of the project is also a cause of erosion of land. In addition, some pointed out that

the sudden opening of the gates when the barrage is full of water causes the erosion. The following are the experiences shared by the river communities from the upstream river communities.

When India closes the gates of the barrage during floods, the river swells, then inundates, erodes and damages thousands of hectares of land. After swelling up of the river, it [India] opens the gates that would erode the land. (Anonymous male, aged 50-55 years, Prakashpur VDC)

The Koshi River was flowing about 7-8 kilometres far in the west from the current channel [before the flood]. India started transporting stones from the river in trains and trucks and even from the riverbanks to India for various reasons including building construction at their side [in India]. Such activities began from 2013 BS [1956] ... Even the stones lying on the riverbanks were broken and transported on boats. After the stones were removed, the river began changing its channel, and in 2022 BS [1965], Pulthegaunda and Sinduretappu [places] in Chatara were eroded away. (Anonymous male member, Sapta Koshi Inundation and Erosion Flood-Victims Struggle Committee)

The people in Srilanka Tapu are also facing the same problem of erosion and inundation as in the past. Some of them contended that both the barrage as well as nature were the causes of their trouble.

When the gates of the barrage are closed, the water here [in the upstream of the barrage] swells. It is the water flown from the hills that erode our lands. If the gates are opened on time, water would pass easily. (Anonymous male, aged 55-60 years)

6.5.2 The Downstream Settlements

The story is the opposite in the downstream areas. About 76 percent (n=90) of the people from the downstream was of the view that the flood events were linked to the barrage (see table 6.2). Almost 97 percent (n=29) of the people from Gobargadha contended that the floods were due to the barrage while about 64 percent (n=36) from Hanumannagar stated this. The difference in the responses of the people from Gobargadha and Hanumannagar is because the people in Gobargadha are living within the embankments whereas the people in Hanumannagar are living outside. Furthermore, the people in Hanumannagar are only concerned about their agricultural land lying close to the western embankment within the embankments, which used to be inundated even before the KRP was built.

Table 6.2: Is there a link between flood events in the river and the barrage in the upstream?

Settlements	Yes		No	
	No.	%	No.	%
Gobargadha	29	96.67%	1	3.33%
Hanumannagar	36	64.29%	19	33.93%
Baluwatar	10	83.33%	2	16.67%
Joginiya Average	15	71.43%	6	28.57%
Miya Tol, Joginiya	6	75.00%	2	25.00%
Musahari Tol, Joginiya	9	69.23%	4	30.77%
Total – Average		75.63%		23.53%

In the areas to the west of the western embankment in Hanumannagar, the embankment has played a dual role. On the one hand, the embankment has protected people from inundation and erosion due to the inflowing of the KR into their settlements. A resident in Hanumannagar argued that the settlements in the VDC remained intact despite occurrences of many big floods because of the construction of the western embankment. In his words,

If the barrage were not built at that time, all the settlements would have already been washed away.
(Anonymous male, aged 50-55 years)

On the other hand, the same embankment has been the major cause of erosion of settlements and cultivated land during the monsoon. During the monsoon, other seasonal rivers such as Mohali and Khando, along with the KR, play a role in the inundation. In the past, the rivers used to drain into the KR through the sluice gates constructed at certain distances in the western embankment, but it does not happen at present. This is because the river bed level has risen above the other side of the embankment due to excessive siltation, which does not allow the tributary rivers to flow into the KR through the sluice gates. Besides, the sluice gates have become non-functional due to the lack of regular repair and maintenance works (see Photograph 6.10). Mostly the half-open and non-functional sluice gates have caused the flow of water from the KR into the Mohali and Khando rivers instead, which has led to inundation of many settlements and cultivated land between these rivers, not only in Hanumannagar but also in the surrounding VDCs.



Photograph 6.10: A non-functional sluice gate along the western embankment in Hanumannagar

Though the embankments helped us to be protected from inundation to some extent for some years, it became worse when siltation in the river started. The riverbed is elevated due to the siltation, and water started entering our villages through the sluice gates instead of happening the opposite. Water from other small rivers such as Khando and Mohali, which used to flow into the Koshi River or to the east, now flow towards the west. (Anonymous male member, Sapta Koshi Inundation and Erosion Flood-Victims Struggle Committee)

Because of the water from Mohali and Khando rivers not draining into the Koshi but flowing in the opposite direction from the KR, there is a decrease in agricultural production. According to a man (Anonymous, aged 60-65 years) from Hanumannagar, “This causes damage to the paddy fields. Because of this, the production of paddy has decreased here significantly”.

It is not only in Hanumannagar, but the situation is also similar in Joginiya because of the Mohali River, which troubles the people living there by inundating their backyards and agricultural land.

During monsoon, floods from both the Mohali River and the Koshi River inundate everything here [in Joginiya]. Water from the Koshi River enters here from the nearby sluice gate. Water enters my

house when the floods are big, otherwise, my backyard remains inundated for 1-2 months every year. (Anonymous male, aged 50-55 years old, Joginiya VDC)

The residents of Hanumannagar have also complained about the erosion of agricultural land by the sudden opening of the gates. Because of the opening of the gates, their land between the western embankment and Gobargadha VDC is being continuously eroded away every year. The sudden opening of the gates causes the water above the barrage to flow with force, which is strong enough to erode the agricultural land.

All the harms which we are facing [due to the Koshi River] are because of the barrage. When the gates of the barrage are opened, the force of the water released erode our land. Such damages were not seen before the barrage was built. (Anonymous male, aged 70-75 years, Hanumannagar VDC)

For the people in Gobargadha also, the main problem is the opening of the barrage gates without informing them that the water would suddenly inundate and erode their settlements and cultivated land. Although inundation is an annual phenomenon, erosion of their houses, valuables and land are their main concerns. They also complained they are not informed before the opening of the gates during the monsoon. If they are informed, they feel that they would be able to do some necessary preparations, such as keeping things in safe places. They express their anger while saying that they are informed only in some emergency cases such as avalanches or big flash floods in the Hills.

The barrage is closed during other times, but it is opened during floods, which affect us [the people of Gobargadha]. They don't inform us when they open the gates. The barrage is opened whenever they want. Only sometimes when there is an emergency such as the Jure Flood in Sunkoshi, the police inform us. (Anonymous male, aged 50-55 years, Gobargadha VDC)

Besides the mentioned causes of floods above, some of the residents of both Hanumannagar and Gobargadha have shared other interesting causes of floods. One of the causes of floods on the Nepalese side is the opening of the gates only on the Nepalese side while keeping the remaining gates closed. Another is dropping stones on the Indian side to deposit piles of stones as temporary barriers if all the gates in the barrage need to be opened. These cases are exemplified by the following narrative.

During floods, India opens the gates of the barrage only on the western side i.e. the Nepalese side. But during the emergency, it needs to open all 52 gates [or most of the gates]. In such a situation, it deposits stones on the eastern side [Indian side] so that river water would be diverted towards the western side [Nepalese side]. (Anonymous male, aged 50-55 years, Hanumannagar VDC)

Floods also become disastrous because of rampant corruption. The residents of Hanumannagar accused the contractors, who are responsible for repair and maintenance works of the embankments and spurs, of keeping fake records. They have complained that the contractors do not use the recorded amounts of construction materials in the maintenance works; they allegedly use less than the recorded figures. This is because the materials used are also flooded away and do not remain intact during floods, which makes it very difficult for the authorities to assess the amount of materials used. Some of the residents have also argued that the breaches of embankments were caused by the negligence of the contractors.

The occupation of the contractors, either the Indian or the Nepalese, is to do corruption... The Koshi River had been serving as the begging pot for the contractors. They call it “flood fighting”. They arrange all the things, like boulders and crates, needed for the flood fighting by the day, but they do not do anything on the river in the day. As the night begins, they start to work. They work for the whole night. The next day at the time of reporting after the occurrence of erosion at multiple locations, they say that they didn’t get labourers, so it was very difficult to work. They save crates, boulders and labour cost [by doing this]. The harm would have been less if both the Indian and Nepalese governments had been alert ... They deliberately let the breach [the Kusaha breach in 2008] happen, but record the use of materials at many locations. (Anonymous male, aged 60-65 years, Hanumannagar VDC)

The next sub-section will present the perceptions of the communities on the reasons for not carrying out the regular repair and maintenance works.

6.5.3 The Reasons for Negligence

According to the people interviewed, as well as from my observations, the Koshi barrage, the embankments and some irrigation structures such as pump canals are in dilapidated condition. Regarding the Koshi barrage, the handrails on the sides of the bridge on the barrage are broken at many points. Some have been temporarily joined using some metal wires. This increases the risk for people walking across the bridge of falling into the river. Apart from the handrails, some other structures of the barrage are broken and easy for trespassing, making it very dangerous. As no safety measures have been taken by both the project administration and the Nepali administration for the protection of the locals and the visitors, there is the risk of loss of lives.

Regarding the degraded condition of the barrage, it has been in the same condition for many years. The barrage people [the Nepal police] do not care about the condition of the barrage. The Indian government also doesn’t care about its condition as it has been able to get the needed quantity of

water from the canals. Previously, the transportation of Indian vehicles also used the Koshi barrage bridge, but now it has already constructed an alternative on the Indian side. (Anonymous male, aged 60-65 years, Hanumannagar)

As noted earlier, the embankments are also not in a good condition due to the sluice gates built in the embankments. People have praised that the embankment works were being carried out regularly in the upstream. During the fieldwork, some workers were constructing porcupines²³ along the eastern embankment in the upstream that, in engineering terms, are used to reduce the flow of water and trap sediments (see Photograph 6.11). Some of them were also constructing new spurs and repairing some damaged spurs. Some repair and maintenance work on spurs in the downstream were also observed during the fieldwork. However, the sluice gates in the downstream were non-functional, due to a lack of regular repair and maintenance works. Many of the sluice gates were half-open. Interviewees stated that the gates could neither be lowered nor raised as required. Further, some expressed their concerns over the dilapidated condition of irrigation structures such as the pump canal and sluice gates, and the exhausted powerhouse, which does not produce electricity uninterrupted. During the field visit, the powerplant was not working. As per the agreement, half of the 20 megawatts of energy generated by the power plant has to be sold to Nepal, but Nepal has not been getting the stated energy on a regular basis.



Photograph 6.11: Construction of Porcupines and a spur along the eastern bank of the Koshi River in Prakashpur

²³ A porcupine is a component of a river training system, called the porcupine system. The system is regarded as one of the cost-effective techniques of river training that is believed to be effective in controlling the velocity of water flow and capture sediments flowing in the river.

People from both upstream and downstream have given different reasons for India's non-compliance of carrying out the repair and maintenance works related to the KRP. Firstly, they think that the Koshi barrage was mostly used for transportation purposes by the Indians, and India has constructed an alternative for transportation some kilometres downstream in Nepal some years ago. Secondly, they argued that the lifespan of the barrage has already ended. In fact, the lifespan issue was raised by the Indian side during the 1991 secretary-level Indo-Nepal Sub-Commission on Water Resources meeting in New Delhi, India, where it reported that the lifespan of the barrage was over (Pun, 2008). Some Indian newspaper articles have published the lifespan of the barrage, i.e. 25 years, and have expressed concerns over Nepal's disregard in not materialising the Koshi High Dam project (KHDP) (TNN, 2008; Economy Bureau, 2008). Thus, some of the key-informants argued that India shows indifference towards repairing and maintaining the barrage and its structures for expediting the construction of the High Dam.

India has not been complying with the terms and conditions of the agreement. There have already been three instances of breaches of the Koshi embankments in Nepal ... Floods are increasing than being controlled, which increases the question of the existing structures ... So, the KRP has not benefitted Nepal and the people of Saptari in terms of irrigation, electricity and flood mitigation. That's why we can take this project as a failed project. Therefore, we note that the agreement should be reviewed ... The KRP has the responsibility to monitor all the contractors ... The river channel was diverted to the west by dumping on the eastern side of the barrage. This caused the breach of the embankment at Joginiya ... There are altogether 15 sluice gates in the embankment in Saptari; none of them is in working condition at the moment. It is the responsibility of the Indian government to do the repair and maintenance ... In addition, the Indian government has added another embankment in Kunauli, India which are the reasons for the inundation of Saptari. (The Managing Director of the Koshi Victims Society, Saptari, Nepal)

6.5.4 Benefits of the Koshi River Project

While many have been complaining about the negative impacts of the KRP, some have argued that there have also been benefits for Nepal. Most of them, both upstream and downstream of the barrage, mentioned that the bridge over the barrage was the most significant achievement for Nepal. Nepal did not have a single bridge over the KR until the Koshi barrage was built, so Nepalis travelling across the river had to travel via India. The barrage is still being used as a bridge by people as it was built at a strategic location and connects the East-West Highway of Nepal. Apart

from the barrage serving as a bridge, a political leader from Prakashpur also praised the project for connecting Bhandabari VDC in the south bordering India to Mahendranagar VDC in the north through the road built upon the eastern embankment.

The Koshi barrage was the need of the time because it served the purpose of a bridge ... And, the embankments have also connected Bhandabari to Mahendranagar through the embankment [road]. (Anonymous male political leader, aged 40-45 years, Prakashpur VDC)

As in the upstream, most people in the downstream contended that the only benefit for Nepal is the bridge over the barrage. Although not many people from the downstream praised the role of the barrage, a political leader from Gobargadha contended that the barrage has played a significant role in protecting erosion in Gobargadha. He said, "If there were no barrage, everything would have been eroded" (Anonymous male political Leader, Gobargadha VDC).

Though some of the people in the downstream, particularly the inhabitants of Hanumannagar, did not see the benefit of the barrage except that of the bridge, many praised the benefit of the embankment built on the side of the river. They have argued that the embankment has helped them in protecting their settlements and land from floods.

Erosion of land on the western side has been stopped by the embankment; this is the benefit of the embankment. (Anonymous male, aged 60-65 years, Hanumannagar VDC)

Most importantly, the KRP has also provided space for the landless to build their homes beneath the embankment.

It is because of the embankment the poor people have been able to build their houses beneath it and live their lives. Otherwise, where would they go? (Anonymous male, aged 60-65 years, Hanumannagar VDC)

Besides, some households have benefited substantially from the construction of the barrage and embankments in the downstream, both in Hanumannagar and Gobargadha. These households are from the fishing community, who benefit in two ways. Firstly, they have been making their living by collecting the firewood washed away by the river from the upstream during floods. They use their boats to collect wood, then they dry and sell it in the market. They also stock the firewood for their own consumption for the whole year. Next, they benefit by fishing in the KR below the barrage, where they get large amounts of fish (see Photograph 6.12). As fish from the KR is popular among people, there's a good market for the fish (see Photograph 6.13).



Photograph 6.12: A fisherman doing preparations for fishing in the Koshi River



Photograph 6.13: Fish market close to the Koshi barrage

6.5.5 Economic Situation of the River Communities

The household data shows that many people in the riverine communities often do not have access to basic amenities and facilities. Almost 70 percent of the people both in the upstream and downstream settlements do not have a radio, which is regarded as a rural communication device in Nepal. Nobody from Musahari Tol, Joginiya had owned a radio. Over 50 percent and almost 75 percent of people in the upstream and the downstream settlements respectively did not have a television set. Nobody from Joginiya and over 93 percent of people from Srilanka Tapu did not have a television. Not having a radio or a TV means that they cannot listen to news from the surrounding area or from around the world, which prevents them from gaining useful information that may be related to floods. Almost 12 percent from the upstream and around 28 percent from the downstream settlements could not afford to buy a bicycle, which is a common means of transportation. Surprisingly, about 92 percent from the upstream and about 83 percent households from the downstream owned mobile phones, which is a recent trend. The phones are mostly used by young members of the households and are used more for entertainment purposes than for gaining information.

6.6 Summary

The governance of the KR has contributed to the misery of the river communities living in the upstream and downstream of the Koshi barrage, both for allowing people to live in the vulnerable areas and not giving due attention to their situation. At first, they should not have been allowed to live in such areas by the Nepal Government. Floods in the river became destructive only some years after the construction of the barrage, which is also because many people moved closer to the river and even within the embankments, particularly in the upstream areas. Siltation in the river has played a major role in flooding. Although the aim of the KRP was irrigating and preventing erosion in both India and Nepal, there seems to be less enthusiasm among the project managers to prevent erosion and inundation, especially in the settlements of Gobargadha and Srilanka Tapu. It seems that these settlements have been a big burden for the KRP. Providing a timely and equitable amount of water for irrigation to the Nepalese river communities has also been an issue.

The condition of the river-affected communities is bad in terms of their living standards. The educational status of their children is poor as many households are not capable of sending their children to schools. Most of the people are still dependent upon the public land cultivation while their privately-owned land is under the river. Some people have been displaced to those areas where they just have a place to build their houses; they are obliged to do wage labour for sustaining their daily lives.

The next chapter will present the responses of the people in these river communities after being affected by the river.

Chapter Seven: Responses of the Communities to the Consequences of the Koshi River Governance

7.1 Introduction

We had 7 *bigaha* 10 *kaththa* [5.08 ha of private] land in Lilza, Hanumannagar, but all [land was] flooded away. Then [we] stayed close to Thana [the police station] for about 30-35 years, then came here. Now, we are living in [a piece of] public land. Now, [my] two sons are working as wage labourers in India, and the third is ploughing other people's field with their oxen. For this, he either gets 5-6 kilos of rice or NRs. 250-300 [AUD 3.125-3.75] per day. (Anonymous female, aged 60-65 years, Musahari Tol, Joginiya)

The above story is of a former landlady, whose family turned into a household of labourers after being affected by floods. Previously, the family was cultivating more than 5 hectares of private land, from which they could produce tonnes of agricultural products. Now all her sons do wage labour.

This chapter presents the responses of people in the river communities to the consequences of governance of the river. The people have carried out various activities to cope with flood hazards and to better their lives in the aftermath of the calamities. The information presented in this chapter is helpful in answering the second part of the third research question related to the coping strategies of the river communities in response to the injustice they faced because of the KRG. The next section (7.2) presents the activities of the people in the communities for coping with the floods. This will be followed by the livelihood strategies of the people that are useful in their coping with the disasters. Issues related to compensation raised by the people will then be described in section 7.4. The penultimate section discusses the organisation of protests by the people against various issues, just before presenting a summary of the chapter.

7.2 Coping with Floods

This section presents the activities carried out by the river communities to cope with floods. The activities include the immediate response to floods to arrange shelter and food for the family; and the livelihood strategies of the communities for sustaining their lives in the aftermath of flood

disasters. The livelihood strategies include the occupations that the people pursue to feed their family (see Section 7.3).

7.2.1 Response to Floods

The people in both the upstream and the downstream settlements have carried out various activities to cope with floods. As these activities differ, they are presented separately.

7.2.1.1 *The Upstream Settlements*

During previous flood events, the people in the upstream, who were living in wards 4 and 5 of the Prakashpur Village Development Committee (VDC), used different coping strategies to save themselves from the hazards. The first thing that almost all flood-affected people did during floods was to move to the eastern embankment with whatever private household things they could take with them and wait there for the floods to cease. Some people used boats while a few even used banana trunks as boats to cross the river. Some people died when these vessels capsized (as noted in the previous chapter).

We crossed the river in the mid-night by making a boat made up of a banana shoot. Three people crossed at a time ... After that, we stopped at Bandanda for 3 months. Then, the village leaders took us here [to Bahunikhola]. (Anonymous male, aged 60-65 years, Bahunikhola)

In the cases of short-lived floods, the people returned to their homes. But when they were fully displaced by the floods of the 1980s, their options were to wait for rehabilitation by the government or to wait for temporary places to live. Most of the people waited for the local government to resettle them in other places, while some continued to live beneath the embankment by building temporary houses.

Some friends stayed at Bandanda; some stayed in the school, and some were spread elsewhere. We lived with our [my] aunt for 1 year. After that, the village leaders took us here [Bahunikhola] in the pasture land ... Those people who were able to escape with their money, they were able to buy land elsewhere, but those who escaped without anything, they lived in others' houses and also at Bandanda. (Anonymous male, aged 50-55 years, Bahunikhola)

Some, who had previously bought land elsewhere or who bought after the incident, went to live on their private land by building temporary houses, but some lived at their relatives' houses.

I had bought 5 *kaththa* [0.17 ha] of land here before, so I build this house and lived here [after living in Bandanda for 6-7 months]. (Anonymous male, aged 60-65 years, Prakashpur)

[After being displaced and lived in Bandada for 2-3 years] we sold the remaining land in the hills and purchased land here. (Anonymous male, aged 75-80 years, Prakashpur)

Some even lived in rented rooms in Prakashpur.

We rented a house [in the market area of Prakashpur] after being affected by the Koshi flood. I think we lived on rent for about 8-9 years ... Then we came here. (Anonymous male, aged 35-40 years, Prakashpur)

The above stories are of activities by the people when they were displaced by floods. But the people living beneath the eastern embankment on the western side and in Srilanka Tapu still face flood hazards every year. The people living on the western side of the embankment have distinct but bitter experiences of annual floods. Though they have not experienced flooding or inundation of their houses, they fear the annual monsoon-erosions which are eroding the land in their backyards and are approaching their houses.

We, the men, stay awake in nights and watch the water level in the river during floods, and keep on exchanging messages or talk over the phone regarding the floods. We are not able to sleep in the nights when there is a flood. We very much fear the erosions due to floods every year. (Anonymous male, aged 35-40 years, Bandanda, Prakashpur)

The people living in Srilanka Tapu have different experiences. Mostly, the people have been facing the problem of erosion of their land and houses. Because of the erosion, many of them living close to the river have the experiences of shifting their houses back numerous times.

After 2035 BS [1978], I kept on shifting towards the east and the west depending on the flow of the Koshi river floods [in Prakashpur-4]. I shifted my houses 11 times here. After the flood in 2039 BS [1982], I also went to live at the east of the embankment. Then, I lived in public land; and cultivated about 3 *bigaha* [2.03 ha] of land there. Then, I came here [Srilanka Tapu] in 2052 BS [1996]. Now, I own about 1.5 *bigaha* [1.015 ha] of land. I have lived to the east of the embankment from time to time during the floods in the river ... The people who had land on the eastern side used to live there during floods and return to the island after the floods ceased. (Anonymous male, aged 55-60 years, Srilanka Tapu)

I shifted my house 5 times. After the flood in 2041 BS [1984], I shifted there [pointing in front] in front. I made [cleared forest] about 1 *bigaha* [0.677 ha] of land there. After 2 years, that land was also eroded away. Then, I shifted closer to the reserve, but wild animals harassed us. Our [my] house was demolished 2-3 times by the elephants. We lived there for 5-7 years, then we left. As there was no land left for cultivation, we shifted here [the current location] on 1 *bigaha* 5 *kaththa* [1.015 ha] of land. the river has been eroding the land here; maybe it will take away this year. (Anonymous male, aged 65-70 years, Srilanka Tapu)

7.2.1.2 The Downstream Settlements

The people living in Gobargadha have similar experiences to the people living in Srilanka Tapu, but some of their activities are different during inundation of their settlements. Many people have the experience of shifting their houses back from the river, but during monsoons, the people take their families and livestock to higher grounds in the settlements when the inundations are not severe and last for short durations. Some families cook out of their homes during inundations (see photograph 7.1). During heavy floods and inundations, only the men stay in the settlements by building *machans*²⁴ (See Photograph 7.2), while other family members are sent out of the settlements to take refuge either in Hanumannagar (mostly) or India (a few).



Photograph 7.1: A woman cooking food during the 2017 floods in Gobargadha (Source: Pappu Yadav, Hanumannagar; Received from Dipesh Khadga)

The people in Gobargadha take family and livestock to higher grounds during floods. When water enters their houses, they build *machans* and stay, cook and eat there. They shift their children and

²⁴ A *machan* is a wooden or bamboo structure built by the villagers for living, cooking food and looking after their homes, cattle and property during inundations.

women to other safe places, and only the male adults stay in the *machans* for 1-2 months till the floods cease. (Anonymous male, aged 60-65 years, Hanumannagar)

When erosion occurs, people either go to Hanumannagar or towards India on boats with their property. Only inundation does not make people go away. They also go towards India, and Indian people also come here during floods. (Anonymous male, aged 55-60 years, Gobargadha)



Photograph 7.2: A machan built in Hanumannagar during the 2017 floods (Source: Dipesh Khadga, Hanumannagar)

When there is a big flood, we are ordered to evacuate our places by the administration, we send our children to Hanumannagar, but we don't go. This is because we don't want to leave our houses because thieves across the border may steal our things ... 1 or 2 household members stay at home by sending other family members to a safe place. (Man, Anonymous, aged 51-55 years, Gobargadha)

Some men, who are living in Joginiya, go to live at Gobargadha during floods by leaving their family at home for looking after the cattle and agricultural produce (see figures 4.2 and 4.5 in chapter four).

During floods, my family live here, but I live at Tappu [Gobargadha] in recent years. I have to look after my cattle and produce there. (Anonymous male, aged 45-50 years, Joginiya)

7.2.2 Livelihoods after Displacement

After being displaced, the people had hard lives as most of them did not have any possessions. They were provided relief by the government for a few months but then had to manage everything by themselves. The people who had land elsewhere could build houses and farm the land. But the people who did not have additional land suffered. Lacking permanent employment, there was no other option for them except doing wage labour for sustaining day-to-day activities. They did different kinds of wage labour for their survival.

[After the flood], my mother used to beg. We didn't have anything at that time. Then I also went to Delhi ... We didn't have anything to eat and suffered a lot ... After going there, as I was not able to carry big loads of stones and sand, I worked in a store. After working in the store for some time, my friends took me to work at construction sites. Then they planned to return home. As I was afraid of staying there alone, I also returned with them ... I brought some money home from there. Then I started working here [at home], like selling plastic bags; I even went to Dharan and Chatara [for selling plastic bags]. (Anonymous male, aged 40-45 years, Bahunikhola)

We were in Gobargadha previously ... Everything was flooded away. We didn't have anything with us. Then, I started living at the Koshi Barrage. After living at the Koshi barrage for some time, some of my neighbours told me that agricultural land was available in the upstream. I was lured, so moved to Prakashpur ward number 4-5; I took a *kaththa* [0.034 ha] of land from a man there and produced pointed gourd for 5 years for survival. The owner took the land afterwards, then I went to Bhardaha, the Koshi Barrage again; and made my living by selling firewood. (Anonymous male, aged 35-40 years, Bahunikhola)

Some of the people did *adhiya* while others did agricultural and other various kinds of wage labour. As agricultural labour is seasonal work, and other labour opportunities were not abundant, the people had to consider options such as migration to other parts of the country or cross the border to India. According to some participants in the upstream settlements, the trend of going to India for work started after being severely affected by the Koshi floods. Most of them, who were originally from the Hills, went to Koilakhad of Shillong, India. In Shillong, they worked as labourers in coal-mining.

After coming here [after being displaced], my (three) sons went to work in coal mining in Shillong. One son went to Saudi Arabia; he was driving a car in Kathmandu before ... the income in Shillong was very good; one could earn about IRs.²⁵ 2-3000 per day [AUD 25-37.5]. My sons are still doing the same work in Shillong, but the work is not that easy as it was previously because the depth of mines has increased on the one hand while cranes are being used on the other hand. (Anonymous male, aged 75-80 years, Prakashpur)

Some people also went to Delhi, but many have returned because they could not find good-earning work in Delhi. Some people who went to Koilakhad and are still working there but had to change their work.

For about 5 years [after being displaced], it was very hard here, even for hand-to-mouth. I then went abroad, Koilakhad, Shillong, India ... what employment is available here? [aggressively] ... Then went to Sikkim and worked on a construction site, loading brick, cement etc. From 2046 BS [1989], I started doing business; I used to bring oxen from there and sell here. By doing this, I raised my kids, provided education to them. I have left that work 2 years ago. (Anonymous male, aged 65-70 years, Bandanda)

When people are not able to find jobs at home and struggle to feed their family, they must leave their homes. The following narrative of a man from Inner Prakashpur tells a similar story.

I worked as a wage labourer in Delhi, India for 12-14 years. When there was nothing at home, and it was very hard for hand to mouth; the man who used to stockpile about 2-250 maund²⁶ of paddy and when there was not even 2-4 maund of paddy during the harvesting time, our [my family's] condition was miserable ... I went to Delhi in 2046-7 BS [1989-90]. I did the work of printing clothes. Previously the work was good as I could save about IRs. 500 per day, but the same work was started to be done by using a computer afterwards; then I lost the job. (Anonymous male, aged 45-50 years, Inner Prakashpur)

Usually, people go to India for work as the border is close to their home, but some people also went to Kathmandu and other parts of the country for work.

Just after the flood displaced us in 2040 BS [1983], they [my brothers] left the place ... They (my brothers and four sons) went out [of home] because the [agricultural] production was not good here; so, it's hard for hand-to-mouth here ... I didn't leave because I had small children with me, but they were not married. (Anonymous male, aged 60-65 years, Bahunikhola)

I have been doing the business [of selling *bhujia*²⁷, a kind of snack] since 2034 BS [1977]. I went to Dhankuta, Hile, Ghodetar, Bhojpur and Kathmandu to sell *bhujia*. (Anonymous male, aged 65-70 years, Prakashpur)

²⁵ Indian currency; IRs. 1 = NRs. 1.6

²⁶ Generally, 1 maund = 37.3242 kg; but in practice, people in Nepal use maund to indicate one typical sack of grains used in the area.

²⁷ It is a popular crispy snack prepared by using rice in the Terai region of Nepal.

7.3 Livelihood Strategies of the River Communities

As many people are still suffering from the KR and many are still in misery because of their displacement due to the KR floods, it is important to understand the livelihood strategies of these people. The river-affected people are currently engaged in various occupations, ranging from agricultural and non-agricultural wage labour to wage labour migration overseas. This section presents these livelihood strategies.

7.3.1 Occupations

The household data of the river-affected people show that they are engaged in various occupations. In this section, the primary occupations of the people are presented. Household data shows that altogether 50.7 percent (n=808; N=1593) of the flood-affected population are earners and 49.3 percent (n=785) are dependants. Among the economically active population or earners, the highest proportion of the people from both upstream and downstream settlements are involved in farming, foreign employment, as housewives and in wage labour locally respectively. In addition to the figure for farming, the younger boys and girls, and some housewives, help their families in agriculture. Housewives generally do household chores, but their other activities are not clear as many of them (but not all) also do agricultural and labour work. Some less popular occupations in which the people are engaged in include fishing, government service, informal service, driving, rickshaw pulling and herding (see figure 7.1).

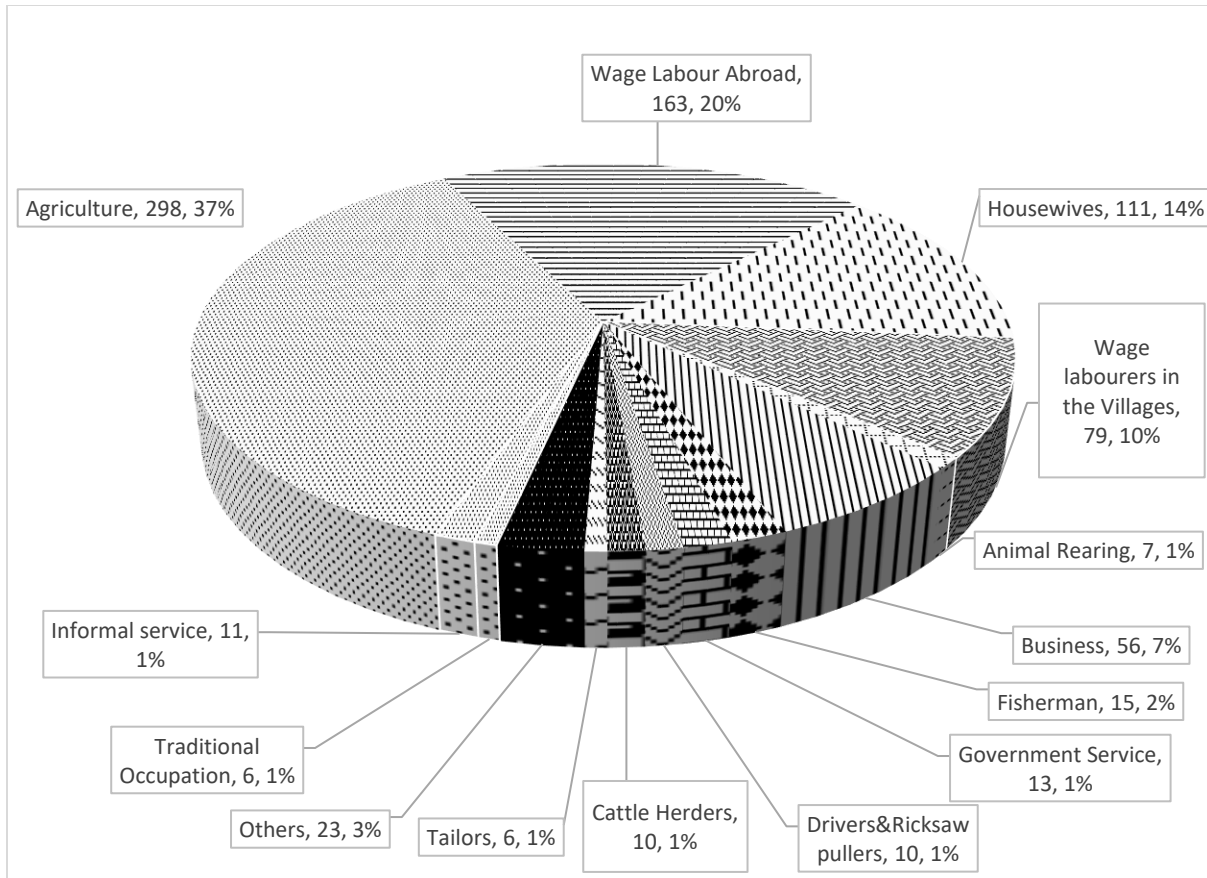


Figure 7.1: Primary Occupations of the economically active flood-affected people in both Upstream and Downstream Settlements

Among the people working abroad (20 percent; n=163), their destinations have also been Bahrain, United Arab Emirates and Saudi Arabia, apart from India, Malaysia and Qatar (see figure 7.2).

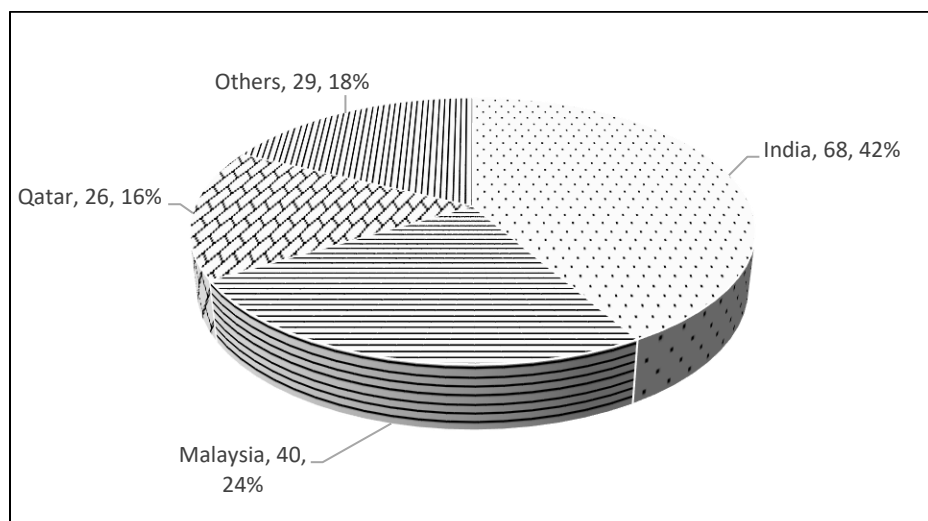


Figure 7.2: Destination Countries of the Migrant Flood-Affected People

The data related to occupation in the upstream settlements are almost similar to the overall data from both the settlements (see figure 7.3) in terms of the major occupations. Regarding the proportion of the people from the upstream settlements working abroad, 34 percent (n=25) is in Malaysia; 19 percent (n=14) are in Qatar, and almost 18 percent (n=13) are in India.

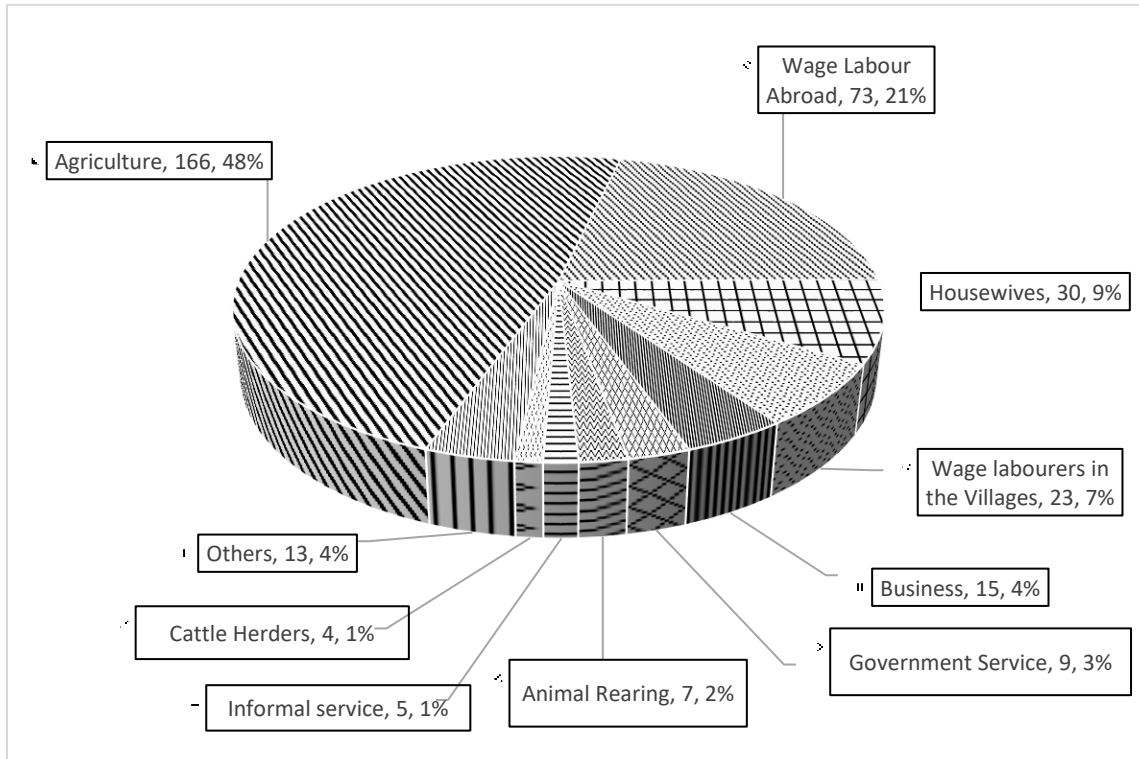


Figure 7.3: Primary Occupations of the economically active flood-affected people in the Upstream Settlements

In the downstream settlements, the major occupations are more evenly distributed than in the upstream settlements (see figure 7.4). Unlike foreign employment from the upstream settlements, over 62 percent of the people working abroad are in India, while only 17 percent (n=15) and 13 percent (n=12) in Malaysia and Qatar respectively.

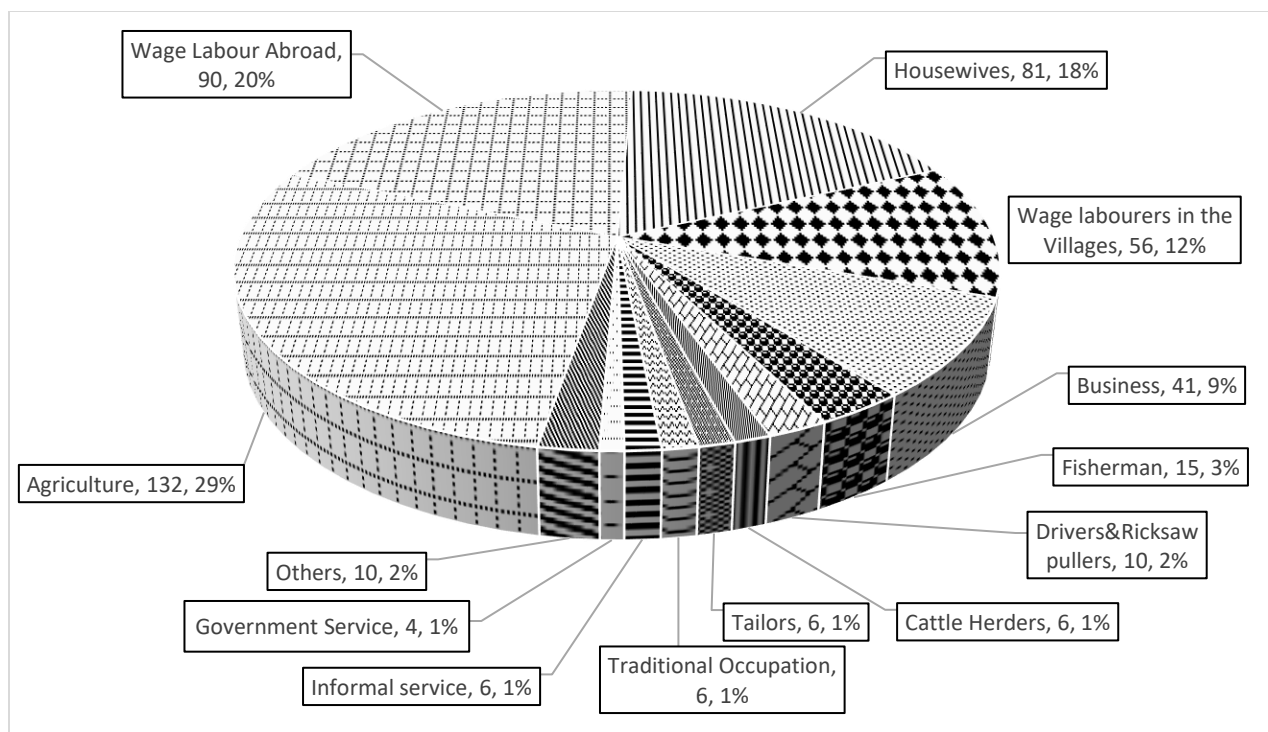


Figure 7.4: Primary Occupations of the economically active flood-affected people in the Downstream Settlements

7.3.2 Agriculture and Access to Land

Land is an important asset for people in countries such as Nepal, especially for those living in rural areas. Much of the country is an agrarian society. On top of that, ownership of land is necessary for building houses and for connecting basic amenities to the house such as electricity and drinking water. In a rural scenario, people have hard lives without access to land. Therefore, access to land is an important indicator of the wellbeing of rural people, which is more important in the case of the river communities because their access to the land situation reveals how the KRG has affected their livelihoods. This section presents the situation of the river communities' access to land in both the upstream and downstream settlements.

Agriculture is still the main occupation for most people in both the upstream and downstream settlements, despite losing land due to the KR-floods. Among the upstream settlements, the primary occupation for the highest number of economically active people living in Bahunikhola (57 percent; n=56), Srilanka Tapu (54 percent; n=53) and Inner Prakashpur (44 percent; n=52) is agriculture (see table 7.1). Among the downstream settlements, the primary occupation for the

highest number of economically active people living in Gobargadha (66 percent; n=79), Baluwatar (40 percent; n=17), Joginiya (17 percent; n=20) and Hanumannagar (9 percent; n=16) is agriculture.

Table 7.1: Economically Active People Engaged in Agriculture

Settlements	People Engaged in Agriculture	Percentage*	Total Economically Active People
1. Upstream Settlements			
Bahunikhola	56	56.57%	99
Bandanda	5	17.24%	29
Inner Prakashpur	52	44.07%	118
Srilanka Tapu	53	53.54%	99
Upstream Settlements Average	166	48.12%	345
2. Downstream Settlements			
Gobargada	79	66.39%	119
Hanuman Nagar	16	8.89%	180
Baluwatar	17	39.53%	43
Miya Tol, Joginiya	12	27.27%	44
Musahari Tol, Joginiya	8	10.39%	77
Joginiya Total	20	16.53%	121
Downstream Settlements Average	132	28.51%	463

* Percentage of economically active people engaged in agriculture

7.3.2.1 The Situation of Access to Land in the Upstream Settlements

The river communities' access to land is defined by the type of access and the size of land cultivated. In the upstream settlements, the people have access to land in various ways such as privately owned, public, on contract or lease and *adhiya*. Household data show that most of the people in the settlements privately own land, i.e. about 64 percent. Among the individual settlements, almost 89 percent of the people from Inner Prakashpur privately owned land whereas only about 35 percent of Srilanka Tapu owned land privately (see table 7.2). This means the people from Srilanka Tapu have been able to buy and privately own land elsewhere despite living on the public land.

Around 24 percent of the households from the upstream settlements have been cultivating public land (see table 7.2). About 65 percent of the people from Srilanka Tapu cultivated public land.

Besides, only a very fewer people cultivated land under *adhiya* and lease, i.e. about 5 percent and 4 percent respectively. Taking-in land under *adhiya* was only practised by the people from Bahunikhola and Inner Prakshpur. About 14 percent of the people from Bahunikhola had taken land under *adhiya* while only about 5 percent from Inner Prakashpur had taken land under this contract system.

Table 7.2: Types of Access to Land for the households in the Upstream Settlements

Settlements	Privately Owned	Public	<i>Adhiya</i> (Taken In)	Contract	NA*	Grand Total
Bahunikhola	60.71%	17.86%	14.29%	7.14%	0.00%	100.00%
Bandanda	50.00%	12.50%	0.00%	25.00%	12.50%	100.00%
Inner Prakashpur	88.64%	2.27%	4.55%	0.00%	4.55%	100.00%
Srilanka Tapu	35.48%	64.52%	0.00%	0.00%	0.00%	100.00%
Average	63.96%	24.32%	5.41%	3.60%	2.70%	100.00%

*NA – Data not available

The area of cultivated land in the upstream showed that some of them cultivated big areas of land which are more than 2 *bigaha* (1.35 ha) (see Figure 7.5). Many i.e. about 28 percent, had more than 2 *bigaha* (1.35 ha) of land while about 25 percent each cultivated more than 5 to 10 *kaththa* (>0.17 to 0.34 ha) of land and 1-5 *kaththa* (0.034 to 0.17 ha).

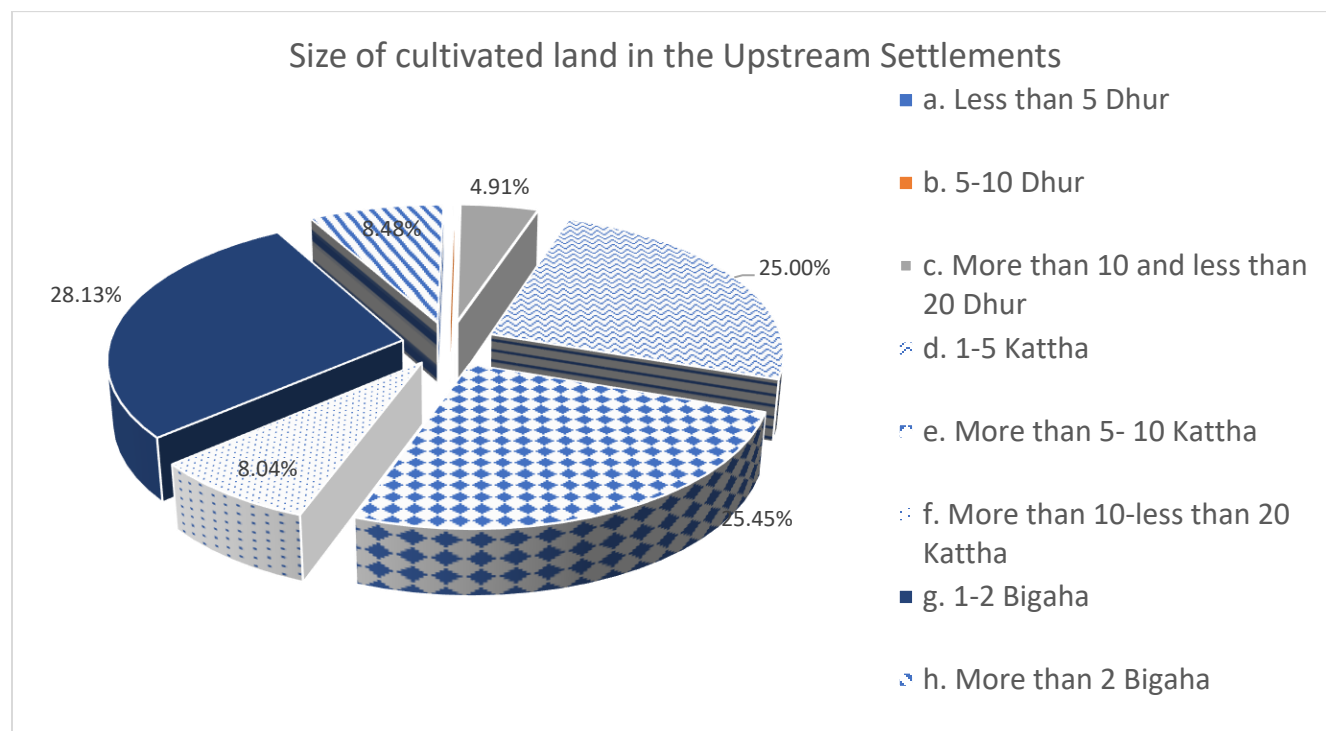


Figure 7.5: Area of cultivated landholdings of the households in the upstream settlements

However, very few people in the upstream settlements owned large areas of land privately. The common sizes of land owned were 1-10 *kaththa* (0.034-0.34 ha) (see table 7.3). Only about 15 percent owned land bigger than 1 *bigaha* (0.677 ha), while about 60 percent owned land within the area range of 1-10 *kaththa* (0.034-0.34 ha). Moreover, none of the people from Inner Prakashpur and Srilanka Tapu owned more than 2 *bigaha* (1.35 ha) of land while almost 52 percent of these people from Bahunikhola owned land of area 1-5 *kaththa* (0.034-0.17 ha).

Table 7.3: Area of Privately-owned Landholdings of the Households in the Upstream Settlements

Settlements	>10 and <20		>5 - 10 <i>Kaththa</i>	>10 -		
	<i>Dhur</i>	1-5 <i>Kaththa</i>		<20 <i>Kaththa</i>	1-2 <i>Bigaha</i>	>2 <i>Bigaha</i>
Bahunikhola	3.45%	51.72%	10.34%	6.90%	10.34%	17.24%
Bandanda	0.00%	40.00%	40.00%	0.00%	0.00%	20.00%
Inner Prakashpur	12.50%	22.22%	33.33%	15.28%	16.67%	0.00%
Srilanka Tapu	6.25%	25.00%	56.25%	6.25%	6.25%	0.00%
Average	9.02%	30.33%	31.15%	11.48%	13.11%	4.92%

Among the people cultivating public land in the upstream, people did not cultivate overly small pieces of public land i.e. less than 1 *kaththa* (0.034 ha) (see table 7.4). It was only in Srilanka Tapu, where about 22 percent cultivated large areas of land that are more than 2 *bigaha* (1.35 ha). This is because the people there occupied as much land as they could when they moved in the island, and it is not sufficient to cultivate small pieces of land there as it is isolated from other villages. All the people from Bandanda owned small pieces of public land i.e. 1-5 *kaththa* (0.034-0.17 ha), and all people from Inner Prakashpur owned public land within the range of >5-10 *kaththa* (>0.17-0.34 ha). Public land is bought and sold, similar to privately owned land, but without formal certificates and for very cheap prices. The people who occupied the land before sell if they do not want to live or cultivate the land anymore.

Table 7.4: Size of Public Land Cultivated by the Households in the Upstream Settlements

Settlements	5-10		>10 and		>10 -		
	<5 <i>Dhur</i>	<i>Dhur</i>	<20 <i>Dhur</i>	1-5 <i>Kaththa</i>	>5 - 10 <i>Kaththa</i>	<20 <i>Kaththa</i>	1-2 <i>Bigaha</i>

Bahunikhola	0.00%	0.00%	0.00%	45.45%	0.00%	27.27%	27.27%	0.00%
Bandanda	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%
Inner Prakashpur	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%
Srilanka Tapu	0.00%	0.00%	0.00%	1.82%	12.73%	0.00%	63.64%	21.82%
Average	0.00%	0.00%	0.00%	17.33%	12.00%	4.00%	50.67%	16.00%

7.3.2.2 The Situation of Access to Land in the Downstream Settlements

Similar to the people in the upstream settlements, the people in the downstream settlements also have access to land in the form of privately owned, public, on contract or lease, *adhiya*. Slightly different from the upstream settlements, few people cultivated privately owned land, i.e. about 34 percent, than the people cultivating public land which is about 39 percent (see table 7.5). Among the individual settlements, about 47 percent and 39 percent of the people from Hanumannagar and Gobargadha respectively have owned private land, while nobody from Musahari Tol owned land privately.

The number of people cultivating public land in downstream settlements is very high because many people cannot afford to buy land privately. The people cultivating public land were highest in proportion in Miya Tol, i.e. almost 86 percent, while only 23 percent from Gobargadha have been cultivating the public land. This is because many people in Gobargadha received land certificates for the public land they owned in 1979 (as noted in section 6.2.2.2).

Besides, data shows that *adhiya* is more common in the downstream settlements in comparison to the upstream settlements. About 24 percent of the people in the settlements have taken land under *adhiya*, while only a very limited number of people (i.e. almost 1 percent each) have let out their land under *adhiya* and taken land under lease. Among the individual settlements, the highest proportion i.e. 50 percent of the people from Musahari Tol has been cultivating land under *adhiya*, and surprisingly, nobody from Miya Tol has taken-in land under this system of contract. In Gobargadha, about 35 percent have taken-in land under this contract system. As land is very important for subsistence, the landless people must take land from the ones who have large areas of land under *adhiya*. Besides, giving out land under *adhiya* has been practised only in Gobargadha, whereas lending land under contract has been practised only in Hanumannagar. Only a very few people (less than 3 percent) have done land transactions in this way.

Table 7.5: Types of Access to Land for the Households in the Downstream Settlements

Settlements	Privately Owned	Public	Adhiya (Taken in)	Adhiya (Given out)	Contract	NA*	Grand Total
Gobargada	38.71%	22.58%	35.48%	3.23%	0.00%	0.00%	100.00%
Hanumannagar	47.37%	35.09%	15.79%	0.00%	1.75%	0.00%	100.00%
Baluwatar	9.09%	63.64%	27.27%	0.00%	0.00%	0.00%	100.00%
Joginiya	5.00%	60.00%	30.00%	0.00%	0.00%	5.00%	100.00%
Miya Tol	12.50%	87.50%	0.00%	0.00%	0.00%	0.00%	100.00%
Musahari Tol	0.00%	41.67%	50.00%	0.00%	0.00%	8.33%	100.00%
Average	34.45%	38.66%	24.37%	0.84%	0.84%	0.84%	100.00%

*NA – Data not available

In comparison to the upstream settlements, people in the downstream settlements cultivated large areas of land (see figure 7.6). About 48 percent of the people have owned land bigger than 1 *bigaha* (0.677 ha), and only about 8 percent of people have owned less than 10 *Dhur* (169.32 m²) of land.

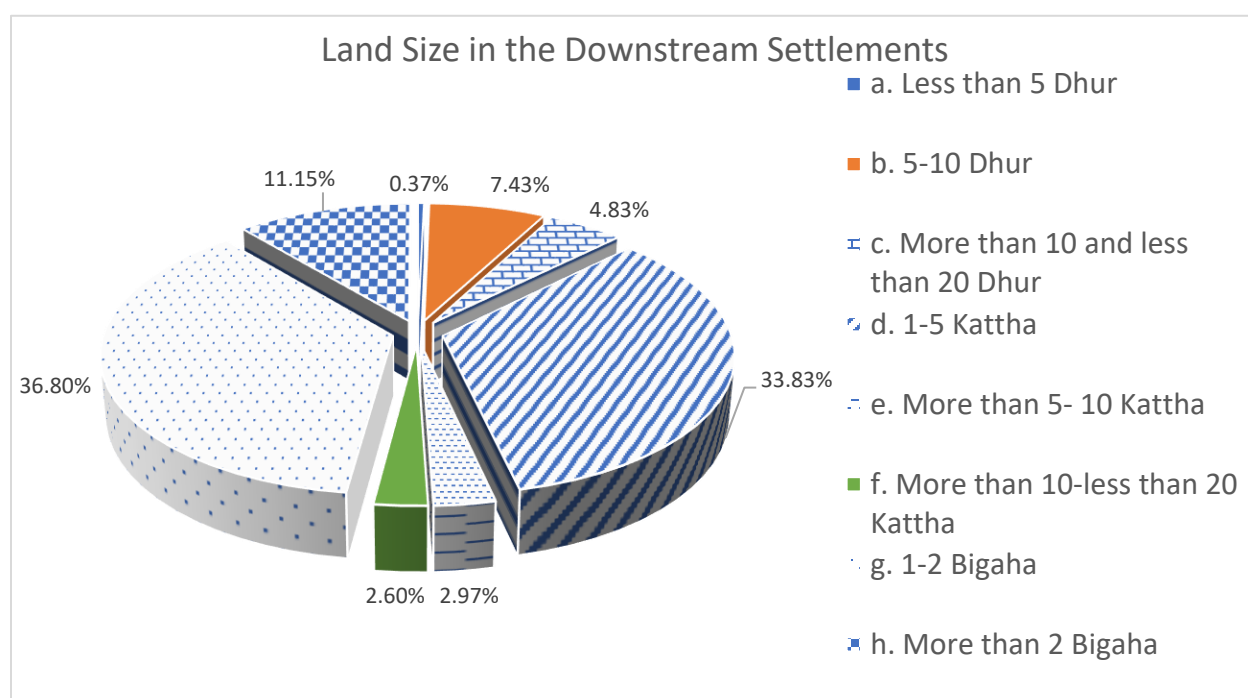


Figure 7.6: Landholding area in the downstream settlements

Among the people who have owned land privately, people in some settlements owned large areas of land while some did not own any. Among them, many people, i.e. over 87 percent, in Gobargadha owned land of more than 1 *bigaha* (0.677 ha), whereas about 66 percent of the people from Hanumannagar owned land of less than 5 *kaththa* (<0.17 ha). This is because the early dwellers in Gobargadha occupied large areas of land, and the value of land in Hanumannagar is

very high as compared to the land in Gobargadha, which do not allow them to afford to buy land. As noted earlier nobody from Musahar Tol, Joginiya have owned land (see table 7.6).

Table 7.6: Size of Privately-owned Landholdings of the Households in the Downstream Settlements

Settlements	5-10	>10 and	1-5	>5 - 10	>10 -	1-2	>2 Bigaha
	Dhur	<20 Dhur	Kaththa	Kaththa	<20 Kaththa	Bigaha	
Gobargada	0.00%	6.25%	6.25%	0.00%	0.00%	25.00%	62.50%
Hanuman Nagar	13.64%	15.91%	36.36%	2.27%	6.82%	18.18%	6.82%
Baluwatar	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%
Miya Tol, Joginiya	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%
Total	9.68%	12.90%	30.65%	1.61%	4.84%	19.35%	20.97%

7.3.2.3 Change in the Access to Land Situation for the Households Owning Private Land Previously before Being Affected by Floods

Before being displaced, almost 96 percent of the households living in the upstream settlements owned land (including public land) while living at their previous place of residence (see table 7.7). In the downstream settlements, about 71 percent of the households had owned land at their previous place of residence before being affected by the KR floods. Among them, however, almost 47 percent from Gobargadha and 33 percent from Baluwatar did not own any land previously.

Table 7.7: Ownership of Land at Previous Residence

Settlements	Yes	No
	1. Upstream Settlements	
Bahunikhola	93.10%	6.90%
Bandanda	87.50%	0.00%
Inner Prakashpur	97.73%	2.27%
Srilanka Tapu	96.67%	3.33%
Upstream Settlements Average	96.40%	2.70%
2. Downstream Settlements		
Gobargada	53.33%	46.67%
Hanuman Nagar	73.21%	26.79%
Baluwatar	66.67%	33.33%
Miya Tol, Joginiya	87.50%	12.50%

Musahari Tol, Joginiya	100.00%	0.00%
Joginiya	95.24%	4.76%
Downstream Settlements Average	71.43%	28.57%
Average of Upstream and Downstream Settlements	83.48%	16.09%

Note: 12.5 percent of the people from Bandanda, Prakashpur did not provide information on land ownership at their previous residence.

Among the households who had owned land (including public land) in their previous place of residence in the upstream settlements, 61 percent (n=64; N=105) of the households still owned land, the individual sizes of which were bigger than 1 *bigaha* (0.677 ha); among them, almost 27 percent (n=28) owned land with the individual land-area of more than 2 *bigaha* (1.35 ha) (see table 7.8). Among the people who had owned land in their previous place of residence in the downstream settlements, about 69 percent (n=59; N=85) owned land with the individual land-area bigger than 1 *bigaha* (0.677 ha) that also includes 47 percent (n=36) who owned land with the individual land-area of more than 2 *bigaha* (1.35 ha).

Table 7.8: Area of Land Owned at the Previous Residence of the People

Settlements	5-10 Dhur	> 10 and < 20 Dhur	1-5 Kaththa	> 5 - 10 Kaththa	> 10 - < 20 Kaththa	1-2 Bigaha	> 2 Bigaha	NA*
1. Upstream Settlements								
Bahunikhola	0.00%	0.00%	7.69%	7.69%	26.92%	34.62%	19.23%	3.85%
Bandanda	0.00%	0.00%	0.00%	14.29%	0.00%	42.86%	28.57%	14.29%
Inner Prakashpur	0.00%	0.00%	13.95%	9.30%	11.63%	32.56%	32.56%	0.00%
Srilanka Tapu	0.00%	0.00%	3.45%	17.24%	17.24%	34.48%	24.14%	3.45%
Upstream Settlements Average	0.00%	0.00%	8.57%	11.43%	16.19%	34.29%	26.67%	2.86%
2. Downstream Settlements								
Gobargada	0.00%	0.00%	0.00%	6.25%	0.00%	25.00%	68.75%	0.00%
Hanuman Nagar	4.88%	2.44%	19.51%	2.44%	2.44%	14.63%	43.90%	9.76%
Baluwatar	0.00%	0.00%	37.50%	0.00%	0.00%	25.00%	37.50%	0.00%
Miya Tol, Joginiya	0.00%	0.00%	0.00%	0.00%	0.00%	57.14%	42.86%	0.00%
Musahari Tol, Joginiya	0.00%	0.00%	0.00%	23.08%	0.00%	23.08%	38.46%	15.38%
Joginiya Total	0.00%	0.00%	0.00%	15.00%	0.00%	35.00%	40.00%	10.00%
Downstream Settlements Average	2.35%	1.18%	12.94%	5.88%	1.18%	22.35%	47.06%	7.06%
Average of Upstream and Downstream Settlements	1.05%	0.53%	10.53%	8.95%	9.47%	28.95%	35.79%	4.74%

N=230; n=190; *NA – Data not available

But the land ownership situation of the households at present has become worse in comparison to their past. Only about 45 percent (n=86; and N=190) of the households that owned land previously own land privately in both the upstream and the downstream settlements. Among the individual upstream settlements, about 45 percent (n=13; N=29) from Srilanka Tapu; around 42 percent of the people (n=11; N=26) from Bahunikhola; and around 42 percent (n=18; N=43) from Inner Prakashpur own land privately at present. In the downstream settlements, only Hanumannagar has more than 50 percent of households owning land, while other locations vary to a low of about 38 percent (n=3; N=8) in Baluwatar (see table 7.9).

Table 7.9: Present Land Type Cultivated by the Households Owning Land Previously (Before floods)

Settlements	Privately cultivated	Adhiya-in	Contract	Public	NA*
1. Upstream Settlements					
Bahunikhola	42.31%	11.54%	0.00%	46.15%	0.00%
Bandanda	57.14%	28.57%	14.29%	0.00%	0.00%
Inner Prakashpur	41.86%	4.65%	4.65%	48.84%	0.00%
Koshitappu	44.83%	10.34%	6.90%	31.03%	6.90%
Upstream Settlements Average	43.81%	9.52%	4.76%	40.00%	1.90%
2. Downstream Settlements					
Gobargada	43.75%	6.25%	0.00%	50.00%	0.00%
Hanumannagar	51.22%	17.07%	0.00%	29.27%	2.44%
Baluwatar	37.50%	37.50%	0.00%	25.00%	0.00%
Miya Tol, Joginiya	42.86%	28.57%	0.00%	28.57%	0.00%
Musahari Tol, Joginiya	46.15%	15.38%	0.00%	38.46%	0.00%
Joginiya Total	45.00%	20.00%	0.00%	35.00%	0.00%
Downstream Settlements Average	47.06%	17.65%	0.00%	34.12%	1.18%
Average of Upstream and Downstream Settlements	45.26%	13.16%	2.63%	37.37%	1.58%

*NA – Data not available

Besides, their current individual land ownership-area has decreased greatly when compared with their previous land-area. Currently, the individual land ownership-area for about 59 percent (n=51; N=86) of the households is within the range of 1-10 *kaththa* (0.034-0.34 ha). Only about 10 percent (n=9) own land-area of 1-2 *bigaha* (0.677-1.35 ha), and about 9 percent (n=8) own the land-area of more than 2 *bigaha* (1.35 ha). In the upstream settlements, only around 13 percent (n=6) of them each own 1-2 *bigaha* (0.677-1.35 ha) and over 2 *bigaha*. In the downstream settlements, only 5 percent (n=2) own the land-area of more than 2 *bigaha* (1.35 ha). Only the households from Hanumannagar (about 5 percent; n=1; N=21) and Joginiya (around 11 percent; n=1; N=9) among the downstream settlements own the land-area of more than 2 *bigaha* (1.35 ha).

Regarding the privately-owned land, some of the households have inherited it from their parents while others have purchased. About 32 percent (n=31; N=96) of all the land in both upstream and

downstream settlements has been inherited, and around 65 percent (n=62) has been purchased. These overall statistics are almost similar for both the upstream and the downstream settlements. Most of them bought the land using the money they earned from wage labour in India and overseas and in conducting small businesses.

I then started selling Bhujia and then bought this plot ... I bought this plot for about NRs. 23,000 [AUD 287.5] at that time. (Anonymous male, aged 45-50 years, Bahunikhola)

We [my family] had bought 10 kaththa [0.34 ha] land here for NRs. 7,000 [AUD 87.5], and sold 5 *kaththa* [0.17 ha] for NRs. 35,000 [AUD 437.5] two years ago for sending the youngest son to Saudi Arabia ... we are paying 3 % for the loans that we have taken. We haven't taken a loan from banks because we need to pay them exactly by the deadline, which is very hard. It's only easy for businessmen. We can't do that. (Anonymous male, aged 75-80 years, Prakashpur)

Among the households that previously did not own land, only a few have managed to buy land later. About 26 percent (n=10; N=29) of the households in both the upstream and the downstream settlements have been able to purchase land after moving to their new settlements.

However, many of the households still face difficulty in meeting their needs annually due to lack of sufficient agricultural production.

7.3.3 Agricultural Food Sufficiency

A household's agricultural food sufficiency means the adequacy of the household's annual agricultural production to meet the food demand of its household members for the whole year. As the land-holding sizes of the households have decreased significantly, their agricultural production has become insufficient for sustaining their families.

Although people in the upstream and downstream settlements cultivate land in different ways, the agricultural produce is not sufficient for about 61 percent of people in the upstream and for almost 70 percent of people in the downstream settlements. To feed themselves, the people are engaged in various forms of work such as agriculture, agricultural labour, non-agricultural labour, animal rearing, informal sector, service sector, non-government, self-employment, labour migration to India and overseas (this will be discussed in chapter seven). Still, over 50 percent of the people in the upstream and about 73 percent in the downstream revealed that their earnings were not sufficient for covering their expenses, they, therefore, borrow money, mostly from local money

lenders, paying interest generally ranging from 36 to 60 percent per annum. The people borrowed money for various purposes, such as covering their household expenses, building a house, doing businesses, wedding and treatment of illnesses. For paying the loan, many people from the settlements have travelled either to India or overseas for employment, which again needed money to be borrowed.

Almost 66 percent (n=151; N=230) of all households in both upstream and downstream settlements do not have agricultural sufficiency. In the upstream settlements, agricultural production is not sufficient for about 61 percent (n=68; N=111) of the households; and in the downstream settlements, this figure is almost 70 percent (n=83; N=119). Gobargadha is the only settlement where agricultural production is sufficient for most of the households; 60 percent (n=18; N=30) of the households in the settlement have sufficient agricultural food production (see table 7.10).

Table 7.10: Agricultural Food Sufficiency

Settlements	Yes	No	NA*
1. Upstream Settlements			
Bahunikhola	37.93%	58.62%	3.45%
Bandanda	12.50%	75.00%	12.50%
Inner Prakashpur	36.36%	63.64%	0.00%
Srilanka Tapu	40.00%	56.67%	3.33%
Upstream Settlements Average	36.04%	61.26%	2.70%
2. Downstream Settlements			
Gobargada	60.00%	40.00%	0.00%
Hanuman Nagar	8.93%	82.14%	8.93%
Baluwatar	25.00%	58.33%	16.67%
Miya Tol, Joginiya	12.50%	75.00%	12.50%
Musahari Tol, Joginiya	0.00%	92.31%	7.69%
Joginiya Average	4.76%	85.71%	9.52%
Downstream Settlements Average	22.69%	69.75%	7.56%
Average of Upstream and Downstream Settlements	29.13%	65.65%	5.22%

*NA - Data not available

Of the people who do not have food sufficiency from their agriculture for the entire year, about 11 percent (n=17) have food sufficiency for 9 months to 1 year and almost half have food sufficiency for less than six months. A significant number (n=33; i.e. almost 22 percent) did not reveal the duration of their food sufficiency. In the upstream settlements, about 65 percent (n=44; N=68)

have food sufficiency for less than six months, and around 25 percent (n=17) have food sufficiency for 7 months to 1 year. Only about 10 percent (n=7) did not mention their food sufficiency in the upstream. In the downstream settlements, about 32 percent (n=26; N=83) of the people did not mention the duration of their food sufficiency. About 33 percent (n=27) have food sufficiency for 6 months to 1 year while around 31 percent (n=26) have food sufficiency for only 2-4 months (see table 7.11).

Table 7.11: Duration of Food Sufficiency for the households which do not have whole year food sufficiency

Settlements									
1. Upstream Settlements	1 month	2-4 months	5 - 6 months	7 - 8 months	9 months to <1 year	NA*	NR**	Grand Total	
Bahunikhola	5.88%	35.29%	17.65%	23.53%	11.76%	5.88%	0.00%	100.00%	
Bandanda	16.67%	16.67%	33.33%	16.67%	16.67%	0.00%	0.00%	100.00%	
Inner Prakashpur	3.57%	46.43%	32.14%	7.14%	0.00%	10.71%	0.00%	100.00%	
Srilanka Tapu	11.76%	11.76%	17.65%	11.76%	29.41%	17.65%	0.00%	100.00%	
Upstream Average	7.35%	32.35%	25.00%	13.24%	11.76%	10.29%	0.00%	100.00%	
2. Downstream Settlements									
Gobargada	0.00%	0.00%	25.00%	33.33%	0.00%	41.67%	0.00%	100.00%	
Hanuman Nagar	0.00%	10.87%	23.91%	17.39%	13.04%	32.61%	2.17%	100.00%	
Baluwatar	0.00%	0.00%	42.86%	42.86%	0.00%	14.29%	0.00%	100.00%	
Miya Tol, Joginiya	0.00%	33.33%	0.00%	0.00%	16.67%	16.67%	33.33%	100.00%	
Musahari Tol, Joginiya	0.00%	0.00%	16.67%	25.00%	16.67%	33.33%	8.33%	100.00%	
Joginiya Average	0.00%	11.11%	11.11%	16.67%	16.67%	27.78%	16.67%	100.00%	
Downstream Average	0.00%	8.43%	22.89%	21.69%	10.84%	31.33%	4.82%	100.00%	
Average of Upstream and Downstream Settlements	3.31%	19.21%	23.84%	17.88%	11.26%	21.85%	2.65%	100.00%	

*NA – Data not available

**NR- Not relevant for the people who have agricultural sufficiency and those who are not involved in agriculture at all

7.3.4 Labour Migration to India and Overseas

Due to insufficient land holdings and the resulting inadequate food production, many households have looked for alternative livelihoods and/or migration to India and overseas (recently) because of the lack of good employment opportunities in Nepal.

The household data show that a significant number of people from the flood-affected households are out of the country. About 10.8 percent (n=172) of the total population of the Koshi-affected people (N=1593) are working as wage labourers out of the country, comprising 4.7 percent (n=75) working in various places in India, and about 6.1 percent (n=97) working overseas mostly in the Middle East and Malaysia. In India, the people have been working in various cities and states such as Delhi, Jaipur (Rajasthan), Punjab, Gujrat, Kashmir, Karnataka and Supaul, Bihar. Among the other destinations, Malaysia is the most popular with about 2.7 percent (n=43) of the population working currently, followed by Qatar with about 1.8 percent (n=28) then Saudi Arabia, Dubai and Bahrain are the other destinations with about 0.75 (n=12), about 0.3 percent (n=5) and 0.06 percent (n=1) people respectively working currently. About 0.5 percent (n=8) people did not specify their destination during the data collection.

Currently, my sons are in Gujrat, India. One of the neighbours had been there many years ago, while he was still a teen. He returned after 38-39 years. Because of him, many boys have gone to Gujrat now ... There are many people, particularly the flood displaced people, going there from many neighbouring areas as well. ... The employment situation is not good here; employment is good there in Gujrat; that's why people have gone there. People earn about IRs. 25-30,000 there. It's only been 6-7 years that people started going there. (Anonymous male, aged 45-50 years, Bandanda)

One son is in Punjab, working as a labourer in loading and unloading since over 2 years. I had also worked in Punjab before. A contractor has taken my son. (Anonymous male, aged 45-50 years, Hanumannagar)

Those households which have sent their family members overseas have improved their economic conditions. Comparatively, they earn more money than those who work at home or in India, which means people want to send family members, especially their sons, overseas at any cost. Many have taken a loan for the purpose, with an interest rate of 36 percent per annum. Some pay more than this amount when they need money instantly.

The condition of some of the households, who have gone overseas for employment, has been improved. Otherwise, the conditions of most of the households are miserable. There are many families who eat the earnings of the day. (Anonymous male, aged 45-50 years, Prakashpur)

Two of my sons are in overseas. The elder one is in Malaysia and another is in Qatar ... I didn't take a loan from the bank because I didn't know about banks so didn't go to the bank. I paid NRs. 36,000 [AUD 450] [i.e. 36 % interest] for the NRs. 100,000 [AUD 1250] that I took for sending my son to Malaysia ... My elder son earns around NRs. 35,000 [AUD 437.5] per month and my younger son earns about NRs. 50,000 [AUD 625] per month. (Anonymous male, aged 65-70 years, Prakashpur)

As owning land is one of the important assets in the case of rural areas of Nepal, many have bought land after a family member is sent overseas and obtained higher income for the family. Buying land not only secures their agricultural food sufficiency, but it also secures their future as it is essential to own land in Nepal to get various facilities from the government such as electricity, drinking water and loans from banks (at lower rates of interest).

Out of 5 sons, my second son went overseas (Malaysia) for employment about 1.5 years ago ... His wife has bought a piece of land for housing in Morang... He earns about NRs. 25000 [AUD 312.5] per month. My third son is in Qatar now ... He has bought 1 *bigaha* [0.677 ha] of land now. (Anonymous male, aged 55-60 years, Srilanka Tapu)

My younger son has just returned home from Malaysia. He went there for the first time in 2006 (2063 BS). He earned about NRs. 12-15 lakh²⁸[AUD 15,000-18,750] from there. He returned 3 years ago. Now, he is planning to go to Korea for work. We have bought a 4-*kaththa* [0.135 ha] of public land in Bange, Mahendranagar VDC for 4 lakhs. (Anonymous male, aged 66-70 years, Bsandanda)

There are other less popular occupations that people practice, but they are important. Thus, the occupations are presented in Appendix E.

7.3.5 Income Sufficiency

Despite being engaged in various forms of work, the incomes are not sufficient for most of the people in both the upstream and downstream settlements. The household survey showed that overall, about 62 percent (n=143; N=230) of the total participants (households) admitted that their incomes are not sufficient to sustain their family (see table 7.12). About 48 percent (n=53; N=111) in the upstream while only 27 percent (n=32; N=119) in the downstream settlements have sufficient income. Among the upstream settlements, the figure on income sufficiency of all the settlements almost correlates with the overall statistic, but it is different among the downstream settlements. Incomes are not sufficient for almost 90 percent (n=19; N=21) households in Joginiya

²⁸ 1 lakh = 100,000 (one hundred thousand)

and 89 percent (n=50; N=56) households in Hanumannagar. Interestingly, incomes are sufficient for about 63 percent (n=19; N=119) of households in Gobargadha, which is because they cultivate large areas of land and have raised a large number of cattle. So, they earn by selling their agricultural produce, cattle and milk.

Table 7.12: Income sufficiency for the households

Settlements	Yes		No	
	No. of HHs	%	No. of HHs	%
1. Upstream Settlements				
Bahunikhola	14	48.28%	14	48.28%
Bandanda	4	50.00%	4	50.00%
Inner Prakashpur	20	45.45%	24	54.55%
Srilanka Tapu	15	50.00%	14	46.67%
Total of Upstream Settlements	53	47.75%	56	50.45%
2. Downstream Settlements				
Gobargada	19	63.33%	11	36.67%
Hanuman Nagar	6	10.71%	50	89.29%
Baluwatar	5	41.67%	7	58.33%
Miya Tol, Joginiya, Gobargada, Saptari		0.00%	8	100.00%
Musahari Tol, Joginiya, Gobargada, Saptari	2	15.38%	11	84.62%
Joginiya Average	2	9.52%	19	90.48%
Total of Downstream Settlements	32	26.89%	87	73.11%
Total of Upstream and Downstream Settlements	85	36.96%	143	62.17%

Note: 2 households did not provide information on income sufficiency

Because of the hand to mouth problem faced by the people due to income insufficiency, many of them have been demanding compensation for their loss from the Nepal government.

7.4 Raising Issues Related to Compensation

Compensation is the major issue raised by the river communities in both the upstream and the downstream settlements for many years. On the one hand, the people in the upstream settlements have been demanding compensation for the land, previously situated in Prakashpur 4 and 5, which has been lost or become uncultivable due to the erosion, inundation and siltation by the KR. On the other hand, the people in the downstream settlements have been demanding compensation for

the land that lies in between the embankments, along with the agricultural crops that were lost due to floods.

7.4.1 The Upstream Settlements

The people in the upstream settlements claim that they did not receive any compensation for their loss, except relief support from various organizations during the floods. According to a member of the Saptakoshi Inundation/Erosion Related Committee, some of the flood-displaced people settled in Bange of Mahendranagar VDC, which is adjacent and lies north to Prakashpur VDC. They had to forcefully occupy the forest area because the government did not take any initiative to satisfactorily relocate them. The reason for the forceful occupation of the area by the people was their residential insecurity as they did not have anywhere to go after being displaced.

As the people didn't have anything after the flood including food and shelter, people began to enter a forest area in Mahendranagar, called Bange, where they began to build huts. During this time too, the Panchayat government obstructed them. The huts were demolished by using elephants, taking people into custody and taking them to the Chief Zonal Office. The people were also ready to die. Because of their protest, the then Chief Zonal Officer formed a 7-member committee and distributed 1.5 *kaththa* [0.051 ha] of land each to the flood victims in the Bange area. (Anonymous male key-informant, Mahendranagar VDC)

The people have been living there until today but have not received the land certificate for the occupied land.

The story of the people living in Bahunikhola differs from those living in Mahendranagar, where some have received temporary land certificates for the land they currently occupy, while some did not accept the certificates because the certificates were issued only for 25 years. The government authorities had said that the certificates would automatically turn into permanent certificates after this time period, but the people who did not accept the certificates had demanded fully-functional certificates, which was rejected by the then government. As the time-period has not passed (during the fieldwork), even the people who accepted the certificates, have not received permanent certificates. Some of these people said that they would have accepted the certificates if they knew that they would never be provided with compensation.

We thought that we'd not receive other compensation from the government if we accepted the land ownership certificate for this land. (Anonymous male, aged 51-55 years, Bahunikhola, Prakashpur)

We have asked for the original ownership certificate that provides the right to trade the land. The government wanted to provide us with the 25 years-ownership certificates, which we didn't want to take. 25-years-ownership certificate means we will be provided with the ownership-certificate only after 25 years. The certificate is non-functional and cannot be used for trading the land for 25 years; and, it was told to us that the certificate could be used as collateral for taking a loan from banks and use it for starting any business. But, when we take the certificate to any banks, they said that the certificates are non-functional, and the banks even didn't want to accept. (Anonymous male, aged 46-50 years, Bahunikhola, Prakashpur)

The people living in Bandanda have also been waiting for compensation from the government, therefore they have not gone elsewhere. But they currently do not think that they will receive the compensation. Instead, an old man complained that the workers working for the KRP were building spurs on his land, but he was not provided compensation. In the hope of getting compensation, many people have rebuilt their houses many times as the houses were built temporarily.

India damaged everything; even I haven't received the compensation. They constructed all the spurs in my land and destroyed it. Much of my land is in the river. Now, only some land left here ... much of the plantations and crops were destroyed. They have not provided me with the compensation yet. (Anonymous male, aged 76-80 years, Bandanda, Prakashpur)

We were told that we'd be provided land as compensation, so we lived here in huge expectation. We have rebuilt this house about 7 times. (Anonymous male, aged 66-70 years, Bandanda, Prakashpur)

7.4.2 The Downstream Settlements

The issue of compensation is even more complicated in the downstream settlements. The people have been demanding compensation for their eroded, inundated and silted land, along with the expropriated land during the initiation of the KRP in 1954 and for the crops damaged by floods at different times. Therefore, the compensation issue has been pending for more than 60 years.

Regarding the compensation for the expropriated land, the people have been raising mainly two issues. The first, according to the managing director of the Koshi Victims Society (see section 6.4), is that not all people received compensation for the land that was expropriated for building the barrage, the embankments and the spurs. Out of the land acquired for the project, about 1000 *bigaha* (677.2 ha) of landowners have not been compensated yet by the Nepal government, though the government has already compensated for more than 10,000 *bigaha* (6772.63 ha) of land. Another issue is that the project only compensated for the expropriated land that was used for

constructing the barrage and various other structures of the project, but it did not compensate the land lying in between the embankments. According to the managing director, the area of the land is about 60,000 *bigaha* (40,620 ha), and much of it has already been eroded by the river.

Besides, much of the land lying in between the embankments have been damaged by the river due to erosion, inundation and siltation. These problems have not only spoiled the agricultural land but also damaged huge quantities of crops that were being cultivated in the land, and this damage has been happening for many years since the construction of the barrage and the embankments. The people are also demanding compensation for the crops damaged by the river but have not received any compensation yet.

The Indian government had promised that it would provide compensation for the land, but it has not provided yet. Farmers plant crops, but its flooded away during the harvest time. (Anonymous male key-informant, aged 55-60 years, downstream settlement)

The people opined that it is the duty of the Nepal government to provide the compensation as it is the responsibility of the government to safeguard the livelihood security of its people. A resident of Hanumannagar stated that the Nepal government should provide the compensation as it has been collecting tax on the land which lies in between the embankments.

7.4.3 Initiatives for Solving the Issue of Compensation

The people have already made various attempts to make the government hear their calls for compensation. Some of these initiatives are presented below.

Firstly, after the people were displaced from Prakashpur and Mahendranagar Panchayats in the early 1980s, the then government formed a commission with the aim of resolving the issue of compensation. The commission had assured people of providing land in Chisyang of Morang district and Jalthal of Jhapa district but became inactive after a while and then disappeared.

Secondly, a second commission approached the people in 2007 (2064 BS) some months before the First Constitutional Assembly Election. The commission recorded the eroded land in some VDCs, but it also vanished.

Thirdly, a committee was formed by the flood victims of three upstream VDCs, Barahakshetra, Mahendranagar and Prakashpur, under the name of *Saptakoshi Duban Katan Badhi Pidiit Sangharsha Samitee* (Saptakoshi Inundation, Erosion and Flood Victims Struggle Committee) in April 2012 to materialise the issue of compensation for land affected by floods. As soon as the committee was formed, the members visited the District Land Administration Office, Sunsari to inquire about the report submitted by the second Commission. They noticed that no action had been taken regarding the report, so they inquired the matter with the Chief District Officer, Sunsari and sent letters to the Home and Land Reform and Management Ministries, but the signs of hope faded again. Then they visited high-level politicians in Kathmandu, including the then prime ministers Madhav Nepal, Prachanda, Late Girija Prasad Koirala, the then president of Nepali Congress Party, the chair of the then Communist Party of Nepal (Maoist) and other political party leaders. However, the meetings also did not help them, except for the excitement in meeting with the high-level politicians.

In around 2065-66 BS [2008-9], 17 members of parliament came for inspection, and during the same time, we, the Koshi victims from the districts of Okhaldhunga, Dhankuta, Udaypur, Sunsari and Saptari, provided our situation to them. They collected the information from us, but nothing happened on the matter. (Anonymous male, aged 60-65 years, Hanumannagar VDC)

Fourthly, the then Irrigation Minister formed a committee, under the name of *Saptakoshi Duban/Katan Sambandhi Sujhav Samitee* (Saptakoshi Inundation/Erosion Related Suggestion Committee) in 2012 (2069 BS), the main purpose of which was to collect the record of all the land eroded and made uncultivable by the river. After almost 21 months, the committee produced a report, recording all the land affected by floods, that was submitted to the Ministry of Irrigation. The report documented that altogether 12,560 applicants from three districts – Sunsari, Saptari and Udaypur demanded compensation for about 65,420 *bigaha* (44,289.34 ha) of land. Among them, 2,521, 9,873, and 166 applicants from the Sunsari, Saptari and Udaypur districts demanded compensation for the loss of about 4,077, 57,141, and 201 *bigaha* (136.08 ha) of land respectively. From Prakashpur VDC, the number of applicants was 715, and they demanded compensation for about 670 *bigaha* (453.59 ha) of land; and from Hanumannagar, 167 applicants demanded compensation for about 683 *bigaha* (462.39 ha) of land.

In a meeting with the *Bhu Arjan* [Land Acquisition] office including the CDOs, Land Administration Officers, representatives from the LDO, Division Heads of the flood-affected districts Udayapur, Saptari and Sunsari in Saptari CDO office on 2069/5/24 [Sep 9, 2012], a

decision was made to pay NRs. 105,000 [AUD 1,312.50] per *bigaha* [0.677 ha] of compensation for the period of 2018-2028 BS [1961-71]. The decision was sent to all related departments and offices, but nothing has happened yet. (Anonymous male, aged 60-65 years, Hanumannagar VDC)

Other meetings have been conducted, but no further progress has been made.

Despite so many initiatives taken by the people and the interest shown by the government as well, the issue has yet to be resolved. The people were considering further strong protests during the field visit.

We have been filling up forms related to compensation for many years until last year, but nothing has been provided to us yet ... we don't think that we will ever get the compensation. (Anonymous male, aged 60-65 years, Bahunikhola, Prakashpur)

We don't think that the government would provide compensation to us. We have also left paying NRs. 10 [AUD 0.125] to the committee that we are paying annually for registering our lands for the protests. (Anonymous male, aged 66-70 years, Inner Prakashpur)

Despite the allegations of the people on the Nepali government regarding the compensation issue, government officials argue that they have raised the issue in the bilateral meetings, a claim supported by the minutes of the meetings (see below). One of the bureaucrats (B2) argued that the data on loss provided to India for compensation could not be agreed between the two countries because of the accuracy of the data. There was much repetition, some of the land had already been compensated while India declined to compensate for some of the land. However, India asked the Nepal government to provide actual data of loss so that it could work on it. Nepal has not yet been able to provide the data.

A text of the minutes of the bilateral meeting of Nepal-India Joint Committee on Water Resources (JCWR) held on January 24-25, 2013 is presented here.

The Nepalese side brought an issue of compensation for private lands, which had been lost on account of the Kosi Project. Of such lands, 1516 bighas were eroded during 1961-1964; 3948 bighas (verified as against 4400 bighas claimed earlier) were eroded during 1965-1968, and additional 2226 bighas were jointly verified by the officers from both sides. The rates of compensation for the lands have also been determined. The Nepalese side also stated that the issue needs to be resolved with priority, because 1st meeting of JMCWR, through its joint press statement, has directed JCWR to look into the matter and smooth implementation of field investigation works in the Sapta Kosi High Dam Project has a direct bearing on the resolution of the issue of compensation in the Kosi Project. It was decided that the report would be first taken up by JCKGP because the taskforce was constituted by JCKGP. (JCWR, 2013, p. 2)

As the people did not receive compensation for their lost land, they also held various demonstrations against the Nepal government.

7.5 Staging Protests by the River Communities

This section presents the description of the protests and demonstrations carried out by the people in the river communities to demand compensation and protest the Detailed Project Report (DPR) preparation process of the Koshi High Dam Project (KHDP).

7.5.1 The Protests for Compensation

The people have already staged several protests demanding compensation for the loss they incurred due to the KR floods. This sub-section presents the reasons behind their need for protests for compensation.

After many initiatives taken for getting compensation, the people were frustrated, so they were planning to stage stronger protests than the previous ones. A man (anonymous, 60-65 years of age) from Hanumannagar VDC stated that “if nothing happens, we will go for protest. We will call for transportation strike.” Another man (55-60 years of age, also from Hanumannagar VDC) said with aggression that he, along with other people in the community, would organise a strike if the Nepal government would not look after them.

The people believe that the Nepal government did not take strong initiatives to compensate the affected people, so they wanted to stage a protest. They have heard from the chief district officers (CDO) and other officials that the Nepal government, of any party, have not been able to put its voice strongly in meetings with India. A political leader from Prakashpur VDC (Anonymous male, 50-55 years of age) believes that the governments of Nepal are not able to raise their voice in front of India because they do not want to step down from power. Many believe that if the governments do not listen to what India says, they have to leave the government. Similarly, a man from Hanumannagar VDC (Anonymous male, 60-65 years of age) had heard from a CDO that the Nepalese side did not even raise the issue of the river communities in an India-Nepal meeting, and the CDOs were not allowed to speak in the meeting. Furthermore, a political leader from

Prakashpur VDC (Anonymous male, 50-55 years of age) had also heard from a CDO that the Nepalese side was not able to provide the actual data of loss to the Indian side when the latter asked. The Nepalese side had not done sufficient homework and was not well prepared for the meeting. This is why almost all the participants did not think that the Nepal governments of any party would be able to strongly put forward their demands when in meetings with India. They did not believe that their political leaders would do anything for them.

I don't believe that the leaders would speak on behalf of people, how can I believe? On which basis can we believe? They just do for themselves. (Anonymous male member of the Saptakoshi Inundation-Erosion Related Suggestion Committee, aged 45-50 years)

7.5.2 The Protests against the Koshi High Dam

As noted in section 3.6, the local communities, especially from the Hills, living around the KR of Nepal have been obstructing the DPR study of the KHDP due to the doubt that Nepal will get equitable benefit from this project (see section 5.5.1 of chapter five). The locals and the people associated with the *Kiraat Rashtriya Mukti Morcha* (Kiraat National Liberation Front, Nepal), a sister front of the then Communist Party of Nepal, Maoist, halted the DPR preparation process in 2008 that was initiated by the Indian government. This section discusses the reasons for hindering the DPR process.

Regarding the KHDP, all the interviewed participants opined that the construction of the KHD is not beneficial for Nepal but is for India. According to the director of the Koshi Victims Society, it is only a necessity for the Indian government, so it is neither necessary for the Nepali nor the Indian people. A leader from Prakashpur VDC (Anonymous male, 50-55 years of age) stated, “The KHDP is not our necessity because the Koshi barrage [the existing KRP] has already shown that”. He does not want the Nepal government to repeat the mistake.

The concern of most participants was that the KHDP would inundate and displace hundreds of settlements in the upstream districts if constructed. An NGO activist from Prakashpur VDC argued, “The KHDP will collapse the Arun Valley Civilisation”; the valley lies in the upstream of the KR, and the civilisation is believed to be in the deepest valley of the world. According to an information booklet published by the NGO, the construction of the KHD will inundate 83 VDCs.

displace 75 thousand people and destroy the culture and civilisation of the upstream villages (Bhattarai, 2013).

Many feared that it would destroy thousands of settlements lying in both the upstream and downstream districts if a big earthquake, similar to the one in April 2015, occurred. A leader from Prakashpur VDC (Anonymous male, 45-50 years of age) said, “If a similar earthquake occurs, I don’t think even Morang [district] along with Sunsari will exist”. Another leader from Prakashpur (Anonymous male, 50-55 years of age) claimed that “everything will be lost” if there is a big earthquake. This means the project has failed to assure and guarantee the security of the people from calamities.

If it can’t guarantee the security of the people, it is of no use for us, for Nepal. But if the security is guaranteed, we get the benefit of irrigation. (Anonymous male political leader, aged 45-50 years, Prakashpur)

The participants were confident that India wants the KHD to fulfil its own interests rather than helping Nepal with the problems of irrigation and flood control. Many argued that the main intention of India was to control the water resources of Nepal and use it for the water linking project in India. This is why an activist from Prakashpur VDC (Anonymous male, 45-50 years of age) claimed, “India would not involve aggressively to benefit only the Nepali citizens by spending billions [of rupees] on the high dam.” A leader from Prakashpur VDC (Anonymous male, 50-55 years of age) accused India of keeping ill intentions of harming Nepali land.

India wants the KHDP for fulfilling its own interests. It wants to take water to its land. It wants to irrigate its land and expand its electricity [capacity] making the Nepali land dry and control the water. After it makes the dam, Nepal will have to flatter it. (Anonymous male political leader, aged 50-55 years, Prakashpur)

The above statement shows the frustration of the people who have been struggling to obtain reliable irrigation and a continuous supply of electricity, which have not materialised from the KRP. Many other participants also suspected that the KHD will be similar to the existing KRP, thus questioned its effectiveness.

India will control the water even if the High Dam is constructed. We are not getting water from the canals. India keeps all the keys [of the dam]; then what would be the benefit for Nepal? It would have benefitted Nepal if the control were in the hands of Nepal. (Anonymous male political leader, aged 50-55 years, Prakashpur)

Its main intention is to protect Bihari people... I don't have trust as it has not compensated previous harms; how can it compensate now? [with suspicion]. (Anonymous male political leader, aged 50-55 years, Prakashpur)

Besides the suspicions noted above, some of the participants were highly cynical about the inception and commencement of the KHDP. Some political leaders from Prakashpur VDC suspected India was in the process of colonising Nepal, with the motive of expansionism by controlling the water resources of Nepal via the projects such as the KHDP. According to an activist from Prakashpur VDC (Anonymous male, 45-50 years of age), the intention of India was to have access to the upper reach of Nepal through the Koshi Tappu Wildlife Reserve, which is located in the South-west of Prakashpur VDC, by destroying it. He opined that the KHDP is a step towards the Bhutanization of Nepal by India. "Bhutanization" is the process by which Nepal becomes similar to Bhutan, in which the major aspects of the country such as security and foreign policy are controlled by India.

Some of the participants argued that India had been giving assurance of providing benefit to the locals, but they failed to guarantee it. According to a member of the suggestion committee, noted above, an engineer from the Indian side on behalf of the KHDP provided assurance of providing employment, development and irrigation in Jhapa and Morang in a meeting. But he failed to guarantee when asked to do so, which further decreased the trustworthiness of India.

I asked for guaranteeing a certain amount of water for Nepal, but he was not able to answer it. He told that his seniors would be able to do that. Later his senior came to Dhankuta, but he was also not able to guarantee it. Then, they tried to persuade us in other meetings in Dharan, Chatara and in Energy Ministry in Kathmandu, but we denied [their proposal]. The then secretary of the ministry was upset with us for not agreeing with them. (Anonymous male member of the Saptakoshi Inundation/Erosion Related Suggestion Committee, aged 45-50 years).

An NGO activist from Prakashpur VDC accused India of trying to buy off some people to make it easier to construct the dam. By "some people", he referred to the people who were engaged in one of the committees formed to advocate for compensation for land lost or destroyed by the river. According to him, the Indian side had invited these people, including himself, to a meeting a few hours prior to the project information dissemination meeting. These people had already been brainwashed by assuring them of various benefits. In the earlier meeting, he questioned the legitimacy of the meeting as the main stakeholders were not invited. The organisers could not answer his questions and assured him of inviting other stakeholders to the next meeting.

The participants, however, accepted that Nepal would benefit from the project if India would comply with all the terms and conditions of the contract. According to them, Nepal would benefit in terms of irrigation, electricity, and various other forms of developments including finding a good market for vegetables. The way the people presented themselves while being interviewed showed their distrust towards India.

Apart from distrusting India, the people also accused the Nepal government of not acting on behalf of the people, despite all the possible harms of the KHDP. The major concern for the people was the inability of the Nepal government to speak strongly in front of India. They accused the Nepal government of understanding that the KHDP is of no benefit to Nepal, unable to raise this issue with India; instead of pressing hard to continue the DPR process.

Almost every participant doubted the ability of the national level politicians in speaking for the country with India and questioned their honesty.

The [Nepal] government should have the courage to explain it [the benefits and harms] to us [the people] ... I think that the leaders of the country are not honest enough to their people while having agreements with countries, like India. (Anonymous male political leader, aged 45-50 years, Prakashpur)

Nepalese leaders are not able to object to the Indian policy of expansionism. No any leaders and parties have been capable of doing this. (Anonymous male political leader, aged 50-55 years, Prakashpur)

Some of the participants opined that the people should have been given detailed information regarding the KHDP before the initiation of its preparation process of the DPR. A political leader from Prakashpur VDC (Anonymous male, 50-55 years of age) opined that there should have been a big debate about the dam at the national level, and the government should have deployed its high-level engineers and specialists in informing its people about the benefits and harms of the project.

The engagement of a radical political party, along with the awareness created by the NGO, in the process of protesting against the KHDP played a significant role in stopping the project's DPR process. An NGO, Abhiyan Nepal, had already informed and made aware of the possible devastation that could be caused by the project. Because of this campaign, it was successful in the active mobilisation of the local people and various community organisations. But the radical

political party, *Kiraat Rashtriya Mukti Morcha*, Nepal (Kiraat National Liberation Front of Nepal), the sister organisation of the Communist Party of Nepal, Maoist, obliged the project personnel to halt the process by putting up a flag at the DPR preparation site. Apart from erecting a flag, they also sent letters to various related ministries, departments and offices of the Nepal government aimed at stopping the activities of the DPR preparation process.

7.5.3 Other Protests

Other relevant protests that the people recalled are presented in this sub-section.

People staged a protest against the transportation of stones when stones from the river were transported to India in 1982 (2039 BS). According to a member of the suggestion committee, four of the protesters were arrested by the then autocratic government of Nepal. They were accused of protesting against the royal family as the birthday of the then Mother Queen (of Nepal) was approaching close to the protest day. They were set free the next day after being forced to sign a written document which stated that they would not repeat such an act. The people did not stage any further protests during the autocratic regime.

Another protest was staged when the Indian side brought some dozers and rollers in the Prakashpur area in 2010-11 (2067-68 BS) with the intention of diverting the river towards the west. The people objected to the act of India by saying that they had their private land there, and they would not allow India to excavate the land without gaining consent from them. They organised a meeting in the evening and organised a protest rally the next day in the market area that turned into a corner-gathering. The speakers reprimanded the Indian act. The protest stopped the diversion of the river towards the west.

The third protest was carried out by the people of Rampur-Malhaniya VDC in the 1990s, towards the south of Hanumannagar VDC bordering India. According to the managing director of the Koshi Victims Society, the protest was against the badly constructed embankment surrounding his village. The Indian side had so badly constructed the embankments around the area that the embankments surrounded the village in a triangular shape. The enclosure prevented the water in the area from escaping the village, such that it inundated the whole village and formed a lake. In

order to have an outlet for the water to be discharged, the people asked related government officials in Nepal, who took no initiative to solve the issue. Later, the villagers cut the embankment so that water would flow out. They did this work without formal consent from the Nepali government officials and the Indian KRP authorities. Though the Nepali government officials knew the act previously, they did not do anything. The project personnel had come after the act but did not object.

7.6 Summary

The river-affected people have suffered and are suffering from the hardships of maintaining their livelihoods since they were severely affected by the calamities in the river. They have used various mechanisms to cope with the calamities immediately after being affected and in the aftermath of the tragedies. As this chapter has demonstrated, many people do not have good employment, sufficient privately-owned land, and thus food sufficiency. Because of this situation, most of those who have been to India and overseas to secure their future have taken loans at high interest rates. But not many of them have been able to send their family members, preferably sons, overseas due to financial problems. As the income of many people is not sufficient for feeding their family, they are engaged in agricultural and non-agricultural wage labour. They would be relieved if they could get compensation for their loss, so they could buy land, even small amounts, for cultivating food. As both the Nepal government and the Indian government have been indifferent towards the demands of the people, the people have united and protested many times. They have also protested the DPR preparation process for the KHDP because they do not think that they would be fairly treated and benefited by the KHDP as they have already experienced the bitter experience from the existing KRP.

The next chapter discusses the implications of the findings obtained from the semi-structured interviews or questionnaires, key-informant and in-depth interviews presented in this and the preceding two chapters.

Chapter Eight: Transboundary Water Governance and the Production of Environmental Injustice

8.1 Introduction

This thesis has employed the concepts and theories related to water governance, access and environmental injustice to study the impacts of an Indo-Nepali transboundary River agreement, the KRA, on the people living in the communities in and around the river in Nepal. The preceding chapters presented the findings, which are discussed in this chapter. In this process, it will address the aim of this thesis to study the political ecology of water governance in South Asia, specifically the impact of the Koshi River Agreement between India and Nepal on the river communities around the river residing in Nepal, and answer the following research question and sub-questions;

- How does the governance of a transboundary river between Nepal and India produce environmental injustice for riverine communities in Nepal?
 - a. What role do multi-scalar power relationships among various actors play in the governance of a transboundary river?
 - b. How does such governance of the river impact access of people in the riverine communities of Nepal to the resource?
 - c. How does restriction on access of the people to the resources shape environmental injustice? And how do the people cope with the injustice?

This chapter proceeds as follows: First, I elaborate on the existing governance process of the KR by explaining the actors and their power relationships; formal and informal regulation instruments involved; interactions between the actors across scales; and the effect on the access of the actors to resources. Second, I discuss various aspects of injustice faced by the people due to the governance of the river. Third, I explain how the people manage to maintain access to resources for coping with unfavourable situations and carry out environmental justice movements. Fourth, I will provide an alternative framework to the existing governance framework based on the findings of the research, which will be followed by a summary of the chapter.

8.2 Multi-Scalar Power Relationships and the Governance of the Koshi River

This section answers the research questions related to the role of multi-scalar power relationships among various actors in the governance of the Koshi River and the impact of the governance on the riverine communities' access to resources. This study has found that the complicated multi-scalar power relationships among the actors involved in the governance of the KR determine the decisions made regarding access, management and regulation of the river resources, as argued by Budds & Hinojosa (2012) regarding environmental governance. The decisions are made via interactions among various actors involved at different scales and levels of the KRG by taking into consideration a range of formal, non-formal and informal institutions. As noted in the literature review, many scholars (e.g. Budds & Hinojosa, 2012; Reed & Bruyneel, 2010; Bakker, 2007) have highlighted complicated decision-making processes via interaction of actors under various circumstances. These complications will be unpacked by identifying the actors involved in the governance, then discussing the major components of the governance process in the sections below.

8.2.1 Actors and Power Relationships

Before revealing the actors involved in the governance of the KR, this study demonstrates that the KR-water is not just naturally produced but is shaped by social-political processes. This study confirms that water is not only “a material and politically-neutral resource”, as argued by Jackson & Barber (2016), but it is socially produced, as argued by various scholars such as Perreault et al. (2012), Budds & Hinojosa (2012) and Swyngedouw (1999). The social or political production of the water is due to the competition among various actors with asymmetrical power for having access to and control over the water, as argued by Mathis & Rose (2016), Vacaro et al. (2013) and Bryant & Bailey (1997). The social production of the water is discussed in the subsequent paragraphs and sections.

As governance denotes interaction among various actors for exercising power and making decisions according to Reed & Bruyneel (2010), this research has identified all the actors involved

in the governance process to understand how the KRG worked. This study applied the actor-oriented political ecology approach to reveal the various categories of actors involved in the KRG, as per Robbins's (2012, p.3) argument that political ecology "seeks to unravel the political forces at work in environmental access, management, and transformation". According to the formal administrative units of categorisation, five different levels of governance have been identified for this study: International (India and Nepal), National (ministries and departments), interest groups, Districts (Sunsari and Saptari), VDCs (Prakashpur, Hanumannagar and Gobargadha) and Villages or Wards (e.g. Srilanka Tapu, Bandanda). However, based on the issues related to the governance, different scales of governance can also be identified in the process, while some of the scales also overlap with the governance levels. The scales include – transboundary, national, the communities around the KR, district, upstream-downstream settlements, VDCs, villages, neighbourhoods, and households. However, transboundary, national, district and upstream-downstream settlements, village settlements and households are important in the case of the KRG, so they will be discussed in this chapter. Political and community leaders and NGOs are the actors who overlap at various levels and scales. All the mentioned actors have played roles in the process, and some of the actors have become the governors while the others are the governed during the course of governance. That is to say, passive actors also play roles in the governance process, by not interfering with the decisions made by the active actors.

The power relationships among the actors involved in the KRG are unequal in nature. There are many factors that define the inequality, which will be revealed here, starting with the KRA. Regarding the KRA, the negotiation took place only between two actors, the governments of India and Nepal. Among the two actors, the Nepalese side was not well trained and was inexperienced in negotiations related to transboundary waters. Such kind of negotiation largely defined the unequal nature of the deal made, which is evident in the terms of the KRA. Besides, unlike the recent findings of several studies (e.g. Lautze & Giordano, 2007; Zawahri & Hensengerth, 2012) that the negotiation of international agreements, in general, is influenced by active roles played by various non-state actors e.g. I/NGOs, the negotiation of the KRA did not involve other actors. In the case of the I/NGOs, this may be because the agreement took place prior to their existence and in a very short time of negotiation i.e. within 2 days. It seems that the civil societies and community organisations did not get enough time to meet and have their say, although informally, on the proposal during the negotiation period. Moreover, one of the present scenarios also reveals the

exclusion of non-state actors in the process. An interest group of former government officials and experts that have been actively engaged in critically analysing and providing suggestions to the government of Nepal accused the bureaucrats of Nepal of neglecting their views. In 2014, the group provided suggestions to the government during the agreement on the Upper Karnali Project, which took place between an Indian private company and the government of Nepal, for the development of a hydropower project on the Upper Karnali River in the Mid-Western Hill region of Nepal. They have also been voluntarily engaging in the job individually, especially by publishing articles in local and international newspapers and peer-reviewed journals. Although their voices are loud in the media, they believe they are not listened to by the governments and the bureaucracy of Nepal (see chapter five). It seems that the bureaucracy is afraid that the experts would snatch important parts of their roles regarding TWGs. These scenarios reveal how unequal power relationships exist in the governance process among the actors.

Unequal power relationships among the actors at different scales were evident from the findings in chapters five, six and seven. First, there is an asymmetrical power relationship between India and Nepal which is repeatedly evident in acts of the countries, apart from the huge military and economic power disparity. For instance, India has been constructing embankments, dams and dykes along the border to protect its citizens from flooding during the monsoon, but Nepal has neither been able to prevent India constructing new structures nor has it been able to ask India to demolish the already constructed structures. The power asymmetry was conspicuous during the interviews when the government officials of Nepal and an expert feared talking about sensitive issues related to India. One of the political leaders argued that the lives of many leaders have been taken or threatened when they spoke against India. The episodic economic blockades imposed over Nepal by India also signify the extreme asymmetrical power relationship. As argued by several scholars (Zeitoun & Warner, 2006; Elhance, 1999), such hegemonic activities of the powerful actor produce inequitable arrangements.

There are also asymmetrical power relationships among other actors across scales. The influential political leaders in the governments make major decisions without consulting bureaucrats, which the bureaucrats then have to implement. As noted in chapter five, the bureaucrats do not give room to experts and former government officials to influence their decisions. The representation of the lower level government officials is not ensured in bilateral meetings, and they are not listened to

by the high-level officials. At the local level, government officials are not provided sufficient power to deal with their counterparts from India in addressing the issues related to the governance of the rivers. Furthermore, the affected locals have no say in the governance and are not listened to by the government. This internal hydro-hegemony in the governance of the KR has largely impacted the riverine communities' access to the riverine resources.

Although the conceptualisation of governance with regard to making decisions by state bodies exclusively has changed to include various other actors (Moore, 2013; Turton et al. 2007), incorporation of other actors was not evident in the case of the KRG. One of the main messages of the definition of water governance by UN-Water (2014) was also the inclusion of local people in the decision-making processes. Various other scholars also argued that water governance encourages the management of water resources jointly by government agencies, local people and all other stakeholders (Schulz, 2017; Castro, 2007), but joint management is just a myth in the case of the KRG. Only the state authorities of Nepal are still making decisions in the KRG (as noted in chapter five), limiting the involvement of other actors such as the local riverine people in the process.

Although power relationships play a crucial role in the negotiation of water agreements, as argued by various studies (e.g. Kehl, 2011; Zeitoun & Warner, 2006; Elhance, 1999), there are other factors too, which influence the power relationships, along with the power relationship behind the KRA. Apart from power asymmetry, economic interdependence, democratic governance and scarcity of water, as suggested by Tir & Ackerman (2009), played roles in making the deal possible. However, it was not the neoliberal policies that made the negotiation possible, as argued by Biswas (2001) and LeMarquand (1977), because it was long before these policies were introduced. Besides, it seems that the good relationship between the countries was the main factor behind the successful negotiation. The time was the post-independence period for India, which was achieved with the support of many Nepalis taking part in the independence movement. Moreover, Nepal had just overthrown the 104-years old authoritarian Rana rule, which was supported by the Indian government. These scenarios might have influenced the negotiation of the agreement, as it took place almost immediately after these events.

This thesis has demonstrated that there is no formal mechanism in the KRG to include the views and voices of the local non-state actors, along with that of the state. This is the opposite of what Sneddon & Fox (2006) suggested in case of the TWGs. As mentioned by one of the bureaucrats in an interview in this study, the involvement of non-state actors in the decision-making of developmental activities will never allow development projects to be accomplished. This implies that development projects may need to address all complaints and grievances of people if they are included in the process. Thus, it can be said that in this particular case, the powerful actors do not want non-state actors to have their say in decision-making processes.

Apart from identifying the actors and their power relationships involved in the KRG, it is also important to discuss the regulatory instruments which guide the governance process among the multi-scalar actors. The following section presents an analysis of these instruments.

8.2.2 Regulatory Instruments

The KRA and the decisions made by the bilateral mechanisms which have been constituted to support the KRA are the major instruments in the KRG. The revised version of the KRA (1966) has been the dominant instrument that has shaped the KRG to date. All the arrangements in the KRG have been done based on the terms listed in the KRA, from expropriation of land and forest area for the construction of the necessary structures, to allocation of water in the irrigation channels, and to generation and allocation of electricity for the two countries. In addition, the bilateral mechanisms that have been formed for the smooth running of the KRP also play a significant role in the KRG. The mechanisms that are relevant to the KRG include the Joint Committee on Water Resources, the Joint Standing Technical Committee, the Joint Committee on Inundation and Flood Management, and the Joint Committee on Koshi and Gandak Projects. Mostly the high-level bureaucrats from the Irrigation and Energy ministries and the Foreign Ministry, and bureaucrats from the Water and Energy Commission, the Department of Irrigation and the Nepal Electricity Authority represent Nepal in the committees. The Minister for Irrigation also represents Nepal in the ministerial-level Joint Committee on Water Resources. The decisions made by these committees have been the crucial instruments improving the KRA. Apart from these mechanisms, the Nepal government has formulated its various policies and strategies for the

governance of rivers inside its territory. These include the Water Resources Act 1993, the Electricity Act 1993, the Water Resources Strategy 2002, the National Water Plan 2005, the Irrigation Policy 2013 and the Water Induced Disaster Management Policy 2015. These instruments, however, do not influence the KRP because they have all been formulated much later than the negotiation of the KRA. Therefore, the KRA and the decisions made by the bilateral committees fully govern the river.

Although the KRA and the decisions made in the bilateral meetings are the major instruments of the KRG, none of the instruments has functioned well. The problems with these instruments are that the committees take a long time to make decisions regarding the issues of the local people related to irrigation, flooding, erosion and inundation unless an emergency occurs; and the decisions made are either not implemented or take a long time to be implemented. It is also the same with the implementation of the KRA. For instance, the Nepali side has been complaining about India's lack of compliance in providing the promised amount of energy and irrigation for agriculture, compensation for lost land, repair and maintenance of the structure related to the KRP. Despite the decisions being made and documented in the minutes, the Indian side has been unwilling to carry out the necessary works.

Furthermore, the Government of Nepal and the people have not strictly followed other national rules and regulations of Nepal, in addition to the KRA. If the policies and plans were respected, the Nepal government would not have allowed people to live on the flood-vulnerable land and river islands between the embankments. The National Water Plan, 2005 states clearly that settlements in high-risk areas would be discouraged and restricted. Although the plan is a recent instrument in comparison to the beginning of the formation of settlements in the vulnerable areas, the previous policy of the government was to discourage people from living in such areas. The number of people living on the banks of rivers around the country has been increasing in recent years, including in Kathmandu.

Apart from the policy instruments discussed above, the Convention on the Law of the Non-navigational Uses of International Watercourses 1997 has also influenced the KRG, as with other transboundary rivers of Nepal. As per the Convention, each UN member state, while planning to use a TWR, has the obligation to inform other states, which share the same resource, about its plan

to use the water. It should allow sufficient time for the states to carry out studies and object if they find the plan significantly harmful. As different actors interpret the phrase “significant harm” in their own terms, the convention has been controversial with different meanings to different actors. For instance, Nepal wanted to build an inter-basin diversion and other irrigation projects and has attempted to bring in third-party investors on several occasions for building these projects, as noted in chapter five. But, India has been preventing Nepal from allowing foreign investors by using its right as per the convention, meaning that Nepal has self-funded these projects. Although the convention does not affect the current KRP, it affects projects in the upstream of the KRP. Therefore, mutual understanding among both the countries on the interpretation of such universal conventions could have a positive impact on the development of transboundary river projects, but such interpretations of the conventions do not allow weak and poor nations to develop water projects in their territory with ease.

The regulatory instruments presented here support the interactions among all the actors across different scales of the KRG. The following section discusses the interactions based on the power relationships among them.

8.2.3 Interactions Across Scales

Interactions among the actors form the crux of decision-making, thus defining governance processes. It is evident that the acts of the actors are the major reasons behind the problems related to water, as argued by De Loe & Kreutzwiser (2007) and GWP (2007), in the case of the KRG. For instance, the influential political leaders from the major political parties in the Nepalese government and the bureaucrats of Nepal are the main actors involved in the governance of the transboundary rivers of the country, but their acts are very much disputed by different non-state actors, mainly other political parties and people. As they are involved in making decisions regarding major issues related to the KRG and the Nepali people feel that the decisions are against the country and its people, they feel that they are cheated each time the meetings take place. It is also because there is no representation of non-state actors in the decision-making. They accuse their political leaders of being unable to say “No” when India asks for something (see section 5.2.2), which may also be because the people are not provided with sufficient information regarding the decisions made. They also accuse the Nepali bureaucrats of not being efficient in

handling the transboundary issues. As the riverine people could not see their problems solved, they accuse the government of Nepal of lacking courage in raising the issues related to them while having a dialogue with India. However, the minutes of the bilateral meetings reveal that the Nepali bureaucrats have raised issues of compensation for the flood-affected people, repair and maintenance of the Koshi Project structures and issues related to electricity generation. In another instance, the respondents argued that the Indian side deposits boulders and sand-bags in the Indian side of the barrage during floods to divert the water-flow to Nepalese side. As the locals were helpless, there seem to be no voices raised against the act of the Indian side by them, apart from being mute observers. It supports the arguments of the studies (De Loe & Kreutzwiser, 2007; GWP, 2007) that actors and their interactions at various scales are the major reasons behind the problems related to water, as other factors such as climate change, rainfall, water discharge and sedimentation are secondary in the case of the KRG.

The findings of this thesis have demonstrated that India's activities towards Nepal are that of a hydro-hegemon. India has been using all three dimensions of power mentioned by studies such as Zeitoun & Allan (2008) and Zeitoun & Warner(2006), which are structural, bargaining and ideational power in defining hydro-hegemony. First, one example of the structural power which India showed towards Nepal is the economic blockade imposed at different times, notably in 1989 and 2015, when India was unhappy with Nepal's purchase of arms from China against the 1950-treaty and newly drafted constitution in 2015 (see section 5.2.1). Second, the bargaining power of India is evident in its capability in negotiating numerous agreements with Nepal on different transboundary rivers such as Gandak, Tanakpur and others as per its own interest (see section 5.2.2). Lastly, its ideational power has been seen in the form of successfully imposing a discourse, as argued by Menga (2016). India introduced the discourse that Nepal can become rich by selling its electricity only to India (see section 3.5). This discourse was reflected in the policy documents of Nepal and some of the deals on electricity production in Nepal. Currently, the discourses of economic development of the riverine communities and abundance of irrigation are popular in the case of the KHDP.

Other evidence confirms the hydro-hegemony of India in the negotiation and the governance of the KR (see section 2.2.1). First, the knowledge-power that India had during the negotiation of the agreement made the KRA possible. India's hegemony regarding the agreement is exemplified by

India's success in convincing Nepal to sign the agreement in just two days. India was able to negotiate such an unequal agreement with Nepal in the wake of the inexperience and ignorance of Nepal regarding the development of international water projects and negotiation of IRAs. Second, India is successful in securing its lower riparian rights with Nepal, while it hesitates to provide the same riparian rights to Bangladesh, as noted in section 3.5. India has been securing this right with Nepal, which is evidenced by the prevention of the third-party investors from water retention projects, such as Sunkoshi-Kamala diversion, in Nepal (see section 5.2.2). Third, India found one of the articles, i.e. Article 126(2), in the 1990 Constitution of Nepal that demands to ratify international river agreements by a two-thirds majority in the parliament as an obstacle to its river development plans and projects. When Nepal's PM signed the MoU regarding the Tanakpur Agreement in 1991 without having it endorsed by the parliament, many people from Nepal accused India of influencing the political leaders of Nepal. Still, many Nepali people believe that India has been involved in influencing Nepalese politics, e.g. in forming new governments by bribing them (see section 5.2.2). Some Nepalis also believe that India put forward its public and private institutions to have agreements on Nepalese river projects to skip the parliamentary process. Fourth, India has been failing to comply with the KRA in carrying out the repair and maintenance works for many years (see section 5.4) but has been swift in carrying out the DPR study in the case of the KHDP (see section 5.5). Fifth, India has been incessantly constructing embankments, dams and dykes along the border, putting the Nepalese side at risk of flooding, against international norms, but it threatened and even took a life when Nepali people attempted to construct a culvert in their territory (see section 5.2.3). Thus, India has shown its hegemony in terms of its political, economic and military power in demonstrating how the Nepali politicians assent to Indian proposals.

Production of environmental narratives or framing of problems and solution, as argued by Islar & Boda (2014) and Mehta (2007), for justifying the building of large dams at the expense of other critical issues is seen in the case of the KRG. In the case of the KRP, the environmental narrative of prevention of erosion in the Nepalese side, which was stressed in the KRA, seems to play the key role in the successful negotiation of the project. Likewise, in the case of the KHDP, the environmental narrative of the provision of irrigation for large areas of Nepal and swift economic development of the region seems to be being created among the riverine communities. Thus, this study supports Islar & Boda (2014) and Mehta's (2007) creation of environmental narratives for

successful building of large dams, and such narratives or framings play a crucial role in the successful building of large developmental projects, especially in rural areas of poor countries as rural people are usually illiterate. This also depicts one of the three properties that is argued in this thesis to make India a hydro-hegemon.

The Indian government wants to develop several other hydro-projects in Nepal, preserving its interests in TWGs, which is also a property of a hydro-hegemon as argued by Menga (2016) regarding TWGs. It is evident that India wants to construct the Koshi High Dam (KHD) and demolish the existing barrage, as noted in section 5.2.3. India, therefore, does not repair and maintain the barrage and other structures, including the sluice gates, of the KRP. But it does not clearly convey the information to the people living around the river.

It is evident that water grabbing, as argued by Mathews (2012), is true in the case of the KRG. There are many reasons that exemplify this argument. On the one hand, India has the control of the water flow in the barrage area of the KRP and is irrigating large areas of its land by using the water channelled through the canals of the KRP. As noted in section 3.6, the project irrigates only about one-twentieth of the land area in Nepal. Likewise, despite resistance from the locals and political parties of Nepal, India is preparing to build the KHDP, which would provide it with control of the whole river, including its tributaries (see section 5.2.3). On the other hand, the riverine people are using water pumps to irrigate their farms due to the unavailability of water, even though the river is flowing very close to them, as noted in section 6.4.1. Thus, the evidence supports water grabbing as argued by Mathews (2012), and it can be said that transboundary water agreements serve as the legitimate instruments of water grabbing in weak countries by the powerful ones, with negative socio-environmental impacts on riverine communities.

It is evident that the interaction among the actors involved in the KRG, including non-state actors, is very weak. As noted earlier, the non-state actors are not formally or well incorporated in the KRG. As argued by Sneddon & Fox (2006), views and sentiments of local non-state actors are important in TWGs, but most actors at various levels and scales of the KRG are not involved in the decision-making process and do not even get the information about the decisions made. It is also surprising that even the voices of government officials are not heard by the high-level officials regarding the decision-making. As noted in section 7.5.1, even the Chief District Officers (CDOs)

were not allowed to attend the bilateral meetings related to the KRG. As the CDOs represent the local people, the actors involved in the bilateral meetings should have listened to them regarding the issues present at the local level.

Regarding the local riverine communities, their relation to the KR is like “others”, as they do not have access to the river-water for irrigation and any say in the decision-making. Apart from providing their land to the KRP and getting access roads in the form of the barrage and the embankments, their relation to the river has been limited to experiencing floods, inundation, erosion and siltation, with the exception of some families who are living on fishing and selling the wood brought by floods in the river. Their relationship with the high-level government officials is only limited to some failed commissions formed to solve the problem of compensation for the people. The statement of a bureaucrat that it is better not to include non-state actors in big developmental activities clarifies what bureaucrats want from the locals. And their relationship with the high-level politicians is nothing more than a few visits to them regarding the problem and during election campaigns, as noted in section 7.4.3. The locals hope that the compensation issue will be solved if they pressure the Nepal government which would ultimately pressure the Indian government. However, the issue is in limbo due to not having accurate data on the flood-affected land area, which is because of the indifference of the Nepal government towards the people. Besides, the Indian government is not willing to compensate for land eroded after the implementation of the KRP (see section 7.4.3). The inaction, or the limited action, of the riverine people, is also the cause of their weak interaction with the high-level authorities and is, in a way, shaping the decision-making processes of the KRG. Weak interactions among actors in global transboundary decision-making processes are what scholars (Suhardiman & Giordano, 2012; Moore, 2013) found in their research. Suhardiman & Giordano (2012) called the weak interactions among actors as the “scalar disconnect” in transboundary decision making. The authors were of the view that scalar disconnect arises due to non-recognition of the role of non-state actors and fragmentation of government-aligned agencies at different levels of the governance process. Scalar disconnection, as evident in the case of the KRG, is nothing more than the “preferred scalar disconnection” as desired by the powerful actors – the Indian and Nepali state actors.

Despite the preferred scalar disconnection, a few I/NGOs have been working on increasing local people’s access to the KRG. As argued by Zawahri & Hensengerth (2012) on Indian policies on

the Ganges and China's policies on the Mekong, and Warner (2012) on Turkey's Ilisu Dam, domestic and international NGOs can shape the decisions taken by states regarding transboundary rivers. But the role of I/NGOs is informal, and their influence in the decision-making process is very limited. What they have been able to do is increase awareness among the people and some political parties of the negative consequences of big dams on them. They have also helped organise a voice against the construction of such dams, which was evident in the case of the KHDP during the preparation of the DPR (see section 7.5.2). This evidence supports Zawahri & Hesengerth (2012) and Warner (2012)'s claim of the role of I/NGOs because even informal and limited roles of non-state actors, like NGOs, can play a significant role in shaping the decisions in TWGs, although it takes a long time. More importantly, I/NGOs become successful in shaping the decisions in TWGs only if the targeted people and political parties, particularly radical ones, support them for their cause.

This study has found that the administrative system is not working effectively in the case of the KRG, although it is very important for the development and management of water resources as argued by GWP (2002). That is to say, the governance of the KRG is a failure. Some examples of the non-functioning administrative system are discussed here. Firstly, both the signatories of the KRA were not able to stop people from living in the areas in between the embankments, particularly in the upstream settlements – Srilanka Tapu, yet the Nepal government registered the land in the name of the locals. After the signing of the KRA, the Indian government provided compensation to most of the people in the downstream settlements, particularly in Hanumannagar and Gobargadha, but again the late King of Nepal declared Gobargadha as a Village Panchayat in 1979, as noted in chapter six. Had the administration of the KRG and the Nepalese government really been concerned about the lives of the people and the land in Srilanka Tapu and Gobargadha, it would have taken initiatives to prevent the erosion and inundation occurring there every year. It seems that the administration does not have a clear safety-plan and strategy to handle the matter related to the people.

Secondly, the KRG administration is unable to make the actors comply with the decisions made in the bilateral meetings. The issue of compliance is related to the repair and maintenance of the KRP structures, including the barrage, sluice gates and irrigation channels, which has been pending for many years. Likewise, local governments, VDCs, are not able to provide data on the effects of

floods such as the displacement of people, areas of erosion, inundation and silted land. Instead, it is the victims themselves who are keeping the records of their land and agricultural produce affected by floods in the hope of getting compensation from the government. But the Nepal government is indifferent towards their effort, citing issues with the accuracy of the data collected. Effective governance requires an administrative system that is fully functional as per the agreed guidelines.

Regarding the issue of compliance, the Indian side seems to be not responsible and accountable to the riverine people, and its responsibility and accountability seem to be influenced by the culture-power nexus. The Indian government should have undertaken timely repair and maintenance works related to the KRP and provided compensation to the people who lost their land and crops. It did not. The situation is exactly the opposite of what Norman & Bakker (2009) conceived as governance in terms of accountability. According to these scholars, the decision makers should be held accountable in the governance process, but accountability was largely absent in the case of the KRG. According to one former Nepal government official, the poor efficiency of the Bihar government, which is responsible for the repair and maintenance of the KRP on behalf of the Indian government, relates to the culture and mentality of the people of the Bihar state towards Nepal (see section 5.4). They do not consider Nepal as a different country. Thus, the government is not swift in executing scheduled works, which implies that culture is an important factor in determining responsibility and accountability of actors. The overlap of culture with power has manifested in the form of the poor KRP infrastructure and the water struggles faced by the communities, similar to the people in the Andes (Boelens, 2014) and the Ord catchment in Australia (McLean, 2017). When the actors are not accountable for the decisions they make, transboundary governance of the rivers will continue to fail, and the local people will suffer persistently. Therefore, governance is not only about who played the role but is also about who did not play the role which they should have played.

The multi-scalar power relationships-based interactions among the actors discussed above determine their access to the resources, which are presented in the following section.

8.3 Impact on Access of the Actors to Resources

The hydro-hegemony of India and the internal hydro-hegemony at the national-scale, as discussed above, have eventually played crucial roles in the creation of unequal access to the actors to the riverine resources. The powerful actors gained easy access while the weak actors, i.e. the local people, have been restricted in their access to the resources. This section will discuss the kind of restrictions on the resources the weak, and how the governance enabled this restricting of access.

8.3.1 Gaining Access

Power relationships between the actors play an important role in allowing access to resources, and this has been evident in the case of the KRG. Unequal power relationships between India and Nepal have played a critical role in the negotiation of the transboundary river agreements, as presented in chapter five. This resonates with the findings of several scholars (e.g. Kehl, 2011; Zeitoun & Warner, 2006; Elhance, 1999) who found that unequal power relationships produce inequitable access to resources. The interviews with former Nepal government officials, experts and political leaders revealed that different means or mechanisms (Ribot & Peluso, 2003), or bundles of power (Ghani, 1995) or channels of access (Berry, 1989) or social structures of access (Schaffer & Wen-hsien, 1975) as various terms used by different authors, have been applied in gaining access. In the case of the KRG, economic means was the strategy most used for tempting political leaders in the Nepal governments over time to accept the Indian proposals. In many cases, the interviewees argued that the political leaders simply acquiesced to the proposals. In case of the KRA, it can be argued that it is largely the ideational power of India, mainly the ideas and the technology as argued by Kehl (2011) in a study based on eight international river systems, over Nepal that played a crucial role in the negotiation of the agreement (see section 2.2.1). This was possible because there were not many engineers who had knowledge and experience in envisioning and working for the training of Nepal's rivers with big dams during that time (see section 5.3). Thus, power relationships, whether mainly of a political or economic or ideational nature, play crucial roles in the inequitable distribution of access and benefits among various actors.

Besides, structural and relational mechanisms support the access gained through direct mechanisms, according to Ribot & Peluso (2003), but in the case of the KRA, it is the opposite. It has been found that structural and relational mechanisms help in gaining access through direct mechanisms, so direct or right-based mechanisms and structural and relational mechanisms interchangeably support each other in both gaining access and controlling the access of others. This means structural and relational mechanisms help in gaining access for the powerful actors, who also create the right-based mechanisms by themselves, and these mechanisms support access gained through the right-based mechanisms at lower hierarchies, i.e. if the actors use the already existing right-based mechanisms.

This study has advanced the use of the theory of access in incorporating the issue of access from local levels to national and international levels, as the concept was criticized by Pedersen (2016) for focusing only at the local level and making suppositions of the national and international actors.

It has been evident that infrastructural development activities do not necessarily benefit people or provide more access to resources although the activities are aimed at their wellbeing, as argued by Adam et al. (2012) while exploring the impacts of development of roads on a Canadian Aboriginal community. In the case of the KRG, the embankments were constructed to protect the riverine communities from flood-related disasters such as erosion, inundation and siltation. But the same embankments harmed the people, particularly in the downstream settlements of Hanumannagar and Joginiya, by flooding. The sluice gates built in the embankments for draining water from other small rivers and rivulets into the KR served in an opposite way, allowing water to flow towards the rivers and settlements due to sedimentation in the river around the embankments. This implies that much deliberation and careful planning is needed to serve people while implementing large developmental projects, otherwise, such activities produce injustice to the people that the project proponents claim to be aiding.

It is the asymmetrical power relationship between India and Nepal that is shaping the transboundary water projects development at present. Currently, the political and economic power of India is at play, as noted in chapter five. The political power play was also evident in the recent visit (August 2017) of the Nepali Prime Minister (PM) to India. The PM assured his Indian counterpart he will revise the new constitution of Nepal to incorporate the demands raised by the

Madhesh-based political parties and conduct the study for preparation of the long-stalled Detailed Project Report (DPR) for the KHD project against the will of many local people and political parties of Nepal. Although India claims that the project would provide enormous benefit to Nepal in terms of irrigation, hydro-electricity, urban development and navigation to the sea, many people in Nepal suspect that India would take advantage of the KHD at the expense of Nepal and the local riverine people. Some research (e.g. Asiyani, 2016; Felipe-Lucia, 2015; Levidow, 2013) had similar findings, which suggest that powerful actors take advantages of shared resources at the loss of local people. Many people, including the interviewed former government officials, experts and some political leaders, argued that it is India's strategy of controlling the KR via the high-dam project. If it is India's interest to control the rivers of Nepal, many people in Nepal would suffer due to the diversion of benefits from the local people of Nepal to India at the expense of the socio-environmental impacts (e.g. Levidow, 2013; Matthews, 2012) through a process known as "water grabbing".

The major actors, India and the government of Nepal, assume that the giant project would solve all the problems which people in both the countries currently face. This is similar to what Sofoulis (2005) found in municipal drinking water projects in Australia, which the author terms "big water". According to Sofoulis (2005), the proponents of big water - large-scale engineering projects – ignore various consequences of the projects except for their main objective. In the case of KHDP, the proponents seem to be determined to make it happen, without giving due consideration to providing proper solutions to the issues raised by the locals. The government of Nepal intended to conduct the DPR study by coercion, demonstrating the unequal power relationship between the government and the local people. Many factors including climate change, seismicity, possible upstream and downstream impacts, people's grievance addressing measures and dispute settlement mechanisms must be considered appropriately as part of the decision regarding this big water project.

While political and economic mechanisms have mostly been used, the powerful actors have also used informal, particularly illegal, mechanisms for gaining and regulating access to resources. As per the interviewees, there have been cases of corruption involving Nepali political leaders receiving financial benefits from India in return for accepting Indian proposals. Because of such

acts, the Nepali leaders have been impotent, and they have failed to bargain effectively while negotiating agreements with India.

8.3.2 Access Control

This thesis has found that the key powerful actors in the KRG have controlled or have been regulating various types of access of the other actors to the riverine resources. The first type of access restriction is the restriction of the people's access to the irrigation-water. The second is the restriction on their access to their own land. The third is related to the imposition of the regulation on their access to fishing around the barrage. The fourth is the restriction on the access to electricity. And, the fifth is the lack of government resources for the flood-affected people.

This thesis has found that the key actors related to the KRG have means of regulating the access of other actors. First, the Government of India controlled the access of the Nepal government and other actors of Nepal to water in the river and its tributaries, and land related to the KRP via the KRA signed in 1954. The revised agreement in 1966 revoked the Nepali side's access to water in the tributaries. Nepal lost its right on the regulation of water in the barrage and the land on which the project was constructed for 199 years, despite the agreement guaranteeing Nepal's sovereignty on the land occupied by the project. It was the Nepal government, along with the Indian government, via the same agreement, that controlled the access of the people living in and around the river to the irrigation water and the land. As noted in chapter six, the local district level administration, in coordination with the Indian side, did not allow local fishermen to fish near the Koshi barrage for some years after the construction of the barrage, before introducing an annual levy for fishing. As some of the poor fishermen were not capable of paying this levy, they were deprived of their livelihoods. Only the elite contractors were allowed to fish close to the barrage, where the highest number of fish could be found. The powerful actors have regulated the access of the subordinate actors to the resources related to the KRP as conceptualised by Ribot & Peluso (2003). The finding resonates with the studies of several scholars (e.g. Asiyanbi, 2016; Felipe-Lucia, 2015) who also found that powerful actors benefited by controlling the access of the weaker actors to resources. The powerful actor, India, has visibly benefited from the project by regulating the access of other actors.

People lose their access to resources despite having land property rights if access control is in the hands of powerful actors, as argued by Fairbairn (2013). This is also evident in the case of the KRG. The people in the downstream settlements lost their land, or the quality of their land lying within the embankments, although it was their private property. It was because the access control was, and is, in the hands of the actors other than the people themselves. Thus, it supports Fairbairn (2013) in that powerful actors can snatch people's access to resources irrespective of their land rights.

The next mechanism of controlling access of Nepal to the river water is through India objecting to the efforts by third-party investors to invest in irrigation and water diversion projects in Nepal and not allowing them to build the projects. India assumed that Nepal would be unable to use a large quantity of water for consumptive purposes, and India would benefit from the availability of a significant quantity of water. In this case, India has used its right as per an international norm, the Convention on the Law of the Non-Navigational Uses of International Watercourses -1997, giving the downstream country the right to have the information and deny the approval for constructing water projects in the upstream countries if the projects would harm them. However, Nepal has started building irrigation and river diversion projects on self-funding, which suggests that Nepal has developed its capacity to fund such projects independently. The self-funding of the projects may affect India's strategy of access control of Nepal's river resources. However, Nepal may have to bear some consequences too. Investing in water-retention projects by Nepal alone may reduce its opportunity to develop more water-retention projects, which would ultimately slow down the rate of development. Furthermore, the investment of the huge amount of money in the projects bears the opportunity cost of not developing other necessary projects related to infrastructure, service delivery etc. There is the danger of keeping Nepal underdeveloped, and potentially subservient to India.

In the case of the KHD, the Indian government and the Nepalese government officials have regulated the access of the local people to the information regarding the DPR process of KHD. As noted in chapter seven, the organisers of a public meeting did not inform the locals regarding the information dissemination of the KHD, and they were not allowed to ask questions in the meeting. The organisers only invited the people who could easily be convinced. This is a case of regulation of access of people to the information, which Ribot & Peluso (2003) argued as a means of

regulation of access to the resources. The regulation of people's access to accurate information is also a means of gaining access and regulating their access to the river by the powerful actors.

8.4 Environmental Injustice for the Local People

This section addresses the research question related to the kind of injustices and how these injustices are shaped by the control of the riverine people's access to the riverine resources. While considering the question of fairness and equity, there is the prevalence of both distributive as well as procedural injustices in the KRG. As noted above, the powerful actors have controlled the access of resources, such as water, land and information, while the powerless have been denied their equitable share in the governance process. All types of injustices – distributive, participation and recognition discussed by Schlosberg (2007), are evident in the KRG. The issues of distributive and procedural injustices are discussed below.

8.4.1 Distributive Injustice

Distributive injustice is the most visible form of injustice in the KRG. As noted above, the principles and outcomes of resource distribution (Sabbagh & Resh, 2016) in the case of the KRG suggest that the local people have not received the expected economic and social benefits of the KRP. Firstly, due to loss of access to land, particularly within the embankments, they lost their right to private property i.e. owning land. The loss of access to land due to erosion, inundation and siltation barred the people, in both upstream and downstream settlements, from farming and growing food rights. Apart from losing land for the KRP, many of them have not received compensation for their lost land, which has violated their right to receive compensation for the loss of private property. Secondly, the limited or no access to the irrigation-water from the KR for irrigating their agricultural land prevented them from producing good quality and quantity of their own food. Thirdly, many of the people in both the upstream and downstream settlements do not have access to electricity, which means their right to energy is breached. This has serious implications on other rights of the people such as education of their children, communication and entertainment, preparation of food etc. Fourthly, the flood-affected people are losing their right to

earn their livelihoods because of not having land to cultivate due to the loss of land and not having access to irrigation, and because of not getting good employment opportunities at home. Many of them have left for foreign employment in India, the Gulf countries and Malaysia. Lastly, other human rights are also severely violated due to the improper governance of the KRG. For example, there is no practice of safe rehabilitation of the people when they are affected by floods. Many of them have to live in unsafe places when they are displaced, and they remain in such situations for a long time, as the government or the managers of the KRG do not have intact disaster recovery plans. Likewise, there are no serious safety measures taken for the people most vulnerable to floods, erosion and inundation i.e. the people from Gobargadha and Srilanka Tapu. Neither the management of the KRP nor the government of Nepal has taken an initiative to safeguard their settlement from the disasters. This is a serious violation of the right to life for the people living in the settlements. The KRG has produced unequal principles and outcomes of resource distribution among the actors involved in the governance process, badly affecting the riverine communities. Thus, TWGs, including those between developing countries, produce unequal principles and outcomes of resource distribution among all the actors involved in governance processes, and the most badly affected people are those with subsistence livelihoods living in the poor riverine communities.

Most of these people have been living in temporarily built traditional huts, while their neighbours are living in permanent modern houses. The hardships made many people relocate to other marginal areas because they do not own houses and land, and they are not getting loans from banks for investing in any business. Instead, they borrow money from local landlords at high-interest rates to send their sons overseas and for other purposes, including marriages. Many of their children have abandoned school because of an inability to afford the school fees. This scenario has been demonstrated in the story of a man from Prakashpur at the beginning of chapter six. The story is just a single case, but there are many such cases within the river communities. This has happened because the people have unequally received the environmental “bads” but no benefits, as argued by Dubios (2016), which have led them to the environmental injustice. Therefore, it can be said that environmental injustice is directly related to how transboundary rivers are governed.

The Nepali people have not received many benefits from the KRP. One of the main aims of the KRP was to control erosion on the Nepalese side, but inundation and erosion have been common

in Srilanka Tapu and Gobargadha. Neither the Indian side which manages the project nor the Nepal government has worked for the prevention of these areas from severe flooding. Although the KRP came into action over a half-century ago, people have not seen a significant extension of irrigation structures in the Nepalese side, especially from the irrigation canals of the Koshi barrage. Therefore, riverine people face environmental injustice when TWGs are more focused on the resources than the people.

8.4.2 Procedural Injustice

Although distributive injustice seems dominant, procedural injustice is the major constraint in the KRG. As argued by Schlosberg (2007) in general, lack of participation and recognition of the local people in the decision-making process have contributed to the injustice situation. Apart from participation and recognition, lack of responsibility of the actors is another contributing component of the injustice. As noted in chapters five, six and seven, only the governments of Nepal and India, which may include the Bihar government, are actively involved in the decision-making process. Collaborative decision-making is lacking in the KRG. This is generally a major problem in the decision-making processes of environmental resources as argued by Schlosberg (2007). It is the duty of the Nepal government to incorporate the voices of the local people in the bilateral meetings related to the KRG, but the people have perceived that they have been bypassed in the process. Even the CDOs are not allowed to take part in the meetings. They are the main messengers of the local people. While Nüsser (2003) argued that the perspectives of all the actors involved in the governance of a resource must be taken into account when making decisions, the KRG is a failure in terms of participation of all the relevant actors in the decision-making. Therefore, the lack of participation and recognition of local riverine people in the governance of transboundary rivers also leads to their environmental injustice.

While discussing recognition of the local people, particularly the “river communities”, in the KRG, it is true that “the river communities are recognized neither by the Nepal government nor by the Indian government”, as said by an expert in an interview. If they were recognised by the Nepal government, or if they were provided with the same status as the other citizens, they would not have faced the trouble that they have been recurrently facing. Even the responsibility of the VDC

officials has been put on the flood-affected people for collecting information related to the erosion and inundation and the damages caused by them, along with coordinating with the high-level government offices for lodging the complaints. In the case of KHD, if the different governments of Nepal had recognised the existence of the local people, the governments would have extensively discussed different benefit and harm possibilities of the KHD with them before agreeing with the Indian government to conduct the DPR study. Non-recognition of people living around rivers will create conflicts in future, so their existence must be recognised before negotiating any agreement related to the rivers. Hence, it can be argued here that “participation parity” (Fraser, 2003, 2005) is absent in the case of the KRG as none of the components of justice i.e. redistribution, recognition and representation have been satisfied by the process. It seems that participation parity can never be reached in the case of TWGs because power relationships among all the actors shape the governance processes, and interactions based on power relationships produce an unequal distribution of benefits and harms.

The irresponsibility of the actors involved in the KRG is also one of the major contributors to the injustice. Altogether three types of irresponsibility have been noticed in the KRG. First, it is the responsibility of the Nepal government to not allow people to live in flood-vulnerable river islands. The people should have been relocated to safe and better places, which did not happen. It is also the ignorance of the people in continuing to live in such flood-vulnerable places. Secondly, once the people have already lived in the vulnerable places, it is the irresponsibility and unaccountability of the Nepal government towards the people for not providing them better safety and livelihood options and boldly asking India to finalise the compensation issues of the local people in the bilateral meetings. Thirdly, it is the irresponsibility of India to not working towards complying with the decisions made in the bilateral meetings regarding the repair and maintenance of the already damaged structures of the KRP, including the barrage. Such responsibility voids related to maintaining compliance produce injustice to the local people. That is to say if states fail to take responsibility for their people while governing transboundary rivers, environmental injustice is imminent.

8.5 Local People's Access Maintenance: Coping with the Injustice and The Struggle for Environmental Justice

This section addresses the research question related to the coping strategies and practices, or access maintenance, in relation to the environmental injustice faced by the riverine communities. Access maintenance for the local people has not been easy in the case of the KRG. Due to lack of various economic, social and technological resources, they have not been able to cope with various kinds of unfavourable situations such as floods, erosion, inundation and poverty. And their struggle for environmental justice has not taken shape. As argued by Ribot & Peluso (2003), access maintenance needs the weaker actors to expend their own resources to cope with the disasters and struggle for justice. These two aspects of access maintenance are discussed in following sub-sections.

8.5.1 Coping with the Unfavourable Situations/Disasters

The thesis has shown that the distribution of uneven access to resources produced uneven capability to cope with the environmental injustice, and the capability of the people differed among and within the locations of the communities. In the aftermath of floods, comparatively richer people used their economic and political assets to escape flood-vulnerable areas and move to safer places after being displaced.

The coping with the disasters and unfavourable situations was effective when the people had more capability. The capability is the strength of a person or a family in terms of social, economic and political resources, and is influenced by scale. Owning these resources is critical in applying various tactics and strategies in coping with unfavourable situations, and this is how they build resilience. In the case of the KRG, the local people have used one, or more, of these resources in combination, to tackle their hard situations. Some people lived with their relatives; some lived on their purchased land; some sold their cattle to purchase land, and some sold wood collected from the KR during floods for making their livelihoods. This is how they coped with the unfavourable situations and improved their resilience during and after disasters.

In the aftermath of the disasters, the people from the different settlements negotiated their livelihoods based on their values. Similar to the Hmong communities in Vietnam, who did not

give up their livelihoods based on semi-subsistence agriculture to engage totally in capitalist economic activities (Turner, 2012), some people, particularly from Gobargadha and Srilanka Tapu, did not turn away from their land and coped with floods in their own habitual ways. Most of the people from the downstream settlements, including Baluwatar, who have been engaging in fishing activities are still involved in fishing. Likewise, some from the downstream still practised collecting wood from the river. Despite the pressure on livelihoods of the affected people, they have been struggling with the disasters, developing resilience at the same time.

Some of the affected people used their political networks to live in safe places. For instance, some of the people in the Bahunikhola got land because they had good relations with the local political leader. The people of Rampur Malhaniya also showed enormous courage in breaching the embankment surrounding their village. Although the act was illegal, it was informally supported by the district administration. Ribot & Peluso (2003) mentioned different structural and relational mechanisms in gaining access to and having control over resources, which are information and technology, market, capital, labour, authority, knowledge, identities and social relations. But the scholars did not argue that these mechanisms can also be used by the weaker actors in maintaining access to the resources. The current study has shown that the weaker actors also use various mechanisms for access maintenance. Apart from that, “courage” is also a mechanism of gaining and maintaining access that has not been mentioned by the scholars. Although Ribot & Peluso (2003) mentioned “illegal” mechanisms, “courage” may not always be illegal.

8.5.2 Environmental Justice Movements

While people have been suffering from floods, erosion and inundation by the KR, the justice movement initiated by the people against the KRP does not include the agenda of prevention of disasters but includes the main agenda of compensation for their lost land and cultivation. Most of the justice movements at the local level around the globe are concerned with the “unequal distribution of environmental ‘bads’” (Dubios, 2016, p. 21), thus they demand equitable representation and participation in the decision-making process. But the case of the KRG is unique, where people have been protesting to get compensation for their loss due to erosion and inundation. This may be because the people know that the Nepal government is not capable of providing them safety from the disasters. Although the people have been demanding compensation, the Nepal

government has been unable to provide reliable data on land and cultivation loss to the Indian government (see section 7.4.3).

Another justice movement of the local people against the KHD has become effective with the coordinated efforts and participation of various actors at different scales, including political parties, local community organisations, local NGOs and the local people. They have protested the conduct of the DPR preparation study several times as noted in section 7.5.2. The movement has been special because of the involvement of a radical communist party and its series of threats, along with several demonstrations by the people, with knowledge and information back-ups from local NGOs, resulting in the postponement of activities for an indefinite period. All the political leaders, community leaders and the local people who took part in the demonstrations, were of the same voice which the NGOs had been advocating. They believe that the construction of the high dam would further marginalise the livelihoods of the local people, and the development-dream that they have been shown by the proponents of the KHD project will not become true. Such a scenario is similar to what several scholars (e.g. Islar & Boda, 2014; Mehta, 2007) found in their studies. In a study on the inter-basin water transfer project in Turkey, Islar and Boda (2014) argued that the narrative framed by policymakers for constructing mega-dams minimises the focus on sustainable water-use and livelihoods of people living in rural areas. The involvement of NGOs in stimulating anti-dam discourse has also been found by Warner (2012) while doing research on Turkey's Ilisu Dam. Therefore, NGOs can play a crucial role in the production of discourses related to resources and influence various justice movements against development projects.

Sometimes, actors should show courage, even by carrying out illegal activities, to make a justice movement successful. As noted above, the people of Rampur Malhaniya village were facing an inundation of their entire village due to the ill-management by the actors involved in the KRG. The villagers came together and decided to breach the western embankment. An NGO, Practical Action, helped them with necessary technical support for constructing an outflow channel.

8.6 Transforming Water Governance: A Direction towards Environmental Justice

The discussion of the findings above has demonstrated that the KRG is not satisfactory. A number of issues have emerged in the governance process that is producing injustice for the people living

in and around the river. The most critical issues or gaps identified are the compliance-related issues, scalar-disconnection among the actors involved in the governance and the responsibility-void produced by the power asymmetry among them. Such issues need to be corrected for governing a transboundary water resource well. As the framework provided by the WCD (2000) has also not been satisfactorily accepted in the dam-building world, as discussed in section 2.2.1, the alternative framework proposed in this section will take into account the gaps identified in the WCD (2000) framework and the governance of the KR in the discussion above.

Many gaps have been identified in the governance of the KR that are critical to the wellbeing of the people living in and around the river. First, intra-scalar as well as inter-scalar power asymmetry among the actors is huge in the KRG. The power asymmetry is evident in economic and political aspects. Second, one or two actors are dominating the decision-making process when there are many other actors related to the governance of the river. Specifically, the roles of the local people and NGOs have been greatly minimised by the governments of India and Nepal. Third, there is the problem of responsibility-void among the powerful and responsible actors. The responsible actors are not conducting their works as obliged. Fourth, non-compliance with the agreements and decisions made in the bilateral meetings is a big challenge for the KRG. The powerful actors have not been implementing some of the decisions made on a timely basis. Fifth, scalar-disconnection among the actors is rampant in the KRG. There is no smooth communication among the actors across different scales. These anomalies must be rectified in order to provide justice to the people. Addressing the KRG framework is essential.

8.6.1 The Reframing of the Koshi River Governance Framework: The 3R Framework of Governance

The discussion of the KRG focused on various aspects of the actors involved in the process. Three aspects related to the actors have been found critical in the decision-making process. They are roles and responsibilities of the actors; regulation instruments for maintaining the discipline of the actors; and interaction among the actors. All the above anomalies, including scalar-disconnection, responsibility-void and non-compliance, are related to these aspects of governance in the KRG framework. In order to address the anomalies, it is crucial to reframe the aspects of governance.

Based on the three aspects of governance and building upon the framework provided by the WCD (2000) (see section 2.2.1), this section introduces an alternative framework of 3R for the KRG (figure 8.1); 3R represents a. Roles and responsibilities of actors; b. Rules and Regulations for governance; and c. Relationships among the actors across scales. The framework will be supported with supplementary components of PSP, which means Power, Scale and Place and the justice components. The framework can be both an analytical and normative framework for understanding and examining the governance of resources. The use of justice components in the framework makes it normative, whereas omitting them makes it analytical. The components will be helpful in linking governance with political ecology and human geography and provide environmental justice to the people adversely affected by the river. Further, it is expected to solve the issues related to the problems, as noted above, particularly the issue of non-compliance, ultimately improving the lives of river communities.

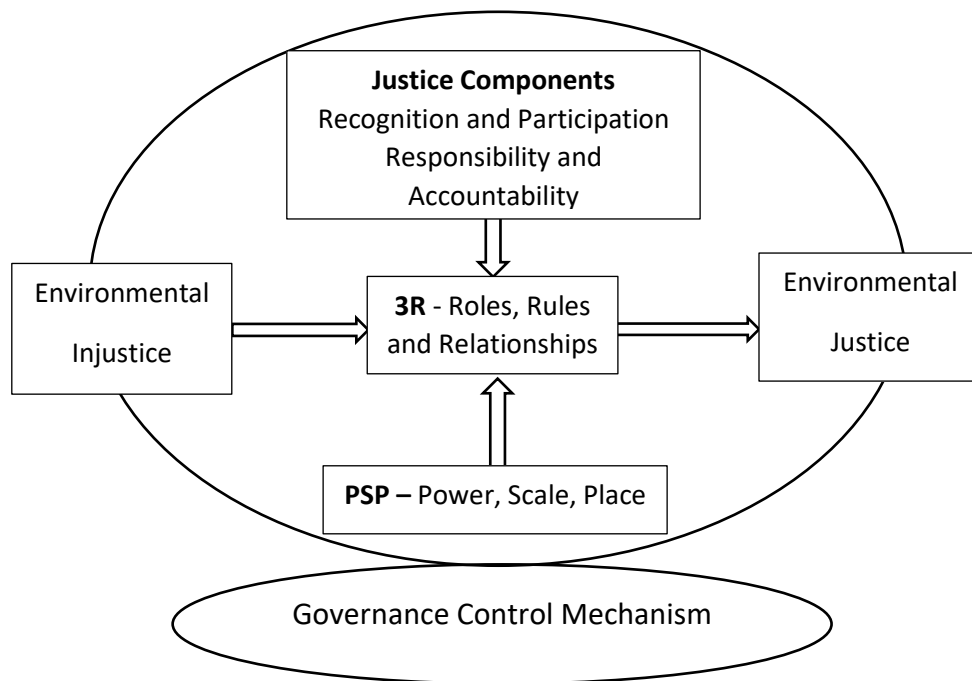


Figure 8.1: The 3R-Framework of Governance (Source: Author)

The 3R-Framework, its aspects and components, are discussed below.

a. Roles and Responsibilities

The application of the actor-oriented approach in the theoretical framework aided in examining the agency, interest and actions of the actors involved in the KR. The agency, interest and actions of the actors have defined their roles and responsibilities. The roles and responsibilities of each actor are crucial in the governance of resources. Identification of all the actors in the governance is necessary because it is often the case that only the actors involved in decision-making are considered as the actors of governance, and the people who are governed are not counted as the actors of the process, as argued by various scholars such as Chen et al. 2016, Middleton & Dore, 2015, Mirumachi & Torriti, 2012 and Hirsch (2010) that the rights, i.e. meaningful participation of the affected people, are neglected in decision-making. It is worthwhile to mention that non-human actors are also considered as actors. For instance, Turton et al. (2007) identified the natural environment as a societal actor while explaining their government-society-science model of governance. Further, the New Zealand government granted citizenship to the Whanganui River as an ancestor of the local Maori tribe (Charpleix, 2017; Rodgers, 2017). However, it may not be possible to recognize non-human actors as citizens everywhere because even people are not granted their basic rights in many parts of the globe at present. The roles and responsibilities of all the actors should be defined clearly, thus the making of rules is important in governance processes.

b. Rules and Regulations

Rules and regulations, hereafter referred to as Rules, define the roles and responsibilities of the actors involved in a governance process, which has been demonstrated in the case of the KRG. For instance, the KRA guided the roles and responsibilities of the Indian and Nepali governments, bureaucrats and the local riverine people. Thus, rules are critical for understanding governance processes. Rules can be categorised according to the nature and the scale of influence as either a. formal and informal, and b. Local and extra-local. The formal rules refer to the nationally and internationally published and law-binding policies, acts, treaties, agreements, minutes of meetings,

contracts, rules and regulations (e.g. the KRA; the Irrigation Policy, 2013; the decisions made in the bilateral meetings), whereas the informal ones denote the local customs and practices, e.g. selling of public land, and the fishing facility to the contractors in areas close to the barrage). Likewise, the local rules refer to both formal and informal instruments that are practiced at the local level (e.g. building homes besides the embankments, collecting and selling of wood from the KR during floods.), whereas the extra-local rules denote the formal and informal instruments that influence the governance of resources, also at the local level, e.g. the Convention on the Law of the Non-Navigational Uses of International Watercourses 1997, the Water Resources Act 1993.

In the case of the normative framework of governance, all the rules necessary to govern a resource should be succinctly defined so that they resonate with or supplement each other, do not become controversial, and allow the actors to easily follow them. Therefore, it is very important to formulate rules to smoothly govern resources. Further, there should be a governance control mechanism to facilitate compliance with the formulated rules, which will be discussed in section 8.6.3.

c. Relationships

Another important component of governance is relationships among actors across various scales, both intra-scalar and inter-scalar. It is the relationship between actors that shape their actions. In this thesis, it has been found that there was no connection, rather a “scalar disconnection”, between the governments and the affected people. Therefore, it is crucial to understand connections between all the actors such as governments, government agencies, political leaders at various levels, bureaucrats at different administrative levels, local people, I/NGOs, villages, settlements and communities. Unlike the WCD (2000) framework, which failed to analyse the relationships between various actors (Kirchherr & Charles, 2016), relationships based on power, scale and place will be analysed in this new framework.

The normative framework suggests maintaining good relationships among the actors for allowing actors to follow the rules and acts responsibly. If there is no good relationship between actors, it is necessary to redefine the connections so that close connections can be built among them to dissolve scalar disconnections and nullify the influence of boundaries created among the actors. There is a

need for actor-to-actor connection among the actors within and across scales. Thus, this framework bridges the gap between stakeholders at multiple scales particularly between local people affected by projects and their government.

8.6.1.1 The PSP Components

The components of power, scale and place are helpful in linking the alternative governance framework with political ecology and human geography. The finding of Kirchherr & Charles (2016) that the WCD framework lacks analysis of the relationships between various actors forms the basis of the introduction of the “PSP components” in the new framework. These components shape all three aspects of the 3R framework, and ultimately the overall governance process. Paying cautious attention to these components thus helps the actors to make equitable decisions. Each component is discussed below.

Power

As noted above, power asymmetry between actors at various scales plays a significant role in the governance of resources. Power influences the roles of the actors, as noted in section 8.3.2 regarding the access control of weaker actors by the powerful actors. As powerful actors take over the responsibility of making decisions, weaker actors are neglected in the governance process. Powerful actors formulate rules favourable to themselves and manipulate rules to take as much benefit as possible from the resources they govern. This has been evident in the KRG. Likewise, power asymmetry is inherently the main factor that either prevents or intermediates connection among various actors in the process. The “Scalar-disconnection” in the KRG is also the result of power asymmetry. While talking about the normative framework, although power asymmetry between the actors cannot be reduced, the effect of the asymmetry in the governance process can be minimised by paying attention to power while making decisions.

Scale

Scale also plays a crucial role in the governance of resources. In the case of the KRG, the role of scale is critical as scale determined the inclusion of the actors in the governance process. Scalar configuration of the actors is also the reason behind the escalating boundaries between them, apart from the power asymmetry. Further, scale has also played a major role in defining the power asymmetry among the actors. As scale is the influencing factor for creating disconnection among the actors in the governance, it should be given due importance in the governance process.

Place

Place is an important factor that determines the overall governance of resources. In the case of the KRG, place has been explained by features such as private and public land, the river islands, villages, and embankments. Governance processes vary between places due to contextual factors, such as the people, culture, water use and environment. Place can be attributed to other aspects as well, such as villages, poor people, migrants, vulnerability to excessive rain and so on. As the governance of the KRP has depended upon the features of “place”, place is an important element to be considered in the governance process.

8.6.1.2 Justice Components

The justice components in this framework consider both procedural as well as distributional principles of environmental justice, as identified by Dore & Lebel (2010a) in section 2.2.1. Acknowledging that the distributional justice is achieved through attaining procedural justice, the framework discusses some important procedural justice components, which are presented below.

Recognition and Participation

For governing equitable and environmentally just resource development projects, it is very important to incorporate the aspects of recognition and participation of the local people in the governance process. The WCD (2000) report also strongly advocated for the recognition and participation of local people in the decision-making (see section 2.2.1). However, the meaningful participation of the affected people has often been neglected in the decision-making, as argued by

Chen et al. 2016, Middleton & Dore, 2015, Mirumachi & Torriti and Hirsch (2010) as noted in section 2.2.1. Thus, proper recognition of all the communities that may be affected by the projects must be done, and the planning of the projects should be done by analysing possible benefits and harms to the communities. By doing this, the people receive an identity, and the projects potentially become feasible by producing less harm to the communities. Also, the participation of the people must be ensured in the governance process, meaning the participation of the people in the decision-making and in the implementation of the decisions. Involvement in the decision-making provides the people with access to resources, while involvement in the implementation helps in correcting the problems of the “responsibility-void”. Participation of the local people and other actors in the governance process helps in establishing the scalar connection among all the actors by dissolving the scalar boundaries present in the process. Thus, participation and recognition of the local people in the process of governance may help in regulating access control of the resources by the powerful actors, reduce the problems of non-compliance of the negotiated agreements and delays in implementing the decisions made, ultimately preventing environmental injustice for them.

Responsibility and Accountability

It is also important to make actors, especially the powerful ones, ethically responsible and accountable for what they do or do not do. As argued by Bird et al. (2005), the responsibility of various actors is important in fostering engagement of the actors in a constructive dialogue based on fairness and openness. But responsibility and accountability scenarios of powerful actors are problematic in governance processes, as evident in the KRG. When these vital components do not function well, failure of a governance system will occur, leading to dysfunction of other components of the system.

Incorporation of Research in Policy and Practice

Roles and responsibilities of actors are guided by rules and regulations, and there is a need for academic research in formulating policies for addressing various issues related to the overall governance. As the integration of academic research with governance helps in formulating policies

that are suitable for the majority of the actors involved in the governance process, it helps in planning and carrying out environmentally just resource development projects by providing the weaker actors with access to resources and preventing access regulation by the powerful actors.

Although knowledge guides policies and practices, the connection of knowledge with policy and practice is lacking in water resources development planning in Nepal. Thus, there should be a necessary institutional arrangement of actors that can be involved in either the utilisation of the existing knowledge or generation of new knowledge via collaboration with academic institutions. In Nepal, there is an institutional arrangement, the Water and Energy Commission, for supporting the Nepal government in formulating policies and planning projects related to water resources and hydro-energy development, but the Commission has not been fully functional due to a lack of human and financial resources, and the cleavage of the Water Resources Ministry into Irrigation and Energy ministries. Such a scenario can be prevented in future by raising awareness among politicians about the importance of knowledge-institutions like the Commission, and by making the provision of uninterrupted financial arrangements from the government's side.

8.6.1.3 The Impetus for Following the Alternative Framework

The sections above have elaborated on the problems and challenges in the KRG. The problems such as non-compliance, non-participation, non-recognition, irresponsibility and unaccountability are all related to power dynamics among the actors involved. The two major actors, the Indian and Nepali governments, should mainly be responsible for making change for the better governance of the KRG. As non-compliance and irresponsibility have been the main issues, adopting a governance framework has been a problem. In such a situation, there appear to be two options: the first – a formal way i.e. introduction of a governance control mechanism; and the second – an informal but effective way i.e. escalation of environmental justice movements.

a. Governance Control Mechanism

The introduction of control mechanisms has been in practice in the governance of transboundary waters for many decades, but most of the mechanisms did not function without conflicts among

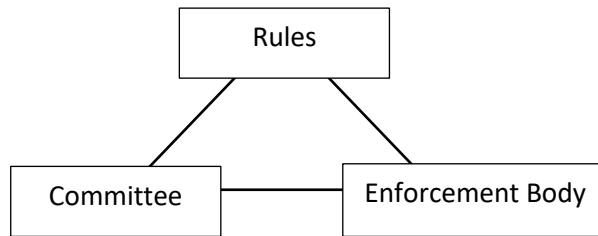
the actors involved. As discussed in section 2.2.1, control mechanisms in the form of various mediation and arbitration practices have not worked well in the management of conflicts. Even in the case of the KRG, it is evident that the issue of compliance is problematic, and the riverine people are suffering. In such a situation, a strong governance control mechanism should be developed that would minimise or resolve the conflicting issues.

It is evident in the thesis that the conflict resolution mechanisms such as mediation and arbitration have not functioned well. In the case of the KRP, there is a provision of appointment of one arbitrator for each country if any conflict or dispute arises, but the countries have never felt the necessity of using the arrangement. Further, the agreement has also made a provision for the formation of the Koshi Project Commission in the revised agreement for managing complications of common interest in relation to the KPR (see section 3.6), but it has not yet been formed. As Nepal is heavily dependent on India for meeting its daily necessities, Nepal would not want to irritate India. So, there is a very slim chance that the governments of Nepal would ask India to implement these alternatives. They would rather attempt to solve problems through bilateral meetings. As the problem of compliance cannot be solved without truly being responsible and accountable to the people, the meetings do not produce proper resolutions for the conflicts. The issue may be solved by using compliance plan guidelines, as suggested by the WCD (2000), but the guidelines do not provide necessary measures of compliance for the actors, as noted in section 2.2.1. So, a question arises here, who would guarantee the involvement of the representatives in the governance? This question can be answered by the introduction of a governance control mechanism, as presented below.

This thesis envisages a governance control mechanism that consists of a committee of various national and international stakeholders, a set of rules and an enforcement body. At an international level, it envisages a committee of all the countries with transboundary or international water resources, who will vote to decide whether any issues related to such resources are right or wrong. They should make rules related to the resources with the two-thirds majority of the committee that should be binding and acceptable to all the countries. The rules so prepared will be used as the main guidelines for the monitoring, evaluation and compliance of water and energy-related new and ongoing projects by the enforcement body. The enforcement body shall comprise a certain number of elected members among all the members, for the ease of carrying out the necessary

responsibilities. If any member does not deliberately comply with the rules, there shall be a provision to challenge the member in the international court on behalf of the committee. If any country with international or transboundary water resources does not become a member of the committee, there shall be a provision that such countries would not be entitled to develop any projects related to such waters. Thus, this governance control mechanism is expected to resolve all compliance-related issues, including various other issues (see figure 8.2).

Figure 8.2: Governance Control Mechanism



At a national level also, the institutional structure can be replicated, comprising of a committee of all the states or provinces or districts of a country, depending upon the governance structure of the country, as members, a set of rules and an enforcement body. The enforcement body should be located at the federal level so that it can be accessed by all the states. This governance control mechanism at the national level is expected to resolve all the compliance-related and other inter-provincial or inter-state or national issues. If this kind of mechanism cannot be established, the only other alternative for the affected people is to go with environmental justice movements.

b. Escalation of Environmental Justice Movements

Intensifying the justice movements means not only increasing the number of demonstrations and protests but also entails many other things. Firstly, a formation of an alliance at the local level among all the affected people in the Koshi basin, civil societies, community leaders, political leaders and NGO activists is needed, as has happened in the case of the KHDP (see section 7.5.2). Secondly, this local-level alliance should encourage alliance building in other parts of the country, such as the Gandaki and Mahakali, so that a national-level alliance could be formed. Thirdly, this national-level alliance should collaborate with other regional-level alliances, especially from India

if any, to make its voice heard at the regional arena. Lastly, the national-level alliance should also collaborate with other global alliances so the whole world can hear them. The strength of the alliance formation would pressure the strong actors in TWGs to step down and work in the interests of the people. Although the participation of political leaders and political parties is important, precaution should be taken not to allow them to make the goal of the alliance their own political ladder-steps.

8.6.2 The Framework in the New Federal Structure of Nepal

Nepal has recently entered into the federal structure of governance after promulgating the new constitution in 2016. As noted in chapter three, the constitution has divided the country into seven states (see figure 3.1), with the names of the states yet to be finalised as of early May 2018. Until the states are given proper names, they have been given numerical names from 1 to 7. While dividing the territory into different states, almost all the rivers, both large and medium, in the country flow through different states. The KR currently flows through two states, the state 1 and the state 2 (Pradesh²⁹ 1 and Pradesh 2 on the map) before crossing the international boundary of Nepal with India. The Government of Nepal has been the major actor involved in making critical decisions regarding the river in coordination with India after the negotiation of KRA. This scenario may transform into a new arrangement as state governments have been formed for the first time following the state elections in November 2017. If the states claim their rights over the rivers, the new form of governance of the river may pose new challenges. In Nepal's new Constitution, there is the provision of the concurrent power of the federal government and the province on water bodies crossing two or more provinces.

The first challenge is related to creating mutual understanding among the newly formed states and the federal government regarding the benefit sharing. The revenue generated from the current and future irrigation facilities may be a source of conflict. The federal government may not want the states to collect the revenues, while the states may want to do so. Likewise, there may be conflict related to the right to the river and the water flowing in it. The individual states may want to divert

²⁹ Pradesh means State or Province in the Nepali language.

more water to their states and may blame each other for any unfavourable situations such as floods, inundations and erosions. Apart from these, the problem of Scalar-Disconnection may become severe as the number of vertical scales increases. There have been a number of inter-state conflicts in the world, including India (Swain, 1998), United States (Sherk, 2000), Africa (Bereketeab, 2013) and Australia (Bischoff-Mattson & Lynch, 2017) for sharing water resources. In India, there are disputes between the states of Punjab and Haryana over tributaries of the Indus River, Haryana and New Delhi over the waters of western Yamuna Canal, and Karnataka and Tamil Nadu over the waters of the Cauvery River (Swain, 1998). As noted above (in section 8.5.1), such conflicts may be minimised via recognition and participation of the local people in decision-making and implementation of the river related development projects and incorporating research into policy and practice.

8.7 Summary

The discussion of the findings of the study has identified several anomalies in the existing governance framework of KR. There are the problems of extreme intra-scalar and inter-scalar power asymmetry between the actors that produced the participation of not only the governments in the decision-making processes but the domination of a single actor in implementing the decisions. This led to the problems of non-compliance and the responsibility-void because of which the local people suffered. Besides, scalar-disconnection among the actors across various scales presented a major challenge in the governance. In overcoming these challenges, an alternative framework, i.e. the 3R-Framework of Governance, has been proposed by building upon the risks and rights framework provided by the WCD (2000) as discussed in Chapter Two. The new framework constitutes three aspects of governance, namely roles, rules and relationships; the PSP components – power, scale and place; and the justice components – recognition and participation, responsibility and accountability and need of research in policy and practice. While the WCD framework is a normative framework for building dams, the proposed framework can be used for both analytical as well as normative purposes. As actors and their actions are the key factors in governance processes, the framework has given emphasis on the roles, rules and relationships among various actors across multiple-scales. In addition, the concepts of power, scale and place help the framework in linking water governance with political ecology and human

geography. Besides, the justice components provide normative characteristics to the framework. The framework is expected to help the actors in providing guidance for governing the KR, which will ultimately provide environmental justice to the local people.

Chapter Nine: Conclusion

9.1 Introduction

This thesis examines the governance of KR and multi-scalar causes of environmental injustice for the people living in riparian communities in Nepal where the river crosses the border with India. The thesis develops a framework that combines the concepts of water governance, access to resources and environmental justice and employs the actor-oriented political ecology approach in interrogating injustice issues in the case of transboundary river governance. These processes were analysed by scrutinising various actors involved at multiple scales in the KRG while looking at the effect of the Indo-Nepali IRAs, specifically the KRA, on the people living in the riverine communities of the KR of Nepal. This chapter summarises the major findings of the thesis and discusses how these findings contribute to the policy and practice related to the governance of transboundary water and to the theoretical literature on governance of water, political ecology and environmental justice. This section will then be followed by an outline of a way forward for the transboundary governance of water, then concluded with final comments on the thesis.

9.2 Summary of Key findings

This thesis has used the actor-oriented political ecology approach to challenge the dominant approach of governing transboundary rivers which involve primarily developing heavy infrastructure but largely neglecting the local people (e.g. Palomino-Schalscha et al. 2016; Islar & Boda, 2014; Mehta, 2007). In the case of the KRP, India built the barrage infrastructure, along with embankments and other irrigation infrastructure, allegedly for the purpose of developing hydropower and irrigation, managing floods and controlling erosion. But, the major actors of the project, the governments of India and Nepal, largely neglected the lives and livelihoods of people living in the communities in and around the river in Nepal. As a result, the people were obliged to experience environmental injustice. This study has argued that the production of environmental injustice for the people is explained by the amalgamation of the socio-natural interactions among the actors involved in the KRG with the river over time and the multi-scalar power relationships

among the actors. The key findings of this thesis will be presented in this section, based upon the research questions asked in chapter one.

9.2.1 Role of Multi-Scalar Power Relationships in the Governance of Transboundary River

Chapter 8 demonstrated that power relationships among the actors involved at various scales play a crucial role in the governance of the KR. From the negotiation of the KRA to the production of injustice for the riverine people, power relationships are crucial. Some of the key consequences generated due to power relationships in the KRG are presented here.

This thesis has found that hydro-hegemony has played a major role in the negotiation and governance of the KR. As discussed in section 8.2.3, India's hydro-hegemony was evidenced on several occasions. India's political, economic, knowledge-power, information, and technology helped it as the mechanisms of gaining and regulating access to the KR resources. India's hydro-hegemony still exists today as it has the capacity to influence Nepal in acting in India's interests, which was seen in the visit of Nepali PM to India in 2017. Because of the hydro-hegemony of India, Nepali politicians assent to Indian proposals related to river development projects.

Although power relationships between nation-states occupy the centre stage of the literature on transboundary resource governance, power relationships among intra-national actors across various scales also play important roles in the process. As noted in chapter eight, the major actors in the KRG are the Indian, including the Bihar government, and the Nepali governments, particularly the political leaders and the bureaucrats. But, the power relationships among intra-national actors in Nepal also play a key role in the governance. It was found that the politicians and only the high-level government officials took the authority in their hands to make decisions regarding river-related issues. Even the Chief District Officers were not allowed to take part in the meetings, as noted in section 7.5.1. Besides, the politicians in the Nepal government and the bureaucrats do not listen to the issues of the riverine people, as noted in section 7.4. Apart from this, the former government officials and water experts argued that their voices are ignored by the people in the government. The evidence shows disconnection among the actors with unequal

powers across different scales due to the mini-hydro-hegemony present in the major actors within a nation.

This study has also found that political boundary, which is generally insignificant in the case of showcasing cultural cohesiveness, is actually significant in the case of natural resource governance. This has been found in case of the people living in the Terai of Nepal and the people residing in the states of Bihar and Uttar Pradesh of India.

9.2.2 Impact of the Transboundary Governance on Various Actors' Access to Resources

This thesis has shown that the unequal power relations among actors across various scales exacerbate issues of gaining access to resources and regulating the access of other actors via formal agreements and policy documents. In other words, asymmetrical power relationships between actors produce unequal arrangements for governing resources. Such arrangements provide the already powerful actors with more power.

As noted above, India has been able to negotiate several agreements and treaties on transboundary rivers with Nepal by using political and economic influence over Nepal. In recent agreements, India has used political and economic, also illegal mechanisms such as bribing Nepali politicians, in gaining access to Nepal's rivers. The agreements provided India with more power for regulating Nepal's rivers and its people's access to river and land resources, as discussed in section 3.6.

By gaining access to the river, India gained more power to regulate the access of other actors to the river resources. Just after signing the agreement, Nepal lost its right to regulate water in the river for 199 years, and its right to develop other river projects on the river as it needed to comply with the agreement in regularly availing a certain amount of water downstream in the barrage area. On top of that, the agreement regulated the access of local communities to the river resources. First, many of them lost their land to the KRP. Some received compensation while many others did not. Secondly, the regulation imposed by the district administration on fishing around the barrage restricted the local fishermen from fishing in areas with the most fish. Thirdly, the people do not have access to irrigation-water when they need it most. While the Koshi Barrage irrigates a huge area of land both in India and Nepal, the area of land irrigated by the project in Nepal is only

about one-twentieth of the total irrigated area. Thus, it can be argued here that the rules and policies made to aid governance provided the powerful actors with more room for regulating the access of the local people to resources, thus creating environmental injustice.

9.2.3 Environmental Injustice for the People

The thesis has argued that the distribution of uneven access to resources has created varying forms and extents of environmental injustice for the people, based on the locations of their settlements and their economic capability. Environmental injustice was evident in different forms for people living in the upstream and the downstream settlements of the barrage. People living in the upstream settlements suffered the most from erosion of their settlements and agricultural land during rainy seasons, whereas most of the people in the downstream settlements faced inundation. The people did not receive compensation in any form for the loss of land, houses and other property due to the floods.

The riverine people faced both distributional as well as procedural injustice. The people mainly faced four types of injustices which are related to distribution, recognition and participation, and responsibility and accountability. Firstly, the people faced distributive injustice. As noted above, the people did not receive many benefits from the KRP for floods, erosion and inundation control and irrigation. A very few of them received compensation for the loss of land and property incurred due to the KRP. But the majority of them faced the loss of lives, livelihoods, agricultural land, houses, livestock and property, including displacements (see chapters six and seven) due to severe flooding, inundation, erosion and siltation problems. Secondly, their existence was not recognised by the major actors, the governments of India and Nepal who did not take any strong initiative to prevent them from facing the trouble. Thirdly, the governments of both India and Nepal have not recognised the existence of the riverine communities, as they have been excluded from the mainstream development of Nepal. There is no mechanism that ensures meaningful participation of the local people in the decision-making processes of the KRG. It can, therefore, be said that Fraser's (2003; 2005) "participation parity" is lacking in the case of the KRG. This is also because of the mentality of some of the government officials, who believe that developing countries like Nepal cannot develop if communities are given more priority than projects. This is one of the main

reasons why local people are ignored while developing hydro-infrastructure projects. Lastly, the lack of a sense of responsibility and accountability of the key actors in the governance also contributed to the injustice for the people. The major problem was they did not do what they were supposed to do. Thus, the people suffered because of the severity of all of the above-mentioned injustices.

This thesis has demonstrated that the uneven access of the people to resources produced uneven capability to cope with the environmental injustice. As noted in section 8.5, the comparatively rich people in both the upstream and downstream settlements were able to escape from the flood-risk areas to safer places by using their political and economic assets. Poor people did not have choices, except to live in the vulnerable or marginal places. Many people from the settlements went overseas, mostly to the Middle-East and Malaysia, for labour employment, while some stayed working on their own or public marginal agricultural land and some lived by practising shared-cropping, *adhiya*. Some of them were able to buy their own agricultural land later on. Besides, some of them kept making their living by fishing in the river while a few of them also lived by collecting and selling wood from the river during floods. Some of them even started their own businesses. Therefore, the coping strategies of the people varied in different locations.

Surprisingly, some richer people decided to stay in the vulnerable lands because they saw more benefit in doing so. For instance, the people living in Baluwatar got more opportunity to earn by doing non-agricultural labour than in their previous residence in Gobargadha. While many people were devastated by the floods, some people in Hanumanagar benefited from the hazards by selling wood collected from the river in the nearby market. Although a few people benefited from the disasters, many people lost their livelihoods. Thus, it can be argued here that the uneven capability of people to cope with injustice depends upon the locations of people's residence.

The people not only adapted to cope with the injustice, but they also organised environmental movements to respond to the injustice. The affected people from both the upstream and downstream settlements staged various protests against the KRP and the government demanding compensation for the loss of their livelihoods, particularly their land. Despite the protests, the issue seems to take a long time as both the Nepali and Indian governments are indifferent towards their plight. On top of that, the data collected by the affected locals was not acceptable to the

governments, and the Nepali government has not been pro-active in solving this issue by collecting data on the loss of land and property (see section 7.5.1). Similarly, they also demonstrated against the DPR study of the proposed KHDP, which is believed to affect thousands of the riverine people upstream and downstream of the proposed dam construction site. The demonstrations were also supported by a radical political party of Nepal. As a result, the study came to a halt, and it has not resumed despite several attempts by its proponents. The need for protests arose because the decisions about planning and moving forward with huge projects like the KDHP are made in high-level negotiations, while the people are neglected and not informed about such critical projects which have the potential to harshly affect local people.

Although the people are not recognised and are excluded from the decision-making processes, this study has found that the people did not demand their recognition and participation in the decision-making. There may be several reasons. Firstly, compensation is the main issue for them as most of them are concerned with their daily lives. Secondly, they might have felt that they would not get any right in the KRG because even the government of Nepal does not hold any right on the KRP. They know that the project is handled by India. Thirdly, they may not know that various movements are being carried out in many parts of the world regarding the recognition and participation of local people in development projects, which affect them.

The study demonstrated that radical political parties play crucial roles in supporting environmental justice movements, especially in developing countries like Nepal. In the case of the KHD project, a radical political party, the Communist Party of Nepal, supported and participated in the demonstrations organised to protest the DPR study related to the KHDP. For further protesting against the study, an informal alliance was also formed that constituted the potential people being affected by the project, local community organisations, NGOs and local political parties. The NGOs were critical in educating and empowering the people and the political leaders and uniting them for the protest. The protest was successful as the study was postponed for an indefinite period of time.

This thesis has found that environmental justice movements take very little time to become successful if there is a commitment from political leaders, bureaucrats are not ineffective, and the related policies are not ambiguous. The riverine people argued that the political leaders,

representing their constituents, become active only during elections, but they hardly return to their constituency to listen to the grievances of the people after being elected to parliament. The people said the leaders cannot be trusted on any grounds to speak for the people (see section 7.5.1). Besides, Nepal's bureaucracy has also been ineffective because it has failed to effectively lobby for providing the compensation to the people for many years. Furthermore, there is ambiguity in the policies and regulations regarding the issue of compensation. India is of the view that it is not responsible for the loss of the land and property within the embankments, but Nepal is demanding compensation, while the KRA states that compensation is applicable to the land where KRP-infrastructure is constructed. Such circumstances would only lengthen the process of the justice movements to become fruitful.

9.3 Contributions to Theory

This thesis has interrogated the transboundary river governance of the KR and examined local people's access to the river resources and the resulting environmental injustice by using the actor-oriented political ecology approach. Based on the findings and analysis, this section presents the main contributions of this study to theory building.

First, the thesis has advanced the political ecology discourse by unfolding environmental justice in practice. The thesis has empirically studied the transboundary environmental governance and the resulting scenario of the riverine communities' uneven access to resources. It then sought the empirical evidence of the environmental struggle that the people orchestrated in order to achieve environmental justice. This study has done exactly what Blaikie (2012; 2014) advocated regarding the engagement of political ecology with key government actors and members of civil society. It is the use of the actor-oriented approach of political ecology in the thesis that has made it possible to bring forward the perspectives of various actors operating across different scales, including former ministers, politicians, bureaucrats, former government officials, NGO activists, community leaders and activists and local riverine people, regarding the KRG. Thus, this thesis has also contributed to identifying different perspectives of actors operating across various scales in the TWG literature, which was a critique by Moore (2013) regarding the literature. The thesis has also focused on environmental justice from the perspective of political ecology, to which Blaikie (2012;

2014) aspired. As this thesis has given much emphasis to the empirical base, this study on political ecology has advanced the notion of engaged political ecology.

Second, political ecology does not only investigate winners and losers among various actors who struggle for “environmental access, management, and transformation” as argued by Robbins (2012, p. 3), but it also studies what both the winners and losers do in the process of struggle for gaining access, management and transformation of resources.

This thesis has presented a picture of the actors involved in the KRG by studying their agencies, interests and actions in the process of governance. So, political ecology is an approach of investigating actors in a continuum of their incentive and struggle for gaining or losing access to a resource to controlling or regulating resources by the powerful to coping with the adverse consequences by the weaker actors.

Third, it has demonstrated that the actor-oriented political ecology approach can be comfortably used in interrogating TWG, which is rare in the TWG literature. As noted above, it has helped in understanding the perspectives of both those who govern and those who are governed. By aiding in understanding the perspectives, it also helped in exploring the agency, interests and actions of the actors involved in the governance process. As the perspectives from various actors are often gained on the same subject matter of research by using the approach, various agencies, interests and actions of the actors emerge. The variety of data on the same subject matter helps researchers in comparing and triangulating the data collected from various actors regarding the agencies, interests and actions. Besides, it confirms Wilson (2010, p. 35) who argued that the approach clarifies how the conduct of actors operating at various scales shape local interaction with resources.

Fourth, this thesis also contributes to knowledge in the area of river agreements by interrogating why agreements on transboundary rivers take place between nations. As noted above, it has studied the agencies and interests of both riparian nations for negotiation of agreements while having cooperation on TWRs, which was pointed out as the weakness of the TWR literature by several studies (e.g. Tir & Ackerman, 2009; van der Zaag & Vaz, 2003; Biswas, 2001). It confirms that agreements on transboundary rivers between nations take place mainly due to the interests that the nations see by having the agreements. This thesis has demonstrated that a range of factors plays

roles in the negotiation of agreements between India and Nepal in the backdrop of their asymmetrical power relations. Despite the agreements looking bad in hindsight for Nepal, it appears that there are also some advantages, but they did not all come to fruition.

Fifth, this thesis has demonstrated that Ribot & Peluso's (2003) concept of the "theory of access" can also be applied in studying the coping strategies used by people to fight injustice, apart from using it for explaining how resources are accessed and regulated by actors. Ribot & Peluso (2003) used the concept in explaining how weaker actors regain access to resources by expending their resources, while this study has used it in explaining how the weak actors cope with injustice by expending their resources.

Sixth, this thesis has advanced the environmental justice discourse by focusing on the issue other than the predominant injustices related to ethnicity, race and industrial hazards (e.g. Vaz, Anthony, & McHenry, 2017; Adeola & Picou, 2016; Hernandez, Collins, & Grineski, 2015), and that in the underdeveloped region, which is away from the developed world wherein the literature is mostly concentrated. This thesis has demonstrated that the concept of environmental justice can easily be applied to studying any kinds of injustice issues related to the environment including in the developing world.

Seventh, this study confirms that Fraser's (2003) "participation parity" does not exist in the case of the KRG. Neither redistribution nor representation of the people from the riverine communities has been ensured in the governance process. Fraser (2005) argued that there is no participation parity if any of these three dimensions of justice is unfulfilled. In the case of the KRG, none are fulfilled. Therefore, it is an ideal form of good governance that is very hard to achieve in the governance of environmental resources because of the unsymmetrical power relationships among various actors across scales and living in different places. Especially in the case of the developing countries where corruption is rampant, it will take longer time than usual to materialise the concept of "participation parity". Apart from the hydro-hegemony, where the powerful nation demonstrates unfair and inequitable acts regarding the governance of resources, the internal hydro-hegemony prevalent among various actors within a nation also plays a critical role in preventing "participation parity" in becoming a reality.

And lastly, although both distributive and procedural (participation and recognition) forms of injustice are common issues in the governance of resources, this thesis has found that absence of “responsibility and accountability” is another factor that contributes to injustice. It has been found that the linkage of distributive injustice with participation and recognition is evident in the study, as pointed out by Schlosberg (2007). Distributive injustice also links to the responsibility of the actors involved in the governance. Neither the Indian government nor the Nepali government could be fully responsible and accountable to the riverine communities regarding the repair and maintenance works of the infrastructure related to the KRP. The Nepal government allowed people to live in the river islands but did not take sufficient safety measures to protect them. Therefore, “responsibility and accountability” is equally crucial to participation and recognition in defining environmental justice.

9.4 Contributions to Policy and Practice

Based upon the flaws found out in the KRG, this thesis suggests a more inclusive, democratic and comprehensive approach to transboundary river governance. As this study has used an actor-oriented political ecology approach in interrogating the KRG, the contributions that it makes to policy and practice are also actor-oriented. It can aid policy and practice in three ways: the development of policies, strategies and regulations; institutional development and strengthening; and maintaining compliance with the decisions made. These measures will help in resolving the problems that have arisen due to asymmetrical power relationships among various actors at and across various scales and places in the governance process. The ways that help policymakers and other actors in policy and practice are described below.

Firstly, this thesis suggests that there is a need for the development of a comprehensive policy backed by research which allows the governments, especially the weaker ones, like Nepal, to make better decisions regarding transboundary natural resources. The comprehensive policy should basically help the weaker countries in two main aspects. One of them is it should help to make strategies that withstand the dominance of the powerful countries, and the next is it should help to make unanimous decisions among various actors, including political parties, regarding various developmental aspects of the resources. For this, such a mechanism should be developed that

would put all the political parties together while dealing with the international community. This also envisages devising foreign policies based on maximum utilisation of environmental resources for the benefit of the nation. More importantly, it is necessary to back the political decisions regarding the governance of transboundary waters with scientific and systematic research. Lack of detailed information on environmental projects may lead politicians towards making unintentional bad decisions. Thus, evidence-based research will boost governments' capacity in dealing with their powerful counterparts and help them to make better decisions.

Secondly, this thesis demonstrates that there is the need of strengthening the existing government institutions of Nepal so as to solve the problem of the irresponsibility of the stronger actors and increase coordination among the government agencies. It has been shown that the bilateral mechanisms formed to make decisions on various matters related to the KRG have failed to deliver the desired outcome (see section 5.4) due to the compliance problem, especially from the Indian side as noted above. Although there is the provision of arbitration and formation of the Indo-Nepal Koshi Project Commission in the agreement as the alternatives for solving the problems related to the KRP, the issues appear not to have been discussed at that level, and the Commission has not yet been formed. However, there has always been a need for a strong dispute settlement mechanism. As long as the Nepali side is incapable of forcing India to abide by the decisions made in the meetings, it should engage itself in strengthening the capacity of its government agencies - ministries, departments and the advisory body – the Water and Energy Commission. By creating good coordination among the government agencies, all of the agencies should act to achieve the same aim of making the Indian side comply with the decisions made while sitting on the dialogue table. If not, they should be able to demand arbitration or the formation of the commission.

Thirdly, some policy work needs to be done for attaining participation parity, as illustrated in the section above. The three justice dimensions - redistribution, recognition and representation – must be taken seriously by the concerned governments, and they should work towards devising policies that would create justice ethics while working on environmental projects. For this, it is imperative to formulate clear policies that would demoralise the internal hydro-hegemony present within the country before developing any project. Attaining participation parity would also mean bridging the scalar-disconnection particularly between the government agencies and the local people.

Fourthly, this thesis also suggests the formulation of policies that would provide political, economic and technical solutions for comforting the affected riverine communities. The political solution includes the strict implementation of the Land Use policy, which discourages people from living in disaster-vulnerable areas. A political solution should also opt for either providing safety measures to the riverine communities or relocate them to safe locations with better living conditions. Further, the political solution should also ensure active mobilisation of the local government bodies, at least in the disaster preparedness and rescue operations. The economic solution includes providing safe housing and livelihood options for the riverine communities living in vulnerable areas. The technical solution should include an arrangement of early warning systems, safe boats, life jackets, reliable electricity etc. so that they could be safe from immediate dangers of disasters, however, the technical solution should aim at short-term benefits only.

Lastly, this thesis has contributed to enhancing the science-policy interface by the grassroots-nested environmental movement. The thesis has produced evidence-based knowledge regarding the local knowledge. Local knowledge, here, means coping with injustice i.e. the people's voices seeking good governance, as well as environmental justice movements. It has suggested strengthening environmental movements at the grassroots-level by building alliances so that their voices would reach the policymakers. By using the local evidence, this thesis has also introduced an alternative framework of governance, which can inform policymakers in drafting policies addressing the local needs.

9.5 Limitations

While this thesis has covered significant ground describing the governance of the KR, the production of injustice and people's responses to the injustice, there are some limitations in the study.

First, data collection was done during the dry season, so the phenomena of floods, erosion and inundations could not be experienced (see section 4.8). Conversely, it would not have been possible to reach the river islands, Srilanka Tapu and Gobargadha, if the research had been conducted during the rainy season. Besides, it might have been very difficult to meet the respondents as they would be focused on keeping themselves safe from the adverse effects of the

disasters. Despite not getting firsthand experience of floods, the signs of erosion and inundation were still visible.

Second, although the data related to the KRG were collected from the existing and former high-level government officials, I felt that I was not provided with enough data by the government officials (also see section 4.8). The government offices could not provide me with the data on compensation issues citing that the offices did not have such data. Because of this, I had to rely on the documented data provided by the local community organisation members.

Third, the research tools, questionnaires and interview questions used did not interrogate sufficient questions on the KRG. This was because the tools were prepared while I was enrolled in the Department of Political Economy in late 2014 when my research was more related to the local economy of the KR communities. However, conversations in the form of interviews highlighted issues not anticipated, and these interviews changed the focus of my research. My interest was in geography and environment, hence I officially moved to the School of Geosciences from January 2017.

Fourth, this thesis relies more on disaster-data than on irrigation-data, which was noted in section 4.8. To overcome this issue, I had to rely on the interviews with key-informants from both the upstream as well as downstream settlements.

Lastly, this thesis has not taken into account the irrigation and disasters related information from across the border, India. The northern state of Bihar suffers a lot due to the construction of the Koshi embankments because of waterlogging by preventing the natural drainage of water, though flood-disasters are significantly reduced (see Lahiri-Dutt & Samanta, 2013; D'Souza, 2008; Mishra, 1999). The comparative study of flood-disasters and irrigation in both India and Nepal may provide a different picture of the concepts of hydro-hegemony, access to resources and environmental justice movements. It was beyond the scope of this PhD thesis because of the time required for getting permission from the Indian government to conduct the research, the 2015-earthquake in Nepal and the scale of the project (see section 4.8). This current research can be complemented by another study based in India, as part of a move to build a body of literature that presents the complex and multiple perspectives of transboundary water governance in South Asia.

9.6 Suggested Further Research

The thesis also suggests some avenues for future research.

First, this thesis has demonstrated that the redistribution of benefits and harms of the KRG is not equitable because of the asymmetrical power relationships between India and Nepal. However, there are many transboundary-rivers in the world, which cross the boundaries of relatively more and less powerful nations. In such cases, the question of all the components, including PSP and justice components, described in the 3R framework (see section 8.6.1) may be different, which is an important avenue for future research.

One area of further research could be the implications of climate change on the snow-fed river, which this thesis did not consider. Currently, the International Centre for Integrated Mountain Development (ICIMOD) is coordinating a study, the Hindu Kush Himalayan Monitoring and Assessment Programme, which examines the impact of climate change on the glacial cover in the Hindu Kush region (ICIMOD, 2018). The study assesses various rivers of the region, which is relevant for future understanding and planning of the rivers, including the KR. Since climate change has significant impacts on the water flows in the Himalayan rivers, as noted in section 3.3, which eventually affect the roles, rules and relationships, along with redistribution, recognition, representation and responsibility patterns among various actors due to multi-scalar power relationships. Thus, future studies could endeavour to explore the impacts of climate change on the KRG. Further, climate change has different effects on different river basins in the world, so it is also worthwhile to examine the effect of climate change on governance of transboundary-rivers elsewhere.

As this thesis is more focused on the disaster-related data than on irrigation, another avenue for future research would be investigating governance issues related to irrigation. A detailed study of the irrigation dynamics present in the areas irrigated by the Koshi barrage may provide a new dimension on the components of the 3R framework (see section 8.6.1).

Future research could also compare the impacts of the KRG on the local people in both India and Nepal. The current study has studied the impacts of the KRG only on the Nepalese side. There may also be cases where the impacts arise from various transboundary river governance styles. For instance, transboundary rivers may be governed either via mutual agreements between two or more concerned governments or unilateral decisions of the governments. Such studies would help in

understanding water governance approaches in the countries involved, potentially confirming the presence of hydro-hegemony and understanding participation parity.

Another possibility for future research would be to explore the political ecology of TWG in the changed political environment of Nepal, as the country has just moved to a federal structure (see sections 3.2 and 8.6.2). As the governance of the transboundary rivers may be affected by the aspirations and interests of the newly formed state structures, this governance may be a catalyst for inter-state conflicts in future. Further research can also be done on the impact of such inter-state political dynamics of a nation on its international water relationships with other riparian nations.

A future study could also be conducted on the future of the international water agreements based upon the result of the final EPG meeting, as noted in section 5.2.1. Altogether eight meetings have already been carried out, and a final report is expected to be published soon based on all the meetings held. The final report will be an important document for researchers who are conducting studies related to international water agreements, as it is expected to provide new insights into international agreements.

There is also an avenue for future research in terms of the significance of international political border on the governance of transboundary water resources. This study has demonstrated that international border plays an important role in the governance of transboundary water resources in the local context despite having a similar culture across the border. There may be many cases around the world, where there exist similar cultural societies across international borders. Yet, there may be differences in the components of the 3R framework of governance (see section 8.6.1) and resulting impacts. There may also be many cases, where there are vast cultural differences across borders, thus having different governance and impacts. Therefore, studies on such dynamics of international borders would also have a significant contribution in the field of transboundary water governance.

9.7 Final Comments

This thesis has demonstrated that injustices are shaped and sustained by unequal power relationships. Multi-scalar power relationships come into play when there is competition among

actors for gaining control over resources. These relationships are in turn shaped by forces of economy, politics, military, knowledge and information. Uneven access to resources results where and when the powerful actors gain more benefits while the weak lose out. Thus, the examination of micro-politics alone is insufficient to interrogate and understand complex issues related to transboundary environmental governance. Local decision-making processes are shaped by political economic processes at the national and international levels and these forces require critical attention to understand and address local problems.

Power, scale and place are important concepts of political ecology and human geography. These ideas are vital to this thesis. Power asymmetry is the centre of interactions among various actors across multiple scales that define their roles, rules and relationships, and it is both intra and inter-scalar power asymmetries that produce uneven access to resources for the actors involved in the process. Hydro-hegemony at the international scale has long been a major problem in the governance of transboundary water resources, which has continuously shadowed internal hydro-hegemony within a country. It is the internal hydro-hegemony that produces various issues such as scalar disconnection and participation disparity in the governance processes, leading to distributive and procedural injustice for weaker actors. Unless powerful actors and the actors at higher levels are made responsive and responsible to the weaker actors, apart from ensuring recognition and representation of the weaker actors, hydro-hegemony, both international and internal, remains the major challenge in the environmental governance processes. One of the ways to challenge and overcome this hurdle is for the weaker actors to organise and intensify environmental justice movements. For this, the formation of a strong justice movement alliances at various scales, from local to international, is required.

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APPENDICES

Appendix A: Population movement timeline

Year	Incidents
1768-1850s	<p>“After the unification of Nepal in 1768, the Shah rulers encouraged Indian people to settle in the Terai, the lowland plains (Dahal 1983).”^a</p> <p>“In-migration from the south was involuntary; people sought shelter against political persecution and repression by powerful enemies in India (Kansakar 1984).”^a</p> <p>“During the Muslim invasions, Nepal sheltered many Indians who took refuge to avoid being forcefully converted to Islam. Their number was so huge that they encroached upon the fertile lands of the indigenous populations of the Terai and drove them to the slopes of the hills (Kansakar 1984). An analysis of the Nepalese economic history from 1768 to 1846, Regmi ([1972]1999) reports that the local administrators in the Terai were encouraged to import settlers from India.”^a</p>
1862	<p>“In order to develop the newly acquired territory known as <i>Naya Muluk</i> (new territory) for appropriating income for his family members and relatives, Prime Minister Jung Bahadur made provision in the first Civil Code of Nepal in 1862 that foreigners residing in Nepal could purchase and sell land in Nepal. This resulted in large-scale migration of Indian businessmen and entrepreneurs to purchase land in Nepal and was followed by migration of the tillers as well.”^c</p>
1950	<p>“The provision in the Nepal India Treaty of 1950 in the Article VII encouraged large-scale immigration of the Indians into Nepal. The article states, "The Government of India and Nepal agree to grant, on reciprocal basis, to the nationals of one country in the territory of the other the same privilege in the nature of residence, ownership of property, participation in trade and commerce, movement and other privileges of a similar nature." In 1951 after the installation of democracy, a large number of people politically exiled in India and apprehensive of the persecution by the Rana regime returned to Nepal. However, there exists no record of immigration from India. Even the censuses of Nepal from 1911 up to 1952/54 have not collected immigration data.”^c</p>
1942	<p>“In 1942 During World War II when the Japanese overran Burma, large numbers of Nepalese settled in Burma fled into India and Nepal, and in India special camps were established in Motihari, Bihar.”^b</p> <p>“Whelpton (2008: 125) notes: “A disputed number of Indians moved into the Terai, where, before large-scale migration from the Nepalese hills began in the late 1950s, the great majority of the inhabitants were already Indian in language and culture”.”^a</p> <p>“The 1960s saw a massive wave of emigration from the hills into the Terai. During the 1960s, while the population of the hills and mountains increased at around 1-2 percent a year, that of the terai increased by between 3 and 5 percent annually. This was the result, however, not only of immigration from the Nepalese hills but also of a continuing influx from the more densely populated Indian districts to the South.”^b</p>

	<p>“This process of immigration into the Nepalese Terai from both the north and the south continued into the 1970s.”^b</p>
The 1950s	<p>“The eradication of malaria and the implementation of land resettlement programs in the Terai”^a “For example, in 1954, the Rapti Valley Development Plan encouraged the settlement of Tharus in the Chitwan district of the Terai. The Nepal Resettlement Company was set up in 1964 to execute resettlement of people in different parts of the Terai.”^d “Up to the late 1950s, the whole Terai region was then called a Kala Pani (Death Valley) by the hill people ... only since the 1950s, when malaria was eradicated, the terai became an attractive destination.”^a</p> <p>“In Nepal, the Citizenship Act of 1952 declared as a citizen anyone born in Nepal, anyone permanently settled in Nepal with at least one parent born in Nepal or any woman married to a citizen. It also stated that anyone who had resided in Nepal for at least five years could acquire citizenship. But the 1962 constitution was more restrictive and introduced much stricter requirements for naturalisation. The 1952 edition of the Legal Code allowed foreigners to settle on land, pay taxes on it and become landowners; the 1964 Lands Act made citizenship a prerequisite for land ownership. These changes were, undoubtedly, the government’s response to the perceived threat of massive immigration into Nepal from India ... curiously, according to official statistics, the foreign-born population resident in Nepal did not increase between 1961 and 1971.”^b</p> <p>“The natural disasters combined with the resettlement program led to a burst of internal migration from the hill country to the Terai region that is still continuing today (Chauhan, 1971; Gurung, 1980)”^e</p> <p>“Several experts have suggested that Nepal as a whole experienced net immigration during the 1960s and 1970s largely as a result of immigration from India into the Terai but it is impossible to confirm this. What is certain, however, is that immigration from India into the Nepalese Terai continued to take place on an appreciable scale. The annual compound rate of population growth in the Terai between 1971 and 1981 was more than two and a half times of the rest of Nepal. To those actually settling in the Terai, those who emigrate on a temporary or seasonal basis from Indian states to work in agriculture, construction or other sectors in the Nepalese Terai must also be added. The World Bank (1991: 46) has noted that ‘the labour market in the Terai is affected by substantial inflows of Indian labour’ attracted by somewhat higher wages for casual labour and competing with locals seeking work.”^b</p> <p>“Nepali-origin people from Burma because of the Burmese Nationalization Act in 1964;” “About 10000 Bihari Muslims from Bangladesh in around the 1970s;” “A (return) flow of a considerable number of Nepali people who were forced to leave Nagaland and Mizoram in the late 1960s. With few exceptions, these people went to the Terai (Subedi 1991: 84).”^a</p> <p>“During the period of 1961- 81, the Terai experienced a 2.5 times increase in population and a 6.4 times increase in net migration.”^a</p> <p>“Whelpton (2008: 123) reports, “by the 1980s, only 45 percent of Nepal’s population lived in the hills, compared with 60 percent twenty years earlier”^{. a}</p>

The 1990s	<p>“Especially, since 1990, individual labour out-migration from the Terai to urban centres in the country and abroad is an increasing trend.”^a</p> <p>“Out-migration of Nepalese youths to foreign countries increased especially after the restoration of multi-party democracy and liberalisation in 1990.”^a</p>
Population Movement in the Koshi Barrage Construction Area	
The mid-1960s	People from hills started migrating to Prakashpur area (upstream of the barrage)
The late 1960s	Many people displaced from the barrage construction area from the downstream Hanumannagar and Gobargada
1962	<p>“The Koshi Tappu wetland was created after the construction of the Koshi Barrage in 1962 to protect the downstream flood-prone Indian territory of Bihar.”^f</p> <p>“The construction of the dam relied heavily on labour imported from India.”^g Among them, some did not return home. (fieldwork)</p>
1976	“The establishment of the [Koshi Tappu Wildlife] Reserve in 1976 [and expanded in 1979 ^g] resulted in displacement of more than 12,000 people, many of whom lost their land without receiving adequate compensation.” ^f
1980	Flood eroded away a dense settlement from 3 wards of Prakashpur VDC, along with other adjacent VDCs
The 1990s and 2008	Huge floods displaced many people from Gobargada and Hanumannagar VDCs of Saptari District, (including some VDCs in Sunsari District due to a breach of the eastern embankment)
2006	It is believed that many Indian immigrants received Nepalese citizenships after the enactment of the Citizenship Act 2006. This act was enacted prior to the CA election 2008. – The clause 8(4) of the Nepal Citizenship Act 2063 (2006) states, “In the circumstance, where a person could not submit the evidence along with the application as prescribed in Sub-section (1) and (2), the designated authority may award the Nepalese Citizenship Certificate based on the spot investigation and on the basis of identification at the time of spot investigation by at least three persons having obtained Nepalese Citizenship Certificate and residing in the same Ward and are acquainted with the applicant.”

Sources: a. Gartaula & Niehof (2013); b. Seddon (1995); c. Kansakar, V. B. S. (2003); d. Thapliyal, S. (1999); e. Massey et al. (2010); f. ICIMOD and MoFSC (2014); g. Matthew & Upreti (2007)

Appendix B: Governance Issues related to Mahakali and Gandaki Rivers

The Mahakali River is governed by two major treaties: the Sarada Treaty and the Mahakali Treaty. India and Nepal signed their first treaty, the Sarada Treaty, in 1920 during the British rule in India and the autocratic Rana rule in Nepal, for harnessing the waters of the Mahakali River, which is also called the Sarada River in India. The Indian government envisaged the project to solely irrigate the land in the Uttar Pradesh province, the province west of the river, which is clearly stated in the letter written by the then British Resident J. Manners to the then Prime Minister of Nepal - Maharaja Chandra Shamsher Jung Bahadur Rana on 3 May 1916. The need for the treaty arose due to the shifting current of the river and the resulting need for tying the eastern flank of the weir to the higher ground in the Nepalese territory by using afflux bunds in both the upstream and downstream. The treaty included: an exchange of a portion of Nepalese land in the eastern side of the river for constructing the afflux bunds i.e. 4093.88 acres with the equal area of land from India; also, ensuring a certain amount of water flow in the river downstream in the Nepalese territory according to the Sarada Treaty (1920). However, the regulation of water in the barrage is in the hands of India.

Similarly, the Mahakali River around the Tanakpur barrage bordering the western part of Nepal with India is governed by the Mahakali Treaty, which took place in 1996. The treaty envisaged the integrated development of the already existing Sarada Barrage, the then constructed Tanakpur Barrage and the proposed Pancheshwar Project. However, the main intention of the treaty was to construct the eastern or the left afflux bund of the already constructed Tanakpur Barrage unilaterally by India to the high ground in Nepal. For this, Nepal provided about 2.9 hectares of land for the purpose besides 9 hectares of land which also included a part of the poundage area. The treaty also ensures a certain amount of water to Nepal i.e. 1000 cusecs³⁰ during the wet season and 300 cusecs during the dry season. But it does not specify the amount of water that India is entitled to receive from the project. Besides, it also ensures 70 million kilowatt-hours of continuous electricity annually for which the Government of India would construct a 132 kV transmission line up to the India-Nepal border from the power station in India. Apart from constructing the Pancheshwar Multipurpose Project upstream of the Tanakpur barrage, it also ensures 350 cusecs

³⁰ 1 cusec = 1 cubic foot per second

of water for irrigating two VDCs of Nepal across the Mahakali River. But irrigation in the two VDCs has not yet materialised (Bhattarai, 2017a). Besides, the Pancheshwar Project could not move forward smoothly as both India and Nepal were not able to prepare the detailed project report until November 2016 (Ministry of Water Resources, 2018), though it should have been prepared within six months of the effective date of the Mahakali Treaty i.e. 5 June 1997.

After the Koshi Agreement took place in 1954 (which will be discussed in section 3.7), the Gandaki Treaty took place on 4 December 1959 and was later amended on 30 April 1964 with the purpose of irrigating agricultural land and generating hydro-electricity for both the countries. The treaty permitted land to be acquired in Nepal and transferred to the Government of India for constructing a barrage over the Gandaki River. The treaty consisted of constructing a powerhouse with an installed capacity of 15 MW in the Nepalese territory and constructing the Western and the Eastern Nepal Canals and their distribution system that would provide flow irrigation to about 40,000 and 103,500 acres respectively within one year of the completion of the barrage. However, the treaty is silent on the irrigation benefits to India, and it also does not indicate its lifetime. Except for internal irrigation in Nepal, the treaty demands the country to negotiate a different agreement for inter-basin water transfer. Article 6 of the amended treaty clearly states that the project would be operated and managed by the government of India, therefore it is solely governed by India.

Apart from the treaties noted above, there are a few other agreements between the government of Nepal and some national and international private and public institutions that govern some rivers. Currently, there are two agreements with a private as well as a public institution of India for generation and export of electricity that were signed in 2008. The first agreement was with GMR India Limited, a private company for producing electricity and exporting it to India from the power station in the Upper Karnali River, on 24 January 2008. The second agreement took place with Satluj Vidhyut Nigam (SJV), one of the public entities of India, for producing and exporting electricity from the Arun River in Nepal on 2 March 2008. This agreement allows the SJV to produce 402 MW of electricity, out of which Nepal gets 21.9 percent of the monthly generated energy free of cost. Though the agreements took place almost a decade ago, the projects have not actually started yet.

Appendix C: River Agreements

1. Kosi River Agreement - 1954 (Source: Indian Embassy, n.d.)

Agreement on the Kosi Project between Nepal & India, Kathmandu, April 25, 1954.

THIS Agreement made this twenty-fifth day of April 1954, between the Government of the Kingdom of Nepal (hereinafter referred to as the 'Government') and the Government of India (herein after referred to as the 'Union')

WHEREAS the Union is desirous of constructing a barrage, head-works and other appurtenant work [s] about 3 miles upstream of Hanuman Nagar town on the Kosi River with afflux and flood banks, canals and protective works, on land lying within the territories of Nepal, for the purpose of flood control, irrigation, generation of hydroelectric power and prevention of erosion of Nepal areas on the right side of the river, upstream of the barrage (hereinafter has referred to as the 'Project');

AND WHEREAS the Government has agree to the construction of the said barrage, head-works and other connected works by and a the cost of the Union, in consideration of the benefits hereinafter appearing;

1. Now the parties agree as follows:

(i) The barrage will be located about 8 miles upstream of Hanuman Nagar town.

(ii) Details of the Project - The general layout of the barrage, the areas within afflux bank, flood embankments and the lines of communications are shown in the plan annexed to this agreement as Annexure A1.

(iii) For the purpose of clauses 3 and 8 of the agreement, the land under the ponded areas and boundaries as indicated by the plan specified in sub-clauses (ii) above, shall be deemed to be submerged.

2. Preliminary Investigations and Surveys

(i) The Government shall authorise and give necessary facilities to the canal and other officers of the Union or other persons acting under the general or special orders of such officers to enter upon such lands as necessary with such men, animals, vehicles, equipment, plant, machinery and instruments as necessary and undertake such surveys and investigations required in

connection with the said Project before, during and after the construction, as may be found necessary from time to time by the Chief Engineer, Public Works Department (Kosi Project) in the Irrigation Branch of the Bihar Government. These surveys and investigations will comprise aerial and ground surveys, hydraulic, hydrometric, hydrological and geological surveys including construction of drillholes for surface and sub-surface explorations; investigations for communications and for materials of construction; and all other surveys and investigations necessary for the proper design, construction and maintenance of the barrage and all its connected works mentioned under the Project.

(ii) The Government will also authorise and give necessary facilities for investigations of storage or detention dams on the Kosi or its tributaries, soil conservation measures such as check dams, afforestation, etc., required for a complete solution of the Kosi problem in the future.

3. Authority for Execution of Works and Occupation of Land and other Property.

(i) The Government will authorise the Union to proceed with the execution of the said Project as and when the Project or a part of the Project receives sanction of the said Union and notice has been given by the Union to the Government of its intention to commence work on the Project and shall permit access by the engineer(s) and all other officers, servants and nominees of the Union with such men, animals, vehicles, plants, machinery, equipment and instruments as may be necessary for the direction and execution of the project to all such lands and places and shall permit the occupation, for such period as may be necessary of all such lands and places as may be required for the proper execution of the Project.

(ii) The land required for the purposes mentioned in the clause 3(i) above shall be acquired by the Government and compensation thereof shall be paid by the Union in accordance with provisions of clause 8 hereof.

(iii) The Government will authorise officers of the Union to enter on land outside the limits or boundaries of the barrage and its connected works in case of any accident happening or being apprehended to any of the said works and to execute all works which may be necessary for the purpose of repairing or preventing such accident: compensation, in every case, shall be tendered by the Union to the proprietors or the occupiers of the said land for all damages done to the same through the Government in order that compensation may be awarded in accordance with clause 8 hereof.

(iv) The Government will permit the Union to quarry the construction materials required for the Project from the various deposits as Chatra, Dharan Bazar or other places in Nepal.

4. Use of water and power

(i). Without prejudice to the right of Government to withdraw for irrigation or any other purpose in Nepal such supplies of water, as may be required from time to time, the Union will have the

right to regulate all the supplies in the Kosi River power at the Barrage site in to generate power at the same site for the purpose of the Project.

(iii) The Government shall be entitled to use up to 50 percent of the hydro-electric power generated at the Barrage site Power House on payment of such tariff rates as may be fixed for the sale of power by the Union in consultation with the Government.

5. Sovereignty and Jurisdiction

The Union shall be the owner of all lands acquired by the Government under the provisions of clauses 3 hereof which shall be transferred by them to the Union and of all water rights secured to it under clause 4 (i)

Provided that the sovereignty rights and territorial jurisdiction of the Government in respect of such lands shall continue unimpaired by such transfer.

6. Royalties

(i) The Government will receive royalty in respect of power generated and utilized in the Indian Union at rates to be settled by agreement hereafter. Provided that on royalty will be paid on the power sold to Nepal.

(ii) The Government shall be entitled to receive payment of royalties from the Union in respect of stone, gravel and ballast obtained from the Nepal territory and used in the construction and future maintenance of the barrage and other connected works at rates to be settled by agreement hereafter.

(iii) The Union shall be at liberty to use and remove clay, sand and soil without let or hindrance from lands acquired by the Government and transferred to the Union.

(iv) Use the timber from Nepal forests, required for the construction shall be permitted on payment of compensation.

Provided to compensation will be payable to the Government for such quantities of timber as may be decided upon by the Government and the Union to be necessary for use on the spurs or other training works required for the prevention of caving and erosion of the right bank in Nepal.

Provided likewise that no compensation will be payable by the Union for any timber obtained from the forest lands acquired by the Government and transferred to the Union.

7. Customs Duties

The Government shall charge no customs duty or duty of any kind during construction and subsequent maintenance, on any articles or materials required for the purpose of the project and the work connected therewith or for the bona fide use of the Union.

8. Compensation for Land and Property

(i) For assessing the compensation to be awarded by the Union to the Government in cash

(a) lands required for the execution of the various works as mentioned in clause 3(ii) and

(b) submerged lands, will be divided into the following classes:

1. Cultivated lands

2. Forest lands

3. Village lands and houses and other immovable property standing on them.

4. Waste lands (i) All lands recorded in the register of lands in the territory of Nepal as actually cultivated shall be deemed to be cultivated lands for the purposes of this clause.

(ii) The Union shall pay compensation

(a) to the Government for the loss of land revenue as at the time of acquisition in respect of the area acquired and

(b) to whomsoever it may be due for the Project and transferred to the Union.

(iii) The assessment of such compensation, and the manner of payment shall be determined hereafter by mutual agreement between the Government and the Union.

(iv) All lands required for the purposes of the project shall be jointly measured by the duly authorised officers of the Government and the Union respectively.

9. Communications

(i) The Government agrees that the Union may construct and maintain roads, tramways, ropeways etc. required for the Project in Nepal and shall provide land for these purposes on payment of compensation as provided in clause 8.

(ii) Subject to the territorial jurisdiction of the Government the ownership and the control of the metalled roads, tramways, and railway shall vest in the Union. The roads will be essentially departmental roads of the irrigation Department of the Union and any concession in regard to their use by commercial and non-commercial vehicles of Nepal shall not be deemed to confer any right of way.

(iii) The Government agreed to permit, on the same terms as for other users, the use of all roads, waterways and other avenues of transport and communication in Nepal for bona fide purposes of the construction and maintenance of the barrage and other connected works.

(iv) The bridge over Hanuman Nagar Barrage will be open to public traffic but the Union shall have the right to close the traffic over the bridge for repairs, etc.

(v) The Government agrees to permit the use of telephone and telegraph in the project area to authorised servants of the Government for business in emergencies provided such use does not in any way interfere with the construction and operation of Projects.

10. Use of River Craft

All navigation rights in the KosiRiver in Nepal will rest with the Government. The use of watercraft like boat launches and timbe rafts within two mils of the Barrage and headworks shall not be allowed except by special licence under special permits to be issued by the Executive Engineer, Barrage. Any unauthorised watercraft found within this limit shall be liable to prosecution.

11. Fishing Rights

All the fishing rights in the KosiRiver in Nepal except within two miles of the Barrage shall vest in the Government of Nepal. No fishing will be permitted within two miles of the Barrage and Headworks.

12. Use of Nepali labour

The union shall give preference to Nepali labour, personnel and contractors to the extent available and in its opinion suitable for the construction of the Project but shall be at liberty to import labour of all classes to the extent necessary.

13. Administration of the Project Areas in Nepal

The Union shall carry out inside the Project areas in the territory of Nepal functions such as the establishment and administration of schools, hospitals, provision of water-supply and electricity, drainage, tramway lines and other civic amenities.

14. The Government shall be responsible for the maintenance of laws and order in the Project areas within the territory of Nepal. The Government and Union shall, from time to time consider and make suitable arrangements calculated to achieve the above object.

15. If so desired by the Union, the Government agrees to establish special court or courts in the Project area to ensure expeditions disposal of cases arising within the Project area. The Union shall bear the cost involved in the establishment of such courts, if the Government so desires.

16. Future Kosi Control Works

If further investigations indicate the necessity of storage or detention dams and other soil conservation measures on the Kosi and its tributaries, the Government agree to grant their consent to them on conditions similar to those mentioned herein.

17. Arbitration

If any question, differences or objections whatever shall arise in any way, connected with or arising out of this agreement or the meaning or operation of any part thereof or the rights, duties or liabilities of either party, except as to decisions of any such matter as therein before otherwise provided for, every such matter shall be referred for arbitration to two persons-one to be appointed by the Government and the other by the Union-whose decision shall be final and binding, provided that in the event of disagreement between the two arbitrators, they shall refer the matter under dispute for decision to an umpire to be jointly appointed by the two arbitrators before entering on the reference.

18. This agreement shall be deemed to come into force with effect from the date of signatures of the authorised representatives of the Government and the Union. respectively.

IN WITNESS WHEREOF the undersigned being duly authorised thereto by their respective Governments have signed the present agreement. DONE at Kathmandu, in duplicate, this twentyfifth day of April 1954.

Government

Sd/-

GULZARILAL NANDA

For the Government of India.

Sd/-

MAHABIR SHUMSHER

For the Government of Nepal

COORDINATION COMMITTEE FOR KOSI PROJECT

1. Whereas it is considered desirable to establish a forum for discussion of problems of common interest and in order to expedite decisions for the early completion of the Kosi Project, it is agreed between the Union of India and the Government of Nepal to set up a Co-ordination Committee. The Committee will consist of three representatives from each country to be nominated by the respective Governments. It is further agreed that the Chairman of the Committee will be a Minister of the Government of Nepal and the Secretary will be the Administrator of the Kosi Project. The Committee will consider such matters of common interest concerning the project including land acquisition, rehabilitation of displaced population maintenance of law and order, soil conservation measures and such other items as may be referred to the Committee for consideration by the Government of Nepal or the Union from time to time.
2. The Committee shall meet as and when necessary at Kathmandu or at the barrage site or such other /place a may be necessary at the discretion of the Committee.
3. Travelling allowance for the journeys undertaken by the Committee shall be met by the Union according to normal rates in the Union. All other expenditure on staff, etc., of the Committee will be met by the Union

2. [Koshi River Agreement – 1966](#) (Source: Ministry of Energy, Water Resources and Irrigation of Nepal, n.d.)

Revised Agreement
between
His Majesty's Government of Nepal
and
The Government of India on
The Koshi Project

**MINISTRY OF WATER AND POWER H.
M. G., DURBAR MARGA, KATHMANDU,
NEPAL**

1975

AMENDED AGREEMENT BETWEEN HIS MAJESTY'S GOVERNMENT OF NEPAL (HEREINAFTER REFERED TO AS "HMG") AND THE GOVERNMENT OF INDIA (HEREINAFTER REFERRED TO AS THE "UNION") CONCERNING THE KOSI PROJECT.

WHEREAS the Union was desirous of constructing a barrage, headworks and other appurtenant works about three miles upstream of Hanuman Nagar town on the Kosi River with afflux and flood banks, and canals and protective works on land lying within the territories of Nepal for the purpose of flood control, irrigation, generation of hydro-electric power and prevention of erosion of Nepal areas on the right side of the river, upstream of the barrage (hereinafter referred to as the 'Project')

And Whereas HMG agreed to the construction of the said barrage, headworks and other connected works by and at the cost of the Union, in consideration of the benefits arising therefrom and a formal document incorporating the terms of the Agreement was brought into existence on the

25th April, 1954 and was given effect to;

And Whereas in pursuance of the said Agreement various works in respect of the Project have been completed by the Union while others are in various stages of completion for which HMG has agreed to afford necessary facilities:

And Whereas HMG has suggested revision of the said Agreement in order to meet the requirements of the changed circumstances, and the Union, with a view to maintaining friendship and good relation subsisting between Nepal and India, has agreed to the revision of Agreement.

Now, THEREFORE, THE PARTIES AGREE AS FOLLOWS:

-

1. Details of the Project: -

- (i) The barrage is located about 3 miles upstream of Hanuman Nagar town.
- (ii) The general layout of the barrage, the areas within afflux banks, flood embankments, and other protective works, canals, power house and the lines of communication are shown in the amended plan annexed to this agreement as Amended Annexure-A.
- (iii) Any construction and other undertaking by the Union in connection with this Project shall be planned and carried out in consultation with HMG,

Provided that such works and undertakings which, pursuant to any provision of this Agreement require the prior approval of HNG shall not be started without such prior approval;

And further provided that in situation described in Clause 3 (iii) and Clause 3 (iv) intimation to HNG shall be sufficient.

- (iv) For the purpose of Clauses 3 and 8 of this Agreement the land under the ponded areas and boundaries as indicated by the plan specified in sub-clause (ii) above, shall be deemed to be submerged.

2. Investigations and Surveys: -

- (i) Whenever the Chief Engineer of Kosi Project, Government of Bihar may consider any survey or investigation to be required in connection with the said project, HMG shall, if and in so far as HMG has approved such survey or investigation, authorise and give necessary facilities to the concerned officers of the Union or other persons acting under the general or special orders of such officers to enter upon such land as necessary with such men, animals, vehicles, equipment, plant, machinery and instruments as necessary to undertake such surveys and investigations. Such surveys and investigations may comprise aerial and ground surveys, hydraulic, hydrometric, hydrological and geological surveys including construction of drill holes for surface and subsurface exploration, investigations for communications and for materials of construction; and all other surveys and investigations necessary for the proper design, construction and maintenance of the barrage and all its connected works mentioned under the Project. However, investigations and surveys necessary for the general maintenance and operation of the project, inside the project area, may be done by the Union after due intimation to HNG.

In this Agreement, the "Project Area" shall mean the area acquired for the project.

- (ii) The provisions of sub-clause (i) of this clause shall also apply to surveys and investigations of storage dams or detention dams on the Kosi, soil conservation measures, such as check dams, afforestation, etc., required for a complete solution of the Kosi problems in the future.
- (iii) The surveys and investigations referred to in sub clauses (i) and (ii) shall be carried in co-operation with HMG.
- (iv) All data, specimens, reports and other results of surveys and investigations carried out by or on behalf of the Union in Nepal pursuant to the provisions on this clause, shall be made available to HMG freely and without delay. In turn, HMG shall, upon request by the Union, make available to the Union all data, maps, specimens, reports and other results of surveys and investigations carried out by or on behalf of HMG in Nepal in respect of the Kosi river.

3. Authority for execution of works and use of land and other property:

-

- (i) Provided that any major construction work not envisaged in the amended plan (Amended Annexure- A) referred to in clause 1 (ii) shall require the prior approval of HMG, HMG shall authorise the Union to proceed with the execution of the said project as and when the project or a part of the project receives sanction of the said Union and notice has been given by the Union to HMG of its intention to commence work on the respective constructions and shall permit access by the Engineer and all other officers, servants, and nominees of the Union, with such men, animals, vehicles, plant, machinery, equipment and instruments as may be necessary for the direction and execution of the respective constructions, to all such lands and places, and shall permit the occupation, for such period as may be necessary, of all such lands and places as may be required for the proper execution of the respective constructions.

- (ii) The land required for the purposes mentioned in clause 3 (i) above shall be acquired by HMG and compensation therefor shall be paid by the Union in accordance with the provisions of clause 8 hereof.
- (iii) HMG shall, upon prior notification, authorise officers of the Union to enter on land outside the limits of boundaries of the barrage and its connected works in case of any accident happening or being apprehended to any of the said works and to execute all works which may be necessary for the purpose of repairing or preventing such damage. Compensation, in every case, shall be tendered by the Union through HMG to the owners of the said land for all accidents done to the same in order that compensation may be awarded in accordance with clause 8 hereof.
- (iv) HMG will permit the Union to quarry the construction materials required for the project from the various deposits at Chatra, Dharan Bazar or other places in Nepal.

4. Use of water and power: -

- (i) HMG shall have every right to withdraw for irrigation and for any other purpose in Nepal water from the Kosi river and from the Sun-Kosi river or within the Kosi basin from any other tributaries of the Kosi river as may be required from time to time. The Union shall have the right to regulate all the balance of supplies in the Kosi river at the barrage site thus available from time to time and to generate power in the Eastern Canal.
- (ii) HMG shall be entitled to obtain for use in Nepal any portion up to 50 percent of the total hydro-electric power generated by any Power House situated within a 10- mile radius from the barrage site and constructed by or on behalf of the Union, as HMG shall from time to time determine and communicate to the Union:

Provided that :-

HMG shall communicate to the Union any increase or decrease in the required power supply exceeding 6,800 KW at least three months in advance:

- (iii) If any power to be supplied to Nepal pursuant to the provisions of this sub-clause is generated in a power house located in Indian territory, the Union shall construct the necessary transmission line or lines to such points at the Nepal – Indian border as shall be mutually agreed upon.
- (iv) The tariff rates for electricity to be supplied to Nepal pursuant to the provisions of this clause shall be fixed by mutual agreement.

5. Lease of the Project areas: -

- (i) All the lands acquired by HMG under the provisions of clause 3 hereof as of the date of signing of these amendments shall be leased by HMG to the Union for a period of 199 years from the date of the signing of these amendments at an annual Nominal Rate.
- (ii) The rent and other terms and conditions on which lands for Western Kosi Canal shall be leased by HMG to the Union pursuant to this Agreement shall be similar to those as under sub- clause (i).
- (iii) The rent and other terms and conditions of any other land to be leased by HMG to the Union pursuant to this Agreement shall be fixed by mutual agreement.
- (iv) At the request of the Union, HMG may grant renewal of the leases referred to in sub-clauses (i), (ii) and (iii) on such terms and conditions as may be mutually agreed upon.
- (v) The sovereignty rights and territorial jurisdiction of HMG, including the application and enforcement of the law of Nepal on and in respect of the leased land shall continue un- impaired by such lease.

6. Royalties: -

- (i) HMG will receive royalty in respect to power generated and utilised in the Indian Union at rates to be settled by agreement hereafter:

Provided that no royalty will be paid on the power sold to Nepal.

- (ii) HMG shall be entitled to receive payment of royalties from the Union in respect of stone, gravel and ballast obtained from Nepal territory and used in the construction and future maintenance of the barrage and other connected works at rates to be settled by agreement hereafter.
- (iii) The Union shall be at liberty to use and remove clay, sand and soil without let or hindrance from lands leased by HMG to the Union.
- (iv) Use of timber from Nepal forests, required for the construction, shall be permitted on payment of compensation. Provided that no compensation will be payable to HMG for such quantities of timber as may be agreed upon by HMG and the Union to be necessary for use on the spurs or other river training works required for the prevention of caving and erosion of the right bank in Nepal.

Provided likewise that no compensation will be payable by the Union for any timber obtained from the forest lands leased by HMG to the Union.

7. Customs Duties: -

HMG shall charge no customs duty or duty of any kind, during construction and subsequent maintenance, on any articles and materials required for the purpose of the Project and the work connected therewith.

8. Compensation for land and property and for land revenue: -

- (i) For assessing the compensation to be awarded by the Union to HMG in cash-
 - (a) Lands required for the execution of various works as mentioned in clause 3 (ii) and clause 9(i); and
 - (b) Submerged lands, will be divided into the following classes: -
 - 1. Cultivated lands,
 - 2. Forest lands,
 - 3. Village lands and houses and other immovable property standing on them.
 - 4. Waste lands.

All lands recorded in the register of lands in the territory of Nepal as actually cultivated shall be deemed to be cultivated lands for the purpose of this clause.

- (ii) The Union shall pay compensation-
 - (a) to HMG for the loss of land revenue as at the time of acquisition in respect of the area acquired, and
 - (b) to whomsoever it may be due for the lands, houses and other immovable property acquired for the Project and leased to the Union.

The assessment of such compensation and the manner of payment shall be determined hereafter by mutual agreement between HMG and the Union.

- (iii) All lands required for the purposes of the Project shall be jointly measured by the duly authorised officers of HMG and the Union respectively.

9. Communications: -

- (i) HMG agrees that the Union may construct and maintain roads, tramways, railways, ropeways, etc., required for the project in Nepal and shall provide land for these purposes on payment of compensation as provided in Clause 8. Provided that the construction of any roads, tramways, railways, ropeways, etc., outside the Project area shall require the Prior approval of HMG.
- (ii) Any restrictions, required in the interest of construction, maintenance and proper operation of Project, regarding the use of the roads, etc., referred to in sub-clause (i) by commercial or Private vehicles may be mutually agreed upon. In case of threatened breach or erosion of the structures on account of the river, the officers of the Project may restrict public traffic under intimation to HMG.
- (iii) HMG agrees to permit, on the same terms as for other users, the use of all roads, waterways and other avenues of transport and communication in Nepal for bona fide Purposes of the construction and maintenance of the barrage and other connected works.
- (iv) The bridge over Hanuman Nagar shall be open to public traffic. With prior approval of HMG., the Union shall have the right to close the traffic over the bridge temporarily if and in so far as required for technical or safety reasons. In such cases, the Union shall take all measures required for the most expeditious reopening of the bridge.
- (v) HMG agrees to permit installation of telegraph, telephone and radio communications of the bona fide purposes of the construction and maintenance of the project:

Provided that Union shall agree to the withdrawal of such facilities which HMG may in this respect provide in future.

Further provided that the Union agrees to permit the use of internal telephone and telegraph in the Project area to authorised servants of HMG for business in emergencies provided such use does not in any way interfere with the construction and operation of the Project.

10. Navigation rights: -

All navigation rights in the Kosi River in Nepal shall rest with HMG. Provision shall be made for suitable arrangements at or around the site of the barrage for free and unrestricted navigation in the Kosi River, if technically feasible. However, the use of any water-craft like boats, launches and timber rafts within two miles of the barrage and headworks shall not be allowed on grounds of safety, except by special permits to be issued by the competent authority of HMG in consultation with the executive Engineer, Barrage. Any unauthorised water-craft found within this limit shall be liable to prosecution.

11. Fishing rights: -

All the fishing right in the Kosi River in Nepal shall continue to rest with HMG. However, no fishing shall be permitted within two miles of the barrage and headworks except under special permits to be issued by the competent authority of HMG in consultation with the Executive Engineer, Barrage. While issuing the special permits within two miles, HMG shall keep in view the safety of the headworks and the permit-holders.

12. Use of Nepali labour: -

The Union shall give preference to Nepali labour, personnel and contractors to the extent available and in its opinion suitable for the construction of the Project but shall be at liberty to import labour of all classes to the extent necessary.

13. Civic Amenities in the Project Area: -

Subject to the prior approval of HMG, the Union may, in the project area, establish schools, hospitals, water-supply systems, electric supply systems, drainage and other civic amenities for the duration of the construction of the project. On completion of construction of the projects, any such civic amenities shall, upon request by HMG, be transferred to HMG, and that, in any case, all functions of public administration shall, pursuant to the provisions of clause 5(v) be exercised by HMG.

14. Arbitration: -

- (i) Any dispute or difference arising out of or in any way touching or concerning the construction, effect or meaning of this Agreement, or of any matter contained herein or the respective rights and liabilities of the parties hereunder, if not settled by discussion shall be determined in accordance with the provisions of this clause.
- (ii) Any of the parties may by notice in writing inform the other party of its intention to refer to arbitration any such dispute or difference mentioned in sub-clause (i); and within 90 days of the delivery of such notice, each of the two parties shall nominate an arbitrator for jointly determining such dispute or difference and the award of the arbitrators shall be binding on the parties.
- (iii) In case the arbitrators are unable to agree, the parties hereto may consult each other and appoint an Umpire whose award shall be final and binding on them.

15. Establishment of Indo-Nepal Kosi Project Commission: -

- (i) For the discussion of problems of common interest in connection with the project and for purposes of co-ordination and co-operation between the two Governments with regard to any matter covered in this agreement, the two Government shall at an early date establish a joint

'Indo-Nepal Kosi Project Commission.'" The rules for the composition, jurisdiction, etc., of the said Commission shall be mutually agreed upon.

(ii) Until the said Joint Commission shall be constituted the "Co-ordination Committee for the Kosi Project" shall continue to function as follows: -

(a) The committee shall consist of four representatives from each country to be nominated by the respective Governments.

(b) The Chairman of the committee shall be a Minister of HMG, and the Secretary shall be the Administrator of the Kosi Project.

(c) The committee shall consider among others such matters of common interest concerning the Project as land acquisition by HMG for lease to the Union, rehabilitation of displaced population, maintenance of law and order.

(iii) As soon as the said joint Commission shall be constituted, the Co-ordination Committee for the Kosi Project shall be dissolved.

16. (i) This present Agreement shall come into force from the date of signatures of the authorised representatives of HMG and the Union respectively and thereafter, it shall remain valid for a period of 199 years.

(ii) This present Agreement shall supersede the Agreement signed between the Government of Nepal and the Government of India on the 25th April 1954 on the Kosi Project.

In Witness Whereof the undersigned being duly authorised thereto by their respective Governments have signed the present Amended Agreement.

Done at Katmandu, in quadruplicate, this day, the 19th of December 1966.

For the Government of India-
SHIRMAN NARAYAN,
Ambassador of India

For His Majesty's Government of Nepal-
Y. P. PANT,
Secretary, Ministry of Economic
Planning and Finance in Nepal

1. Approval from the Human Research Ethics Committee (HREC)



Research Integrity
Human Research Ethics Committee

Tuesday, 2 December 2014

Dr Elizabeth Hill
Political Economy; Faculty of Arts and Social Sciences
Email: elizabeth.hill@sydney.edu.au

Dear Elizabeth

I am pleased to inform you that the University of Sydney Human Research Ethics Committee (HREC) has approved your project entitled “**Political Economy of Livelihood Strategies around the Koshi River: A Study in Eastern Terai Region of Nepal and the Neighbouring State of India**”.

Details of the approval are as follows:

Project No.: 2014/879
Approval Date: 1 December 2014
First Annual Report Due: 1 December 2015
Authorised Personnel: Hill Elizabeth; Maharjan Kiran;

Documents Approved:

Date Uploaded	Type	Document Name
14/10/2014	Interview Questions	Check-list for Interview/Oral History
14/10/2014	Interview Questions	Check-list for Key Informant Interview
14/10/2014	Participant Consent Form	Participant Consent Form for Interview
16/11/2014	Participant Info Statement	Revised PIS for Interview
16/11/2014	Participant Info Statement	Revised PIS for Survey
14/10/2014	Questionnaires/Surveys	Questionnaire for Survey

HREC approval is valid for four (4) years from the approval date stated in this letter and is granted pending the following conditions being met:

Special Condition/s of Approval

- It will be a condition of final approval that independently certified translations of the public documents are provided either from a NAATI-certified translator or from a suitably qualified person accompanied by a statutory declaration certifying the documents as a true and accurate of the English version. These can be provided after the English versions have been approved. A statutory declaration form can be found at <http://www.ag.gov.au/STATDEC>. These documents can be provided once the final English versions are approved.

Condition/s of Approval

- Continuing compliance with the National Statement on Ethical Conduct in Research Involving Humans.

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ABN 15 211 513 464
CRICOS 00026A



- Provision of an annual report on this research to the Human Research Ethics Committee from the approval date and at the completion of the study. Failure to submit reports will result in withdrawal of ethics approval for the project.
- All serious and unexpected adverse events should be reported to the HREC within 72 hours.
- All unforeseen events that might affect continued ethical acceptability of the project should be reported to the HREC as soon as possible.
- Any changes to the project including changes to research personnel must be approved by the HREC before the research project can proceed.
- Note that for student research projects, a copy of this letter must be included in the candidate's thesis.

Chief Investigator / Supervisor's responsibilities:

1. You must retain copies of all signed Consent Forms (if applicable) and provide these to the HREC on request.
2. It is your responsibility to provide a copy of this letter to any internal/external granting agencies if requested.

Please do not hesitate to contact Research Integrity (Human Ethics) should you require further information or clarification.

Yours sincerely

**Professor Glen Davis
Chair
Human Research Ethics Committee**

This HREC is constituted and operates in accordance with the National Health and Medical Research Council's (NHMRC) National Statement on Ethical Conduct in Human Research (2007), NHMRC and Universities Australia Australian Code for the Responsible Conduct of Research (2007) and the CPMP/ICH Note for Guidance on Good Clinical Practice.

2. Participant Information Statement for Survey



**Department of Political
Economy School of Social and
Political Sciences Faculty of Arts
and Social Sciences**

ABN 15 211 513 464

Dr. ELIZABETH HILL
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Honours Programme Co-ordinator*

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*Political Economy of Livelihood Strategies around the Koshi River: A Study in Eastern
Terai
Region of Nepal and the Neighbouring State of India*

PARTICIPANT INFORMATION STATEMENT FOR SURVEY¹

(1) What is this study about?

You are invited to take part in a research study about daily activities, floods in the Koshi River and disasters, effect of dam in the river, migration, people across the border, their daily activities and their relationship with you.

Your participation is very much important in completing this study and in drawing conclusion that may contribute to national or local level policies. This Participant Information Statement tells you about the research study. Knowing what is involved will help you decide if you want to take part in the study. Please read this sheet carefully and ask questions about anything that you don't understand or want to know more about.

Participation in this research study is voluntary. So it's up to you whether you wish to take part or not.

By giving consent to take part in this study you are telling us that you:
Understand what you have read
Agree to take part in the research study as outlined below
Agree to the use of your personal information as described.

You will be given a copy of this Participant Information Statement to keep.

(2) Who is running the study?

Mr. Kiran Maharjan is conducting this study as the basis for the degree of Doctor of Philosophy at The University of Sydney. This will take place under the supervision of Dr. Elizabeth Hill.

¹ Version 1 [14/11/2014]

(3) What will the study involve for me?

- If you agree to participate in this study, the researcher will arrange a meeting with you. During this meeting, the researcher will ask you questions from a questionnaire.
- The questions are about daily activities, floods in the Koshi River and disasters, effect of dam in the river, migration, people across the border, their daily activities and their relationship with you.
- Some of the questions may be sensitive to you and you might feel uncomfortable to answer them. You do not need to answer if you do not want.
- The interview will be held at a mutually agreed location in a separate place.

(4) How much of my time will the study take?

The interview will last for approximately 60-90 minutes. If this time is not sufficient to cover all the questions, you will be asked to extend the time or attend a second interview if possible.

(5) Do I have to be in the study? Can I withdraw from the study once I've started?

Being in this study is completely voluntary and you do not have to take part. Your decision whether to participate will not affect your current or future relationship with the researchers or anyone else at the University of Sydney.

If you decide to take part in the study and then change your mind later, you are free to withdraw at any time. You can do this by telling the researcher involved that you do not want to participate anymore.

You are free to stop the interview at any time. Unless you say that you want us to keep them, any recordings will be erased and the information you have provided will not be included in the study results. You may also refuse to answer any questions that you do not wish to answer during the interview.

(6) Are there any risks or costs associated with being in the study?

Aside from giving up your time, we do not expect that there will be any risks or costs associated with taking part in this study.

(7) Are there any benefits associated with being in the study?

We cannot guarantee or promise that you will receive any direct benefits from being in the study.

(8) What will happen to information about me that is collected during the study?

You will be asked if you are willing to disclose your identity. If you do not want, your confidentiality is guaranteed. In cases where you are, you will be given the opportunity to indicate if you wish any parts of the information not to be attributed to you. Confidentiality is guaranteed in such cases as well.

The filled questionnaires will be kept safe in a safe locker for 7 years. These can be only accessed by the researchers involved in this project. After 7 years, these questionnaires will be shredded into pieces.

The data may be published in the form of a thesis, journal publications, conference presentations, and reports to agencies and organizations. The data collected will be only used for this project.

By providing your consent, you are agreeing to us collecting personal information about you for the purposes of this research study. Your information will only be used for the purposes outlined in this Participant Information Statement, unless you consent otherwise.

Your information will be stored securely and your identity/information will only be disclosed with your permission, except as required by law. Study findings may be published, but you will not be identified in these publications unless you agree to this using the tick box on the consent form.

(9) Can I tell other people about the study?

Yes, you are welcome to tell other people about the study.

(10) What if I would like further information about the study?

When you have read this information, Kiran Maharjan will be available to discuss it with you further and answer any questions you may have. If you would like to know more at any stage during the study, please feel free to contact Kiran Maharjan, PhD Candidate via phone: 9841417355 or via email: kmah2420@uni.sydney.edu.au.

(11) Will I be told the results of the study?

You have a right to receive feedback about the overall results of this study. You can tell us that you wish to receive feedback by ticking the relevant box on the consent form. This feedback will be in the form of a one page summary. You will receive this feedback after the study is finished.

(12) What if I have a complaint or any concerns about the study?

Research involving humans in Australia is reviewed by an independent group of people called a Human Research Ethics Committee (HREC). The ethical aspects of this study have been approved by the HREC of the University of Sydney [2014/879]. As part of this process, we have agreed to carry out the study according to the *National Statement on Ethical Conduct in Human Research (2007)*. This statement has been developed to protect people who agree to take part in research studies.

If you are concerned about the way this study is being conducted or you wish to make a complaint to someone independent from the study, please contact the university using the details outlined below. Please quote the study title and protocol number.

The Manager, Ethics Administration, University of Sydney:

- ☐ **Telephone:** +61 2 8627 8176
- ☐ **Email:** ro.humanethics@sydney.edu.au
- ☐ **Fax:** +61 2 8627 8177 (Facsimile)

This information sheet is for you to keep

3. Participant Information Statement for Interviews



ABN 15 211 513 464

**Department of Political
Economy School of Social and
Political Sciences Faculty of Arts
and Social Sciences**

Dr. ELIZABETH HILL
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Honours Programme Co-ordinator*

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*Political Economy of Livelihood Strategies around the Koshi River: A Study in Eastern
Terai
Region of Nepal and the Neighbouring State of India*

PARTICIPANT INFORMATION STATEMENT FOR IN-DEPTH INTERVIEW/ORAL HISTORY¹

(1) What is this study about?

As you have already taken part in the household survey, you were invited to tell about your daily activities, floods in the Koshi River and disasters, effect of the dam in the river, migration, people across the border, their daily activities and their relationship with you. Your information has been found interesting. Therefore, you are again invited here to take part in this study for providing more information on the previously discussed issues.

Your participation is very much important for completing this study and drawing conclusion that may contribute to national or local level policies. This Participant Information Statement tells you about the research study. Knowing what is involved will help you decide if you want to take part in the study. Please read this sheet carefully and ask questions about anything that you don't understand or want to know more about.

Participation in this research study is voluntary. So it's up to you whether you wish to take part or not.

By giving consent to take part in this study you are telling us that you:
Understand what you have read
Agree to take part in the research study as outlined below
Agree to the use of your personal information as described.

You will be given a copy of this Participant Information Statement to keep.

¹ Version 1 [14/11/2014]

(2) Who is running the study?

Mr. Kiran Maharjan is conducting this study as the basis for the degree of Doctor of Philosophy at The University of Sydney. This will take place under the supervision of Dr. Elizabeth Hill.

(3) What will the study involve for me?

- In this session, you will be asked to attend an in-depth interview for about 60-90 minutes to discuss more on the issues that we discussed in our previous meeting. This time, you will be asked to tell your stories on those issues. The information that you provided in the previous meeting is very much interesting and important for this study.
- If you agree to participate in this study, the researcher will arrange a meeting with you. During this meeting, the researcher will ask you questions related to the issues mentioned above.
- The discussion will be audio-recorded with your consent.
- Some of the questions may be sensitive to you and you might feel uncomfortable to answer them. You do not need to answer if you do not want. You can just skip them.
- The interview will be held at a mutually agreed location, where privacy can be ensured.

(4) How much of my time will the study take?

The interview will last for approximately 60-90 minutes. If this time is not sufficient to cover all the questions, you will be asked to extend the time or attend a second interview if possible.

(5) Do I have to be in the study? Can I withdraw from the study once I've started?

Being in this study is completely voluntary and you do not have to take part. Your decision whether to participate will not affect your current or future relationship with the researchers or anyone else at the University of Sydney.

If you decide to take part in the study and then change your mind later, you are free to withdraw at any time. You can do this by telling the researcher involved that you do not want to participate anymore.

You are free to stop the interview at any time. Unless you say that you want us to keep them, any recordings will be erased and the information you have provided will not be included in the study results. You may also refuse to answer any questions that you do not wish to answer during the interview.

(6) Are there any risks or costs associated with being in the study?

There is possibility of psychological trauma while discussing any potentially traumatic experiences, which is a very low-level risk and will be mitigated by quick termination of the interview if you feel distressed.

You may have negative feelings or discomfort when talked about people across the border. You are welcome to tell your feelings during the interview. However, the purpose of the issues that will be discussed here is not to make you aggressive. In case, if you feel discomfort in answering such questions, you can skip answering them. Response would be sought for the next question, which is not related to the issue.

Aside from giving up your time, we do not expect that there will be any risks or costs associated with taking part in this study.

(7) Are there any benefits associated with being in the study?

We cannot guarantee or promise that you will receive any direct benefits from being in the study.

(8) What will happen to information about me that is collected during the study?

You will be asked if you are willing to disclose your identity. If you do not want, your confidentiality is guaranteed. In cases where you are, you will be given the opportunity to indicate if you wish any parts of the information not to be attributed to you. Confidentiality is guaranteed in such cases as well.

The audio-recordings will be kept safe in a password protected computer and then transcribed. The transcriptions will also be kept in the password protected computer for 7 years. These can be only accessed by the researchers involved in this project. After 7 years, both the audio-recordings and transcriptions will be erased from the computer.

The data may be published in the form of a thesis, journal publications, conference presentations, and reports to agencies and organizations. The data collected will be only used for this project.

By providing your consent, you are agreeing to us collecting personal information about you for the purposes of this research study. Your information will only be used for the purposes outlined in this Participant Information Statement, unless you consent otherwise.

Your information will be stored securely and your identity/information will only be disclosed with your permission, except as required by law. Study findings may be published, but you will not be identified in these publications unless you agree to this using the tick box on the consent form.

(9) Can I tell other people about the study?

Yes, you are welcome to tell other people about the study.

(10) What if I would like further information about the study?

When you have read this information, Kiran Maharjan will be available to discuss it with you further and answer any questions you may have. If you would like to know more at any stage during the study, please feel free to contact Kiran Maharjan, PhD Candidate via phone: 9841417355 or via email: kmah2420@uni.sydney.edu.au .

(11) Will I be told the results of the study?

You have a right to receive feedback about the overall results of this study. You can tell us that you wish to receive feedback by ticking the relevant box on the consent form. This feedback will be in the form of a one page lay summary. You will receive this feedback after the study is finished.

(12) What if I have a complaint or any concerns about the study?

Research involving humans in Australia is reviewed by an independent group of people called a Human Research Ethics Committee (HREC). The ethical aspects of this study have been approved by the HREC of the University of Sydney [2014/879]. As part of this process, we have agreed to carry out the study according to the *National Statement on Ethical Conduct in Human Research (2007)*. This statement has been developed to protect people who agree to take part in research studies.

If you are concerned about the way this study is being conducted or you wish to make a complaint to someone independent from the study, please contact the university using the details outlined below. Please quote the study title and protocol number.

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This information sheet is for you to keep

4. Participant Consent Form



**Department of Political Economy
School of Social and Political Sciences
Faculty of Arts and Social Sciences**

ABN 15 211 513 464

Dr. ELIZABETH HILL
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Honours Programme Co-ordinator*

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*Political Economy of Livelihood Strategies around the Koshi River: A Study in Eastern Terai
Region of Nepal and the Neighbouring State of India*

PARTICIPANT CONSENT FORM FOR IN-DEPTH INTERVIEW/ORAL HISTORY

I, [PRINT NAME], agree to take part in this research study.

In giving my consent I state that:

- ✓ I have understood the purpose of the study, what I will be asked to do, and any risks/benefits involved.
- ✓ I have read the Participant Information Statement and have been able to discuss my involvement in the study with the researchers if I wished to do so.
- ✓ The researchers have answered any questions that I had about the study and I am happy with the answers.
- ✓ I understand that being in this study is completely voluntary and I do not have to take part. My decision whether to be in the study will not affect my relationship with the researchers or anyone else at the University of Sydney now or in the future.
- ✓ I understand that I can withdraw from the study at any time.
- ✓ I understand that I may stop the interview at any time if I do not wish to continue, and that unless I indicate otherwise any recordings will then be erased and the information provided will not be included in the study. I also understand that I may refuse to answer any questions I don't wish to answer.
- ✓ I understand that personal information about me that is collected over the course of this project will be stored securely and will only be used for purposes that I have

agreed to. I understand that information about me will only be told to others with my permission, except as required by law.

✓ I understand that the results of this study may be published, but these publications will not contain my name or any identifiable information about me unless I consent to being identified using the “Yes” checkbox below.

Yes, I am happy to be identified.

No, I don't want to be identified. Please keep my identity anonymous.

I consent to:

- **Audio-recording** YES NO
- **Receiving feedback** YES NO

If you answered **YES to Receiving feedback**, please provide following details:

Postal: _____

Email: _____

Signature:

Name:

Date:

5. Checklist for Interviews (Oral History)

A Check-list for In-depth Interview

General Information on the Village

- What kinds of difficulties do you face being belonging to a specific caste or ethnicity?
- How often do you participate in decision making processes at the village level?
- What challenges are there for you being a woman here in the village?
- How difficult is it for you to receive the facilities provided by the government? (such as education, health, financial institutions etc.)

Flood Dynamics in the Koshi River

- How did you get affected by floods? What were the reasons behind?
- Why did not you move to safer places though you have been affected by floods before?
- What kinds of damages are made when floods occur?
- What do you do at times of floods?
- What measures do you take in coping with floods?
- How do you feel when monsoon starts?

Livelihood Strategies of People

- How is the current job?
- How did you get this job? Is it sufficient for you?
- Why did you leave your previous job?
- How did you get the previous job?
- What happened to your job/employment after the flood?
- Why is not this job sufficient for you to stay safe from flood?
- What else do you do when you are affected by floods?
- In case of indebtedness after floods, how would you pay back the money?
- How would you be able to take care of your cultivated land after floods?

Dam in the River and Its Relation to Flood Disasters and People

- How has the dam in the river affected flood disasters?
- What was the scenario before the dam construction (if you know)?
- How has the dam construction affected the relationship between the people across the border?

Migration

- Why did you (your family member) migrate to?
- Why did you select to go to this destination?
- How did you find the job at your (family member) new destination? Did anybody help you (your family member) to find job there?
- What are the challenges that you (your family member) face at your new destination?
- How do you (your family member) find the local people there?
- How do they perceive you (your family member) in their locality?
- What were the difficulties that you (your family member) faced while crossing the border?
- How badly are you (your family member) treated by the locals there at times of floods?

Socio-Political Capital

- What kinds of support do you get from the organizations in which you are a member? (at other times and at times of disasters)
- Who else is helping you in facing the disasters? How?
- What do you do with your friends, relatives, other known people, political leaders, reputed people etc. when you face flood disasters?
- Have you ever lost your opportunity to receive something that others got through their own channels?
- How did the political party/leader help you at times of floods?

6. Checklist for Key-informant Interviews

A Check-list for Key Informant Interview

General Information on the Village

- What is the composition of the population in the village in terms of origin, caste, and ethnicity?
- How is the situation of relationship of caste and ethnicity among people? Any discriminatory practices being practised there?
- What are the gender roles in the village?
- What kinds of work do women do out of home? And what kinds of work inside home?
- How well-off people reside in the village?
- What type of land do most people cultivate here?
- How is the development scenario of the village? (about infrastructure, education, health, agriculture, financial institutions, social networks etc.)

Flood Dynamics in the Koshi River

- How often is flood noticed in this village/area?
- How severe are the floods in the river?
- Which part of the village is most affected and how?
- Which group (class/caste/ethnicity/gender) of people are mostly affected by floods? How?
- How are people affected by floods in overall?
- Why do people stay in such flood-prone areas? Do people know that the village is flood-prone before coming here?
- What are the after-effects of floods in people here?
- What do most people do at times of floods in order to cope with them?
- What measure does the community take in response to floods to cope with it?

Livelihood Strategies of People

- What are the major forms of occupation of people here?
- How do people get employed here?
- How safe are the jobs for people in terms of coping with floods?
- What are the scenarios of jobs after flood disasters?
- How often do people change their jobs?
- How is the agricultural production scenario here? How is the food security situation here?

Political Scenario

- How is the influence of politic parties here?
- Which political parties are active here? And what are the positive notes about them?
- Which political parties won the last election and the previous election?

Migration

- What is the migration scenario of this village?
- How often do people migrate to other places?
- Do people also migrate to India/Nepal from here? What are the reasons behind in selecting the destinations?
- How often do people migrate from here due to flood reasons?

Trans-boundary Issues Related to Floods

- What are the people's perceptions about India/Nepal regarding the floods in the river?
- How often do the blockage of the borders occur for any reasons related to floods?
- Have there been any fights/violence against Indian/Nepali people who have been staying here for work?
- How do people perceive the relation between India and Nepal?

7. Questionnaire for Household Survey
Questionnaire for Household Survey

Date of Interview:

Place of Interview:

Oral Consent (in case of illiterate participants):

I. GENERAL DEMOGRAPHIC INFORMATION OF RESPONDENT

1. General Information

Name	Sex		Age	Caste/Ethnicity
	M	F		

2. Current Address:

District:.....

VDC:

Ward No:

Village:.....

3. How long have you been living here?

.....

4. Which religion do you practice?

(i) Hinduism

(ii) Buddhism

(iii) Islam

(iv) Christianity

(v) Other (specify) _____

5. Marital status:

(a) Married

(b) Widowed

(c) Divorced

(d) Separated

(e) Single (never married)

(g) Other (specify) _____

6. Family Size:

(a) Less than five ()

(b) Five to ten ()

(c) More than ten ()

7. Composition of Household:

Name	Relationship to Household Head	Sex	Age	Marital Status	Level of Education Attained*

*Key:

- (a) Illiterate (Unable to read and write)[IL]
- (b) Literate (Just able to read and write)[LI]
- (c) Attended Primary School [PS]
- (d) Attended Secondary School [SS]
- (e) Attended Higher Secondary School [HS]
- (f) Attended College/University, specify.....

8. If you left your study or did not attend any schools, what were the reasons behind them?

- (a) Financial reasons (no money to study)
- (b) Had to work (earn money for family)
- (c) Had to help at household works
- (d) Had to take care of siblings
- (e) Didn't want to study
- (f) Others, specify.....

9. How many households are away (sex/age) at the moment?

10. If any of your children left the study, what is/are the reason/s behind leaving?

- (a) Could not afford
- (b) Had to work at home
- (c) Didn't like to study
- (d) Other reasons (specify).....

II. INFORMATION ON LIVELIHOOD STRATEGIES AND ECONOMIC CONDITIONS

1. How many family members earn in your household?

2. How many are dependent?

3. What kinds of works do your household members do?

S.N.	Types of Work	No. of Household Members		For how long? (hrs.)					
				Morning		Day		Evening	
		Male	Female	M	F	M	F	M	F
(a)	Agriculture (on own land)								
(b)	Agricultural wage labour								
(c)	Non-agricultural wage labour								
(d)	Animal-rearing (poultry, cows, goats et(c))								
(e)	Share-cropping								
(f)	Informal Sector services (petty trade, selling vegetable/fruit)								
(g)	Service sector (health, education, banking)								
(h)	Non/Government work								
(i)	Domestic worker								
(j)	Unemployed								
(k)	Self-employed								
(l)	Across the border (in India/Nepal)								
(m)	Foreign Employment								
(n)	Other (specify)								

4. What are the sources of income for your household? (Rank them) What is the average cash income per source per day/month?

S.N.	Types of Work	Rank	Average Income (per day/month)		Place of work (where?)
			Male	Female	
(a)	Agriculture (on own land)				
(b)	Agricultural wage labour				
(c)	Non-agricultural wage labour				
(d)	Animal-rearing (poultry, cows, goats et(c))				
(e)	Share-cropping				
(f)	Informal Sector services (petty trade, selling vegetable/fruit)				
(g)	Service sector (health, education, banking)				
(h)	Non/Government work				
(i)	Domestic worker				
(j)	Unemployed				
(k)	Self-employed				
(l)	Across the border (in India/Nepal)				
(m)	Foreign Employment				
(n)	Other (specify)				

5. What is your family income per month? NRs. _____

(i) Is this income sufficient for your monthly consumption needs?

(a) Yes

(b) No

(ii) If the income is not sufficient to cover up your expenses, what do you do?

(Can select more than one)

(a) Use savings

(b) Borrow from relatives (specify who _____)

(c) Borrow from friends (specify who _____ neighbors et(c))

(d) Mortgage assets (jewelry, animals, household articles et(c))

(e) Borrow from a money-lender

(f) Take loan from cooperatives

(h) Take loan from bank

(i) Other (specify) _____

6. Did you borrow money in the last months/years from anybody?

(a) Yes

(b) No

(i) If yes, for what reasons?

Specify.....

(ii) What is the interest rate?

Specify.....

7. Job Distribution within the Household

S.N.	Tasks	Who does?	Who decides?	How often?
1	Cooking			
2	Grooming (cleaning)			
3	Fetching water			
4	Caretaking (Children, elderly)			
5	Shopping (grocery, clothes)			
6	Administrative money issues			
7	Religious activities			
8	Paying bills (e.g. electricity, telephone etc.) (physical)			
9	Dealing with guests			
10	Dealing with outsiders			
11	Farming			

8. Do you own any land?

(a) Yes

(b) No

(i) If yes, how much land do you cultivate?..... *Bigaha/Kaththa*

(ii) What is the mode of cultivation?

(a) Contract

(b) Sharecropping

10. Is the agricultural production sufficient for the whole year?

a) Yes

b) No

- If not, for how many months is it sufficient? State.....

11. (*For displaced/migrated*)

(i) Did your family own any land at your previous residence?

(a) Yes

(b) No

(ii) If yes, how much land?*Bigaha/Kaththa*

(iii) What has happened to the land when you got displaced/migrated?

(a) Flooded away

(b) Sold land before leaving

(c) Left unattended while fleeing

(d) Given to others for cultivation (*Adhiya*

et(c))

(e) Other (specify)_____

12. Do you use any forest products for your household?

(a) Yes

(b) No

- If yes, what products do you use?

(a) Timber

(b) Firewood

(c) Fodder for livestock

(d) others

(specify).....

13. Assets owned by the household:

Assets	No.	Since when?
(a) Radio/TV		
(b) Bicycle/Motorbike		
(c) Computer		
(d) Mobile phone		
(e) Vehicle		
(f) Other (specify)		

14. Do you have access to the following facilities?

Amenities/Facilities	Yes	No	Since when?	Mostly used for?
Drinking water				
Electricity				
TV channel				
Internet				
Insurance				
Others				

15. Do you own livestock?

(a) Yes ()

(b) No ()

- If yes,

S.N.	Types of Livestock	Number	Purpose (milk, meat et(c))
1	Cows (milk)		
2	Cow (Draught)		
3	Buffalo		
4	Oxen/Bulls		
5	Goat		
6	Poultry		
7	Pigs		
8	Others		

16. Have you ever migrated temporarily in search of work?

(a) Yes

(b) No

(i) If yes, when?

(ii) For how long?.....months/years

(ii) Where?

(a) Within Nepal (specify) (b) India

(specify).....

(c) The Middle East (specify) (d) Elsewhere (specify)
.....

17. Are you a member of any community-level organizations?

(a) Yes (b) No

(i) If yes, what kind of organization are you a member of? (can select more than one)

- (a) a savings and credit group (b) a microfinance project
- (c) a Mother's Group/Club (d) an income-generation scheme
- (e) a political party (f) an I/NGO
- (g) Other (specify).....

(ii) What was the reason for you to become a member of that organization?
(mention).....

18. Are you a member affiliated to any political party?

(a) Yes (b) No

19. How much help do you get from political parties?

- (a) Very much (b) Required help
- (c) Less (d) Very less
- (e) Not at all

20. Which political party do you think will help you when you are in trouble?
(mention).....

21. Do you know any local or district or national level political leader?

(a) Yes (b) No

22. Does he/she help you when you need?

(a) Yes (b) No

III. INFORMATION ON FLOOD DYNAMICS

1. How often do you notice floods in the Koshi River? (mention).....

2. How have you (your family) been affected by floods in the River? (more than one may apply)

- | | |
|----------------------------|---------------------------|
| (a) Took life | (b) Left homeless |
| (c) House partly damaged | (d) Land flooded away |
| (e) Livestock flooded away | (f) Others (specify)..... |

3. How many times have you been affected by floods?

- | | |
|----------|--------------------|
| (a) Once | (b) More than once |
|----------|--------------------|

4. Do you think that the dam constructed is the cause of flood disasters?

- | | |
|---------|--------|
| (a) Yes | (b) No |
|---------|--------|

5. Do you ever feel that the dam constructed in the river has affected the relationship between the people across the border?

- | | |
|---------|--------|
| (a) Yes | (b) No |
|---------|--------|

6. Have you (your family) been displaced by floods or migrated here due to flood disasters?

- | | | | |
|---------|---------------|---------------|--------|
| (a) Yes | (i) Displaced | (ii) Migrated | (b) No |
|---------|---------------|---------------|--------|

- If yes,

(i) When did you come here?days/months/years ago

(ii) How many times have you been displaced or migrated due to floods?times

(iii) Original locations:

- | | |
|--------------------|---------------------|
| (a) Village | (b) VDC |
| (c) District | (d) Town/City |

(iv) Has anybody from your household migrated elsewhere?

- | | |
|---------|--------|
| (a) Yes | (b) No |
|---------|--------|

- If yes, where?

- (a) Within Nepal
 - (b) to India
 - (c) to Gulf Countries
 - (d) Elsewhere (specify):
-

- If migrated to India, what are the main reasons for selecting India as the destination?
- (a) In search of a job
- (b) Others (specify).....

7. Who helped you at the time of disasters?

- (a) Government institutions
- (b) Army/Police
- (c) Community members
- (d) I/NGO
- (e) Friends
- (f) Relatives
- (g) Political parties
- (h) Political party leaders
- (i) Other (specify)

8. Do you know (have relation with) any reputed persons or political party leaders inside and outside your village?

- (a) Yes
- (b) No

If yes, did they help you at that time?

- (a) Yes
- (b) No

IV. INFORMATION ON TRANSBOUNDARY ISSUES

1. Do many people from here cross the border in search of work?
 - (a) Yes
 - (b) No
2. Have flood disasters caused people to cross the border?
 - (a) Yes
 - (b) No
3. Have people ever been blocked to cross the borders due to floods?
 - (a) Yes
 - (b) No

If yes, what were the reasons for blocking them?
(mention).....

4. How do you find the working conditions there?
 - (a) Very good
 - (b) Good

- (c) It's OK
- (d) Bad
- (e) Worst

What does that mean? (mention).....

5. How do the local people there treat you?
- (a) Very good
 - (b) Good
 - (c) It's OK
 - (d) Bad
 - (e) Worst

What does that mean? (mention).....

6. Have there ever been any fight or violence in between Indians and Nepalis for any reasons?
- (a) Yes
 - (b) No

If yes, what were the reasons? (mention).....

7. Do you specifically remember any incidents that happened there in between Indians and Nepalis due to floods in the Koshi River?
- (a) Yes
 - (b) No

If yes, what had happened? (mention).....

8. Do any people from the other side of the border come here in search of jobs?
- (a) Yes
 - (b) No

9. Have you seen any change in the flow of these people at times of floods?
- (a) Yes
 - (b)

10. How do you find them working here?
- (b) Very good
 - (b) Good
 - (d) It's OK
 - (d) Bad
 - (f) Worst

What does that mean? (mention)

11. Have you noticed any kinds of fights or violence between Indians and Nepalis here?
- (a) Yes
 - (b) No

If yes, what were the reasons for that?

12. Do you specifically remember any incidents that happened here in between Indians and Nepalis due to floods in the Koshi River?
- (a) Yes
 - (b) No

If yes, what had happened? (mention).....

13. Did you notice any sentiment in people against India/Nepal for the flood disasters?

(a) Yes

(b) No

If yes, what were the reasons for such sentiments? (mention).....

Observe for: Types of the house they live; Kitchen garden; Distance from motorable road

8. Human Ethics: Modification

[2014/879] Human Ethics: Modification outcome_Change in Personnel

Human Ethics <human.ethics@sydney.edu.au>

Fri, Feb 3, 2017 at 10:50 AM To:

[Philip Mcmanus](mailto:phil.mcmanus@sydney.edu.au) <phil.mcmanus@sydney.edu.au>, "kmah2420@uni.sydney.edu.au"

<kmah2420@uni.sydney.edu.au>

Dear Prof McManus

Project Title: Political Ecology of Water Governance in South Asia: A Case Study of the Koshi River Communities

Project number: 2014/879

Modification Outcome-Change in Personnel

Thank you for submitting a Modification form to add/remove investigators for the above project. Your request has been processed and the changes approved.

The current approved researchers are as follows:

Name	Role	Department
Prof McManus, Philip	Chief Investigator	Geosciences, Faculty of Science, USyd
Mr Maharjan, Kiran	PhD Student	Political Economy, Faculty of Arts and Social Sciences, USyd

Please contact us if you have any queries or if there is an error in the above list.

Regards,
The Ethics Office

Research Integrity & Ethics Administration | Research Portfolio

THE UNIVERSITY OF SYDNEY

Level 2 Margaret Telfer Building (K07) | The University of Sydney | NSW | 2006

T +61 2 9036 9161 | E human.ethics@sydney.edu.au | W <http://sydney.edu.au/ethics>

9. Human Ethics: Annual or Completion Report Outcome

[2014/879] Human Ethics: Annual or completion report outcome

Human Ethics <human.ethics@sydney.edu.au> Wed, Aug 30, 2017 at 10:14 AM To:
Philip Mcmanus <phil.mcmanus@sydney.edu.au>, "kmah2420@uni.sydney.edu.au"
<kmah2420@uni.sydney.edu.au>

Dear Prof McManus,

Project Title: Political Ecology of Water Governance in South Asia: A Case Study of the Koshi
River
Communities
Project number: 2014/879

Annual/Completion report outcome

A completion report for the above project was submitted.

Your form has been processed and the ethics approval for your study has now been closed.

You are reminded of your obligations for data management and storage of research data which are guided by the University's Research Code of Conduct and the State Records Act. Please notify the [Ethics Office](#) if your data management plan has changed from that which was approved by the ethics committee.

Thank you for updating us on the status of your project. Please retain a copy of this email with your study records.

Regards,
The Ethics Office

Research Integrity & Ethics Administration | Research Portfolio
THE UNIVERSITY OF SYDNEY
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Appendix E: Other Occupations

Apart from the occupations mentioned above, there are also some occupations of the people that they have been pursuing sustaining their lives. This sub-section presents some of the occupations that are not that popular but are important for some people (figure E.1).

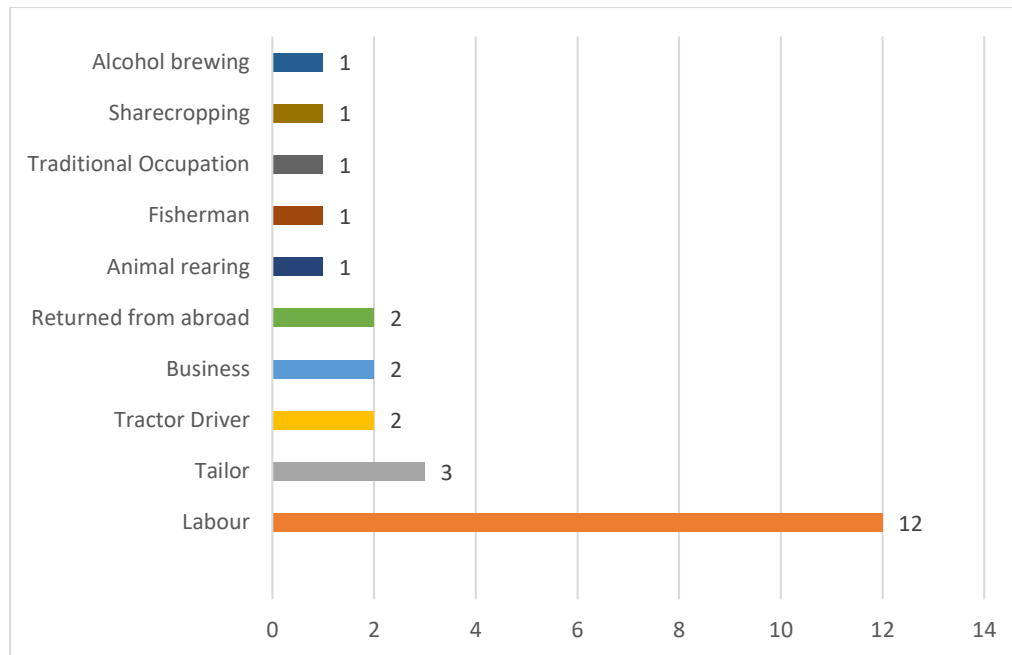


Figure E.1: Secondary Occupation of some of the Respondents

Some households, mainly from the Madhesi community in Srilanka Tapu, are engaged in rearing cattle. This is because of the availability of open land and grass for the cattle on the island. They have a high number of cattle compared to the people of the Hill origin, who have mostly a pair of oxen and a buffalo. The purpose of raising oxen is solely for ploughing fields and buffaloes are for milk.

I have 22 buffaloes and 30 cows. ... I earn about NRs. 400,000 per year by selling cattle and milk. I get about NRs. 25-30,000 for a cow while I get NRs. 60-70,000 for a buffalo. This is because cow milk is not as popular as buffalo milk here. Cow milk costs NRs. 40 per litre while buffalo milk is NRs. 60 per litre. Contractors come here for milk. (Anonymous male, aged 61-65 years, Srilanka Tapu)

I sell ice-cream. I benefit more from selling ice-cream. I earn about NRs. 30-40,000 per month. It's already been 6-7 years that I have been doing this work. ... My wife also does it. (Anonymous male, aged 36-40 years, Bahunikhola)

Apart from doing other occupations, many people also sell their agricultural produce in the local market. The market is known as *hatiya* and is open once a week on every Saturday afternoon (see Photograph E.1). People from the (Prakashpur) village, Srilanka Tapu and the surroundings sell the surplus of their agricultural produce. Because of the *hatiya*, Saturday afternoons look like festivals in the Prakashpur market area. The people from Srilanka Tapu also buy their household necessities for the week so that they do not have to cross the river for their groceries on other days unless they have an urgent need to visit Prakashpur for other reasons.



Photograph E.1: Hatiya market in Prakashpur

My elder son is a farmer. He has taken some land on lease. ... I sell vegetables in *hatiya* for my living. It was very easy when we were in Bandandapari. ... I have also taken a piece of land from the school on lease for over 20 years. I need to pay 1 quintal paddy per year for the land

as it is in a deep area and filled with water most of the time. (Anonymous male, aged 61-65 years, Prakashpur)

Similar to the upstream settlements, the people living in the downstream settlements also organise *hatiya* but on every Wednesday (see Photograph E.2 and E.3). In it, the people from Hanumannagar, Gobargadha, Jogniya, Baluwatar and the surroundings sell their agricultural produce along with fish, ornamental items for women, garments and clothes and various other items. For the people from Gobargadha, the *hatiya* is the main market for their agricultural produce and is also the main market from where they buy necessities for their households for a week. Even the people from Baluwatar have not left taking part in the *hatiya* as they say that it is still the main market for them; and it is also the occasion in which they get the chance to meet their relatives and friends from Gobargadha, Joginiya and Hanumannagar once a week.



Photograph E.2: *Hatiya* market in Hanumannagar



Photograph E.3: People purchasing their necessities in the Hatiya market in Hanumannagar

We used to produce 200 to 300 maund of rice when our 2 Bigaha [public] land in Tappu [Srilanka Tapu] were not eroded away. Now only a small piece is left that is just enough to build a small house, so we have been living at my parent's house since last 5 years. If my parents tell us to leave, there is no choice. Both my husband and I fish every day and sell in the bazaar and *hatiya*. We earn NRs. 200 per day by doing this work. Our life is very hard now. We don't have land to cultivate. If we do not work, we will die of hunger. (Anonymous female aged 25-30 years, Hanumannagar)