

**HYDRO-POWER PROJECTS INDUCED DISPLACEMENT IN  
EASTERN HIMALAYAS: A COMPARATIVE STUDY OF  
BHUTAN AND SIKKIM**

*Thesis submitted to Jawaharlal Nehru University*

*for the award of the degree of*

**DOCTOR OF PHILOSOPHY**

**CHUNKU BHUTIA**



**CENTRE FOR SOUTH ASIAN STUDIES  
SCHOOL OF INTERNATIONAL STUDIES  
JAWAHARLAL NEHRU UNIVERSITY  
NEW DELHI- 110067**

**2017**



Centre for South Asian Studies  
School Of International Studies  
JAWAHARLAL NERHU UNIVERSITY  
New Delhi-110 067

Tel.: +91-1126704350

Date: 6/09/2017

**DECLARATION**

I declare that the thesis entitled "Hydro- Power Projects Induced Displacement in Eastern Himalayas: A Comparative Study of Bhutan and Sikkim" submitted by me for the award of the degree of **Doctor of Philosophy** of Jawaharlal Nehru University is my own work. The thesis has not been submitted for any other degree of this University or any other University.

CHUNKU BHUTIA

**CERTIFICATE**

We recommend that this thesis be placed before the examiners for evaluation.

Prof. Rajesh S. Kharat

(CHAIRPERSON, CSAS)

अध्यक्ष / Chairperson  
श्रीमान राजेश सहाय किराट  
Centre for South Asian Studies  
आंतराष्ट्रीय अध्ययन संस्थान  
School of International Studies  
जवाहरलाल नेहरू विश्वविद्यालय  
Jawaharlal Nehru University  
नई दिल्ली-110067 / New Delhi-110067

Prof. Rajesh S. Kharat

(SUPERVISOR)

सहपाठक/सुपरवाइजर अध्यक्ष संस्था  
Centre for South, Asian Studies  
आंतराष्ट्रीय अध्ययन संस्थान  
School of International Studies  
जवाहरलाल नेहरू विश्वविद्यालय  
Jawaharlal Nehru University  
नई दिल्ली-110067  
New Delhi-110067

*DEDICATED TO EVERY GIRL WHO BELIEVES IN HERSELF...IF I CAN..EVEN YOU  
CAN...MOVE ON.....*

## ACKNOWLEDGEMENT

*Finally I have reached the stage where I can write the acknowledgement for my Ph. D thesis..indeed a blissful moment. First of all Congratulations to myself for having finally achieved it BUT ofcourse the journey from being a Junior Research Scholar (JR) to Senior Research Scholar (SR) would have been unachievable if my guide Prof. Rajesh S. Kharat would not have retained his faith in me. Sir, you always helped me push my boundaries further thereby helping me to unearth the best version of me...**Dhanyavad Guruji.** Shall always remain **Abhari..***

Token of thankfulness to the beautiful part of my life "MY FAMILY"...the unbeatable "PHEMPU"s." **Abala and Amala „kadingche"** for being such impeccable parents. **Tashidelek** to both of you for a successful parenthood, as my achievement is a reflection of both mine and your efforts. Once again, Thank you to both of you for believing in me and for taking care of me.."**Kadingchita Phama**" as someone has said "**behind every independent girl stands an open-minded parents who trusted her not the society.**" Thank you for shaping me into what I am today.

To both my Aielas **Ms. Sonam Norden Bhutia and Dr. Tshering Doma Bhutia..** Thank you BOTH for irritating me while I was going crazy with my work but at the end I need to admit both of you are my „role models." Remember „cherry on the cake"..finally *I deserve to be one..* Thank you to both of you for annoying me but at the same time for being my inspiration and soulmate.

Ofcourse, a self- less member of my family..my **Akula Tenzing Chopel Bhutia..**oh my C.C. Bhutia (Call Centre Bhutia) **Thujeche Akula** for being there relentlessly.**Azhyang Lamala kadingche** for all your support and prayers. **Aku Lamala Yusal Bhutia** thank you for helping me out in arranging interviews for the research work and for your prayers too. I would also like to convey my thujeche to **Agya Lama Chopel Bhutia** (cousin) for always saying „yes" to all my request and wishes while I was

going crazy with my work. I would also like to extend my thankfulness to the twin cousin **Palden Bhutia** and **Palzor Bhutia** for taking care of our home and family when I was stuck with my work. Thank you both for taking care of everything.

**Thujeche Kuenchoshum** for blessing me with such beautiful family and for your benign presence in my life.

Gratitude and thankfulness to **Maa"m Dr. Genevive Syangbo** and **Mr. Karma S. Bhutia Sir** for helping me out during my field work. I need to admit that the field work would have never actualized without your support.

I would also like to express immense respect and gratitude to all the respondents of my field work and special mention to **Ms. Sumit Lepcha**, my friend (Phako) who accompanied me in my field work in Dzongu, North Sikkim. Thank you Dear for never saying „no“ when I needed you the most. I would also like to express my heartiest thankfulness to **Ms. Ishita Manna** (Ph.D. scholar) of CSRD, JNU for helping out in the generation of maps from the Digital Elevation Model data. I would also like to thank **Mr. Tshering Thendup Bhutia**, Deptt. of Ecclesiastical Affairs, Govt. of Sikkim for providing me with the photos of the Buddhist text. Thank you to **Dr. Tsewang Gyatso** (cousin) for always encouraging me.

Last but not the least, Thank you **Jawaharlal Nehru University**, you taught me so many things in so many ways. **Prof. Tseten Namgyal** for sharing with me hot cups of green tea along with your encouraging words and my friends (esp. **Babeena**) on campus and also outside who contributed in my life in various ways.

‘Kuencho Sum thujeche’...  
‘Semchen Thamchen La Phembar Sho’

Chunku Bhutia

## PREFACE

South Asia is one of the most populous region in the world and it is covered by four physical sub-regions: the high Himalayan mountains in the north, the expansive Indus-Ganges lowland which out to the delta lands of Bangladesh from Pakistan, Indian peninsular and the islands Srilanka and Maldives. The region as such includes eight countries namely India, Bhutan, Bangladesh, Nepal, Pakistan, Sri Lanka, Afghanistan and Maldives. The agglomeration of such energy potential countries makes South Asia a highly energy rich region.

Within the region, it is the Eastern Himalayan belt comprising of countries like Bhutan, Nepal (southern, western and central) and the Indian states like Sikkim, Arunachal Pradesh and Darjeeling district of West Bengal that possess huge hydro- power potentialities. The exploration and the unruly usage of the resources of the Eastern Himalayan states with special reference to Bhutan and Sikkim, for hydropower generation has unfolded several crucial issues which would be the focus of the study, like for instance the ecological fragility of the Eastern Himalayan belt, climate change, risk to human security in the form of displacement, the role of the international agencies in the belt and the aggressive intrusion of the neighboring country China in the hydropower activities of the Eastern Himalayan belt.

The issues concerning development has been analyzed through various theories by Rostow's, Herbert Spencer and many such other theorists. Similarly, the hydropower projects and its consequences has been analyzed with the theory by Thayer Scudder and Elizabeth Colson in 1952 and Micheal Cernea.

Further, the analysis of the activities of hydropower projects in the Eastern Himalayan belt would also require an analysis of the core issues like displacement, rehabilitation and resettlement and climate change. So, these issues have been focused upon in the research work. Displacement has been understood as the process of expropriation of land and other assets in order to allow a project to proceed for the overall social good. Displacement is not just about physical eviction from a dwelling rather it also involves the

expropriation of the productive lands and other assets to make possible an alternative use of the space. On the other hand, displacement could also involve only the loss of assets but not necessarily lead to physical eviction. This brings forth the issue of resettlement and rehabilitation. The former referring to merely physical relocation and the latter referring to the restoration of lost economic and social abilities. In the context of the Bhutan and Sikkim, the displacement caused due to the hydropower projects has been witnessed more as cultural displacement rather than physical displacement.

It can thus be reiterated that the whole issue of hydropower projects is prone to being challenged due to its consequences like displacement and inadequate resettlement and rehabilitation. On the other hand, the issue of climate change also tends to further problematize the hydropower project activities. Climate change or global warming can be understood as the increase in the temperature of the earth due to the emission of green house gases through several human activities. Such a scenario creates several problems for hydro-power projects in the form of evaporation of the water available, thereby affecting the river flow and the water in the reservoir for hydr-power generation. Such decrease in the water resources would exist in collateral with the increasing demand of water for irrigation, household, industry due to climate change. This would then complicate the activities of hydropower generation. On the other hand, though hydro-power projects are considered to be clean source of energy, the fact remains that such hydro-power activities does emit green house gases in the production of construction materials, deforestation of an area to be inundated when a reservoir fills and the release of methane and carbon-dioxide from the decomposition of inundated organic matter.

Such an understanding of the hydropower projects and the adverse consequences caused by such activities does facilitate a better analysis of the issues surrounding 'development' vis-à-vis the hydropower projects in the Eastern Himalayan states.

The states constituting the Eastern Himalayan belt has been blessed with mountains, valleys and rich ecology like for instance Nepal has a total land area of 147, 181 sq. km and also constitutes 86% of mountains and hills, 24%

plain area. The country has been blessed with about six thousand rivers and rivulets with huge hydropower potential. Despite the availability of such potential, very small share of it has been harnessed till date, though the country had its first hydropower project (Kulekhani project) in 1911. Other such hydro- power projects are West Seti project, Kali Gandaki project, Tanahanu project, Arun III project.

The Indian state Arunachal Pradesh has been referred to as the ‘power house’ of the country. This is indicative of the rich hydropower generating potentialities of the state. The state has several rivers like Kameng, Subansiri, Lohit, Dibang/ Dihang and Siang. On these rivers several hydropower projects have been built like Subansiri project, Dibang project, Upper Siang project, Tato-II project.

Similarly, Darjeeling in the West Bengal state of India has also been blessed with good hydro-power potential. Infact, the first hydro-power project of Asia named Sidrapong hydro-power project was built in Darjeeling on 10<sup>th</sup> November, 1897. The followed several other projects like Teesta low dam Project III and IV, Lodhama project, Neroa project, Mungpoo-Kalikhola project, Rammam project.

Such hydro-power potential can be witnessed in India’s north-eastern state Sikkim too. The state has the most diverse flora, fauna, wildlife and natural springs. Some of the rivers in the state are Lachung chu, Lachen chu, Rangpo chu, Ranikhola river. Around thirty projects have been sanctioned in the state like the Panam project, Teesta stage I/II/III/IV/V/VI project, Chuzachen project, Rongnichu project, Rangit II project.

Besides, these Indian states, Bhutan too has been actively engaged in hydropower generation. The country has several perennial rivers like the Wang chhu, Ha chhu, Paro chhu, Kulong chhu, Mangde chhu and many more. Some of the projects in the country are: Chukha project, Kurichhu project, Basochhu project, Kholongchhu project, Punatsangchhu project, Nikachhu project.

These facts makes it evidential that the Eastern Himalayan states has been vigorously engaged in the activities of hydropower generation, it is here that a



comparative analysis of the activities of the hydropower generation of both Bhutan and Sikkim has been focused upon. This comparative analysis would be done on the basis of few parameters like the genesis of the hydro-power generation in both of these Eastern Himalayan states, impacts of such hydropower activities on human security in both Bhutan and Sikkim, environmental impacts, the role of civil society and the policies governing such activities in both these Eastern Himalayan states.

Both these Eastern Himalayan states namely Bhutan and Sikkim had existed as Buddhist kingdoms until 1975 when Sikkim was integrated into the Indian Union and on the other hand, Bhutan democratized itself by conducting its first multi-party election in 2008. These two Eastern Himalayan states had their first hydropower projects in the 1970's and 1927 in Bhutan and Sikkim respectively. Most of the hydropower projects in both Bhutan and Sikkim are 'run of the river' projects, which means that the hydropower projects in these two states would divert the river water through a tunnel in order to turn the turbine and thereafter the water is released back to the river. Such hydropower activities in both these states has led to devastating consequences like displacement, environmental degradation, endangering wildlife and many more.

The activities of the hydro-power generation in these two states have been governed by several policies like The Sikkim Land (Requisition and Acquisition) Act of 1977, The Land Acquisition (Sikkim) Amendment Act of 1992, Comprehensive State Policy on Forest, Environment and Land Use of 2000, The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act 2013. Bhutan too has several such policies like The Land Act of 1979, Electricity Act 2001, The Land Act of 2007, Bhutan Hydropower Policy 2008, National Environment, Waste Protection and Management Act of 2009, Water Act of Bhutan (2011), National Environment Protection Act of 2007, National Land Policy of 2010, Land (Amendment) Bill of Bhutan (2012), Environment Assessment Act of 2000, Environmental Clearance of Projects Regulation of 2002, Environmental Planning and Assessment Amendment Act of 2014.

Despite the existence of such policies, the hydropower generation has caused devastating consequences like cultural displacement, physical eviction, loss of lands in both Bhutan and Sikkim, which poses huge challenges to the existing policies and the sanctity of the authority.

So, both Bhutan and Sikkim along with the Eastern Himalayan belt as a whole has been witnessing, the assertiveness of the affected communities. The affected communities have been raising their voice not just against such initiatives being taken under the garb of ‘development.’

Such voices have been raised by the project affected people along with the civil society of the Eastern Himalayan states. In Sikkim the organizations active against the hydro-power projects are the Active Citizens of Teesta (ACT), Concerned Lepchas of Sikkim, Sangha of Dzongu, the Citizens Forum for Sikkim, Joint Action Committee and Kanchendzonga Conservation Committee. Similarly, in Arunachal Pradesh, the organizations active are Save Mon Region Federation (SMRF), Krishna Mukti Sangram Samiti (KMSS), All Assam Students Union (AASU), Asom Jatiyatabadi Yuba Chatra Parishad, Arunachal Citizens Right and Adi Students Union. In Darjeeling, some of such organizations concerned with the hydro-power projects are Pragya, Save the Hills, Association for Conservation and Tourism. In Bhutan, the organization concerned with the environmental issue is Royal Society for Protection of Nature (RSPN) but it is the Assam based organizations that are more engaged in protesting against the hydropower projects in Bhutan like Beki Noi Niyantaran Aru Baan Sahajya Samiti (BNNABSS), All Assam Students Union (AASU), Krishak Mukti Sangram Samiti, Asom Jatiyatabadi Yuba Chhatra Parishad (AJYCP) AND Asom Gana Parishad. Even in Nepal, the presence of such organizations can be witnessed like Arun Concerned Group (ACG), Alliance for Energy.

Such resistance by the civil society does pose a huge challenge to the conceptualization of ‘development’ as a whole. Development has been perceived as the expression of a state’s responsibility to ensure the protection and welfare of its citizens. But in contrary, when development brings with itself impoverishment and displacement, it is then that the authority of the state

is critically reviewed. It is this gap between the state initiatives and the needs of the people that would act as a catalyst for people's resistance against the project.

In the midst of such resistance against developmental initiatives, the role played by the international organizations/agencies in the developmental projects has also been focused upon. In principle, these organizations have been understood as committed towards upholding of universal values like human rights protection, economic parity and other such values. Like for instance, the Asian Development Bank since 1966, has been taking initiatives towards developing the Asia and Pacific region. It adopted an involuntary resettlement policy in 1994, which mentioned that displacement should be avoided but if unavoidable then requisite support and assistance is to be provided to the affected population. The Organization for Economic Cooperation and Development in December 1991, also initiated the guidelines for developmental aid, displacement and resettlement. It focused in avoiding the displacement of people and that the donor countries are not to support projects causing displacement. In case of displacement the resettlement process and the policies should include various other actors like environmental agencies, women, host countries accepting resettlers. Even the World Commission on Dams (WCD), in its report in the year 2000 formulated a decision making framework based on five principles: equity, sustainability, efficiency, participatory, decision making and accountability.

But in praxis, these international agencies have been actively engaged in the funding of such hydropower projects and so can be held equally responsible for causing devastations in the name of development. World Bank was first of the financial international organization that formulated guidelines for involuntary resettlement in 1980, but in the year 2000 about 300 developmental projects funded by the World Bank adversely affected 2.6 million people in the form of physical and economic displacement. This then led to World Bank revising the 'Operational Policy on Involuntary Resettlement.' It was mentioned by the World Bank that efforts are to be made to mitigate involuntary resettlement wherever possible and if it cannot be

mitigated then, efforts are to be made to involve the displaced population in the planning process of resettlement programs.

So both World Bank and Asian Development Bank along with several other funding agencies have been actively engaged in the funding of the hydro-power projects in the Eastern Himalayan belt. Some of the projects funded by Asian Development Bank in Bhutan are Dagachhu project and Nikachhu project. These international agencies has funded projects like Kali Gandaki project and Kulekhani river project in Nepal. Both Asian Development Bank and the World Bank have co- funded along with the Japan International Cooperation Agency in the projects like Tanahu project and Melamchi project in Nepal. Such funding in the border states of Arunachal Pradesh and Sikkim has been difficult due to Chinese objections to it. Though of late, the international agencies like World Bank, JICA have started to divert funds towards the under-developed regions of India which includes the north-eastern region too.

This reveals that the agglomeration of mere policies has not been able to reduce the adverse impacts of the projects funded by these banks. So, the challenge is to understand whether the policy interventions can help in mitigating if not curb the adverse impacts of hydro-projects which is the focus of the study.

Such complexities generated due to hydro-power activities are confined not just to the national borders but it has also surpassed the international borders. In other words, the existence of China in close proximity to the Eastern Himalayan states has led to the rising of border issues between the Eastern Himalayan states and China. China's 'interest' in the Eastern Himalayan belt and the South Asian region as a whole can be reiterated from the repeated 'cartographic aggression' committed by China on the north- eastern states of India, parts of Nepal and Bhutan. Such an aggressive attitude of China towards the Eastern Himalayan states and South Asia as a whole draws the attention towards the control of Tibet by China. In other words, since China has control over Tibet consequently it also has control over the 'Himalayan headways' in

the Tibetan Plateau. Such Chinese control of the rivers flowing in the Tibetan Plateau and the building of hydropower projects in the transboundary rivers like the Zangmu dam on Yarlung Tsangpo river (Brahmaputra river) definitely poses huge threat to the Eastern Himalayan states, as the river forms the source of sustenance for these states. Infact, three more dams have been approved for the Brahmaputra-Tsangpo river basin namely Dagu, Jiexu and Jiacha dam. Besides being engaged in building the hydropower projects, China has also been actively engaged in funding such activities in Nepal and has also been objecting to the international funding of the hydro- power projects in the border states of Arunachal Pradesh and Sikkim. So, the hydropower projects in the Eastern Himalayan belt suffer huge challenges from the Asiatic giant China.

Thus, the hydropower projects have often been subjected to huge resistance and criticisms due to the fallacies attached with it but the other side of the scenario too needs an empirical analysis as it cannot be refuted that the fuel used in hydropower production is river water, thereby making it a clean and renewable energy generation unlike the thermal power plants which uses resources like coal, oil or natural gas. It can be understood that though the hydropower production in its initial stage does incur huge investments but post-construction the operational costs of the same would be minimal. Infact, hydropower as a renewable resource aids in channelizing the economies to a lower carbon future.

Yet on the other hand, it cannot be refuted that the hydropower generation which is considered to be a clean and renewable energy does incur huge losses in the form of environmental degradation, displacement, loss of lands and many more. So the issue that has been addressed in the study is that is it fair to demonize the whole developmental process vis- a- vis hydro-power projects due to the fallacies attached with such activity?

In this context, the research has attempted to examine the pros and cons of the hydropower initiatives in the Eastern Himalayan states with special reference to Bhutan and Sikkim. The study would focus on the inevitable consequences of such activities and the responses of the affected community towards it. The

role of the international agencies as project partners would also be assessed along with the strong influence of China in the hydropower activities of Eastern Himalayan states.

Thus, it is also to be understood that the comparative study between Bhutan and Sikkim is being done considering both as the constituent states of the Eastern Himalayan belt rather than as a country and a state.

# CONTENTS

CHAPTER	TITLE	PAGE No.
	Acknowledgement	
	Maps and Tables	
	Abbreviations	
	Glossary	
	Preface	
<b>CHAPTER 1</b>	<b>Borders, Borderlands and Water Resources in the Eastern Himalayas</b>	<b>1-45</b>
	1.1 Introduction	1-2
	1.2 Geopolitical Background of the Eastern Himalayas	3-4
	1.3 Natural Resources of the Himalayan Belt: Geopolitical Complexities	4-6
	1.4 Changing Nature of Borders and Borderlands: Opportunities and Challenges in Eastern Himalayas	6-8
	1.5 Borders as Opportunities in the Eastern Himalayan Belt	8-15
	1.6 Bi-lateral Socio-Cultural Relations	15-20
	1.7 Co-operative Sharing of Trans-boundary Natural Resources: Ensuring Water Security	20-22
	1.8 Borders as Challenges in the Eastern Himalayan Belt	22-28
	1.9 Borderland and Borderland Communities in Eastern Himalayas	28-30
	1.10 Trans-boundary Rivers and Their Management: Theories and Complexities	31-32

	1.11 Water Resources in the Eastern Himalayas	32-44
	1.12 Conclusion	44-45
<b>CHAPTER 2</b>	<b>Bhutan And Sikkim Hydro-Power Projects: Genesis And Polic</b>	<b>46-141</b>
	2.1 Introduction	46-49
	2.2 Hydro-Power Projects Of Bhutan And Sikkim: A Critical Analysis	49-49
	2.2.1 Punatsangchhu-I And II Hydro-Power Project: Introduction	49-55
	2.2.2 Impacts Of Punatsangchhu Project I And II: Merits And Demerits	55-74
	2.2.3 Hydro-Power Projects In Sikkim	74-74
	2.2.4 Panam Hydro-Power Project	75-75
	2.2.5 Impacts Of The Project: Merits And Demerits	76-95
	2.2.6 Tashiding Hydro-Power Project	95-95
	2.2.7 Impact Of The Project: Merits And Demerits	96-116
	2.3 Role Of Civil Society In Bhutan And Sikkim	116-126
	2.4 Environmental Policies Of Bhutan Relevant For The Study	126-128
	2.5 Environmental Policies Of Sikkim Relevant For The Study	128-131
	2.6 Hydro-Power projects And TheirImpacts: A Comparative Analysis Of Bhutan And Sikkim	131-139
	2.7 Conclusion	140-141



<b>CHAPTER 3</b>	<b>China As A Factor In Eastern Himalayas: With Special Reference to Development of Hydro-Power Projects in Eastern Himalayan Belt</b>	<b>142-176</b>
	3.1 Introduction	142-142
	3.2 Geographical Understanding of the Eastern Himalayan belt Vis-à-vis China	143-144
	3.3 China as an Upper Riparian State: Understanding the Dynamics of Sharing the Trans-boundary rivers	145-147
	3.4 From Hydro-Cooperation to Competitiveness in the Eastern Himalayan Belt:China's Role and India's Response	147-150
	3.5 India's Response to China as a Hydro-Hegemon: Trans-boundary Rivers	151-152
	3.6 A Brief Profile of the Brahmaputra/Yarlung Tsangpo River	153-156
	3.7 China's Strong Influence in the Eastern Himalayan Belt	156-175
	3.8 Conclusion	175-176
 <b>CHAPTER 4</b>	 <b>Human Security in the Eastern Himalayas: A Case Study of the Impact of Hydro-Power Projects in Bhutan and Sikkim</b>	 <b>177-207</b>
	4.1 Introduction	177-179
	4.2 Development Induced Displacement: Conceptual Framework and Analysis	179-180
	4.3 Theories of Development	180-182
	4.4 Understanding Displacement	182-184
	4.5 Theories of Displacement	184-187

	4.6 Interlinkages between Development, Displacement, Resettlement and Human Security: An Analysis	187-193
	4.7 Role of State in developing Hydro-Power Projects: Delimma between Development and Human Security	193-194
	4.8 Response of the People towards the 'Development Initiative: A Case Study of the Development of Hydro-Power Projects in Bhutan and Sikkim	194-199
	4.8.1 Human Security an Issue: The Response of the Lepcha and Bhutia Communities of Sikkim and the people of Bhutan	199-203
	4.9 Need for Changes in the Approach towards the Issue of Development-Induced Displacement: A Breakthrough	204-205
	4.10 Conclusion	205-207
<b>CHAPTER 5</b>	<b>Environmental Impact of the Hydro-Power Projects in the Eastern Himalayas: Special Reference to Bhutan and Sikkim</b>	<b>208-250</b>
	5.1 Introduction	208-210
	5.2 Environment and Development: Interlinkages and Issues	210-210
	5.2.1 Human Intervention in the Natural System: Impacts and Issues	210-218
	5.3 An Eco-friendly Development Approach in the form of Hydro- Power Projects	219-222
	5.4 Impact of Climate Change in the Eastern Himalayas: Special Reference to Bhutan and Sikkim	222-227
	5.4.1 Climate Change and Economic Development in the Eastern Himalayan Belt: Issues and Impacts	227-228
	5.4.2 Impact of Climate Change on Bhutan	228-234
	5.4.3 Impact of Climate Change on Sikkim	234-245

	5.5 Sustainable Development: Synchronisation of Developmental Needs and Environmental Protection in the Eastern Himalayas	245-247 247-248
	5.6 Conclusion	247-250
<b>CHAPTER 6</b>	<b>Role of International Organisations and Institutions in the Development of Hydro-Power Projects in the Eastern Himalayas</b>	<b>251-275</b>
	6.1 Introduction	251-251
	6.2 Theoretical Framework	252-253
	6.3 History of International Organisations	253-255
	6.4 International-level Initiatives for Environmental Protection and Sustainable Development: Policies and Programmes	256-258
	6.5 International Development Assistance Agencies	258-272
	6.6 International Development Assistance in the Eastern Himalayas with Specific Reference to the Development of Hydro-Power Projects	272-275
	6.7 The Role of International Agencies and Institutions: A Critical Analysis	275-275
	6.8 Conclusion	<b>276-282</b>
<b>CHAPTER 7</b>	<b>Conclusion</b>	
	<b>ANNEXURE-I</b>	283-284
	Questionnaires for Wangdue-Phodrang, Bhutan	
	<b>ANNEXURE-II</b>	285-286
	Questionnaires for Tashiding, West Sikkim	
	<b>ANNEXURE-III</b>	287-287
	Questionnaires for Dzongu, North Sikkim	

<b>ANNEXURE-IV</b>	288-291
Article 371 F	
<b>ANNEXURE-V</b>	292-296
Exchange of Notes Between Government of India and Paksistan	
<b>ANNEXURE-VI</b>	297-298
Bhutan-China Agreement On Maintenance of Peace and Tranquility along the Sino-Bhutanese Border Areas, December 8, 1998	
<b>ANNEXURE-VII</b>	299-311
Scheduled Tribes And Other Traditional Forest Dwellers (Recognition of Forest Rights) Act,2006	
<b>ANNEXURE-VIII</b>	312-313
Consent To Participate In A Research Study	
<b>Bibliography</b>	314-346

## LIST OF MAPS

1 Map showing Eastern Himalayan belt	2
2 Topographical Map of Bhutan and Sikkim	47
3 Elevation Map of Sikkim	132
4 Slope Map of Sikkim	133
5 Elevation Map of Bhutan	134
6 Slope Map of Bhutan	135
7 Map showing Himalayan belt and the Himalayan countries lying close to China	143
8 Map showing major rivers originating from Tibet	146

## LIST OF TABLES

1	Six river basins of Bhutan	32
2	River basins of Nepal	36
3	Glaciers found in river basins of Nepal	38-39
4	Total number of different water resources in Sikkim	41
5	Five major river valleys of Arunachal Pradesh	42
6	Some projects in Dzongu	199
7	Projects sanctioned on Rathong chu	201
8	Flora and Fauna of Eastern Himalayan belt	224
9	Sikkim's Diverse Ecology	233
10	Loan and Grants to Nepal	257
11	Financial Assistance by ADB to Nepal	259
12	Financial Assistance by other international funding agencies	260
13	Financial Assistance by JICA, ADB and EIB to Nepal	262
14	Financial Assistance to Bhutan by international funding agencies	265

## ABBREVIATIONS

WWF	WORLD WIDE FUND FOR NATURE
TAR	TIBETAN AUTONOMOUS REGION
CBM	CONFIDENCE BUILDING MEASURES
ABTO	THE ASSOCIATION OF BHUTANESE TOUR OPERATIONS
NATA	NEPAL ASSOCIATION OF TRAVEL AGENTS
GBM	GANGES, BRAHMAPUTRA AND MEGHNA BASIN
IWRM	INTEGRATED WATER RESOURCES MANAGEMENT
NEFA	NORTH-EAST FRONTIER AGENCY
UNESCO	THE UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANISATION
EILTF	EAST INDIA LIBERATION TIGER FORCE
NSCN	NATIONAL SOCIALIST COUNCIL OF NAGALAND
ULFA	UNITED LIBERATION FRONT OF ASOM
GLOF	GLACIAL LAKE OUTBURST FLOODS
MW	MEGAWATT (unit of energy)
GWh	GIGAWATT HOUR (unit of energy)
PDD	PROJECT DETAIL DOCUMENT

ACT	AFFECTED CITIZENS OF TEESTA
LOI	LETTER OF INTENT
NGO	NON-GOVERNMENTAL ORGANISATION
SANDRP	SOUTH ASIA NETWORK ON DAMS, RIVERS AND PEOPLE
kWh	KILOWATT HOUR (unit of energy)
SNWD	SOUTH-NORTH WATER DIVERSION



## GLOSSARY

SAGA DAWA	TRIPLE BLESSED BUDDHIST FESTIVAL THAT INCLUDES THE BIRTH OF BUDDHA, ACHIVEMENT OF ENLIGHTENMENT BY BUDDHA AND BUDDHA ATTAINED NIRVANA
DRUKPA TSHESHI	BUDDHA PREACHED THE FOUR NOBLE TRUTHS OF BUDDHISM TO HIS FIRST FIVE DISCIPLES IN SARNATH
GURU RINPOCHE TRUNGKAR TSECHU	BIRTH ANNIVERSARY OF GURU RINPOCHE (a Trantic master)
LOSOONG	END OF THE TENTH MONTH OF THE TIBETAN YEAR AND IS CONSIDERED AS THE AGRICULTURE NEW YEAR/SIKKIMESE NEW YEAR
LHOTSAMPAS	BHUTANESE NEPALI
GHO/KHO	TRADITIONAL DRESS OF BHUTAN (NATIONAL DRESS OF BHUTANESE MEN) AND SIKKIM (MEN AND WOMEN)
KERA	NATIONAL DRESS OF BHUTANESE WOMEN
TEGO/HANJU	TRADITIONAL SHIRT OF BHUTAN AND SIKKIM
CHOKCHE	HAND CARVED TRADITIONAL TABLES OF BHUTAN AND SIKKIM
CHU	RIVER IN DZONGKHA LANGUAGE (national language of Bhutan) AND SIKKIMESE BHUTIA LANGUAGE
TSHO	SEA/OCEAN IN BHUTANESE AND SIKKIMESE LANGUAGE
DZONGKHAG	ADMINISTRATIVE AND JUDICIAL DISTRICT OF BHUTAN
BONGTHING	LEPCHA PRIEST
BUMCHU	A SACRED BUDDHIST OCCASION OBSERVED IN TASHIDING MONASTERY, WEST SIKKIM

DE-FACTO	EXISTING IN FACT BUT NOT LEGALLY ORDAINED
ARTICLE 371 F	SPECIAL PROVISIONS WITH RESPECT TO SIKKIM IN THE INDIAN CONSTITUTION
LOANS	A SUM OF MONEY BORROWED FROM A FINANCIAL INSTITUTION OR BANK BY AN INDIVIDUAL OR ENTITY, FOR A REASON, THAT REQUIRES REPAYMENT ALONG WITH THE INTEREST AFTER THE TERM EXPIRES, FOR WHICH IT IS REPAID.
GRANTS	THE FINANCIAL ASSISTANCE THAT IS NON-REPAYABLE IN NATURE. IT IS PROVIDED BY THE GOVERNMENT TO THE INDIVIDUALS OR ENTITIES, TO FULFILL A PARTICULAR PURPOSE, WHICH IS RELATED TO THE WELFARE OF GENERAL PUBLIC.

## CHAPTER 1

# BORDERS, BORDERLANDS AND WATER RESOURCES IN THE EASTERN HIMALAYAS

### 1.1 Introduction

The Eastern Himalayan region is one of the most ecologically rich regions in the world. It has been globally recognized as the „earth“s biodiversity hotspot“ comprising of endemic plant and animal species. The beauty of the region lies in the fact that the flora of the region is inclusive of the “elements from tropical Indo-China, temperate East Asia, the Palaearctic region and the Deccan Plateau” (WWF-US 2005: 4-6). Such a pristine beauty of the region is inherent in the presence of the magnificent Himalayas.

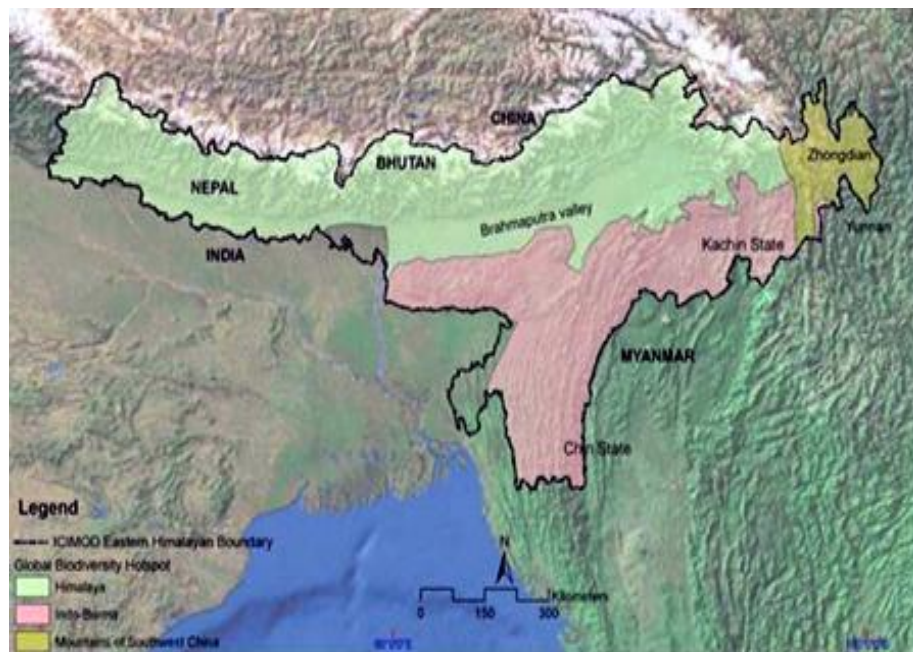
The Himalayas exist as a wall bordering the northern side of the Indian subcontinent, which extends from Indus in the north-west to the Brahmaputra in the east. It can be divided into three zones, namely, the Great Himalaya, the Inner Himalaya/ Middle Himalaya/Lesser Himalaya and the Sub-Himalayan foothills and the adjacent Terai and Duar Plain. The Himalayas culturally reflects a mosaic pattern constituting of the Hindu culture and the Tibetan culture in the Inner and Sub-Himalayan belt (from Kashmir and Nepal) on the one hand and from the north of the Himalayas on the other hand, respectively. Besides these, central Nepal comprises of a syncretic culture of both Indian and Tibetan cultures. Such is the cultural mosaic of the region which has a very influential impact on the political scenario of individual states of the region and also the region as a whole.

Furthermore, the whole of the Himalayan range can be divided into three: Western Himalayas, Central Himalayas and Eastern Himalayas. The Western Himalayan belt has been divided into sub-Himalayan Kashmir, Pir Panjal, valley of Kashmir, Ladakh, etc. The Central Himalayan belt has been further sub-divided into three geographic regions, namely, Himachal and Punjab Himalayas, Garhwal and Kumoan Himalayas and Nepal Himalayas. Similarly, the Eastern Himalayas have been sub-divided into three geographic regions: Darjeeling and Sikkim Himalaya, Bhutan and Arunachal Himalaya (Karan and Jenkins Jr. 1963: 10-20).

With such geographical significance, the Himalayas have also been blessed with natural resources like glaciers, mountain springs and lakes. The Himalayan region constitutes the „Great Himalayan Watershed“, which exists as the focal point of Asian dam-building and triggers the competition for the same, thereby generating geopolitical concerns for the whole Himalayan belt and particularly, the Eastern Himalayas (Chellaney 2012: 1).

In the process of such competition, there is a need to analyze the borders, borderlands and water resources of the belt which has been romanticized as the “mythical paradise” in order to understand the geopolitical sensitiveness of the region (WWF 2009: 2).

Map no.1:



This map shows the Eastern Himalayan belt in green colour. All the states of the belt have not been shown in the map.

Source: ICIMOD

## 1.2 Geopolitical Background of the Eastern Himalayas

Geopolitics can be understood as including both geographic and political factors which determines the conditions of a state or region and the impact of geography on politics. The „Encyclopedia Britannica“ defines the term „geopolitics“ as the “analysis of the geographic influences on power relationships in international relations”. Similarly, the „Longman Dictionary“ defines the term „geopolitics“ as “the study of the effect of a country“s position, population etc. on its politics”. One Professor of the University of Houston explains the term „geopolitics“ as the “contemporary rationalization of power politics” (Gokmen 2010: 11-15).

Halford MacKinder through his „Heartland theory“ explains the significance and role of geopolitics. He regards “political history as a continuous struggle between land power and sea power with the ultimate victory going to the continental power”. He categorized the world landmass into three tiers, namely, the Heartland, Inner Crescent and Outer or Insular Crescent (Ismailov and Papava 2010: 84-86).

1. The Heartland: “It is the huge area of inner Eurasia east and north of river Volga surrounded by mountains on three sides (S-E-W) and by ice-bound Arctic on the north”. This was the so-called „pivot area“ that he later renamed as the „heartland“. The distinguishing feature of the heartland was that it was not accessible to sea powers and therefore it was strategically secure like a fortress. This was a resource-rich area having agriculturally fertile Russian grasslands of the Steppes and coal fields.
2. Inner Crescent: “The pivot area was surrounded by an „inner“ or „marginal“ crescent consisting of an arch of coastland. It included rest of Europe, W. Asia, E. Asia, and S. Asia. This area was characterized by drainage into navigable seas”.
3. Outer or Insular Crescent: “North America, South America and Africa south of Sahara, Oceania were put in outer crescent category”.

According to this theory, Mackinder pressed that the world geopolitics would be very critical in the Heartland and the Inner Crescent. He also put forth through the theory that, the one who can hegemonise over the „World Island“ would be able to rule the

world. The „World Island“ for Mckinder was comprised of Europe, Asia and Africa. Mackinder defines geopolitics as “the influence of geography on politics: how distance and terrain and climate affect the states and men”. Geopolitics as a branch of political geography involves the study of “the relationship among politics and geography, demography, and economics, especially with regard to the foreign policy of a nation”. Importance is also given to the strategic importance of the land and sea area with regard to a nation“s military and economic power.<sup>1</sup>

The understanding of the geopolitical status of the Eastern Himalayan belt is important in order to understand clearly both the internal and external dynamics shaping and reshaping the relations among the states of the belt. So, in order to understand the nature of relationship shared by the constituent states of the belt, it is important to take into account the factors like geographical location, the status of natural resources, present international power structure and several other such factors.<sup>2</sup> It is the nature of the relationship shared by the constituent states of the region in both the intra and inter regions, which defines the nature of national and international politics.

### **1.3 Natural Resources of the Himalayan belt: Geopolitical Complexities**

The Himalayas have been understood globally as the „youngest growing mountain“ system which is constituted of “sandstones, siltstone, clay stone and unconsolidated and semi consolidated conglomerate dip at low angle” (Project Design Document 2013: 24).<sup>3</sup> The Himalayas have also been blessed with enormous water resources which facilitate activities like hydropower generation. So, the rivers in the Himalayas possess and also provide potential for economic development (G.B.Pant Institute of Himalayan Environment and Development 1992: 36-37).

Some of the Himalayan rivers are glacier-fed rivers and so the Himalayas exists as the main source of water especially during the dry season. But the Himalayan rivers have been under a serious threat of drying up as a result of climatic change which would adversely affect the nations dependent on the Himalayan rivers. In fact, the effect has

<sup>1</sup> [https://www.slideshare.net/cindipatten/geopolitics-key?next\\_slideshow=1](https://www.slideshare.net/cindipatten/geopolitics-key?next_slideshow=1) accessed 16 July 2017.

<sup>22</sup> [http://shodhganga.inflibnet.ac.in/bitstream/10603/18345/9/09\\_chapter%202.pdf](http://shodhganga.inflibnet.ac.in/bitstream/10603/18345/9/09_chapter%202.pdf) accessed 10<sup>th</sup> January, 2017. What is this no 22? Write exact title what u have referred

<sup>3</sup> [https://cdm.unfccc.int/filestorage/H/M/6/HM6VZ1UXNIK5J4YDBTGLASC7RW2O39/308.49\\_PDD](https://cdm.unfccc.int/filestorage/H/M/6/HM6VZ1UXNIK5J4YDBTGLASC7RW2O39/308.49_PDD)

[\\_PHPA\\_I\\_clean\\_v07?t=eHR8b2p6NHF1fDCeehgZy5KwppX5Pw3crlza](#) accessed 10<sup>th</sup> January, 2017. Give more details

started to become visible with the reduction in the availability of water in the Asian countries dependent on the Himalayan rivers, like for instance the water resources in India, Nepal, Bangladesh and China are likely to be reduced in the years to come with India losing out in its water availability from 1730 per capita cubic metres in the year 2010 to 1240 per capita cubic metres in the year 2030. Similarly, in Nepal, the reduction would be from 8500 per capita cubic metres in 2010 to 5500 in the year 2030; in case of Bangladesh and China, the water availability would reduce from 7320 per capita cubic metres in 2010 to 5700 per capita cubic metres in 2030 and 2150 per capita cubic metres in 2010 to 1860 per capita cubic metres in the year 2030 respectively (Futehally et al. 2010: 3). Such a pattern would possibly trigger an unhealthy competitiveness among these Asian nations, thereby exposing the nations to a hydrologically oriented competition.

Specifically speaking, the Eastern Himalayan belt possess within its ambit huge natural resources but the ecologically fragility of the region is also a reality and so is prone to natural disasters like earthquakes and landslides.

Despite such ecological fragility, the Eastern Himalayan region holds a grave geo-strategic importance due to the existence of areas like the Chumbi Valley lying between Bhutan and Sikkim, which is only five kilometres away from the Siliguri corridor. This corridor stretches through West Bengal, Nepal and Bangladesh through eastern Sikkim and the north-eastern state of Arunachal Pradesh bordering eastern Bhutan. The strategic importance of the region is enhanced with the repeated territorial claims of China on some parts of the Indian states of Sikkim and Arunachal Pradesh, and of Bhutan. In fact, such border issues were further amplified with the re-opening of the Nathula trade route between Sikkim and Tibet in 2006 and thereafter the construction of the Qinghai-Tibet railway by China passing through Tibet and Chumbi Valley to Yadong and close to the Nathula Pass. The importance and sensitivity of such border disputes is evident with the initiatives taken by Bhutan and China in initiating 37 bilateral border talks since 1984 and thereafter signing an “Agreement to Maintain Peace and Tranquility” in 1996. Thus, China seems to be attempting to revive the Himalayan cultural and economic ties with Tibet in order to strengthen its presence and hold in the Himalayan region and especially on the Eastern Himalayan belt. This would bring forth several security issues for the whole Himalayan belt and specifically the Eastern Himalayan belt (Walcott 2010: 14). Such

border issues of the Eastern Himalayan states with China revive the importance of geopolitics as it is due to the geographically critical location of China that has completely altered the international political power structure of the region and beyond. The nature of the alterations of the power structure has been observed to be favouring China due to its location on the “Roof of the World” after having occupied Tibet in 1950. China as such is taking full advantage of its geographical location in shaping the political matrix of the Eastern Himalayan region.

#### **1.4 Changing Nature of Borders and Borderlands: Opportunities and Challenges in Eastern Himalayas**

Earlier, borders were perceived merely as demarcations separating one area from that of other. Such demarcations disseminated the understanding of borders as “institutional constructs”, as the demarcations were considered part of the delineating process of one’s territory, landed property and other such resources. So, such delineation later became essential for „nation building“ and „national development“ (Jailly 2010: 3). The borders existed as “political boundaries that delineate territories with distinctive laws and customs”. But later, with the dawn of the twenty-first century, the concept of border and borderlands underwent change. The new century brought to the forefront the understanding of the borders as opportunities for cultural interaction, economic engagement and natural resource management, rather than solely as political boundaries (Berry 2000: 755).

The existence of such demarcations has often been the cause for conflicts between nations, especially with reference to cross-border terrorism. So, the border nations prioritize the securing of their borders in order to combat any kind of terrorism. Besides, the safety of the borders are often forcefully compromised with uncontrollable migration across borders during time of war or any other such conflict (Shelley which year 2).

Specifically in the context of the transboundary natural resources, it is said that the natural resources „know no boundaries“ and in this context the most relevant would be the rivers, that do not recognize borders (Gosain and Singh 2004: 41). This as such gives rise to several complexities among the states across borders as an undeniable fact remains that, there exist three forms of transboundary environmental adversities



namely air pollution, transboundary rivers pollution and transboundary dumping of waste (Schwabach 2015: 2).

Though such complexities attached with borders and borderlands are a reality, on the other side, the same borders are also seen as an avenue for opportunities. In fact, with the advent of „globalization“, the interactions between the nations have been a seamless process to the extent that the globalized world is seen as a “borderless world”. As expressed by a Japanese organizational theorist Kenichi Ohmae, “national borders have effectively disappeared and, along with them, the economic logic that made them useful lines of demarcation in the first place” (Ceglowski 1998: 18).

The disappearance of the „borders“ could be understood more as the „denationalization“ of the nations. In simple words, the process of „denationalization“ meant the diluting of the relevance of the national borders. The possibility and actualization of such a process has been enhanced with the increase in the cross-border multiple interactions in the form of cultural exchange, trade, knowledge exchange and many more. The borders in the globalized era have grown beyond mere demarcations, to that of a hub for market opportunities, accessibility to cheap labour, exchange of knowledge, accessibility to technical experts and access to natural resources (Wild et al. 2009: 28-31)

**Market Opportunities:** For any company that introduces a new product into its national market, it has the option to globalize the product in the international market. Such a development is the direct product of a globalized world and is beneficial for the small home market.

**Accessibility to Cheap Labour:** The business enterprises have been observed as setting up factories in places where cheap labour is available, like for instance India has witnessed the US companies like Coca Cola, Ford, Amway, etc. setting up their factories in India.

**Exchange of Knowledge and Accessibility to Technical Experts:** Experts have been able to share and exchange their knowledge and expertise across borders. So, several international conferences, talks, academic exchange programmes, etc. have been initiated. Several professionals from the field of medical sciences, engineering and many more get employed in jobs in different countries.

Access to Natural Resources: From an economic point of view, the companies tend to access the natural resources that are not available in one's country in other country. Like for instance, Japan has limited natural resources but its leading paper company Nippon Seishi, gets its raw materials from the forests it owns in different countries like Australia, Canada and the United States.

Such are the challenges and complexities surrounding the borders and borderlands which are very relevant even for the Eastern Himalayan states. The relevance can be validated on the basis that the Eastern Himalayan belt comprising of states like Bhutan, Nepal, Sikkim, Arunachal Pradesh and Darjeeling, share several national and international borders like for instance Nepal shares international borders with India in the south, east and west; and in the north it shares a border with Tibet (China). Similarly, Bhutan is surrounded by Tibet (China) in the north and in the west and the south it is surrounded by the Indian states of Sikkim, West Bengal, Assam and Arunachal Pradesh. Furthermore, Sikkim is surrounded by Tibet in the north, Nepal in the west and Bhutan in the east; the state of Arunachal Pradesh shares borders with Tibet in the north, Bhutan in the west, Myanmar in the east and Assam in the south. The Darjeeling district of West Bengal is surrounded by Nepal in the west, Bhutan in the east and Bangladesh in the south respectively.

The borders of the Eastern Himalayan belt is a very geo-strategically, politically, socially and economically sensitive one, as the borders are shared with the economically and militarily powerful countries like China (TAR Tibetan Autonomous Region) and India. Such a scenario generates an intense sense of insecurity and unhealthy hegemonising competition between these two „Asian giants“, India and China, which would define the nature of geopolitics not just in the Eastern Himalayan region but also beyond.

### **1.5 Borders as Opportunities in the Eastern Himalayan belt**

The Border Trade between India and China

Border trade involves the “exchange of commodities from a bilaterally agreed list by people living along both sides of the international border” (Vishal and Muthupandian 2015: 32). India and China have been trading with each other, which has been facilitated due to the international borders they share with each other. The viability of

such a trading option can be understood from the fact that, China stood as the largest trading partner of India in the year 2008 and prior to that in the year 2004 it was among the largest trading partners of India. Such a progress, uncovers the possible nature of economic relations shared by these two countries. The bilateral economic relations have played an effective role in redefining the bilateral relations between these two countries and it was the sharing of borders that further facilitated the process of defining and redefining their relation.

The history of the relationship shared by India and China dates back to the year 1950 and also prior to that when India was among those first few countries that officially recognized the legitimacy of the People's Republic of China (PRC). Thereafter, both the countries encountered aggressive military face-offs in 1962, 1967 and 1987 (Zhang and Li 2013: 1-8). Then came the gradual development of economic interdependence between India and China, which was facilitated with the changing nature of their respective economies from „import substitution to export promotion“. Such a change in the nature of their economies led to them rationalising the possible advantage they could make of the borders they share with each other, so that the „mutual gain“ could be actualized. This led to both the countries setting up a „Joint Study Group“ in the year 2000 to strengthen the platform for economic engagement (Virmani 2006: 270). Prior to this both the nations on mutual consent formed the „Joint Economic Group“ to strengthen the economic relations between the two. Such initiatives led to both the nations establishing various „Confidence Building Measures“ (CBMs) to ensure peace on the border. For the execution of the CBM, the two on 13<sup>th</sup> December, 1991, entered into a Memorandum of Understanding (MoU) for the “Resumption of Border Trade” (Vishal and Muthupandian 2015: 33).

In the year 2000, the bilateral economic relation between India and China accelerated to the extent that the trade between the two amounted to about US\$ 2.92 billion (US\$2.92 billion). In fact, as mentioned earlier, the economic engagement progressed further, thereby making China as the largest trading partner of India by displacing the United States in the year 2008. The economic trading between the two increased from US\$ 2.92 billion in 2000 to US\$ 51.8 billion in 2008 to US\$61.7 billion in 2010

(Banerjee 2012: 2). Thereafter, the trade increased from US\$61.7 billion in 2010 to US\$72.34 billion in 2014 and thereafter it decreased to US\$70.73 billion in 2015.<sup>4</sup>

The trading centres between India and China were as follows: (Vishal and Muthupandian 2015: 33):

1. Gunji in Pithoragarh district (India) and Pulan (Tibet) via Lipulekh.
2. Namgaya in Kinnaur district (India) and Juiba in Zada (Tibet) via Shipki La (Himachal Pradesh).
3. Changu/ Sherathang (India) and Reqinggang (Tibet) via Nathula (Sikkim).

The war of 1962 between India and China put an end to the „cordial“ relationship between these two nations and this also marked an end to their economic relationship. So, it was only after about thirty years that the two nations expressed their intention to resume the trade relationship they had shared until 1962. It was on July 14, 1992 that the Gunji and Pulan trading via Lipulekh was resumed and similarly in the year 1993, both the nations signed a protocol for extending the Namgaya and Juiba border trade via Shipki La. Both the nations, furthermore, signed a memorandum of understanding (MoU) on June 23, 2003 to initiate the border trade via Nathula (Sikkim). It was thereafter on July 6, 2006 that the trade resumed (Ibid: 33).

It can thus be reiterated that India and China have been able to establish and also sustain a healthy economic relation till date and the credit for its viability is attributed to the nature of the international borders that these two nations share with each other.

#### India and Bhutan

India-Bhutan relations have been primarily economically driven, with Bhutan being the beneficiary. The root of the relationship traces back to 1961 with India funding the development of the „First Five Year Plan“ of Bhutan and thereafter the „Second Five Year Plan“ in 1967. In the year 1972 these two nations signed the „Indo-Bhutan Agreement on Trade and Commerce“ and began to engage bilaterally in trading. Thereafter, they also signed the 1978 trade agreement which facilitated Bhutan“s engagement with other neighbouring countries. So, later in 1980, Bhutan signed the

---

<sup>4</sup> <http://economictimes.indiatimes.com/news/economy/foreign-trade/indias-trade-deficit-with-china-jumps-to-53-billion-in-2015-16/articleshow/53492853.cms> accessed 28th January, 2017.

Trade and Transit Agreement with Bangladesh and India provided transit facilities across its territories to Bhutan. In 1995, both again signed the „Trade and Commerce Agreement“ which increased the duration of trade and commerce from five to ten years (Kharat 2006: 59-60).

Furthermore, India“s financial support in the development of Bhutan“s Five Year Plan still continues and it is so in the eleventh Five Year Plan of Bhutan (2013-2018). India would be providing „Rs 4500 crore“ to Bhutan out of which „Rs 2800 crore“ is released under the head „Project Tied Assistance“, „Rs 500 crore“, „Rs 850 crore“ and „Rs 850 crore“ would be released as „Economic Stimulus Package, for Small Development Projects and Development Strategy“ (Programme Grant) respectively.<sup>5</sup>

Such economic engagement between the two has continued over the years with India“s exports to Bhutan amounting to Rs. 2.89 billion in the year 1996 to 32,052 million (Nu) in 2016 (Bhutan Trade Statistics 2016).

The exports from Bhutan to India consist of items like electricity, base metals and articles, minerals, oils, chemicals, cement, fruit products, cardamom, raw silk, oranges, apples, wood products, etc. The imports of Bhutan from India consist of items like petroleum products, mineral products, machinery, automobiles, vegetables, nuts, spices, processed foods, etc.<sup>6</sup>

Besides the trade, both the nations also have cooperated with each other in the development of hydropower projects. India has been financing Bhutan in developing hydro-power projects and it is the hydropower projects that constitute 14% of Bhutan“s GDP.<sup>7</sup> It was in the year 1988 that the first hydropower project of Bhutan, the Chhukha project was developed with India providing finance for the project and the agreement to execute this project was signed between India and Bhutan in the year 1974. Thereafter, several other hydropower projects were initiated with India as the developing partner of Bhutan, like for instance, the Kurichhu hydropower project, the Tala project and the Punatsangchhu-I and II hydro-power projects (Premkumar 2016: 11).

---

<sup>5</sup><http://164.100.47.134/intranet/India-Bhutan%20Relations.pdf> accessed 23 February 2017.

<sup>6</sup><http://mea.gov.in/Portal/ForeignRelation/Bhutan-February-2012.pdf> accessed on 21 May 2015

<sup>7</sup>[https://www.mea.gov.in/Portal/ForeignRelation/Bhutan\\_July\\_2016.pdf](https://www.mea.gov.in/Portal/ForeignRelation/Bhutan_July_2016.pdf) accessed on 2 February, 2017

Such economic co-operation between these two nations is evident with India expressing the intention of buying 10 MW (megawatt) electricity from Bhutan by 2020. In addition to these hydropower projects, India and Bhutan have been able to widen the avenues for co-operation. India has also been a development partner for the development of a cement plant with the capacity of one million tonnes at „Nganglam“ in Bhutan. Furthermore, the success of the relationship can be validated with the initiative taken to establish railway links between India and Bhutan. The railway link was to connect Hashimara with Phuentsholing and the railway line was referred to as “Golden Jubilee Railway Line”.<sup>8</sup>

So, the bilateral relationship between the two is more economically oriented and both the nations have been able to sustain it till date.

#### Bhutan and Nepal

The geo-strategic location of both Bhutan and Nepal is similar as both the nations stand sandwiched between the two Asian giants India and China. Both these nations serve as a trading partner for each other, with Bhutan importing items like instant noodles, soaps, beer, footwear, clothes and camping equipments. Nepal on the other hand imports items like coal and gypsum.

The trading activities between the two strengthened further with the signing of a „Memorandum of Understanding“ on March, 14, 2003 by the „Chamber of Commerce and Industry“ of both the countries. This was further boosted with the cooperation of the private sectors of both the countries with the signing of a „Memorandum of Understanding“ between the „Construction Association of Bhutan“ and the „Federation of Contractors Association of Nepal“. Such cooperation between the two nations became visible even in the tourism sector. The „Association of Bhutanese Tour Operators (ABTO)“ and the „Nepal Association of Travel Agents (NATA)“ signed a „Memorandum of Understanding“ in the year 2003 in order to promote tourism. In addition to these, both the nations also initiated exchange programmes and considered Kathmandu in Nepal and Paro in Bhutan as “sister destinations” (CBS 3004: 165-166).

---

<sup>8</sup><https://mea.gov.in/Portal/ForeignRelation/Bhutan-February-2012.pdf> accessed 4 May 2017.

The bilateral relationship between Bhutan and Nepal has been progressing gradually and efforts are being made to enhance it further,

### India and Nepal

The relationship between India and Nepal dates back to 1950, with both the countries signing the India-Nepal Treaty of Peace and Friendship. The treaty permitted the “Free movement of people and goods between the two nations and a close relationship and collaboration on matters of defence and foreign affairs” (Kavitha 2016: 10). The relationship between the two were multi-faceted involving cultural bonding, matrimonial links and economic relationship among many others. India has been the primary donor for Nepal’s economic development and the areas focused upon by India were majorly in terms of infrastructural development like irrigational projects on the river Koshi, Gandak barrages, roads, bridges, hydropower projects and many more (Shrestha 2003: 11).

India has sustained itself as the biggest trading partner of Nepal, with Nepal’s total export in the year 2015 accounting to USD 600 million, out of which USD 419 million was involved in Nepal’s exports to India. Similarly, India has also been exporting to Nepal, which in the year 2015 accounted for US\$4 billion. Besides trade, India has also been a source for development loans and credit to Nepal, which in 2015-2016 amounted to USD 45 million as developmental loan and USD 1.3 billion as credit (Hughes 2016: 2-3).

The export items of Nepal to India were „food grains, raw jute, wool, cotton, medicinal herbs, skin, musks, cardamom, tobacco, ghee“ and many such other items. Similarly, India also exported several items to Nepal which included majorly agricultural products and metals like „copper, iron and also live animals“. Despite such a trading relationship, the fact remains that the percentage of trade between Nepal and India began to decline in the year 1970 with Nepal beginning to diversify its economic relationship with other countries like the United States of America, Germany, United Kingdom, Belgium, France, Japan, etc. Besides, these nations, Nepal developed its trading relations with the other nations of South Asia besides India like Bhutan, Bangladesh, Maldives, Pakistan and Sri Lanka (Shrestha 2003: 12-17).

So, the diversification of Nepal's bilateral relations with other nations besides India would gradually loosen the grip of India over Nepal. So, the bilateral relationship between India and Bhutan is politically and economically very significant.

#### Nepal and China

The Nepal-China bilateral relationship developed further with China invading Tibet in 1950. China intends to take advantage of Nepal's geographical location as a buffer state in order to secure its borders. For the same, China began to show interest in economic development of Nepal with infrastructural development as a priority in the list. As a result, throughout the 1980s, China got involved in building road connectivity with Nepal, like for instance in June 1984 a highway was built connecting Pokhara and Xinjiang-Tibet and in 1987 a road connecting Lhasa with Dazhu (Kumar 2011: 80).

The nature and intensity of relationship between Nepal and China (Tibet) is dependent on the fact that both these nations lie in proximity to each other, with both sharing a border stretching to 1,415 km. Such geographical proximity has translated into bilateral relations between the two and the first economic agreement named the „Treaty of Thapathali“ was signed in the year 1956. Later, in the year 1982, both the nations established an „Inter- Governmental Economic and Trade Committee.“

The relationship was further boosted with both the nations working towards the enhancement of their bilateral relationship in 2014. The defined areas for cooperation ranged from conventional economic sectors like agriculture to that of globalised economic sectors like trade, cultural exchanges, tourism and many others. Besides such cooperation, China has been a source for financial assistance to Nepal for its developmental projects and such an initiative has been supplemented with institutional support by the „Chambers of Commerce and Industry“ of both the nations (Prasad 2015: 24).

The nature of trade between Nepal and China has been such that Nepal has been importing more than it has been exporting to China. The items being exported by Nepal to China are handicraft items, woollen crafts and tanned skins (Kumar 2016: 5-7).



In 2015, Nepal's imports from China accounted to 823 million euro and its exports to China amounted to 18 million euro. China stands as the second largest trading partner of Nepal.<sup>9</sup> The recent development in Nepal-China relations has been the signing of an agreement and a „Memorandum of Understanding“ on March 21, 2016 touching on crucial areas like transit facilities, enhancement of infrastructure between the two nations and free trade. The transit agreement would facilitate Nepal to use the Chinese Tianjin port which lies 3,000 km away from Nepal. In the same context, initiatives are being taken to develop railway connectivity between the two nations in order to facilitate bilateral trade. So, China intends to extend the Qinghai-Tibet railway link to Jilong (Nepal) and also has been working to develop the road connectivity between Lhasa and Kathmandu via the Tatopani checkpoint (Ibid., 3-11). Such interventions by China on the South Asian region, in the long term, would act as a countering factor for India in the region and beyond.

Thus, the borders if managed well, can be a source of economic opportunity for the nations. In a time when geopolitics is playing its vital role in defining the dynamics of international relations, it is for the nations to choose whether to take benefit from the resources available across the borders or not. Besides, the economic opportunities across the borders, there also exist ample opportunities for social and cultural interactions which would shape the nature of political relationship between the nations.

## **1.6 Bilateral Socio-Cultural Relations**

### **India and Nepal**

The cultural relationship between India and Nepal has historical roots which have been well depicted in epic stories like the Ramayana and also in the life history of Gautama Buddha. One of the primary factors contributing to the socio-cultural engagement between these two South Asian nations has been „religion“. Nepal being a Hindu country and India being predominantly comprised of Hindus has served as a catalyst in promoting religious tourism. As a result, every year, a huge number of people of both the nations visits each other's nations for pilgrimage purpose like for instance Nepalese citizens visits India's religious places like Haridwar, Rishikesh,

---

<sup>9</sup>[http://trade.ec.europa.eu/doclib/docs/2006/september/tradoc\\_113424.pdf](http://trade.ec.europa.eu/doclib/docs/2006/september/tradoc_113424.pdf) accessed 12 February 2017.

Vaisnodevi, Varanasi, Gaya, etc. Similarly, the Indian tourists visits Nepal's religiously significant places like Lumbini, Ram-Janaki temple, Pashupatinath temple and such other places.<sup>10</sup>

The cultural bondage between these two neighbouring nations was lubricated with the establishment of the „Nepal-Bharat library“ in the year 1951. The library was intended towards facilitating the deepening of cultural relations and also for the smooth and efficient knowledge exchange between the two nations. Later, in the year 1991 with a „Memorandum of Understanding“, the „B.P.Koirala India-Nepal Foundation“ was established in order to build an educational, cultural, scientific and technical interaction between the two nations.<sup>11</sup>

Further, both the countries have also been working towards the augmentation of the intensity of the socio-cultural connectivity shared by the two. One of such initiatives has been the signing of the Memorandum of Understanding between the „Sahitya Kala Akademi“ of India and the Nepal Academy, between „Doordarshan“ and „Nepal TV“, „Press Council of India“ and Nepal, between „Lalit Kala Akademi“ of India and „Nepal Academy of Fine Arts“. In 2007, a cultural centre was established in Nepal by India to promote and propagate Indian culture in Nepal and beyond (Ibid.). So, Nepal and India share a lot of cultural commonality with each other, which if managed well would boost their bilateral relationship.

#### India and Bhutan

In the words of the current Prime Minister Shri Narendra Modi:

*“Bound by common interests and shared prosperity, India and Bhutan enjoy a unique and special relationship, which has been forged by ties of geography, history and culture. Therefore, Bhutan as the destination for my first visit abroad as Prime Minister is a natural choice. Relations with Bhutan will be a key foreign policy priority of my government.”*

Both the nations took the initiative to encourage healthy interactions between each other in various fields like education, culture and environment. For the actualization

---

<sup>10</sup> <http://www.nepalembassy.in/socioculrel.html> accessed 12 February 2017.

<sup>11</sup> [https://www.mea.gov.in/Portal/ForeignRelation/India-Nepal\\_Bilateral\\_Brief\\_for\\_MEA\\_website\\_-\\_Oct\\_2015.pdf](https://www.mea.gov.in/Portal/ForeignRelation/India-Nepal_Bilateral_Brief_for_MEA_website_-_Oct_2015.pdf) accessed 12 February 2017.

of the same, both the countries formed the „India-Bhutan Foundation“ in the year 2003, co-chaired by representatives of both the nations. The finance of the foundation is received through contributions made by both the nations and the funds are used for research projects proposed by the citizens of both the nations on various aspects like culture, education, and so on. Similarly, exchange programmes are also encouraged and executed between both the nations.<sup>12</sup>

Another very important socio-cultural link between India and Bhutan can be witnessed vis-à-vis India's north-eastern states like Sikkim and Arunachal Pradesh. Bhutan and Sikkim geographically lie very close to each other between 26° 30' and 28° 30' north latitude and 88° 0' and 92° 15' east longitude (White 1909: 1). Bhutan also shares borders with three Indian states Sikkim, West Bengal (Darjeeling) and Arunachal Pradesh (Kameng district). In fact, Bhutan and Sikkim's political development and transformation also share a great similarity, with both these states having been under monarchical rule in the past until the year 1975 and 2008 respectively. Sikkim in 1975 was integrated into the Indian Union as the 22<sup>nd</sup> state and Bhutan in the year 2008 had its first democratic election.

Furthermore, both these states of the Eastern Himalayan belt also share both religious and cultural ties too, as they follow the Kagyupa sect of Buddhism (Rose 1977: 68-69). The Sikkim National Party also stated that “historically, socially, culturally Sikkim has closer affinities with Bhutan and Tibet”. Both Sikkim and Bhutan earlier followed Sikkim's Pon (Bon)<sup>13</sup> religion or Shamanism which involved nature worship (Coelho 1970: 3; Singh 1985: 71). Later, Buddhism was spread to both these states in the eighth century by Guru Padmasambhava, also known as Guru Rinpoche (Coelho 1970: 3).

In Sikkim, there exist three ethnic communities, namely, Lepcha, Bhutia and Nepali. The Bhutia community is primarily Buddhist, following „Mahayana Buddhism“; the Lepcha communities are also Buddhist but many have converted to Christianity and the Nepalese are predominantly Hindus. So, it is the Bhutia community that share socio-cultural similarities with Bhutan as in both the cultures of both the Bhutanese and the Bhutia, there reflect Buddhist philosophies and principles. For instance,

---

<sup>12</sup> <http://164.100.47.134/intranet/India-Bhutan%20Relations.pdf> accessed 23 February, 2017.

<sup>13</sup> The Bon religion was a curious mixture of witchcraft and sorcery, with the worship of spirits and ghosts and the belief that these spirits existed everywhere in nature like in trees, stones etc.

Buddhist festivals namely „*Saga Daw*“<sup>14</sup>, „*Drukpa Tsheshi*“<sup>15</sup>, „*Guru Rinpoche*“’s *Trungkar Tsechu*“<sup>16</sup>, „*Losong*“<sup>17</sup>, „*Chaam*“ (mask dance performed by the monks in the monasteries) and „*Lhabab Duechen*“<sup>18</sup> are celebrated in both Bhutan and Sikkim; they also refer to and also follow the Tibetan calendar<sup>19</sup> (Mehra 1974: 41-43).

In addition to the religious and cultural similarity, the ethnic constituents of Sikkim resemble those of Bhutan. The Bhutanese of the west are predominantly of Tibetan origin and it is believed that when the Tibetans were migrating from Tibet they entered Sikkim and Bhutan. So, the Bhutia community of Sikkim could resemble culturally and ethnically some Bhutanese tribes and they also speak different dialects of the Tibetan language. Besides, the Bhutia community of both these states co-exists with the Nepali ethnic community, which is known as „*Lhotsampa*“ in Bhutan and „*Nepali*“ in Sikkim (White 1984: 9-14).

The national dress of Bhutan referred to as „*gho/kho, kera*“ shares resemblance with the traditional dress of the Bhutia community of Sikkim. The male attire is known as „*gho/kho*“ and the female dress is known as „*kera*“ in Bhutan. The „*gho/kho*“ is a loose knee-length robe which is tied at the waist and is paired with their traditional boots which are knee-length. The „*kera*“ is wrapped round and tied at the waist by a waistband and pinned up on the shoulders. It is worn with a silk shirt called „*tego*“ (Coelho 1970: 81).

Similarly, the traditional Bhutia dress of men is referred to as „*gho/kho*“ and is a full-sleeved cloak sort of garment which is knee-length and is tied at the waist with a belt called „*kera*“ (Subba 2008: 271-272). The dress of women is also referred to as „*gho/kho*“ which is worn with a silk shirt called „*hanju/tego*.“ The dress is wrapped around the waist, similar to the Bhutanese „*kera*.“ Even in terms of handlooms/handicrafts also there seems to be a very close resemblance like for instance in the traditional carpets, traditional tables (*chokche*) and paintings on the

---

<sup>14</sup> it is considered as the “triple blessed festival” including the birth of the Buddha, his achievement of Enlightenment and of Nirvana.

<sup>15</sup> The Buddha preached for the first time, the Four Noble Truths of Buddhism to his first five disciples in Sarnath.

<sup>16</sup> Birth anniversary of Guru Rinpoche

<sup>17</sup> End of the tenth month of the Tibetan year, considered as the agricultural new year.

<sup>18</sup> The day when the Buddha is said to have descended from heaven.

<sup>19</sup> The Bhutia community (Tibetan origin) also follows the Tibetan calendar.

walls of the Bhutanese and Sikkimese Bhutia's houses and monasteries (White 1971: 297-300).

Similarly, the inhabitants of the Kameng district of Arunachal Pradesh share close cultural links with those in the „Trashigang district“ in eastern Bhutan. The Buddhist Arunachalis of „Kameng district“ often referred to as the „Monpa“ community, are observed as sharing close cultural ties with the „Bhutia“ community of Sikkim and the „Sharchop“ community of Bhutan. The „Monpa“ community like the Bhutanese, use the Tibetan script and their language resembles that of the „Sharchopas“. Even the handicrafts and paintings depicting Buddhist Gods and Goddesses can be found in both Arunachal Pradesh and Bhutan.

Such extent of close socio-cultural links between the north-eastern states of India with Bhutan defines the nature of relationship that India and Bhutan could share at the socio-cultural front. This closeness could emerge as a factor nurturing the bilateral relationship of these two countries on various aspects.

#### India and China (Tibet)

Historically, the cultural relations between India and China can be traced back to the time when Buddhism spread from India to China. The spread of Buddhism into China opened the path for cultural exchange between these two nations. Such an engagement has been documented in the Chinese book *Li-Tai-Kao-Seng-Chuan*, wherein the biographies of the monks have been documented. The book reflects upon the cultural exchange of both nations in the form of monks of both nations visiting each other's country to receive knowledge.<sup>20</sup>

If Tibet (China) is taken into consideration to analyse the cultural links, then it can be established that Tibet and India historically have shared close socio-cultural ties with each other. The spread of Buddhism from India to Tibet has often been recognized as a major link but it has been argued by some that the Tibetans claim their race to have been the descendant of a military general „Rupati“, who belonged to the „Kaurava“ army. It is also believed that „Rupati“ fled to Tibet after being defeated by the Pandavas in the Mahabharata battle and then his followers too followed him to Tibet.

---

<sup>20</sup> [http://shodhganga.inflibnet.ac.in/bitstream/10603/99320/8/08\\_chapter%201.pdf](http://shodhganga.inflibnet.ac.in/bitstream/10603/99320/8/08_chapter%201.pdf) accessed 28 May 2017.

Such a claim was validated on the basis of a letter written by „Sankarapati“,<sup>21</sup> an Indian pundit, wherein he describes the migration of „Rupati“ to Tibet (Mehrotra 2000: 1).

It is also claimed that the term „Bod“ which is often used to refer to Tibet, meant „fled“ and this was in connection with the belief that „Rupati“ had fled with his companions to Tibet. Though there do exist multiple versions of the meaning of the term „Bod“, like for instance some consider the term as merely a mark of identification and others consider the word to have been derived from the term „Bon religion“ (Shakabpa 1984: 1).

One of the primary links between India and Tibet has been the religious factor. It has been known that Buddhism in Tibet spread from India and so India played a major role in establishing Mahayana Buddhism in Tibet. The Indian monks and philosophers that contributed immensely towards the spread and sustenance of Buddhism in Tibet were Nagarjuna, Santaraksita, Padmasambhava, Kamalasila, Atisha Dipankara, Tilopa, Naropa and many others. Besides these, India is host to several Buddhist institutions like „The Central Institute of Buddhist Studies“, Ladakh, in the west to the „Namgyal Institute of Tibetology“, Gangtok and „Central Institute of Himalayan Culture Studies“ in Arunachal Pradesh in the east“. In 1967, the „Central Institute of Higher Tibetan Studies“ was established as a result of the consultation between Pt. Jawaharlal Nehru and His Holiness the Dalai Lama. The objective behind establishing the institution is to educate the Tibetan youth and also to spread Buddhist studies across the Himalayan belt (Gautam 2008: 62-64).

Thus, the relationship between India and Tibet (China) is politically, economically and also culturally defined. It is the nature of the relationship shared by these two nations that would define the geopolitics of the whole Eastern Himalayan region and beyond.

### **1.7 Cooperative Sharing of Trans-boundary Natural Resources: Ensuring Water Security**

The trans-boundary natural resources are “one where two or more countries actually share ownership, stewardship or exploitation of a natural resource (asset), the

---

<sup>21</sup>He is known as Deje-dakpo in Tibetan.

distribution and availability of which is linked between the countries.”<sup>22</sup> In the Eastern Himalayan belt, the states do share the trans-boundary natural resources but often such resources have triggered socio-economic and political conflicts between them. The Eastern Himalayan states like India, Nepal, Bhutan and China (it is not in the Eastern Himalayan belt but its close geographical proximity and strong influence compels its inclusion for a better analysis of the belt) along with Bangladesh share the „Ganges, Brahmaputra and Meghna basin (GBM)“ with each other. The management of the water resources between these countries has repeatedly proved to be a challenging and tough task. Lately, things have improved at the bilateral level with countries attempting to resolve the management of „trans-boundary resources“ like for instance India and Nepal signed the „Mahakali treaty“<sup>23</sup> and India and Bangladesh signed the „Ganges Water treaty.“<sup>24</sup> In addition to these treaties, the cordial relationship between India and Bhutan has contributed towards managing the trans-boundary rivers. Such harmonious management of the trans-boundary rivers, when clubbed with the sharing of data and information, would prove to be economically, socially and politically very beneficial for the nations (Salehin et al. 2011: 29- 32).

The trans-boundary resources can prove to be an opportunity for the nations if the nations choose to amicably share the trans-boundary resources. The benefits of a good management of the trans-boundary resources has been historically proved like for instance in 1960 the „Indus Basin treaty“ between India and Pakistan helped these two nations to manage the Indus river waters; in 1999 through the „Nile Basin initiative“, ten African countries came to mutually share the trans-boundary Nile river. Such cooperation among the nations sharing the trans-boundary resources would lead to the achievement of „water security.“ The term „water security“ involves “holistic water governance, striking a balance between resource (water) conservation and resource use”.

Further, the management of trans-boundary resources would be possible if policies like „Integrated Water Resources Management (IWRM) and Basin Wide Planning and Management“ are implemented effectively. IWRM is defined as “a process which aims to ensure the coordinated development and management of water, land and

---

<sup>22</sup> [http://mekong.riverawarenesskit.org/html/1.11.2\\_description\\_transboundary.html](http://mekong.riverawarenesskit.org/html/1.11.2_description_transboundary.html) accessed 9 July 2017.

<sup>23</sup> The treaty was signed in February 1996 in order to share the water of the river Mahakali.

<sup>24</sup> The treaty was signed in 1996 to share the Ganges river waters.

related resources to maximize economic and social welfare without compromising the sustainability of vital ecosystem” (Rasheed 2008: 1-49). These policies when clubbed with a cooperative approach of the nations would ensure a trustworthy and smooth sharing of the trans-boundary resources.

So, if the nations choose to cooperate with each other in sharing the trans-boundary rivers, then it would strengthen regional cooperation and the lower riparian countries like Bangladesh would extensively benefit from it, as it is primarily an agrarian country and the free flow of river would boost its agriculture sector. Besides, it can also harness the water resource to generate hydropower which would enhance its economy. So, this would have a cumulative impact on the regional cooperation in South Asia.

### **1.8 Borders as Challenges in the Eastern Himalayan belt**

#### **Border Incursions and Unruly Territorial Claims between China and India**

The initial days of relationship between India and China was a cordial one with India being one of the first few countries to have officially recognized the People’s Republic of China (PRC) in 1949. Such cordial relation turned into a friendly one with China’s Premier Zhou En Lai and Prime Minister of India Shri Jawaharlal Nehru, signing the „Panchsheel agreement“ in the year 1954. The agreement propagated for a “peaceful co-existence” of both the nations, but such friendliness and tranquility could not survive long. China in the year 1956 published a map nullifying the 1914 McMahon line,<sup>25</sup> which demarcates China and India. The map showed some of the Indian territories as part of China, which roughened the relationship between India and China. The roughened relationship worsened further with the war of 1962 between the two which resulted into all the diplomatic and economic relationships between the two being stalled (Burkitt et al. 2003: 329, 346).

The disputed areas between India and China were the McMahon Line, the state of Arunachal Pradesh and Aksai Chin (Zhang and Li 2013: 2-3). Sikkim also figured in the list until the year 2003 when China officially recognized Sikkim as a part of India (*The Times of India*, 22<sup>nd</sup> June, 2008).

---

<sup>25</sup> The McMahon Line was established in the year 1914 by Sir Henry McMahon (British Foreign Secretary), as the boundary between India and China.



Border incursions by China have been a common phenomenon and can be understood as one of the primary ill-effects of border sharing. The intensity of such incursions and territorial claims by China is well reflected in the words of Mao: “the correct boundaries of China would include Burma, Bhutan, Nepal”. Even the publication of the 1954 map by China in a book titled *Brief History of China* and the one in 1958, depicted some portions of Bhutan as a pre-historical part of China (Penjore 2004: 114-115).

China claims the Doklam Plateau of Bhutan and some portions to the north of Punakha. Such territorial claims have had an adverse effect on the cordial relationship shared by nations sharing borders like for instance, China’s invasion of Tibet in 1950 had a direct effect on the trade relations between Bhutan and Tibet, due to the increasing flow of immigrants from Tibet to Bhutan. So, Bhutan had to close its borders and end the trading relations with Tibet in order to secure its borders against any kind of intrusion (Karan and Jenkins 1963: 35).

Even Sikkim faced the brunt of sharing borders with Tibet (China). The root of the problem lies in the fact that China perceives the Himalayan states as “Tibet is the palm with Ladakh, Nepal, Bhutan, Sikkim and the NEFA as the five fingers”. Similarly, in 1959 then China’s General Chang Kua Hua said: “Bhutanese, Sikkimese and Ladakhis form a „united family in Tibet.“ They have always been subject to Tibet and to the great motherland of China. They must once again be united and taught the communist doctrine” (Grover 1974: 152-153).

Sikkim’s Nathula Pass is one of the most important passes along the Sikkim-Tibet (China) border and so its geo-strategic significance is obvious and inevitable. It is the border where the armies of both countries are deployed and wire fencing was also done in 1967 to secure the borders. Despite, such preventive measures, the Chinese border intrusions became a common phenomenon (Bajpai 1999: 183-190).

So, it is the ill-management of the borders between India and China that have led to multiple repercussions in the form of such incursions across borders.

## Cross-Border Activities: Terrorism, Immigration, Human Trafficking

Borders are a manifestation of the „geographic compartmentalization“ of states/nations. Such compartmentalization of states and nations also defines their cultural and linguistic demarcations (Thiemann et. al. 2010: 1). It is such demarcation of the varied cultural and linguistic identities that also shapes the „social contours“ of a bordering state or a nation, which could have a detrimental impact when conflicts emerge across borders. As such, the management of borders is dependent on factors like „political and economic relations, ethno- religious links across the border.“<sup>26</sup>

So, borders can be a hub for opportunities as they facilitate the „transnational flow“ of people, cultures, ideas or in other words, promote „transnationalism“. The UNESCO defines „transnationalism“ as “multiple ties and interactions linking people and institutions across the borders of nation-states”. But on the other hand, these „transnational flows“ have become the breeding ground for various „transnational“ crimes like arms, human and drugs trafficking (Lee 2014: 3).

The sharing of borders often invites problems for the bordering states which are uncalled for. Borders often act as an easy passage for unwanted social elements like terrorist, insurgents, drug traffickers and human traffickers. This gets further boosted when the border is a porous one like the India-Bangladesh border, the India-Nepal border and the India-Bhutan border. As expressed by then Director General of Border Security Force (BSF), the porous borders are being used by the militants to execute different illegal acts. The porous borders have also triggered huge migrations across borders and such migrations in the long term can alter the demography and social set-up of the bordering states (Das 2006: 23).

The border areas are as such more vulnerable to illegal activities and infiltrations on the one hand and on the other, they are compelled to bear pressures upon their economic and natural resources too. So, the border areas are endowed with the responsibility of not just securing the inhabitants of that area but are also to ensure the security of the borders, specifically in case of the international borders (Gogoi et.al. 2009: 1).

---

<sup>26</sup>[shodhganga.inflibnet.ac.in/bitstream/10603/10659/10/10\\_chapter%203.pdf](http://shodhganga.inflibnet.ac.in/bitstream/10603/10659/10/10_chapter%203.pdf) accessed 11 July 2017.

The Eastern Himalayan state of Arunachal Pradesh also has been facing several border-generated problems like for instance the insurgent groups of Assam and Nagaland have been using Arunachal Pradesh as the „transit route“ to Myanmar. The state is being used by insurgent groups like the „East India Liberation Tiger Force“ (EILTF), the „National Socialist Council of Nagaland“ (NSCN), the „United Liberation Front of Asom“ (ULFA) and many others to execute their activities. The districts that are most affected are Tirap and Changlang, as these two have thick forests which are favourable for the insurgent groups to discreetly execute their activities. Gradually, such activities are seen as spreading even to other districts of the state like Lohit and East Kameng (Routray 2002: 783). Similar, problems are also faced by India, Nepal and Bhutan due to the porous borders that these nations share with each other. Justice Anup Raj Sharma, former Chief Justice of Supreme Court of Nepal and Chairperson of Human Rights Commission, stated that the porous border between India and Nepal has facilitated anti-social activities like „human trafficking“, „smuggling of fake currencies“, „smuggling of endangered animals or their body parts“, etc. (Sarkar 2017:1).

Furthermore, the porous India-Nepal and India-Bhutan borders have been used as safe transit routes for drug smuggling. From Nepal, „cannabis derivatives“ like „hashish“ and „marijuana“ are smuggled to India and on the other hand, „low grade heroin“ (brown sugar) is smuggled to Nepal and Bhutan. Similarly, the cannabis grown in Bhutan is smuggled to India through various routes, which is facilitated by the porous borders (Das 2012: 17-24).

In addition to these, the porous border between India and Nepal has been used by the terrorists as a safe passage. In 2013, Lashkar-e-Taiba and some other terrorists were arrested from the India-Nepal border. Another very heinous crime that is easily carried out due to porous borders is human (woman) trafficking (Shrestha 2014). Human trafficking across the United States and Mexico border is a common phenomenon. This has been facilitated due to the porosity of the border between these two nations (Walters and Davis 2011: 3). Such critical issues associated with the borders and border states have emerged strongly with the newly elected President of United States Donald Trump being vocal about the United States border with Mexico acting as an easy route for illegal immigrants and smuggling drugs. So, Trump in

March 2017 declared that a thirty feet wall would be erected as a border between the United States and Mexico (*CNBC*, 19 March, 2017).

The challenge ahead is the management of the borders and if this is sorted out well then the borders would be considered as not mere boundaries or demarcations; instead, they would be a cosmic arrangement of varied cultures, natural resources, technology, communications and a lot more. This would then enhance interactions across borders and transcend „borders“ into “smart borders” (Lama 2016: 2).

Thus, borders can be politically, socially and culturally influenced and these would contribute in defining the relationship between the states or nations across borders. This would go further in shaping the regional and global politics.

#### Problem of Sharing Trans-Boundary Natural resources

As Michael K. Bess, a professor of History in Mexico working on the history of the US-Mexico borderlands argues, “climate change will deeply affect how nations negotiate water rights, and this tension will continue to influence political realities in border regions for decades to come”.<sup>27</sup> It is also argued that the „trans-boundary water systems“ could instigate and trigger conflicts among nations. Such conflicts could permeate and transpire into politically, socially and economically oriented chaos, which in the long run could pose challenges at the local, state, regional and global level (Kolas et al. 2013: 13).

The sharing of transboundary natural resources and specifically the water resources has since time immemorial proved to be a source of disagreement, escalating to conflicts between nations. For instance, Bangladesh is a lower riparian state of the huge Himalayan rivers namely the Ganges, Brahmaputra and Meghna. The country is blessed with 400 rivers out of which 57 are trans-boundary rivers. Out of the 57 trans-boundary rivers, 54 come from India and the rest from Myanmar. It is interesting to know that the three Himalayan rivers namely the Ganges, Brahmaputra and Meghna drain a total catchment area of approximately 1.72 million sq. km. But only about 7 per cent of it lies within Bangladesh and the rest lies within India, Nepal, Bhutan and China (Jahangir 2013: 15).

---

<sup>27</sup><https://borderlandshistory.org/2016/12/12/new-book-border-flows/> accessed 20 January, 2017.

Bangladesh is often the victim of two extreme situations: flood and drought. This is primarily due to its position as the lower riparian state with regard to the flow of Himalayan rivers. This issue was further pricked, with India constructing a barrage across the Ganges river in a place named Farakka. This was not acceptable to Bangladesh as the excess water release would flood the country and if the flow of the river was controlled by the barrage, it would lead to drought, which would affect its agricultural sector. With such disagreements and conflicts, Bangladesh discussed the issue in the United Nations in 1976, which led to India signing an adhoc agreement in 1977 for a duration of five years. The agreement resolved the issue to a great extent with Bangladesh and India consenting to share the Ganges water in a ratio of 60: 40 respectively. But the issue of sharing the trans-boundary river waters stands further complicated with India proposing to build the „Tipaimukh dam“ and to divert the Ganges water (Khalid year 89-90).

Several international treaties on trans-boundary rivers have been signed between the nations, like for instance the „Gandaki River Treaty of 1959“, the „Mahakali Treaty of 1996“ and the „Kosi Agreement“ which were signed between India and Nepal. Similarly, the Indus Water Treaty of 1960 was signed between India and Pakistan and in 1996 India and Bangladesh signed the „Ganges Water Treaty“.

These agreements do not validate the cooperative approach of nations towards the sharing of trans-boundary rivers as the nations have remained engaged in disagreements and conflicts over the issue of trans-boundary rivers even after signing these agreements. Like for instance, India and Pakistan since the partition days had begun discussing about the sharing of Indus waters and in this connection several agreements were signed like the „Standstill Agreement“ of 1947. This was followed by the signing of the „Inter-Dominion Accord“ of 1948 and later on, by 1951, the negotiations between these two nations had stalled.

Thereafter, one year later, negotiations resumed with the intervention of the World Bank and both the nations were asked to present their proposal for water sharing. But disagreements continued and it was then that the World Bank proposed for the distribution of the Indus river waters. It was then decided by the World Bank that the western tributaries (the Indus, Jhelum and Chenab) of Indus would be given to Pakistan and the three eastern tributaries (Ravi, Beas, Sutlej) to India. Despite the

agreements, the sharing of the trans-boundary river waters has been a huge challenge for both the nations. One of the instances of such difficulties could be witnessed in 1984 when India put forth a proposal for the construction of a barrage at the mouth of the „Wullar lake“ on the Jhelum river, which was opposed by Pakistan. Other such disputes are the Salal dam dispute, the Kishanganaga hydro-electric project and the Baglihar dispute (Bhattacharjee 2013: 19-23). Currently, the dispute over the Sawalkot dam on river Chenab in Jammu and Kashmir, is the new bone of contention between the two.<sup>28</sup>

The „Indus Water Treaty“ survived wars but the recent border attack on India by Pakistan in the Uri town in the Indian administered Jammu and Kashmir brought the treaty to the centre-stage. India’s Prime Minister Shri Narendra Modi in the review meeting of the treaty said “blood and water cannot flow simultaneously”. He further added that India would make optimum use of the western river waters given to Pakistan. This indicated the usage of the trans-boundary rivers as a diplomatic tool by the nations (*The Times of India*, 28 September 2016, New Delhi).

Similarly, India and Nepal also signed several agreements pertaining to the sharing of the trans-boundary river Kosi. These two nations signed the Kosi agreement in 1954 and both the nations discussed the construction of a barrage on the river in order to regulate the flow of the river. But in April 2008, there occurred a huge flood in the Kosi basin, which affected both India and Nepal. Both the countries held each other responsible for the disaster and later Nepal also expressed its discontentment over the lack of compensation by India in lieu of the acquired lands for the project and the people displaced. Further, Nepal considered India’s role in the Kosi river dispute as an intrusion into its „territorial sovereignty” (Malhotra 2010: 4-5).

An analysis of the above mentioned bilateral issues on the sharing of trans-boundary rivers reveals the complexities attached with the sharing of the trans-boundary natural resources. This is also indicative of the challenges that nations face across borders.

---

<sup>28</sup> <https://defence.pk/pdf/threads/by-building-the-sawalkot-dam-is-india-using-water-as-a-weapon-against-pakistan.484690/> accessed on 10 July 2017.

## 1.9 Borderland and Borderland communities in Eastern Himalayas

The transcending of borders as challenges and opportunities has a direct implication on the borderlands and borderland communities. Oscar J. Martinez has classified borderlands into four types (Asiwaju 1996: 256-257):

1. Alienated borderlands: The alienated borderlands are „functionally closed borderlands“ that also mark the absence of any communication between the communities across the borders. Such borderlands often lead to tension and conflicts.
2. Co-existent borderlands: This type of borderland is a „relatively open“ border with limited interaction across the border.
3. Inter-dependent borderlands: The inter-dependent borderland is also „relatively open“ like the co-existent borderland but the degree of interaction is higher compared to the co-existent borderlands.
4. Integrated borderlands: The integrated borderlands are those that are permanently and strongly stable. The borderland communities and also the goods cross over borders without any restrictions. In such borderlands, the communities across the border do not consider the borders as demarcations; instead, they perceive them to be the hub of multi-faceted opportunities.

In the Eastern Himalayas the borderland communities reflect the inter-dependent and integrated forms of borderlands. In the region, the communities across the borders are observed as having interaction and there is a smooth flow of people and goods across the borders. For instance, the borderland communities of Bhutan and Arunachal Pradesh (Tawang and West Kameng districts) share close social, cultural and religious affinities. The „Sharchop“ community of eastern Bhutan and the „Monpa“ community of West Kameng and Tawang districts are predominantly the followers of „Mahayana Buddhism“. There are several sects and sub-sects in Buddhism like „Kagyü, Gelug and Nyingma“ sects. The „Monpas“ belong to the Gelug sect and the Bhutanese belong to the other two sects. Though there is a categorization of sects, the differences between these sects are minimal (Nanda 1982: 72). The religious similarity also indicates cultural similarity which is strongly influenced by religion. Furthermore, both these borderland communities speak the same language with a Tibetan script. Such a cultural affinity between the borderland communities of both states has encouraged

both sides to develop matrimonial ties with each other (Dutta and Duarah 1990: 38-39).

The borderland communities of both Arunachal Pradesh and Bhutan also enjoy free cross-border movements and also engage in trade. This is facilitated due to the porous border between the two. Earlier, cattle trading was common across the borders but later other goods like maize, rice, kitchen items, tobacco, blankets, oranges, dry vegetables and many others, also began to flow between these two states of the Eastern Himalayan belt. In order to boost the trade further, the governments of both the states signed an agreement on February 28, 1995.<sup>29</sup>

On the other hand, the border between Bhutan and West Bengal (Jaigaon) is also an open one which allows for a smooth flow of people and goods. The trade is common across this border with cheaper goods available on the Jaigaon side and so the Bhutanese would be seen as crossing the border to buy certain goods like eatables, clothings and many other such items. Besides, the trading relationship, the open border has also facilitated other illegal activities. For instance, southern Bhutan was inflicted with activities of tribal militant groups of West Bengal and other illegal activities like human trafficking, arms and drugs smuggling.<sup>30</sup>

Unlike the nature of the border between Bhutan-Arunachal Pradesh and Bhutan-India (West Bengal), the border between Bhutan and China (Tibet) after the 1950s has „functionally closed“. Prior to 1950, the border resembled the category of „integrated borderland“ wherein both the nations shared close cultural and religious affinities but after the Chinese occupation of Tibet, the nature of the border and borderland changed to that of an „alienated“ one. Such nature of a border is further complicated with the issue of territorial disputes between the two. China has been claiming some territories of Bhutan “starting from Doklam in the west, the border goes along the ridges from Gamochen to Batangla, Sinchela and down to the Amo chhu.” Such a situation has turned the border between these two nations politically very sensitive and so the scope of a healthy interaction seems blurred (Mathou 2004: 388-401).

---

<sup>29</sup> [http://aruntrade.gov.in/html/indo\\_bhutan\\_trade.htm](http://aruntrade.gov.in/html/indo_bhutan_trade.htm) accessed 12 July 2017.

<sup>30</sup> <https://www.unodc.org/southasia/frontpage/2013/April/bhutan-working-against-human-trafficking-focussing-on-rights-not-on-numbers.html> accessed 12 July 2017.



The borderlands of the Eastern Himalayan belt have reflected an admixture of conflicts and also the exchange of people, cultures and knowledge. It is the nature of the borderlands that would define and shape the diplomatic relations between the constituent states of the belt. This in turn would again have implications on the nature of the social and cultural interactions across the borders, thereby creating a vicious cycle.

### **1.10 Trans-Boundary Rivers and Their Management: Theories and Complexities**

The debates and discussions surrounding the usage and management of the trans-boundary rivers can be assessed with reference to some theoretical underpinnings like:

**Theory of Absolute Territorial Sovereignty or Harmon Doctrine:** The theory was propounded by the United States Attorney General Harmon in the year 1895. The theory stated that all the individual states have a full right to utilize the natural resources existant within their borders, irrespective of the impact on the other neighbouring nations. On the basis of this theory, United States claimed its full right over the water resources available at its disposal, irrespective of its adverse impact on the rivers of the lower riparian state Mexico (Gosain and Singh 2004: 42).

**Theory of Absolute Territorial Integrity:** According to the theory, the lower riparian states have an absolute right as the upper riparian state over an unaltered flow of a river; so, any activity that could compromise with the quality and flow of river for the lower riparian states require their consent (Rahaman 2009: 209-210).

**Theory of Limited Territorial Sovereignty:** This theory focuses on the “equality of rights” and “equitable utilization” of both the upper and lower riparian states of the trans-boundary rivers. The theory promotes the equitable usage of the trans-boundary rivers by all the sovereign states.

**Community of Interests:** This theory is more of a „communitarian“ approach to the usage of trans-boundary rivers. The theory promotes the need for cooperation in using and managing the trans-boundary rivers by the riparian states (Spiegel 2005: 336-337).

These theories enhance further the challenges associated with the management of the trans-boundary rivers between nations. The complications amplify with the upper riparian states intending to take optimum advantage of the river and the lower riparian states resisting it. The approach of China towards the management of the trans-boundary rivers reflects the theory of „absolute territorial sovereignty or Harmon doctrine“. On the other hand, the attitude of Bangladesh is coherent with the „theory of absolute territorial integrity“ and limited territorial sovereignty“. But an ideal way for maintaining regional harmony is by adopting a „communitarian approach“ in the usage and management of the trans-boundary rivers. This would also prove to be ecologically beneficial as all the riparian states would be partners in managing and taking care of the trans-boundary rivers.

### **1.11 Water Resources in the Eastern Himalayas**

#### **Bhutan**

Bhutan, a tiny Himalayan country with a population of 7,79,666 stands landlocked between two Asian giants, India and China (National Statistics Bureau 13). The country has been blessed with a rich serene natural environment in the form of high mountains, rivers and around 72% of forest cover. There also exist glacial and fresh water lakes which together contribute immensely towards the sustenance of the renewable natural resources like rivers (Dorji 2016: 46-54).

Bhutan has within its ambit perennial flows of rivers which are predominantly glacial fed and favoured by monsoons. The majority of the rivers of Bhutan flow from north to south and the six major river basins of the country are the Amochhu, Wangchhu, Punatsangchhu and Manas, Nyere Amachu and Northern Basin. The country also has trans-boundary rivers, namely, the Amochhu<sup>31</sup>, Kurichhu<sup>32</sup> and Gamri.<sup>33</sup> But unfortunately, the rivers of the country have begun to shrink due to a steady withdrawal of the glaciers. This could be an effect of the „climate change“ and so to a

---

<sup>31</sup> The river is known as Machu in the Chumbi valley of Tibet, from where it originates. Thereafter, it flows to Bhutan and then to India (West Bengal).

<sup>32</sup> The river originates in the Tibet Autonomous Region (TAR) of China. It is known in TAR as „Lhozhang Nub Qu“, „Xung Qu“. The river flows in the south-westerly direction to join the Manas river, which then flows towards India.

<sup>33</sup> <http://www.asiapacificadapt.net/sites/default/files/pdfs/seminars/6th-sharing-learning-seminar/water-resources-management-bhutan.pdf> accessed 11 July 2017.

great extent beyond human control, but such a trend would pose a threat to the „water security“ of the country (Pelden 2010: 2).

Table no. 1 shows the six river basins of Bhutan:

Amochhu basin
Wangchhu basin
Punatsangchhu basin
Manas River basin
Nyere Amachu basin
Northern basin

1. The Amochhu basin/Torsa river: The river originates from Tibet and is comprised of three tributaries, namely, Tangkachu, Khangpuchu and Tromochu. These rivers flow from north to south and the basin is comprised of about seventy-one lakes (Mool et al. 2001: 12).
2. Wangchhu basin: Unlike the Amochhu basin, the Wangchhu basin lies within Bhutan. The basin comprises of three rivers: Thimchu, Pachu and Hachu. The Thimchu river before joining the Wangchhu river flows for about 70 km southwards. The Hachu river is the western tributary and originates from the south of the Masang Kyugdu Range and flows towards the south-east for about 70 km before joining the Wangchhu river. Similarly, the Pachu flows towards the south-east for about eight km and then joins the Wangchhu river. This basin is comprised of „thirty-six glaciers and two hundred and seventeen lakes“ (Ibid,: 12-13).
3. Punatsangchhu basin: The Punatsangchhu basin has a total land area of 13, 263 sq. km and is comprised of two rivers named Mochhu and Phochhu. The glaciers cover about 4200 m of the basin and it is the northern region of the basin that is comprised of glacial lakes and also has galciofluvial deposits. The tributaries Mochhu and Phochhu join each other at Punakha and flow as the Punatsangchhu river. On the

river, several hydropower projects have been built like Punatsangchhu I and II, Basochhu and Dagachhu (Choden 2009: 17-18).

4. Manas river basin: It is the joining of the two rivers, namely, Mangdechu and Dangmechu, that form the Manas river. The Mangdechu is 140 km long and has several tributaries, some of which originate from the glaciers and others from snow-covered terrain. The Dangmechu on the other hand is comprised of two rivers, namely, Kurichu and Gongrichu. The Kurichu flows southwards and first joins the Dangmechu in Mongar and then the Mangdechu, forming the Manas river (Mool et al. 2001: 14-15).
5. Nyere Amachu basin: It is the easternmost river basin of Bhutan and is comprised of small glacial lakes (Ibid.: 15).
6. Northern Basin: The northern basin has fifty-nine glaciers of about 387.73 sq. km and there are ten glacial lakes measuring 7.81 sq. km (Katel et al. 2014: 275). The rivers of this basin flow northwards towards Tibet (Mool et al. 2001: 15).

#### Glaciers in Bhutan

The total area of Bhutan is 46, 500 sq. km, out of which around 1, 317 sq. km is covered with glaciers. The highest glacier basin is the Mangdechhu basin, which is at about 7,500 m near „Gankerphuensum“. The second highest glacier basin is the „Pachhu“ basin which lies near „Chomo Lhari“, at an elevation of 7, 314 m. The country is comprised of various types of glaciers like valley glaciers, mountain glaciers, ice aprons, ice caps, niche glaciers and cirque glaciers. The mountain glaciers commonly occur on the steep slopes of high peaks and the other glaciers like ice aprons, ice caps, niche glaciers and cirque glaciers occur in the plateaus and ridges (Iwata 2010: 323-324).

It is reported that the country has around 2,674 glacial lakes and about twenty-five of these lakes are potentially dangerous for the country (Gurung et al. 2017: 8). The country has glacial lakes like the „Lugge Tsho“ lake which is located in „Lunana valley“ at the „head“ of „Pochu“. Another glacial lake in Bhutan is the „Thortomi

Tsho“, which is an „ice melt“ lake on the Thortomi glacier. There also exists the „Tarina lake“ located at the „western headwaters“ of the Phochu river and the „Raphsthreng Tsho“ (Ageta et al. 2000: 167-171).

In Bhutan the „Glacial Lake Outburst Floods (GLOFs)“ are a common phenomena. Till date, around twenty-one GLOFs have occurred in Bhutan. However, not all these originated within Bhutan“s territory. Around nine of these floods occurred in the Tibet Autonomous Region (China). Most of these floods occurred thirty decades earlier and few after it (Gurung et al. 2017: 8). Some of the GLOF events that occurred in Bhutan in the past before the 1970“s are: „Jhomohari“ south (pre-1966), upper „Chokham Tsho“ (pre-1966), „Simdong Goi Tsho“ (pre-1966), „Tarina Tsho“ (1957), „Luggye Tsho“ (before 1966) and many others (Komori et al. 2012: 64).

Some recent glacial lake floods that occurred in Bhutan were the outburst of the Luggye Tsho in 1994 in Lunana. As a result of the event, huge damages were incurred in the Punakkha- Wangdue valleys that lay the downstream (Lotay 2015: 6). In 2015, the Lemthang Tsho“s outburst caused huge glacial floods in Bhutan, which caused huge disasters to the agricultural fields and bridges (Gurung et al. 2017: 8).

Such glacial floods have caused huge damage to human life, livestock, agricultural fields, etc., thereby creating devastating losses for the people of Bhutan.

## Nepal

In the global level after Brazil, Nepal is considered as the world“s most „water-rich“ country (Taylor et al. 2014: 1). Nepal has been blessed with immense water resources in the form of perennial river flows. The country has about six thousand rivers with a drainage area of 1,91,000 sq. km. The rivers of Nepal have been categorized into three types on the basis of their origin:

1. Glaciers and snow-fed lakes: Koshi, Gandaki, Karnali and Mahakali rivers.
2. Midlands or Mahabarat range: Babai, West Rapti, Bagmati, Kamala, Kankai, Mechi.
3. Siwalik range: streams and rivulets.

The first category of rivers which are glacial and snow-fed are perennial rivers that contribute immensely towards the sustenance of agriculture in the country. The second category of rivers is fed by precipitation and groundwater, so the flow of the

rivers depends on the climatic conditions. Lastly, the third category of rivers is based on seasonal conditions. The maximum flows of the rivers in Nepal can be witnessed during the month of July and August and the least in February-March. A larger share of the flow is witnessed from June to October due to the south-west monsoon winds. In addition to the rivers, Nepal has 3,252 glaciers and 2,323 glacial lakes and the glaciers cover about 3.6% of Nepal's total area (Aryal and Rajkarnikar 2011: 1-2).

The rivers of Nepal originate from the east and flow towards the west and some rivers originate from the Tibetan Plateau. The rivers of Nepal, as mentioned earlier, flow from north to south towards the Ganges and then ultimately fall into the Bay of Bengal. The total „average annual runoff“ into Nepal's rivers is approximately 2,00,000 million cubic metres. Such flow of the rivers in Nepal is facilitated further due to the country's climatic conditions. The climatic condition of the country ranges from the “summer tropical heat and humidity of the Terai to the colder dry continental climate in the middle and the alpine winter climate throughout the northern mountainous region” (Upreti 2006: 181-182).

Though Nepal is rich in water resources, the inadequate management of the water resources has led to an increase in the sedimentation and also the displacement of the rivers. This is a critical issue for Nepal, as the water resources of the country are the strongest asset that it possesses at its disposal. The paradox lies in the fact that Nepal also faces extreme dry seasons with the rivers drying up with seasonal variation (Taylor et al. 2014: 1-30).

The river basins of Nepal have been categorized into five: Table No. 2 (Bhushal 2008: 1)

High Himalayan river basin
High Mountain river basin
Middle Mountain river basin
Siwalik river basin
Tarai river basin

Four main river basins of Nepal:

1. Koshi river basin: The river basin falls in eastern Nepal and is comprised of seven rivers. It is as such also referred to as the „Sapta Koshi river“ and the seven rivers that constitute this basin are the Tamor River, the Arun River, the Dudh Koshi River, the Likhu River, the Tama Koshi River, the Sun Koshi River and the Indrawati River. Most of these rivers originate in Nepal itself and flow towards the north-east and south-west except the Sun Koshi river, Arun river and Tama Koshi river that originate from Tibet. The basin has 779 glaciers which cover 1,410 sq. km of the total area of the basin (Mool et al. 2001: 75).
2. Gandaki river basin: The basin is situated in central Nepal and the river originates from Tibet. The river flows from Tibet to Nepal and then to India and joins the Ganges river. The area of the basin is around 35,000 sq km and the annual precipitation in the basin ranges from 152 mm to 5493mm (Panthi et al. 2015: 212-216).
3. Karnali river basin: This river basin is further divided into six sub-basins namely: „Bheri“, „Mugu Karnali“, „Humla Karnali“, „Kawari“, „Tila“ and „West Seti“. Out of these sub-basins the source of the Humla Karnali river lies in Tibet and the rest originate in Nepal. These sub-basins are comprised of several lakes and glaciers with the Humla sub-basin consisting of 345 glacial lakes, which is the highest in the Karnali river basin. Then follows the Mugu Karnali sub-basin with the third highest being the Bheri sub-basin (Mool et al. 2001: 117-119).
4. Mahakali river basin: The basin has two sub-basins which together join the Mahakali river near the Nepal-India border (Ibid: 119). The main river of this basin is the Mahakali river and it forms the western border between Nepal and India. The basin has a total drainage area of 15,640 sq. km, with only about 34 per cent lying with the territory of Nepal.<sup>34</sup>

---

<sup>34</sup> <https://www.researchgate.net/file.PostFileLoader.html?id...assetKey> accessed 12 July 2017.

## Glaciers in Nepal

Nepal consists of about 3,252 glaciers with an area of 5322 sq. km.<sup>35</sup> Some of the glaciers found in the various river basins of Nepal are listed in Table no. 3: (Higuchi et al. 2010: 302-306).

River Basin	Glaciers
Karnali Basin	Saipal
	Ghat
	N. Saipal
	Kaphe
Kali Gandaki Basin	Konabon
	Chhonbarban
	S. Annapurna
	W. Annapurna
	E. Annapurna
	Tulangi
	Chuling
	Lidanda
	Pungeu
	Manaslu
	Jarkya
	Torogompa

<sup>35</sup><http://www.forestrynepal.org/images/Retreating%20the%20Himalays%20Glaciers%20Alarming%20Situation%20in%20Nepal.pdf> accessed 12 July 2017.



	Sangjing
	Chinkyong
	Lalaga
	Phurepu
	Chasmudo
	Lirang
	Shalbachum
	Langtang
Sapta Kosi Basin	Phurbi Cha Chu
	Nyanamphu
	Droga Nagtsang
	Dudh Kund
	Dingjung
	Nangpa
	Sumna
	Ngojumba
	Gyubanare
	Phuchong
	Pamdro
	Jannu
	Yomatari

	Yalung
--	--------

Nepal is constituted of such rich water resources but on the other hand, it has been at the receiving end of the disasters caused due to these water resources. The country has experienced several GLOFs causing huge damage, with some of them originating from within the country and some in the neighbouring nations like China. Some of such GLOFs that originated in Nepal and have affected the country in the past are: „Seti Khola“.<sup>36</sup> „Dudh Koshi“ (1977), „Tamor“ (1980), „Dudh Koshi“ (1985), „Tama Koshi“ (1991), „Dudh Koshi“ (1998), „Madi river“ (2003 and 2004) and many more. Similarly, the GLOFs that originated in China and which also impacted Nepal are: „Sun Koshi“ (1935), „Trishuli“, „Arun“ and Sun Koshi“ (1964), „Arun“ (1968, 1969, 1970), „Sun Koshi“ (1981), „Arun“ (1982), „Trishuli“ (1995) (Mool et al. 2011: 9-10).

The Nepal experience advocates an understanding that the possession of enormous natural resources like water cannot benefit the host country until mechanisms are set up to well manage the resources. Nepal has not been able to harness its water resources in generating hydropower projects. In fact, the country’s water resources have the capacity of generating 40,000 MW but till date, merely 600 MW has been harnessed.<sup>37</sup> Nepal needs to economically and sustainably market its water resources by generating electricity hydrologically.

## Sikkim

The Eastern Himalayan state Sikkim is constituted of varied water resources in the form of glaciers, lakes, rivers and springs. The most important rivers of Sikkim are the Teesta river and Rangit river. Both these rivers are glacial-fed and flow through their basins to join the Brahmaputra river. The state is blessed with many glaciers: Zemu glacier, Rathong glacier, Lonak glacier, Talung glacier and many more. The largest glacier of the state is the Zemu glacier. Most of the rivers of the state are glacial-fed and so are perennial rivers. The state also has lakes, namely, Khecheopalri, Gurudungmar, Cholamu lake, Dud Pokhari and many others. The highest lake of

<sup>36</sup>This GLOF occurred almost 450 years ago.

<sup>37</sup> <http://www.ippan.org.np/HPinNepal.html> accessed 12 July 2017.

Sikkim is the Gurudungmar lake and these lakes constitute a major source of water and so contribute immensely towards sustaining the „water ecology“ of the state. In addition to the rivers and glaciers there also lie springs (Khawas 2004: 2-6). In Sikkim there are about 84 glaciers which are spread over an area of 440 sq. km and around 150 lakes which hold a great cultural significance in the state (SAC and SSCST 2010: 49).

Sikkim is host to one of the biggest trans-boundary rivers of the Himalayas, the Teesta river. The river originates from the Pauhunri glacier of Sikkim and flows down through the Darjeeling ridge; then, it moves further towards North Bengal, later enters Bangladesh and then joins the Brahmaputra river. This river is of prime importance in South Asia as it is one of the longest rivers in the northern part of Bangladesh and its catchment area also covers both Sikkim and the Darjeeling district (West Bengal) (Islam 2016: 3-15). The length of the Teesta river is 404 km and it is accompanied by various tributaries like the Dickchu, Lachungchu, Rangpochu, Rangeet, Zemuchua and Rangyong chu. The Rangit river joins the Teesta river near the Sikkim-West Bengal border (Waslekar 2013: 6-7).

Furthermore, the state is also blessed with „hot springs“ which have both therapeutic value and cultural significance. These hot springs are believed to contain sulphur in high proportion with an average temperature of 50 degree celsius. The famous hot springs of the state are the Yumthang hot spring, the Reshi hot spring, the Ralong hot spring and the Borang hot spring, which are located in various parts of the state: north, west and south.<sup>38</sup>

---

<sup>38</sup> <http://www.sikkimtourism.gov.in/Webforms/General/SikkimAtAGlance/HotSprings.aspx> accessed 12 July 2017.

Table no. 4

Water Resource	No.
Glaciers	84
Lakes (wetlands)	227
Rivers and Streams	104
Hot Springs	09

Source: Deptt. of Forest, Environment and Wildlife Management, Govt. of Sikkim

#### Arunachal Pradesh

Arunachal Pradesh is the largest state among the north-eastern states of India. It is surrounded by Bhutan in the west, China in the north-east, Myanmar in the east and Assam to the south. The state has a temperate climatic condition in the north and in the south, it has a warm and humid climate. The state receives an average annual rainfall of 2,000 mm to 8,000 mm (Indian State Forest Report 2009: 58).

The state is blessed with one of the trans-boundary rivers called the Brahmaputra and there also exist other rivers, namely, Lohit, Kameng, Siang, Subansiri, Dibang, Changlang, Tirap, Papumpare and Tawang. 82.8 per cent of the Brahmaputra river basin falls within the state and there also exist several glaciers in other river basins of the state (INRM/IIMA/IISc 2011: 12-14). The trans-boundary river Brahmaputra flows through the state from Tibet (China) to Arunachal Pradesh, to Assam and then to Bangladesh (Patranobis 2016). Furthermore, the state also has glaciers and the two most important glaciers are the Bichom and Kangto (Negi 1991: 26).

The state has about 162 glaciers stretched over 228 sq. km. The Himalayan glaciers are divided into the three basins: Indus, Ganga and Brahmaputra. These glaciers are distributed in five states, namely, Arunachal Pradesh, Jammu and Kashmir, Himachal Pradesh, Uttar Pradesh and Sikkim (Hasnain 1999: 2).

The state is divided into five major river valleys as mentioned in Table no. 5:<sup>39</sup>

Siang Valley
Kameng Valley
Subansiri Valley
Lohit Valley
Tirap Valley

The state as such is blessed with immense water resources which makes it one of the most viable ones for the development of hydropower projects.

#### Darjeeling

Darjeeling romanticized as the “Queen of Hills”, is the northernmost district of West Bengal and is also a constituent state of the Eastern Himalayas. The major rivers of the district are the Teesta river, the Rammam river, the Rangit river, the Mechi river, the Balason river and the Mahananda river. The rivers of the district are mostly glacial and monsoon-fed.<sup>40</sup>

The Teesta river rises in the Himalayas, drains down to Sikkim and then flows towards North Bengal. The river as such forms a boundary between Sikkim and North Bengal (Darjeeling). In Darjeeling, the primary tributaries of the river at its left and right banks are the Rangpo and the Rilli (right) and the Rangit, Rangpo, Rayeng and Sivok (left). The tributary Rangit river, flows from west to east and then joins the Teesta river. Similarly, the Rammam river rises from the Singalila range and forms the western boundary of Darjeeling. The river flows from west to east and joins the river Rangit. It is accompanied by its tributaries, Rathu and Siri. The Balason river originates in the south-west of Darjeeling and flows towards the Tarai region. The river thereafter splits into two streams known as the New Balason and the Old

---

<sup>39</sup> [http://shodhganga.inflibnet.ac.in/bitstream/10603/8152/6/06\\_chapter%202-3.pdf](http://shodhganga.inflibnet.ac.in/bitstream/10603/8152/6/06_chapter%202-3.pdf) accessed 26 July, 2017.

<sup>40</sup> [http://shodhganga.inflibnet.ac.in/bitstream/10603/149403/7/07\\_chapter\\_02.pdf](http://shodhganga.inflibnet.ac.in/bitstream/10603/149403/7/07_chapter_02.pdf) accessed 12 July 2017.

Balasan. The former joins river Mahanadi near Siliguri and the latter flows further southwards and joins the river Mahanadi in Purnea. Further, the river Mahanadi rises from the east of Kurseong. It flows southwards towards Siliguri and then towards west, forming a boundary between Terai and Jalpaiguri. The river later joins the river Ganges.

The river Mechi that drains the district originates in the Singalila range (Nepal frontier) and flows from north to south into Terai and joins the river Mahanadi (Malley 2012: 8-11).

The natural springs also form a major source of water resource for Darjeeling. The natural springs from the Sinchal range named Sinchal North and South act as the major source of water for Darjeeling. Water scarcity has always been a problem in Darjeeling and the same has been caused due to deforestation and also because of the the impact of climate change (Chhetri and Tamang 2013: 65).

## **1.12 Conclusion**

With time, the conceptualization of terms like „border“ and „borderlands“ has undergone massive changes. Borders are being increasingly conceived more as a point where cultural and ideological confluences breed, rather than as demarcations. In fact, with globalization, the borders behaving as the manifestations of geographical restriction, ethnocentrism and jingoistic nationalism have now been accepted more as opportunities for interactions, cultural exchanges, trade and a lot more. But the reality remains that with globalization, borders have also become a vibrant gateway for various anti-social activities like drug trafficking, human trafficking, arms supply and smuggling.

So, it is the culture and the political composition of a country that plays a vital role in defining the nature and approach of the borders and borderlands. The challenge ahead is to determine the causes and factors that lead to the countries economically interacting and engaging healthily with each other (Jailly 2010: 11). The borders and borderlands have a very critical role to play in the Eastern Himalayan belt, especially due to the presence of an „Asian giant“, China, in the neighborhood. The complexities

are heightened further with China controlling Tibet as this „control“ also indicates the control of China over the „Himalayan headways“ of the main rivers of India and South-East Asia. This then creates the problem of „water security“ in the Eastern Himalayan belt and beyond (Bolton 2010: 53).

Thus, the „politics“ involved in the management of the borders and borderlands gets further „politicized“ with the natural resources like water crossing borders without any restrictions. This has led to the nations today approaching closer towards fighting „hydro wars“ due to the disagreements associated with the management of the trans-boundary rivers. This then makes the border issues more complex and sensitive in the Eastern Himalayan belt.

## CHAPTER 2

### **BHUTAN AND SIKKIM HYDRO-POWER PROJECTS: GENESIS AND POLICIES**

#### **2.1 Introduction**

Bhutan, a small Buddhist country in the Eastern Himalayas, has an area of approximately 47,000 sq km or 18,000 sq. miles and is surrounded by Tibet in the north and the other three sides (south, west and east) by India.<sup>1</sup> The landlocked position of Bhutan plays a pivotal role in defining the varied political and economic dynamics of Bhutan, which is reflected in its bi-lateral relations with its neighbouring countries—India and China.

Within such a geographical set-up, Bhutan's nearest domestic airport in India is the Bagdogra domestic airport of Siliguri, West Bengal, and the Netaji Subash Chandra Bose International airport of Kolkata, West Bengal is its nearest international airport in India. Besides this, Kolkata also serves as the closest seaport to Bhutan and by road it is only 750 km away from Phuntsholing.

The geographical location of Bhutan is further complicated with the mountainous, rugged topography and climatic conditions like heavy rainfall and extreme winters. Such difficult terrain makes the construction of roads and railways difficult. So, the mode of transport available in the country is air and by road, wherever available (Kharat 2015: 82).

Considering the geographical location of Bhutan, it is observed that it has been developing its ties with India. Bhutan began engaging economically with India and such interactions between these two countries dates back to the British period. They signed the Treaty of Sinchula in 1865 followed by the Treaty of Punakha in 1910. These treaties marked the beginning of a friendly relationship between Bhutan and

---

<sup>1</sup> In the south, Bhutan is surrounded by the Jalpaiguri district of West Bengal and the Golpara, Kamrup and Darrang districts of Assam. In the west of Bhutan lies the Chumbi Valley of Tibet, Sikkim and Darjeeling. Similarly, in the east, the Kameng district of Arunachal Pradesh surrounds Bhutan.



British India, wherein Bhutan on one hand had to surrender its territories in the Doars to British India and on the other hand, it also received an annual allowance of Rs. 50,000 in 1865 and Rs. 1,00,000 in 1910. Such nature of relationship continued even in the post-independence era. The newly independent India and Bhutan, in 1949, signed a treaty, according to which it was stated that India would not interfere in the internal matters of Bhutan but would guide the latter in its external matters (Ahsan and Chakma 1993: 1043). So, post-1947, the Bhutan-India relations strengthened further with Bhutan asserting itself more as a sovereign nation and India supporting Bhutan's sovereign status.

The analysis of the development of hydro-power projects in Bhutan would inevitably require the discussion of the economic partnership of Bhutan with India, as almost all of the hydro-power projects of Bhutan have been funded by India.

The pace of the relationship shared by Bhutan and India began to gain momentum after the 1950s, as prior to it Bhutan had chosen to stay aloof from the global world. But events like the Chinese intrusion across the northern border of Bhutan and the invasion of Tibet by China in 1950-51 adversely affected Bhutan's economy due to the disruption of its trade with Tibet and politically, Bhutan felt insecure about its border. All these events compelled Bhutan to open itself to the outside world, and specifically to India.

So, after the 1950s the bilateral relation between Bhutan and India developed and it was in the years 1954-55 that India took the initiative for the establishment of a hydro-meteorological station in Bhutan. Similarly, in 1956, India offered hospital equipments worth Rs. 2.6 lakhs to Bhutan. This was followed by the formulation of the First Five Year Plan of Bhutan in 1961 with the support of India. In fact, India's contribution towards the development of structured economy has continued till date, though the extent of the contribution has decreased like for instance in Bhutan's First Five Year Plan (1961-66) the percentage of India's contribution was 100% and in the latest Eleventh Five Year Plan (2013-18) the percentage of India's contribution is 21%.<sup>2</sup> Thereafter, India also provided financial support in developing hydropower

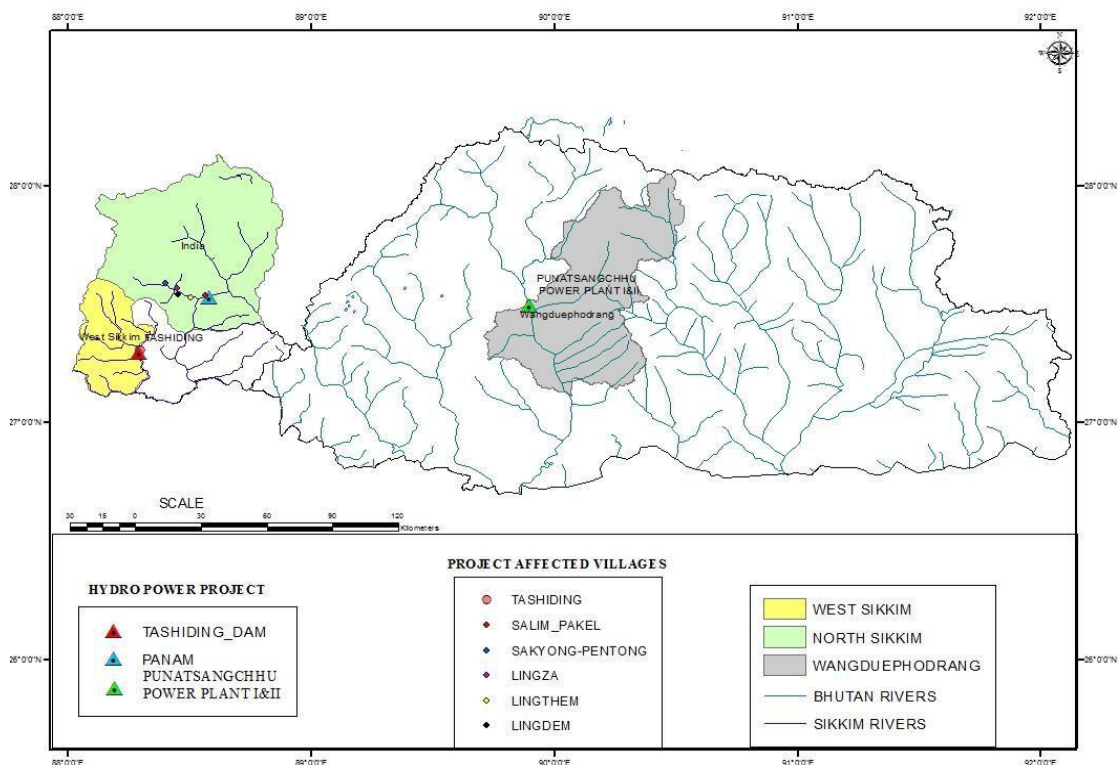
---

<sup>2</sup> <http://www.gnhc.gov.bt/wp-content/uploads/2011/04/salient-feature-of-4th-Plan.pdf>. accessed on 11 July 2017.

projects in Bhutan and the first hydro-project of Bhutan was the Chukha Hydro-project which was initiated in the year 1974.

Similarly, Sikkim is a north-eastern state of India surrounded by China (Tibet) in the north, Nepal in the west and Bhutan in the east. The state is primarily an agrarian state with about 6,11,000 population according to the Census 2011. Until 1975, Sikkim was a Buddhist kingdom and it was with the 36<sup>th</sup> amendment Act of 1975 that it was integrated into the Indian Union as the 22<sup>nd</sup> state.

These two states of the Eastern Himalayan belt share not just similar geographical characteristics but also a similar pattern of political development with both being under monarchical rule prior to the adoption of a democratic form of government. There also lie strong similarities in terms of their culture, demographic pattern, etc. It is such similarities that allow for a comparative study of the two. Further, it would be imperative to also understand that Bhutan and Sikkim are being compared not as a country and a state per se but as the constituent states of the Eastern Himalayan belt.



Map no. 2 Topographical Map of Bhutan And Sikkim

Source: Map prepared by Ph.D. scholar, CSRD,JNU from open source

The map shows the location of the hydropower projects undertaken for the study. The map shows the rivers of Bhutan and Sikkim and the project area Wangdue Phodrang, Bhutan has been indicated in grey colour. Similarly, the North and West district of Sikkim has been highlighted through yellow and green colour. The map has also indicated the project affected villages in Sikkim. The dams of the projects of both Bhutan and Sikkim has been indicated through green, red and blue colours respectively. The map is not depicting the borders between Bhutan and Sikkim, the focus was to locate the project area of both the states.

## **2.2 Hydropower Projects of Bhutan and Sikkim: A Critical Analysis**

Two hydropower projects, one each from Bhutan and Sikkim, are discussed in the research work. For Bhutan, two projects named Punatsangchhu-I and Punatsangchhu-II have been taken into account and in case of Sikkim, the Panam project and the Tashiding project were analysed.

### **2.2.1 Punatsangchhu-I and II hydropower project: Introduction**

The Punatsangchhu-I hydropower project with a total capacity of 1200 MW<sup>3</sup> began in November 2008. It is built on the Punatsangchhu river in Wangdue Phodrang Dzongkhag of Western Bhutan. The project was handed over to the 'Punatsangchhu-I Hydro Electric Project Authority (PHPA-1)' which was constituted together by the Indian Government and the Royal Government of Bhutan. The project is estimated to generate 5543.62 GWh<sup>4</sup> energy and a 'net energy displacement' of 5367.55 GWh (Project Design Document 2013: 2). The project construction company is an Indian company, Larsen and Toubro, and the Head Race Tunnel is being built by another Indian company, Gammon Limited.

The project is constructed on the left bank of the Punatsangchhu river. The geographical location of the dam site is at 27° 24' 21" north and 89° 54' 45" east. The location of the powerhouse is located at 27° 20' 22" north and 89 degree 89° 55' 49" east. The construction site is about 7 km (kilometer) downstream of Wangdi bridge. The upstream of the project area has a human settlement in the place named

---

<sup>3</sup> Mega Watt is a unit of power equal to one million watts.

<sup>4</sup> Gigawatt hours is a unit of electrical energy equal to one billion watt hours or one thousand mega watt hours.

Wangdue<sup>5</sup> which is around 10 km (kilometer) from the project. Besides this, the project is located 80 km from Bhutan's capital Thimphu and is about 110 km (kilometer) away from Bhutan's international airport Paro. The nearest railway route to the project area is the 'Hasimara-Alipurduar' line in India. The main components of the project are accessible through the Wangdue-Tsirang road (Ibid.: 4).

The project would require the construction of a dam across the river Punatsangchhu—'an intake with a desilting chamber, a water conductor system and an underground power house and transmission lines'. These would be used to channelize the energy supply to India from Bhutan. The project would also involve the construction of a '137 m (meter) high and 279 m wide concrete dam' across the river and this dam was to be located about 7 km downstream of the Wangdi Bridge. Two tunnels with a 11 m diameter each would be built to channelize the flow of the diverted water and also a 9-km-long 'Head Race Tunnel (HRT)' attached to an 'underground powerhouse'. With such infrastructure and technology the potential energy of the river flow would be converted into mechanical energy and then further into electrical energy (Ibid.: 2).

The concept of a hydropower project is self-explanatory to understand the objective behind the establishment of the Punatsangchhu-I project. In other words, the project has been constructed to harness the renewable energy source of water for power generation. The electricity generated would be channelized to cater to the needs and demands of two countries, Bhutan and India. The power generated would be supplied to India through the transmission lines via the Kalikhola substation at the Bhutan border and on the Indian side, through the Alipurduar substation (Project Design Document 2013: 2). Moreover, it cannot be denied that hydropower projects are one of the important economic sectors for both Bhutan and India. In simple words, the financial benefits incurred from power generation would also contribute towards the economic growth of both Bhutan and India.

On the other hand, the Punatsangchhu project-II is located on the right bank of the Punatsangchhu river along the Wangdue-Tsirang highway. The project is further downstream than the Punatsangchhu-I project, as it is placed 22 km and 35 km downstream of the Wangdi bridge. The project has an installed capacity of 1,020 MW and would contribute immensely towards the combating of the greenhouse gases,

---

<sup>5</sup> District Heaquarter, West Bhutan.

specifically carbon dioxide. The project is being built by the Indian company named Jaiprakash Associates Limited. The project detail document (PDD) specifies that the project would combat the emission of carbon dioxide to a huge extent. The same has been estimated with the installation of a regional grid boundary constituting of Northern Eastern Western and North Eastern (NEW-NE) grid of India and Bhutan. The project is being supervised by an authority constituted by the governments of both Bhutan and India. This authority is known as Punatsangchhu-II Hydro Electric Project Authority (PHPA-II). The project is constituted of structures like concrete dam, desilting chambers, headrace tunnel, diversion tunnel, surge shaft, underground station, tail race tunnel and other such structures.

Similar to the Punatsangchhu-I project, this second project on the river Punatsangchhu would cater to the electricity demands of both the host country Bhutan and the partner country India. In the absence of this hydrologically enabled project, there would have been the usage of fossil fuels for electricity generation. Such would have further deteriorated the environmental issues due to the emission of the greenhouse gases which would have contributed to the impacts of climate change.<sup>6</sup>

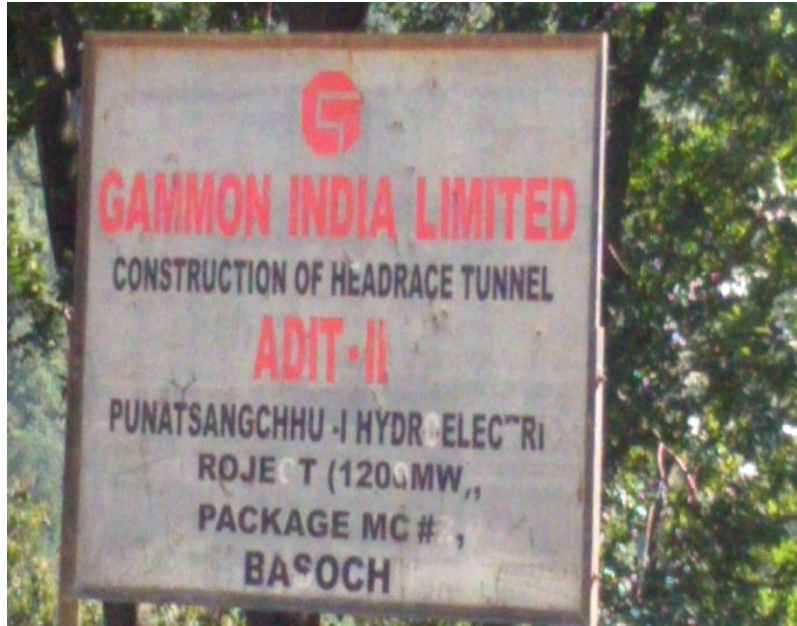


Picture 1: Transparency Board Of Punatsangchhu-I Project

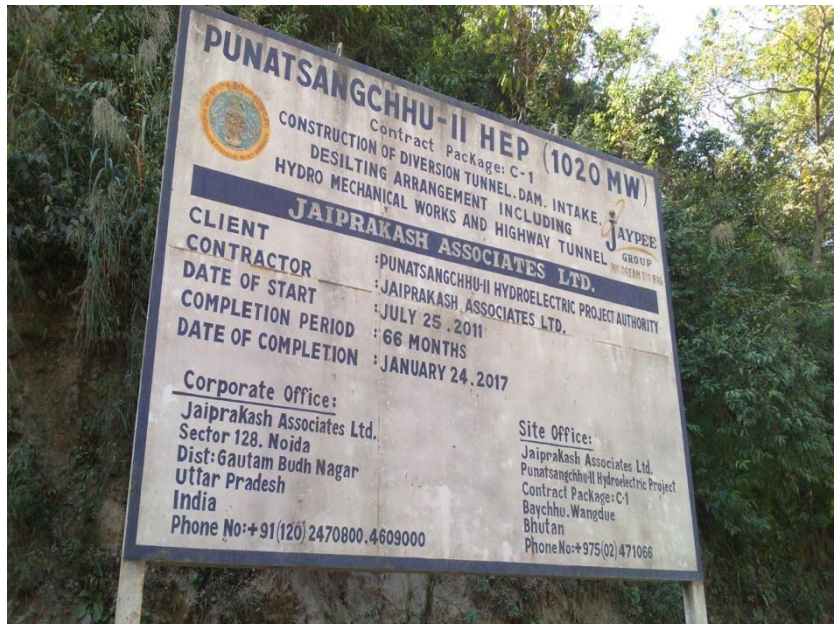
---

6

[https://cdm.unfccc.int/filestorage/S/N/D/SNDRTB1VMG750O26J3X4PCIAEKF9HL/PDD\\_1020\\_P2\\_clean\\_ver.pdf?t=eE18b2pqbm02fDA-2AhgFuSKQFl6BD\\_4LLLQ](https://cdm.unfccc.int/filestorage/S/N/D/SNDRTB1VMG750O26J3X4PCIAEKF9HL/PDD_1020_P2_clean_ver.pdf?t=eE18b2pqbm02fDA-2AhgFuSKQFl6BD_4LLLQ) accessed 11 January, 2017.



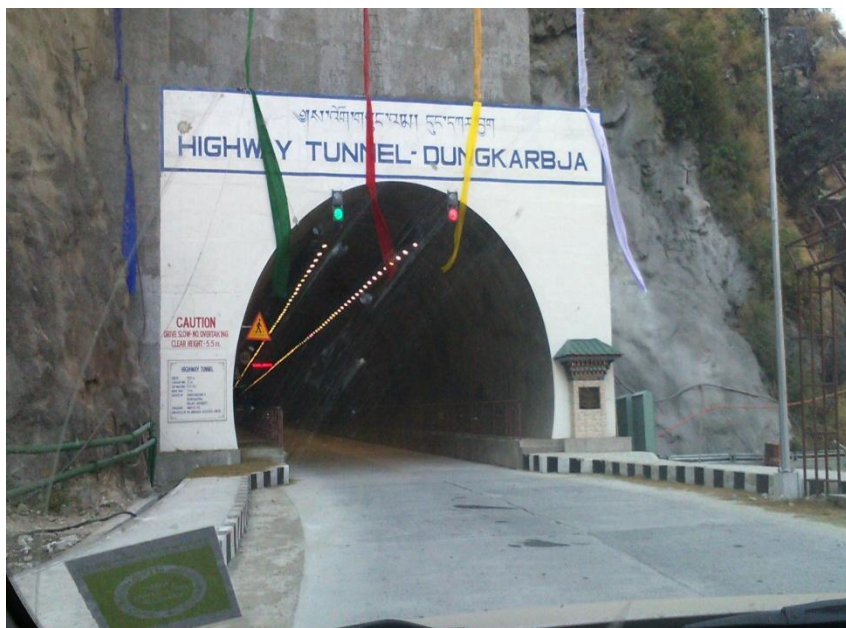
Picture 2: Transparency Board of Head Race Tunnel, Punatsangchhu- I Project



Picture 3: Transparency Board of Punatsangchhu- II Project



Picture 4: Punatsangchhu river, Wangdue Phodrang Dzongkhag, Bhutan



Picture 5: Punatsangchhu- II Project Highway Tunnel

### Challenges in the Construction of the Projects

The location of the project is mountainous in terrain and so the smooth construction of the project becomes difficult. The topographical feature in western Bhutan and the Puna Tsang Valley is that of very 'steep and lower slopes and many high cliffs'. In fact, the project area is the most 'rugged terrain' in Bhutan. Besides these topographical difficulties, the monsoon also poses a huge challenge for the project

developers, as western Bhutan receives heavy monsoon rains and this increases the risk of landslides during the construction phase. Furthermore, Bhutan having been located in the Himalayan belt, specifically the Eastern Himalayan belt, makes the country prone to not just heavy rainfalls but also tectonic activities and glacier melting which together pose a huge challenge to the hydropower activities (Ibid 2013: 23-24). Like for instance in the case of Punatsangchhu-I, a 137 m dam was to be built out of which 74 m was to be built below the ‘deepest river bed level’ but the rocky bed level of the river did not allow it. So, the Department of Geology and Mines (DGM) of the Royal Government of Bhutan conducted a geophysical study for the project and the study recommended for the dam site to be relocated about 1.4 km further down. It was also then that the ‘installed capacity’ of the project was revised from 1095 MW to 1200 MW. This then led to an increase in the project cost price. But the examination of the new project site revealed that the new site too had a rocky level below the ‘70m river bed level’, so the problem remained and also caused a delay to the project activities. Such delays would affect not just the targeted schedule for project completion but also increased the cost of the project (Ibid 2013: 17-25).

The rainy season in Bhutan which usually lasts for five months (May to September) tends to cause huge landslides leading to road blockage. Along with it, ‘temporary reservoirs’ are also formed due to the blocking of river valleys as a result of landslides. In fact, the blockage of the most important and the only route Phuntsoling to Thimphu, which is used for transportation of the equipments for hydropower projects and other goods, leads to Bhutan’s capital Thimphu being cut off from its trading partner India. So, all these could delay the construction of the hydropower projects. In addition, the project area is also prone to GLOFs which would hamper the project activities and it is the long duration of the construction phase of the project which would also intensify the vulnerability of the project to such risks and also increase the cost (Ibid.: 24).

The other important stage in the construction of the hydropower projects is the laying of the ‘transmission lines’ which is essential for supplying power/electricity. The laying process becomes difficult due to the ‘rugged terrain’—the thick forests of the project area. The problem gets further intensified due to the “geological risks” of the region, which could cause damage to the transmission lines. In other words, the



damage to the transmission lines means the electricity supply would be hampered due to the non-availability of any alternative arrangements.

### **2.2.2 Impacts of the Punatsangchhu Project I and II: Merits and Demerits**

#### **Economic Benefits: Underdevelopment to Development**

The construction of the Punatsangchhu hydropower project incurs socioeconomic and environmental impacts among other impacts. As mentioned in the Project Detail Document of the Punatsangchhu project-I and II, the electricity generated from the projects would be supplied by Bhutan to India through the ‘transmission lines’ via the ‘Lhamoizingkha substation’ at the Bhutan border and the ‘Alipurduar substation’ of India which would have a constructive impact on Bhutan’s economy (Ibid.: 2). So, first and foremost, the economic benefits of the hydropower project would be seen in the form of the enhanced economy of the country.

But the question that lies ahead is to what degree do such benefits trickle down to the grassroots level? It cannot be negated that the direct victims of such developmental projects are the grassroot level population, as they are the ones to lose their lands, houses and other such assets. So, it is expected that the direct and maximum benefits should be channelized towards the grassroot level.

Along with such direct economic benefits to Bhutan, both the projects would also enhance the infrastructural development of the country in the form of construction of roads, public services like schools, health facilities, and to develop water and electricity supplies. These would then facilitate the accessibility of the remote areas of Bhutan and also provide water and electricity to these areas. Besides these the execution of the construction and the operation of the hydropower projects would generate employment for the local populations. Such opportunities would generate more income for the local population, thereby improving the living standards of the people (Project Design Document 2013: 3).

In addition to the economic benefits such projects would contribute positively towards the conservation of the environment too. The project would lead to the local population relying more on the ‘clean and renewable energy’ generated from the project for its daily house chores rather than utilize other fuels like kerosene or fuelwood. In other words, this would mean that the project would lead to a decreasing

level of greenhouse gas emissions and also reduce the pressure on fossil fuels. Such an eco-friendly benefit of the project in the long term would prove to be economically beneficial for the host country as a healthy natural environment can be sustained, which would prove to be an asset for the country. On the other hand, the involvement of the local population in the project would also lead to the generation of skilled labor in the country and improve the technology-related knowledge, thereby contributing to the qualitative enhancement of the available human resource of the host country.

The irony of the situation lies in the fact that, in principle, the recipient of the economic benefits of the project to a great extent should be the host country and specifically, the local population of the project-affected area. But the huge inflow of both the skilled and unskilled laborers for the hydropower project would shrink the job opportunities for the local population. So, the economic benefits that the stakeholders of the hydropower projects ensure for the host country seem to be vaguely actualized.

Though, of course, another fact also exists that the local population has been able to diversify its income-generating opportunities with the financial and non-monetary compensation given by the government. But besides the option of entrepreneurship, people often aspire for a 'white-collar' job, the nine-to-five job or such jobs where a fixed monthly income is guaranteed unlike that of entrepreneurship, where the generation of income is not definite. This as such questions the possible economic benefits of such projects for the grassroots level population.

Further, it cannot be negated that despite their renewability and multi-faceted advantages, the hydropower projects in general and specifically in Bhutan have caused several damages to the environment and have grossly affected the local population of that area. Having visited the project area in Wangdue-Phodrang Dzongkhag (district) in November 2015, May 2016 and June 2017, the local population was engaged through an open-ended questionnaire. The questionnaire had been purposely structured in an open-ended format as the researcher wanted to provide the space for an independent opinion rather than limiting the opinions to the options provided.

During the field visit, it was observed that most of the local population of that area owned commercial outlets like small shops, restaurants, canteens, etc. and when the

researcher enquired whether these shops and other such outlets had existed prior to the commencement of the Punatsangchhu Project-I and II in the area, the respondents informed that those were established after the commencement of the project. The respondents further added that the inflow of more people in the area due to the construction of the project had generated the interest in engaging themselves in such economic ventures in order to enhance their source of livelihood.

Having discussed this further, initially few of the respondents expressed their satisfaction and faith in the decision made by the Bhutanese authorities with regard to the development of hydropower projects. They said that since paucity of electricity has been the reality of major areas of Bhutan including Wangdue, the project would act as a boon by ensuring the supply of a perennial flow of electricity. An intense analysis of the conversation made it evident to the researcher that the local population's acceptance of such developmental activities in its country is a reflection of the Hegelian idealistic theory wherein it states that the "state can do no wrong". So, with such an approach the local population had more reasons to accept such changes in the form of developmental activities in their area.

It was further added that due to the development of hydropower projects, several job opportunities were generated at the hydroproject construction sites. As such, several youngsters from the area joined the project companies to work at different levels (mostly unskilled), besides engaging in self-employment through restaurants and shops.

It was further informed by the respondents that the direct economic benefits have not just been in the form of employment generation; instead, several people sold their lands (agricultural and non-agricultural) to the hydroproject construction company and in return were financially compensated. The financial compensation, as informed by the respondents, enhanced the standard of living of the concerned and many of them could also afford foreign visits. Such economic benefits of the hydropower project in Wangdue Phodrang could be observed.

## Environmental Devastation: Symptoms and Diagnosis

The respondents when asked about any environmental alterations that they have observed after the commencement of the projects in the area, replied that earlier the place was known for the production of oranges and the area was covered with thick vegetation, but after the commencement of the hydropower project construction, the fruit-bearing capacity of the orange orchards reduced drastically. Thereafter, the district has not been able to produce oranges, which has economically affected the farming population strongly. Besides this, Wangdue's vegetational cover has also reduced to a great extent due to the felling of trees in the construction process of the hydropower project. Furthermore, the researcher was informed that the Wangdue district had a very clean natural environment, but such developmental activities have made the place very dusty, polluted and noisy. All these have affected the normal lives of the people.

Validating the information provided by the respondents, the researcher could observe muck deposits on the riverside' there was some land on the roadside of the project area which was cleared in order to be used as a dumping site. Besides, there were some construction materials of the project on the roadside which is inconvenient for the local commuters and pedestrians.

One very interesting factor observed during the field visit was that on the river bank, a Buddhist stupa had been built. When the researcher asked the respondents about the rationale behind building a religious stupa on the project site, one of the respondents informed that, during the construction of the first hydropower project Chukha in Bhutan several catastrophes like landslides and earthquakes took place causing the death of many workers of the project. Thereafter, an initiative was taken to perform certain puja and other such religious rituals by the Buddhist monks, prior to the construction of the hydropower projects in Bhutan. Such incidences unearth the hidden ill-effects of such developmental activities but the validation of the linkage between the development of hydropower projects and the adverse environmental consequences seemed to be based more on religious beliefs rather than on a rational understanding, in Bhutan. The people of Bhutan believe that such incidences were the result of the enragement of the guardian deities of the country, instead of understanding it as the result of the hydropower projects. So they believe that offering

puja as a form of repentance to the guardian deities would solve the problem, instead of looking at such incidences from an environmental and developmental perspective. But it is to be clarified that the researcher is not attempting to question the belief system of any community or country, it is just an analysis of the information gathered. The details of such belief that the Bhutanese people hold would be dealt with further in the cultural part.

During the field visit another very important thing that could be noticed was the extensive road diversion in the project area, which would have required the felling of trees. These new roads had no asphalt coating, thereby making the road very slushy during the monsoons. Such a condition of the road has been causing inconvenience for the commuters.

In addition to these, as mentioned earlier, several villagers in the project-affected area had lost their lands (agricultural and non- agricultural) which drastically caused huge losses for the local population of the district as they were reliant on those lands. Many people voluntarily sold the lands but several were compelled to due to the land requirement of the project. The agricultural lands were used to construct several buildings and other temporary sheds for different purposes like construction company employee quarters, workers' shed, shed for piling construction materials, etc. Some portions of the land were being used as dumping grounds, which mostly were located on the roadside and along with them there also existed restaurants and canteens on the roadside. The local population had also lost their houses along with their lands which compelled them to shift to a different area but within the district itself. It was also informed by the respondents that in lieu of the lands, the local villagers were paid some amount of financial compensation which ranged from few thousand to few lakhs ngultrum (Bhutan's currency).

Though such environmentally harmful effects were visible in the project-affected area, the publicly available Project Detail Document prepared by the stakeholders of the project mentions precisely that the project being based on renewable resources has enormous multi-dimensional benefits both in the short and long term. The document mentions:

“The project activity generates electricity from renewable hydro resources and utilizes the energy for meeting the energy requirements in Bhutan as well as in India. The project ensures effective utilization of available natural resources and helps in promoting renewable energy resources in the region. Electricity generated from the project will displace the high carbon intensive grid electricity, dominated by thermal energy sources in the region. Implementation of project activity will reduce the pressure and dependency on fossil fuel sources, in addition to reduction in GHG emission into the atmosphere. The project will contribute to strengthening and capacity building of technical know-how in the project region and improve the local people’s technical skills and availability of skilled manpower through participation in project. Hence, the project contributes to the environmental and technological benefits of the region.”

There is a need to assess both the pros and cons of the project so that the ‘potential risks’ involved can be pre-identified and the possible measures be drawn to tackle it.



Picture 6: Slushy road in the Punatsangchhu Project area



Picture 7: Muck deposits on river side in Wangdue Phodrang, Bhutan



Picture 8: Dumping sites in the Punatsangchhu Project



Picture 9: Agricultural lands cleared for the construction of offices for the project, Wangdue Phodrang, Bhutan



Picture 10: Project construction materials on road- side, Wangdue Phodrang, Bhutan



Picture 11: Water outlet tunnel Punatsangchhu-I project





Picture 12: Landslides in the mountain opposite to the Punatsangchhu Project area



Picture 13: Tunnel of Punatsangchhu- I project



Picture 14: Punatsangchu- I Dam construction<sup>7</sup>



Picture 15: Punatsangchhu-II construction site was flooded due to overflow of Cofferdam

Source: Kuensel Online

---

<sup>7</sup> Picture Source

<https://www.google.co.in/search?q=punatsangchhu+project+construction+site&tbm=isch&imgil=sUNABkC2xT11yM%253> accessed 21 August 2017.



Picture 16: Punatsangchhu Project Construction site<sup>8</sup>



Picture 17: Temporary sheds made of corrugated sheets in the roadside of the Punatsangchhu project area

---

<sup>8</sup> Ibid



Picture 17 a

These picture shows the temporary sheds on the right side which were built after the commencement of the Punatsangchhu project and it led to felling of trees for setting up the sheds.

Displacement, Resettlement, Financial Compensation and Rehabilitation: Short-term Benefits and Long-Term losses

One of the inevitable consequences of the development of the Punatsangchhu Project-I and II in Wangdue was the ‘displacement of people’. During the field work, it was informed by the respondents that in Punatsangchhu-I project, around ten households were affected and in the Punatsangchhu project-II, around thirty-five households have been affected. The total population of the project area is around fifteen thousand. So, if it is assumed that each household would have atleast 5 members (minimum) in the family, then this would accumulate to around 200-300 people. So, in Bhutan physical displacement has taken place but it is lesser than many other countries like India (Sardar Sarovar Dam) and China (Three Gorges Dam).

The people of the project-affected area were resettled by the government in the same district and also were provided with financial compensation ranging in lakhs (ngultrum). During the field visit, one of the respondents who was a member of the committee responsible for negotiating with the public regarding the project affected land and compensation, confirmed that several villagers had lost their houses and were resettled in other areas of the district. The resettled areas according to the

respondents are in remote parts of the district compared to their original settlement and such remoteness has caused several inconveniences to the people. One of such inconveniences according to another respondent was that earlier she used to often come to Wangdue to meet her relatives but after they were resettled in the remote parts of the village, she has not been able to meet her relatives. She further added that the place they have been resettled in, has inadequate basic infrastructures like roads and so such resettlement according to the respondent has affected the social relations of the people strongly.

So, the resettlement process has taken place in Bhutan but the resettled population has been exposed to several new challenges, which if not taken care of by the project stakeholders would instigate a strong sense of resistance in the future.

The resettlement process if not coupled with the process of rehabilitation would lead to the impoverishment of the resettled population. So, Bhutan, as shared by the respondents, has been successful to a great extent in executing its rehabilitation process as the villagers have been able to economically restore themselves by setting up small shops and other such commercial outlets. Besides such economic opportunities as mentioned earlier in the chapter, the project-affected population was also provided jobs (mostly unskilled) in the project construction sites. This also contributed in generating income for its survival.

It was also informed that the project-affected area is predominantly constituted of members of the *Ngalong* ethnic community, who are considered to be the original inhabitants of Bhutan. The government of Bhutan, in lieu of the losses incurred due to the hydropower project, provided financial compensation to the affected people for house construction. It was observed by the researcher that the newly constructed houses were pucca houses and well-furnished, compared to the houses that the project-affected people were previously living in. So, indirectly, the development of the hydropower project in Bhutan enhanced the standard of living of the project-affected people but on the other hand, the people seemed dissatisfied at losing their ancestral home.

Furthermore, it was interesting to know that the land compensated in lieu of the land acquired is referred to as '*kidu*' and according to the government norms, the concerned beneficiary is not allowed to sell the *kidu* for minimum ten years. The

respondent added that such a policy by the government is for the benefit of the people. The logic behind it is that when a person is engaged in maintaining that particular compensated land (*kidu*) for ten long years, he would definitely not think about selling it after the completion of the tenure. So, the hardwork and the attachment with the land would restrain him from selling the land for immediate financial gain. So, the government is ensuring that the project-affected people who have been compensated are economically secured for the future.

When the respondents were asked to highlight more on the nature of the compensation, they highlighted that the categorization of the project-affected people into receiving financial compensation and receiving land in lieu of the acquired land is done on a certain defined basis. Like for instance, if an individual possesses enough of landed property, then the person is given financial compensation. But if an individual does not possess landed property, then he/she is given land in lieu of the land acquired for the project. So, the process of resettlement, rehabilitation and compensation is well designed in Bhutan and has also been executed efficiently though the fact remains that the emotional attachment with one's property and the values attached to one's ancestral home cannot be compensated. So, the project stakeholders are to ensure that capitalist goals are not being achieved against grave injustice and losses to the masses. As such, efforts should be made by the project stakeholders to ensure minimal adverse consequences in the process of fulfilling developmental goals.



Picture 18: Agricultural lands cleared for the construction of quarters and offices.

#### Hydropower Projects and the Changing Social Relations in Bhutan: Potential Risks

In addition, to the internal displacement of the local population, the construction of the hydropower project has also led to the inflow of migrants as construction workers. Such inflow of migrants could in the long term lead to various social problems like culture dilution, increase in crime, compromising of women's safety, etc. These could be generalizations but cannot be fully ruled out in the long course of time.

Besides these it has been observed that the inflow of the migrants following different religions and cultures as against that of the host country could trigger an intense feeling of 'otherness' and insecurity. This could then further deteriorate into varied forms of aggression, which would disrupt the peace prevailing in the society.

According to John S. Gilmore's 'boomtown theory', the increasing sudden inflow of the migrants in a 'boomtown' for various job opportunities or other such economic ventures would gradually impinge on the basic facilities of that particular society like health facilities, housing, education, sewage disposal, etc. which in the long term would lead to 'social disruptions'. Such disruptions would be observed even in the form of the struggles the existent culture of the host society would have to undergo due to the inflow of different cultures, which could be replicated in Bhutan as the inflow of workers from outside the country (skilled and unskilled) for the hydropower

projects would pressurize not just the basic facilities of the country but could also impinge on the cultural sanctity of the country.

Furthermore, as mentioned earlier, the displacements caused due to the hydropower projects have reduced the frequency of the family and other social gatherings of the project-affected area, as the displaced populations have been resettled in remote parts of the district. So, the difficulties in accessing such remote areas and the inadequate basic facilities of such areas have made the social gatherings difficult.



Picture 19: Temporary sheds built for the Punatsangchhu Project workers





Picture 20: The migrant workers in Bhutan Immigration Office, Phuentsholing

#### Cultural Dimension: Struggle between Development and Cultural Beliefs

In Bhutan, it is believed that everything constituting the natural environment like mountains, rocks and rivers, have guardian deities. Such a belief according to a student respondent, has led to Bhutan being able to retain almost 75% of the forest cover. In Bhutan, it is believed that certain deities are identified as guarding rocks, water and forests. The deity of the aquatic natural resources like rivers or springs are referred to as '*lu*'; similarly, in the forest (trees) there are spirits named '*nyen*' and the soil is guarded by a deity referred to as '*sadag*', while rocks contain spirits referred to as '*tse*.' Further, the mountain deities are referred to as '*gyelpo*' and the natural riches of the soil are believed to be guarded by a deity named '*nodjin*'. It is also believed that any disturbance caused to these deities would lead to harmful consequences in the form of spread of diseases, landslides and earthquakes (Carpenter and Carpenter 2002: 34- 35).

Such a strong belief that the people of Bhutan hold in reference to the ‘natural environment’ undoubtedly suggests a critical analysis of the developmental projects like the hydropower projects. The importance given to religion and culture in Bhutan is evident from the various policies and programmes focusing on the preservation of the two. Like for instance, according to the ‘Driglam Namza’ guidelines passed by ‘Ngawang Namgyal’,<sup>9</sup> the people of Bhutan irrespective of their ethnic identity and religion have to wear the national dress of Bhutan ‘*gho* and *ker*’,<sup>10</sup> follow Mahayana Buddhism (the national religion) and speak the national language Dzongkha (Bothe 2012: 32). Such guidelines well reflect the initiatives taken in Bhutan to protect the religion and culture. In the midst of such a scenario lies the paradox that the developmental initiatives being undertaken in Bhutan in the form of hydropower projects have a direct impact on the religious and cultural values of the country.

The intrusions into the sanctity of the pristine natural environment of Bhutan due to hydropower projects does demand for a critical analysis of such projects. In addition, as mentioned earlier in the chapter the inflow of a different community following another religion due to the hydropower projects intensifies the feeling of insecurity and ‘otherness’ both among the migrants and the people of Bhutan. Such feelings could permeate in the society and create social unrest in the long run.

The question that has been raised in this research work is: Is it fair to capitalize on the developmental model which requires the dilution of cultural values?

---

<sup>9</sup> He was the leader who sought to unify Bhutan both politically and culturally. He is also known as the ‘first Zhabdrung Rinpoche.

<sup>10</sup> *Gho* for men and *ker* for women.



Picture 21: Interaction with people in Bhutan



Picture 22: Interacting with a Bhutanese lady

## Health Issues

Another very pertinent issue surrounding the hydropower projects is the adverse consequences on the health of the people. The inflow of a huge number of people from across the borders could also lead to the spread of various chronic diseases like HIV and tuberculosis. The sexually transmitted disease HIV (Human Immunodeficiency Virus) could also spread further through various ways like when the HIV-infected blood enters the body of another person, sharing of the same needles with an HIV-infected person for injecting, etc. HIV, if not taken care of, could degenerate into AIDS (Acquired Immunodeficiency Syndrome) which would irreversibly disrupt the immune system of the infected person, thereby leading to his/her death. Similarly, tuberculosis is a communicable disease which is very common and if not diagnosed well in time can cause death. Such diseases, if they begin to permeate in society, would have a terrible effect. These two diseases are the most common diseases which could spread furiously and cripple the health of the people.

The respondents also shared their views on various health programmes like the free health camps being organized in their area by the project stakeholders. Such initiatives, according to them, instill faith in the system and make them feel secured about their health.

Thus, the impact of the hydropower projects is multi-faceted and the challenge that exists is to validate and achieve social acceptance for such developmental initiatives in the country.

### **2.2.3 Hydropower Projects in Sikkim**

The hydropower projects in Sikkim attracted huge attention due to the hunger strike organized by the representatives of a non-governmental organisation Affected Citizens of Teesta (ACT) in Gangtok, the capital of Sikkim, and the initiative taken by another organisation SIBLAC (Sikkim Bhutia Lepcha Apex Committee) in raising certain pertinent issues related to the hydropower projects.

For this research work two hydropower projects of Sikkim have been taken into account: Panam and Tashiding hydropower projects.

## 2.2.4 Panam Hydropower Project

### About the Project

The project is located on river Rangyongchu in the Linzya village (Dzongu) in Mangan, in the sub-division of North Sikkim. The Rangyongchu is also known as the 'Tolungchhu' and it originates from the 'Tongshiong glacier' in the western part of Sikkim. The latitudinal and longitudinal location of the project as mentioned in the impact assessment report of the project is 27° 33' north and 88° 26' 42" east longitude. The project has an installed capacity of 300 MW. Some of the structures to be constructed for the project include the head race tunnel, reservoir, dam and many others.



Picture 23: Panam project site (Photo courtesy: Samir Mehta)

### **2.2.5 Impacts of the Project: Merits and Demerits**

#### **Land Acquisition, Resettlement, Rehabilitation and Financial Compensation: A Critical Analysis**

The project-affected villages were Lingthem, Lingdem, Sakyong-Pentong, Lingza and Salim-Pakel. These villages in total have a population of 2,000-3,000 which is primarily engaged in agriculture and small business enterprises. The total land to be acquired for the project from all these villages as mentioned in the 'Environmental Impact Assessment' is '26.5620 hectares'.

In an interview conducted with Mr Gyatso Lepcha, a Lepcha activist, he informed that the people did lose their lands due to the project and were provided with financial compensation. The number of people whose lands were acquired for the project is approximately eighty as mentioned by the 'Environmental Impact Assessment' report and the same was confirmed by Mr Lepcha. But he also clearly stated that since the percentage of the Lepcha population is lowest, accounting for only 7 per cent (42,000 approximately) of the total population of Sikkim which is approximately 6,11,000 (Census 2011), therefore, the loss of lands of eighty Lepchas in Dzongu is definitely a matter of concern.

Another interview was conducted with Ms Mayalmit Lepcha who works as a social activist. She informed that the projects would undoubtedly cause an irreversible damage to Dzongu and so the people of Dzongu have been striving hard to scrap all the hydroprojects being installed there. She also highlighted upon one crucial concern—the inadequate and inefficient organization of the public hearing programmes and awareness programmes for the hydroprojects by the project stakeholders. She firmly argued that such awareness programmes and public hearing programmes are a crucial part of the whole process of the hydropower project; yet, the programmes lack transparent communication between the project-affected people and the project stakeholders. Such lack of communication, according to her, generates the feeling of resistance among the people.



Picture 24: Interaction with Ms. Mayalmit Lepcha, an activist from Dzongu

A very crucial issue highlighted by the respondents during the field visit was that the lifestyle of the people who received financial compensation had undergone intense changes as they began to indulge in intense alcoholism. Presently, many of them, as informed by the respondents, have been further impoverished as they are running short of money on the one hand and on the other, they have lost their lands too. Such are the complexities attached with land acquisition and financial compensation, which further denigrate the concept of hydropower projects.



Picture 25: Panam Village, Dzongu



Picture 26: Pentong Village, Dzongu



Picture 27: Lingdem Village, Dzongu





Picture 28: Sakyong Village, Dzongu



Picture 29: Lingthem Village, Dzongu



Picture 30: Salim Pakel Village, Dzongu

#### Environmental Impact: Future at Stake

The environmental impacts of the hydropower projects is an issue much debated about in the context of Dzongu, where the issue seems to get more critical as the natural environment exists not merely as an environment but more as an epitome of the Lepcha culture.

It is as such, important to understand the process of development of the hydropower project in order to assess its problematic areas. The Panam hydropower project requires the construction of a 56 m high dam which would lead to the submergence of an area measuring 14.5 hectares near the Lingzya village. In addition to this, the impact assessment report mentions on page no.184 that there would be the construction of a road towards the ‘*adits*’ for the ‘Head Race Tunnel’ which would require a passage through a dense forest. This would then require some portion of forest being cleared which would impact not just the ecological set up of Dzongu but would also cause cultural disruptions.

Interestingly, the ‘Impact Assessment Report’ of the project also mentions the absence of any endangered species in the project area and that the agricultural lands along with the ‘degraded forest’ would not be affected by the project. But during the

field visit to Dzongu, the villagers expressed their sadness over the loss of their lands and were vocal about the loss of their culture which is attached to their agricultural practices and the natural environment. Unfortunately, the 'Impact Assessment Report' prepared by the Himagri Hydro Energy Pvt. Ltd. has failed to address to the harm being caused to the culture and psychology of the project-affected people of Dzongu, which further complicates the social validation and acceptance of the project.

The construction of the project currently has been stalled due to the massive landslide that occurred in the project area on August 13, 2016. The landslide caused the formation of an artificial lake which was named as the "Mentam lake" as it was in the Mentam village. The landslide occurred on river Rongyong, affecting the whole of the Panam project area. In fact, villages like Lingthem, Lingdem, Sakyong-Pentong, Lingza and Salim-Pakel of Dzongu were badly affected. Some of these villages, since almost a year, are being accessed through rafts as the land connectivity to the villages has been completely submerged due to the artificial lake that was formed. Many houses were also submerged, leaving the people homeless in their own homeland.

The artificial lake created huge fear for the whole state as the monsoons clubbed with earthquake and landslides would have increased the level of the lake and could lead to the outburst of the lake which would have cause enormous damage downstream. Efforts are being made by the state government to drain out the water of the lake safely; a team was formed from within the state and a team from outside the state was led by the renowned scientist, Mr Sonam Wangchuk of Ladakh. But till date the lake exists and with perennial rainfall, the risk of lake outbursts increases everyday.

The project as of now has been stalled due to the petitions filed and also due to the landslides that have washed away a major portion of the project area.



Picture 31: Landslide in Dzongu in August 13, 2016

Source: Voice of Sikkim (local media)



Picture 32: Artificial Lake formed due to the landslide, the lake was named as  
Mentam lakes

Source: Voice of Sikkim

## Economic Gains and Losses

It would be unfair to undermine the possible benefits of the project for the host state and its population. One of the economic benefits that would result from the project is the development of the infrastructures in the project area and around. As stated in the 'Impact Assessment Report', the existing roads of the district would be 'maintained and widened', which would prove beneficial to the people of Dzongu, especially if the 'tourism sector' is taken into account.

There has been an increase in the involvement of the community of Dzongu in enhancing the tourism sector of the district. Several 'home stays' have been set up by the local population of Dzongu and the sustenance of such businesses would require good road connectivity along with other basic facilities like health facilities. But often in the North district of Sikkim, the landslides block the roads, thereby hindering the means of transportation. Such situations would prove to be detrimental for the tourism sector in the district and so the maintenance of such basic infrastructures if being undertaken by the project stakeholders, would prove economically beneficial for the people of Dzongu. But on the other hand, there would also be the construction of roads to access the project area which would require an immense felling of trees which is unacceptable to the Lepcha community due to two reasons: one is the environmental concern and the other is their cultural values attached with the natural environment. It is believed by the Lepchas that the natural environment is protected by the guardian deities and any kind of human intervention is considered by the community as an attack on their belief and culture



Picture 33: Interactions with the villagers of Dzongu



Picture 34: Villagers of Dzongu lost their houses due to the landslide

Source: Voice of Sikkim



Picture 35: The National Disaster Response Team in rescue operation in Dzongu after the landslide

Source: Voice of Sikkim



Picture 36: Villages were cut off from land routes, so rafts were arranged by the rescue team for commutation

Source: Voice of Sikkim



Picture 37: Relief Camp organized in Dzongu post-landslide

#### Impact on the Culture of the Lepcha Community

The Lepcha community is considered and also observed to be ‘peace loving people’ who live in co-existence with the nature. For the Lepchas, any intrusion into the forest and the rivers is considered disrespectful towards their culture and tradition. The development of the hydropower projects has been considered one such disrespectful act on their culture which directly impinges on their identity.

It is also to be known that the Lepcha community prior to the migration of the Bhutia ethnic community from Tibet to Sikkim, used to practice the ‘Bon’ religion. The ‘Bon’ religion also known as ‘animism’ involves the worshipping of the natural environment. The Lepcha community after the inflow of the Bhutia community who were Buddhist, is said to have followed Buddhism but till date, certain animistic rituals are carried out by the Lepchas like offering prayers to the natural environment (mountains, rivers and forests). The prayers are offered through the Lepcha priests known as ‘*bongthing*.’ It is believed by the Lepcha community that while travelling in the forest silence should be maintained and the forest should not be impured as it would enrage the guardian deities of the forest, which the Lepchas refer to as



‘*dhokbu.*’ Unfortunately, all these beliefs stands challenged with the initiation of the hydropower projects in Dzongu.

While interviewing one of the Buddhist monks named Lama Pintso Norbu Lepcha, who is a Lepcha ethnically, regarding the belief about having protector deities in the natural environment, he said that in Sikkim the belief is widely accepted across communities. In fact, each district has its own gurardian deity who protects the people and in every district a prayer known as ‘*Geydig*’ is offered to the protector deities. The term ‘*Geydig*’/‘*Gyaldig*’ comprises of two words ‘*Gey*’ meaning ‘*Gyalpo*’ or the local guardian deities and ‘*Dig*’ meaning ‘in replacement of’. So, the term refers to the prayers offered to the deities seeking their protection. This prayer is offered to the deities replacing the animal sacrifice that was practiced earlier seeking the protection of the people. So, the prayer as mentioned above is referred to as ‘*Geydig.*’



Picture 38: Interaction with Lama Pinsto Norbu Lepcha (extreme right in yellow) of North Sikkim

The monk explicitly explained about the belief of the people of Sikkim primarily the Lepcha and Bhutia community with regard to the guardian deities. He informed that both these communities believe that the guardian local deities inhabit the trees and rocks and no disturbance is to be caused to them. He added that every year in

December, the Lepcha and Bhutia communities offer these prayers through their respective monks like ‘*Bongthing*’ (Lepcha monks) and the Buddhist monks. The whole concept behind such a practice is that the local deities would get enraged if no offerings are made to them and such enragement could bring bad omen to the people of the state. So, through the prayers, offerings are made to the local deities to appease them so that the people are protected by them and no harm is done to anyone.



Picture 39: *Bongthing*, Lepcha Priest<sup>11</sup>

Another person from North Sikkim named Mr. Palzor Bhutia, added that if such offerings are not made then it would lead to bad omens. He also informed that the enragement of the local guardian deities would spread sickness in the place and such incidences have occurred in the past. But when the researcher asked about such sick people being provided medical help, it was informed that such people who are sick because of the local deities’ enragement would never seek medical help as it would worsen their sickness. He also said that monks through prophesy would know about the reason behind the sickness and if it is inflicted by the local deities, then certain pujas and rituals are conducted to relieve the sick person. It is such strong beliefs that have led to the people avoiding practicing the felling of trees and other such disturbances to the forest area, thereby contributing to the forest cover of the state.

---

11

Photo

source

[https://www.google.co.in/search?q=Lepcha+bongthing&tbm=isch&imgil=zpoqoniDsiAvmM%253A%253BBWKCt7\\_L](https://www.google.co.in/search?q=Lepcha+bongthing&tbm=isch&imgil=zpoqoniDsiAvmM%253A%253BBWKCt7_L) accessed July 12, 2017

Such cultural beliefs and traditions problematise further the initiation of the hydropower projects in Dzongu, which entails a large extent of human intervention in the natural environment.



Picture 40: Interaction with Mr. Palzor Bhutia (in blue t-shirt) of North Sikkim

Futhermore, both the Lepcha and Bhutia communities also offer prayers called '*lhasol*'/'*lhabsol*' to the local protector deities of Sikkim. The term '*lhasol*' is comprised of two words '*lha*' meaning deities/god and '*sol*', meaning 'to offer'. These prayers are mandatorily to be offered at least once a year in order to avoid any mishaps or misfortunes. Therafter, the prayers can be offered as many times as one wishes by inviting the monks. As explained by the guide or teacher Lama Yusal Bhutia of a 'retreat centre' named '*Debde Neden Gasthaling*' of Phodong, North Sikkim, the offerings are to be made in order to express the people's thankfulness to the deities for the protection offered. He also shared that earlier animal sacrificial offerings were made to the guardian local deities but later with the suggestion of some of the '*Rinpoches*',<sup>12</sup> i.e., the re-incarnated precious ones, such animal sacrificial

---

<sup>12</sup>In Buddhism it is believed that the souls do not die and the souls of some re-incarnate and they are referred to as the 'Rinpoche.' The reincarnated ones lead a monk's life.

rituals were replaced with that of offerings being made by preparing ‘*tormas*’<sup>13</sup> by monks in lieu of the animal sacrifices.



Picture 41: Lama Yusal Bhutia, Teacher, Retreat Centre, Phodong, North Sikkim

Similarly, Mr Gyatso Lepcha explained that the Panam project was to be built on river Rongyong which is of great religious significance to the Lepcha community. The term ‘*Rongyong*’ comprises of two words ‘*Rong*’ meaning the Lepchas and ‘*Yong*’ meaning to offer prayers. So, the Lepchas offer prayers to the Rongyong river as it is believed that after the death of a Lepcha, the ‘*Bongthing*’ directs the soul to the Khangchendzonga mountain where it is believed that the souls of the ancestors reside. He also added that it is believed that river Rongyong acts as the path for the soul to reach the Khangchendzonga mountain. It is such beliefs and cultural values that have been put at stake by the project stakeholders in the name of ‘development.’

---

<sup>13</sup>*Tormas* are made of both rice and wheat, depending on the kind of puja. The rice/wheat is cooked in water and when cooked and sticky, the *torma* is moulded by the monks in different shapes and sizes as per the requirement of the puja.



Picture 42: Interaction with Mr. Gyatso Lepcha, an activist



Picture 43: *Bongthing* worshipping nature

The Lepcha ethnic community offer prayers to their guardian deity who is believed to inhabit the Khangchendzonga mountain. The Lepcha community during the celebration of the festival '*Pang Lhabsol*' offers prayers to the mountain and expresses their thankfulness to the deity for the protection offered to the people.



Picture 44: *Panglhabso* celebration in Sikkim

Source: Jigme N. Kazi blog

With such strong cultural affinity with the environment, some of the answers for the questionnaires of the researcher were not difficult to anticipate. During the field visit to Dzongu and interacting with the Lepcha community about the hydropower projects, as expected, its members expressed their anger towards such development. But when the researcher asked the respondents about the lands sold by some of the villagers for the hydropower project, few of them unanimously answered, saying that there has been a disruption of unity and it is such weakness within the community that is proving to be advantageous for the stakeholders of the project.

On the visit to Panam village in Dzongu, when the researcher reached there, the villagers were all working together in their agricultural fields. It was informed by a Lepcha acquaintance, who guided the researcher till the village that adjacent to the

village the power station of the project was to be built. When the villagers were asked about their opinion on selling their lands for the project, they said that if they sell land then they would have nothing to leave behind for their children to inherit as for them the main source of income and the property they owned was only the land. They further added that money would not sustain throughout their life and so selling land for a few pennies would be unfortunate for their future generations. But it was also informed by the acquaintance that if the construction of the power project would continue, then the whole of the Panam village would be severely affected.

During the interview, Ms Mayalmit Lepcha informed that since Sikkim lies in seismic zone- IV, it is very ecologically fragile, so such activities like hydropower projects would cause intense damage to the whole of the state and specifically to Dzongu. She further added that Dzongu has been declared as a 'protected area/restricted area' according to the notification no. 3069/O.S dated March 24, 1958, issued by the Home Deptt., Govt. of Sikkim. The proclamation states that

“No authorized transfer of land (transfer without the written permission of the Sikkim Darbar) by Bhutia and Lepcha Sikkimese to Nepali Sikkimese subsequent to the issue of this Proclamation shall henceforth be held valid by the Courts irrespective of such laws, rules, regulations and usage regarding limitation of suits as may be applicable in other cases.”

“It is hereby ordered that any outsiders, (non- indigenous) settling and/or carrying on any occupation in the prescribed areas without a permit issued by the Sikkim Darbar shall be liable to imprisonment upto three years and /or fine to Rs 1000 in default imprisonment upto six months.”

Ms Mayalmit further added that this protection has been continued through the Article 371 F of the Indian Constitution after 1975. She draws instances from the Teesta stage-III and Teesta stage-V hydro power project wherein some Lepcha landlords who were illiterate sold their lands for the project and later, it was witnessed that those people were working in the hydro-project as laborers. Such scenarios, according to her, have enraged the people in Dzongu and they do not want the replication of the same situation. So they are not in favor of losing their agricultural lands which are the only assets they possess. She put up a very pertinent question: shouldn't the Lepchas

be asked about what type of ‘development’ would they want instead of imposing the ‘developmental models’ on them?

She also highlighted on the ‘Forest Rights Act’ and mentioned that an awareness programme was organized on May 13, 2017 for the Act but it has not been understood by the Lepcha people. She said that she too possesses an ancestral paddy field which actually falls under the forest land, but she would claim her right over it as since the times of the ancestors, the family has been dependent on the land for income.

Interestingly, it was also informed by a respondent named Ms S. Lepcha that as a result of the hydropower project issue in Dzongu, the government carried out a political delimitation of the Dzongu district, the native place of Lepcha community. The village *Lingee-Paiyong* of Dzongu, North Sikkim was merged into South Sikkim and places like *Chadey, Mangshila, Namok, Siam* and *Thingchim* of North Sikkim were merged with the Dzongu constituency. The ethnic composition of Mangshila is constituted of mostly the Subba (Limboo), Thingchim, Namok and Swayem is constituted of predominantly a Bhutia community and few Lepchas. Such political delimitation completely violated the exclusive rights given to the Lepchas of Dzongu and the status of Dzongu as ‘restricted area’, both of which have been guaranteed under Article 371 F of the Indian Constitution. Such changes exposed the Lepcha community to several vulnerabilities.

She also added that there are some people in Dzongu whose lands have not been affected by the project and they are in favor of the project. They have also been trying to convince other people to sell their lands for the project. So, such a diversified unity could also be one of the weak link in this whole issue.

An important factor in Dzongu is that the physical displacement that has occurred is minimal as most of the people of Dzongu possess several lands (agricultural and non-agricultural); so, people have lost their lands but they have not been left shelter less. But since it is known that ‘displacement’ does not have to always involve physical eviction, instead it can also just be the expropriation of the productive lands and other assets. So, the physical displacement might have been minimal in the construction process of the Panam hydropower project but in the long run, a huge catastrophe awaits Dzongu in case natural calamities like landslides, earthquakes, etc occur. In case of such occurrences, the whole of Dzongu would be washed away and besides



this, it is the culture and identity of the people which is at stake. So, more than the physical displacement of the Lepchas of Dzongu, it is the displacement of their cultural values, belief system and rituals that can never be reverted to after the damage is done.

Thus, in case of Dzongu, the hydropower project-induced displacement stands more relevant in terms of the cultural displacement that has taken place there.

### **2.2.6 Tashiding Hydropower Project**

#### About the Project

The project is located in Tashiding, West District, Sikkim. The latitudinal and longitudinal location of the project area as mentioned in the 'Environmental Impact Assessment Report' prepared by the 'Shiga Energy Pvt. Ltd' is 27° 20' north and 88° 14' E longitude. The project has an installed capacity of '97 MW' and would be able to generate approximately '439.04 GWh' of electricity annually.

The project has several structures like a reservoir, diversion structure, barrage bay, headrace tunnel (HRT), *adit* to HRT, powerhouse, tail rail tunnel and many such other structures. Besides these, the report also states that the project would require certain infrastructural constructions that include construction of roads leading to the project area; several new residential buildings would have to be constructed for the office staff, workers of the project, buildings for offices, telecommunication network, etc.

According to the 'Environment Impact Assessment' report, the project area would require about 17.854 hectares of land, out of which 14.129 hectares is private land and 3.725 hectares is forest land.



Picture 45: Tashiding Project site

### **2.2.7 Impact of the Project: Merits and Demerits**

#### **Impact on the Natural Environment: Impingement on the Cultural Values**

The project as mentioned in the ‘Environmental Impact Assessment’ pg. no. 20, would not lead to air pollution and noise pollution. The project area falls under the ‘Geyzing’ sub-division which is primarily a remote area compared to the other districts of the state. So, in the district, the vehicle movement is minimal and it is only during the tourist season during May to October that the vehicle movement increases in various places of West Sikkim. This as such indicates that the level of air and noise pollution in the project area is not high which validates the project as being eco-friendly to some extent. But during the field visit in Tashiding, the local communities informed that the blasts in the project area disturb their sleep at night and the tremors felt are very strong, which often scares them at midnight.

The project area as mentioned in the ‘Impact Assessment Report’ pg no. 22- 23, is the home for ‘457 species’ of angiosperms and gymnosperms and 110 flowering plant families. Most of these species and flowering plants are endemic to the West District

like for instance *Edgaria darjeelingensis*, *Angelica sikkimensis*, *Aster sikkimensis*, *Pimpinella wallichii*, *Salvia sikkimensis* and a few more. So, the construction of the hydropower project would cause irreversible damage to these plant species. The project area is also comprised of varied medicinal plants like *Acorus calamus*, *Artemisia indica*, *Bergenia cilliata*, *Cyperus rotundus* etc., food plants like the tuber of *Dioscorea glabra* ('*ban tarul*' in the local dialect of Nepali), *Girardinia diversifolia* ('*bhangrey sisnu*'), the roots of *Manihot esculenta* ('*semal tarul*') etc. Even the plants considered sacred by the Lepcha community can be found in the project area like the *Artemisia nilagirica* (locally known as '*Tuk-ril-koong*'), *Lycopodium japonicum Thunb* (Lycopodiaceae) (locally known as '*nagbelli*'), etc.

The river Rathongchu on which the project is being constructed is comprised of rich aquatic species belonging to the families of '*Salmonidae*', '*Cyprinidae*', '*Sisoridae*', '*Cobitidae*' and '*Schilbeidae*'. So, an intense human intervention in the river in the long term would cause harm to such aquatic livestock. The impact assessment report on page number 40 states that the sediment level in the river is bound to increase due to a 'runoff' from the construction site but in the report it is casually stated that the sufficient flow of river would neutralize this problem. But the critical point here is that no reference has been made to the possible harm that would be caused to the aquatic livestock and also the aquatic plants, and the quality of the water especially in the lower riparian area due to an enhanced level of sediments. The increase in the sediment level of the river would enhance the probability of the increase in the level of the river water which could lead to flooding during monsoons.

In fact, these sediments would increase with the progress of the construction work as there would be the use of varied construction materials like stones, pebbles, bricks, cement, etc. and these while flowing down to the rivers, would cause an intense harm to the fishes. Besides this, the 'turbidity' level of the water is said to increase in the impact assessment report due to the runoff of such construction materials and dust in the river water. The 'turbidity' level means the river water turning muddy or murkier due to the unwanted deposits in the river, which would also cause harm to the health of the people who rely on the river water for various purposes.

In fact, during the field visit, the gradual erosion of soil in the nearby villages of the project area could be witnessed which would cause huge devastation if the level of

river were to rise especially during the monsoons, when the risk factor increases. So, a responsible attitude and approach towards this life-threatening issue should have been taken by the project stakeholders.

#### Economic benefits: A Critical Analysis

The establishment of the hydropower project in Tashiding would help the local communities to procure economic benefits. The most benefitted would be the entrepreneurs and small business men/women as the inflow of people for the project would increase the rate of customers which would subsequently increase the income of the concerned local people. Besides this, the project-affected people whose lands (agricultural and non-agricultural) were acquired and affected by the project were provided financial compensation by the project stakeholders.

But it may here be mentioned that during the field visit of the researcher in the project-affected area, it was informed by one of the local respondents (names withheld on request) that though his house has been damaged due to the constant blasting in the project area, he was not given any compensation. He further added that he had informed the project stakeholders several times about the damages being caused, but all in vain, as nothing was done on their part to compensate him.

In addition to such destruction caused, the 'Environmental Impact Assessment Report' on page no. 39 states that the construction work would engage around 350 workers and out of which around '50 labourers' would be from the local population. In addition to these, hundred more 'workers' belonging to the 'technical, non-technical and service class' would be brought from outside the state. These specifications indicate that the employment of the local population which is guaranteed by the project stakeholders is unfair, as the local population would be engaged merely as 'labourers' and not in the other positions. So, the economic benefits expected from the hydropower project in terms of employment generation for the local population seems meagre. Such an approach of the project stakeholders towards the project-affected people widens the gap between the developmental needs and the developmental model imposed by the state.

Yet on the other hand, the development of the project would also involve infrastructural developments like roads, bridges, electricity connection, and internet

connectivity. So, such developments would be beneficial for the local population as the West district is faced with an acute network problem and weak internet connectivity. Even the condition of the roads are bad and during the monsoon season the road condition turns out to be worse with several blockages due to landslides. So, with the initiation of the project, the road condition would improve and other alternative roads would also be constructed in order to access the project area which can be used by frequent travellers in case of road blockage. Such developments would prove economically beneficial for the people of West Sikkim as tourism is the core economic sector of this district and with a good road condition, the increase in the inflow of tourists can be expected. This would enhance the income level of the people of West Sikkim, which would then increase their living standards.

Despite such economic benefits, the area of concern for the people of West Sikkim is that the road construction would require immense deforestation which could trigger landslides and water and air pollution in the long run.

During the field visit, in the main Tashiding town, the respondents also informed that the availability of water for irrigation has reduced due to the diversion of water for the project work. This is a very critical issue for the local population as maximum people belong to the agrarian community. So practising agriculture is both a cultural and economic necessity and the development which is being ensured at the cost of such compromises definitely demands a critical analysis.

Such a compromise with the natural environment reduces drastically the probability for the social acceptance of such projects.

#### Resettlement, Financial Compensation and Rehabilitation

The project would affect around eleven hamlets that lie on the right and left banks of the river. On the right bank lie villages like Passingthangower, Sanyasigaon, Chungbung, Kagethang, Unglok, Ambotey and Khet. On the left bank lie the villages named Lower Lobing, Burok, Luitelgaon, Sedang and Purethang.

During the field visit to these villages, the respondents when asked about the land acquisition and the compensation in lieu of such acquisition informed the researcher that the people whose lands were acquired did receive some amount of financial compensation. But those whose houses were affected due to repeated tremors as a

consequence of the tunnel construction and blasts were not given any financial compensation. When the researcher asked about the number of displaced population due to the project, it was informed by a social activist and convener of an organization named '*Sikkim Bhutia Lepcha Apex Commiittee*' (SIBLAC), Mr. Tseten T. Bhutia, that there has been no physical eviction due to the project but cultural loss has been caused which according to him, is a 'religious genocide'.

While visiting the villages, the researcher came across an under-construction house and the owner of that house informed that the house is being re-constructed. He further added that the construction of his house was complete but due to blasts and other construction work of the project, his house developed cracks, which ultimately collapsed during the monsoons. He expressed his dissatisfaction on the whole event and denied having received any kind of compensation. Here, it would be important to highlight that these respondents did not lose their lands due to the project; the impact has been in the form of their houses developing cracks due to the constant drilling in the mountains for the project which they fear might turn worse with earthquakes and the setting of the monsoon.



Picture 46: House developed cracks due to blastings in the project site and later it collapsed



Picture 47: Interaction with the owner of the house



Picture 48: Cracks in the house due to rigorous blastings in the project site



Picture 48a



Picture 49: Interaction with the owner of the house shown in picture 48 and 48 a

The respondents also highlighted a very important dimension of financial compensation. They said that the beneficiaries of the financial compensation were happy and satisfied only for a short duration as many people indulged in alcoholism and gambling, which was not just harming their health but also destroyed their



families. The multiple economic benefits which are used as a bargaining tool by the hydropower project stakeholders to convince the local population thus stands challenged from a sociological perspective.

#### Hydropower Projects and the Changing Social Relations in Tashiding, West Sikkim: Potential Risks

The initiation of the project would increase the demand for human resources (both skilled and unskilled). This would mean that the inflow of migrants in the district would increase, which could give rise to multiple issues—if not immediately, then definitely in the long term. The Tashiding area is predominantly comprised of the Bhutia community and these people show great dedication towards their culture. So, the increase in the ‘outsider’ community in the area could lead to conflicts. Besides, the vulnerability of the local population and specifically that of children, women and the older generation would increase.

There have been instances in Sikkim wherein the daily wage labourers or the construction workers who had migrated to the state have been involved in anti-social activities against local women and children. So, a feeling of insecurity could be generated among the local population which would affect the nature of the social relations in the area.



Picture 50: Interaction with the local population of Tashiding



Picture 50 a



Picture 50 b



Picture 51: Project affected village in Tashiding



Picture 51 a



Picture 51 b

### Development and Cultural Dichotomy in Sikkim: A Case Study of the Tashiding Hydropower project

The project is being built on the river Rathongchu which is of great cultural significance to the Bhutia community of the state, which follows Buddhism. Every year on the fourteenth day of the first month of the Tibetan calendar, a festival named '*Bumchu*' is celebrated in the Tashiding monastery which is linked with the Rathongchu river.



Picture 52: Interaction with the local people of Tashiding

The folklore behind the ‘*Bumchu*’ festival is important to know in order to decide the intensity of the significance it holds for the Buddhist community of the state. The story goes as follows:

“In the eighth century, Tibet’s religious king *Trisong Deutsen* (*Khri srong lde’u btsan*) requested *Guru Rinpoche* to teach him a meditation practice that would allow him to reach enlightenment in his present life. He explained that due to his administrative responsibilities as head of state, he had little time left for meditation and was anxious to learn a short but effective practice. *Guru Rinpoche* agreed to initiate King *Trisong Deutsen* in a practice which would help him gain emancipation from the cycle of mundane existence, known as the *THugs rje chen po ’khor wa las grol*. However, in order to perform the initiation, *Guru Rinpoche* asked for a vase made of special earth, water and five kinds of gems (*rin chen sna lnga*) collected from all over the world. When *Trisong Deutsen* explained that he was unable to produce such a vase, *Guru Rinpoche* agreed to collect the precious materials from India, Odiyana and Zahor and instructed the wrathful *Dharmapala Damchen Garnag* (*dam chen mgar nag*) to fashion the object. When the wrathful *Dharmapala* presented the finished vase to *Guru Rinpoche*, he invoked *Chenresig* (*spyen ras gzigs*)’s blessing and empowerment to hold the initiation. While he initiated King *Trisong Deutsen* and his son, Prince *Murub Tsenpo*, *Yeshe Tsogyal* and disciple *Verotsana*, *Guru Rinpoche* consecrated the *Bumchu*, or sacred vase, which is the very same one that is preserved in the *Tashiding* monastery to this day. According to the works of the great *terton Chokyi Gyalpo Garwang Rigzin Zhigpo Lingpa* (*gter ston chos kyi rgyal po gar dbang rig ’dzin zhig po gling pa*, 1524-1588) while *Guru Rinpoche* was performing the *sadhana* of *Yidam Chuchig Zhal* (*yi dam bcu gcig zhal*) as part of the initiation, the *Yidam* and the entire retinue of deities appeared in the sky and immersed in the water contained in the vase. This caused the sacred water to overflow and spread in all directions in the form of rays. That very moment, as a good omen, there was an earthquake and the four *Dharma* protectors and gods of thirty-three heavens showered flowers from the sky. This spectacular event was witnessed by the people who were assembled there who were overjoyed, and the sacred water from the vase was distributed to all. Yet, it was found that the water in the vase never decreased. Inspired by this, the sinful became virtuous, the pious realized lofty divine qualities, and all benefited spiritually. Finally, *Guru Rinpoche* concealed the *Bumchu* as a sublime hidden treasure and entrusted it to the protective deities.

In the sixteenth century, *Zhigpo Lingpa*, the reincarnation of Prince *Murub Tsenpo* who had attended the first initiation, unearthed the initiation text and the *Bumchu* for the sake of all sentient beings from a monastery in *Lhasa* (*ra sa ’phrul snang gi gtsug lha khang*). After the vase’s discovery, *terton Zhigpo Lingpa* adopted *Chenresig*, the deity of the same *sadhana*, as his tutelary deity (*thugs dam rten*). During the latter part of his life, he offered it to *terton Tag Shamchen* (*stag gsham*

can 1556 - ?) of *Ngari* with special instructions. *Terton Tagshamchen* then entrusted the *Bumchu* to his grandson *Ngadag Sempa Chenpo Phungtsog Rigzin* instructing him to install it at *Drakar Tashiding*, where it was to be kept at the heart of the most blessed hidden land of Guru Rinpoche. Thus, *Ngadag Sempa Chenpo* brought the *Bumchu* to *Tashiding* and installed it in the main temple known as the *Tashi Geleg Gon (bkra shis dge legs dgon)*. He then conducted a special recitation of 13 million syllables '*om mani padme hung*' following the same *thugs rje chen po 'khor wa las grol* text. At that time many unprecedented and auspicious signs appeared in the sky. The *Bumchu* and its sacred water are kept in a miniature mansion (*mchod bsham*) under the lock and seal of the Chogyal of Sikkim and the Lama Committee of *Tashiding*. Every year, a special recitation is conducted and the seal is checked by the high officials and lamas before the *Bumchu* is taken out of its mansion. The *Bumchu* is opened during the night of the 14th day of the first month of the lunar calendar, and three cups of water are taken from it. The first cup is for the royal family, the second for the lamas and the third is distributed among the pilgrims on the day of the full moon. The three cups are replaced with water brought from the *Rathong Chukha*, which is also considered to be a blessed river. In some years, the *Bumchu*'s sacred water increases by 21 cups while in others it decreases or remains at the same level. It may also be found to be clear or cloudy; states that are interpreted as predictions for the country. When the water level increases, it is a sign of prosperity and when it decreases, it predicts a bad year of drought and disease. Cloudy water indicates conflict and unrest. It is said that the seed of enlightenment may be obtained by drinking a mere drop of the *Bumchu* water. By this action, all distress, malevolent beings and untoward happenings are removed, prosperity and fulfillment are awarded in this life, and one may attain Buddhahood or be born in the *Riwo Potala (ri bo po ta la)*, the heaven of *Chenresig* or *Zangdopalri (zangs mdog dpal ri)*, the heaven of Guru Rinpoche, in the following life" (this story has been cited from Dokhampa 2003: 25-29).

Such is the religious significance of the "*Bumchu*" festival and the importance of the *Rathongchu* river in it. The initiation of the hydropower project on the *Rathongchu* river has been perceived by the local communities of *Tashiding* and also the other parts of Sikkim as an attack on the religious and cultural sentiments. The most interesting part is the fact that the earlier two projects on the same river, namely the *Lethang* hydropower project and the *Ting-Ting* hydropower project, were cancelled on the same pretext hydropower project on river *Rathongchu*. As rightly expressed by Professor P.S. Ramakrishnan in the context of building hydropower project on Sikkim (specifically on river *Rathong chu*), it is like "burning the *Tirupati* temple and *Benares* temple." He raises a very important question "what kind of impact would it have you can't even visualize, I mean the entire nation might rise in an uprising, forget about a

state.”<sup>14</sup> He further adds that similar is the cultural significance of the ‘*Demazong Landscape*’ to the people of Sikkim. Yet again, the Tashiding hydropower project on the same river has been initiated, which clearly shows the indifferent attitude of the different stakeholders of the project, both from within and outside the state.

In the interview that was conducted with Mr Tseten Tashi Bhutia, he informed that he had rigorously worked for the scrapping of the earlier two hydropower projects. He added that these two projects were cancelled by the state government on the basis that it would cause harm to the culture of the Bhutia community. But currently another project named Tashiding project has begun on the same river and its cancellation has been a tough task to fight for. It was informed by him that the project is in the verge of its completion despite several petitions filed in the High Court of the state and also the Supreme Court against the project as it directly impinges on the cultural sentiments of the Bhutia community.

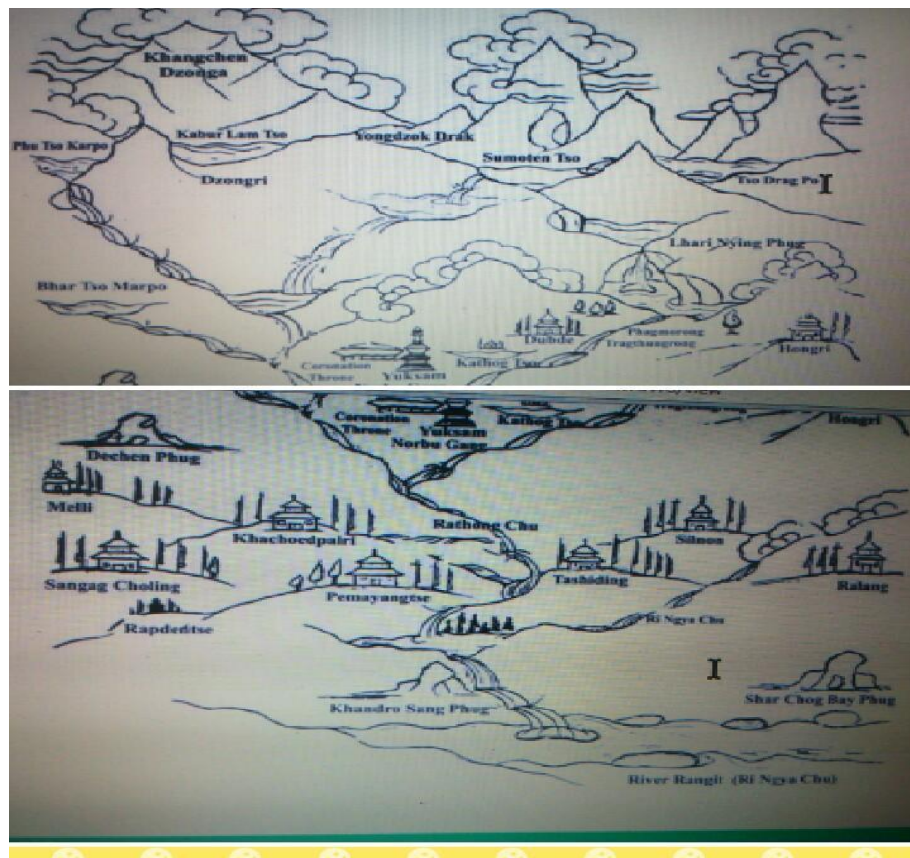


Picture 53: Interaction with Mr. Tseten Tashi Bhutia, Convener, SIBLAC

---

14 <https://youtube//YDTCyXkTmVA> accessed 21 August 2017.

It was further added that in the Buddhist texts ‘*Neyig*’ and ‘*Neysol*’, which discuss the sacredness of certain places of the West District of Sikkim, Tashiding and ‘the four caves’, namely, Lha-ri-nying-phu (north of Tashiding), Kha-do-sang-phu (near Jorethang-Legship road), Pe-phu (Tendong and Maenam hills) and De-chhen phu (Dzongri) have been mentioned. So, in accordance with these texts, Tashiding is a very sacred place for Buddhists, as it is considered to be the abode of Guru Padmasambhava/Guru Rinpoche. Unfortunately, the Tashiding project is an intrusion into such a sacred place which is an attack on the Buddhist culture.



Picture 54: The sacred places of West Sikkim as mentioned in Neysol text

Source: Kanchendzonga National Park Nomination Dossiers

In Tashiding town near the Tashiding monastery, when the local residents were asked to give opinions on the intrusions being made into the holy river Rathongchu due to the hydropower projects, the people were a little hesitant. When an assurance was given that anonymity would be maintained, then the group of respondents belonging to the Nepali community (*Subba*) and the Bhutia community (Buddhist) expressed their dissatisfaction towards such activities in the holy river.



The Tashiding monastery was also visited during the field study and some monks were asked about their opinion on the Tashiding hydropower project. One of the monks who claimed to have been residing in the monastery for about thirty to forty years said that the construction of the hydropower projects had caused several cracks in the monastery. He further added that earlier, the two hydropower projects on the Rathonchu river had been scrapped as the monastery refused to issue the 'No Objection Certificate' for those projects. According to another monk, the problem lies in the fact that there is lack of unanimous voice of dissent against the project. A senior monk of the monastery further added that such intrusions into the holy river and causing harm to one of the most sacred monasteries would enrage the protector deities.<sup>15</sup>

Another respondent from the monastery informed that the river Rathongchu flows down from the Khangchendzonga mountain which is of great religious significance for all the ethnic communities of the state. The '*Dzo-nga*' is considered as the 'guardian deity' and so every year in a festival called '*Pang Lhabsol*', the three communities of the state pay respect, offer prayers to the mountain and seek its blessings for safety. So, the river is considered to be very holy for the state and any damage done to the river would invite destruction to the state. Further, it is also believed that the water is protected by the '*chu-lha*', meaning the deity of the water, and so any unwanted activity carried out in the river would prove to be fatal for the people. In fact, in the words of Mr Tseten Tashi Bhutia, everything in Sikkim which includes rocks, trees, water and mountains, is blessed and is therefore, very sacred.

To confirm the sanctity and belief of the local communities on 'protector deities' guarding the natural environment in Sikkim, the researcher met few officials of the Department of Ecclesiastical Affairs, Govt. of Sikkim. The officials did confirm to the beliefs of the local people and also showed the old Buddhist texts named *Rikzin Sok Drub* by Gyalwa Lhatsun Chenpo, and the *Neysol* and *Denzong Neyig*. These texts are in the Tibetan script and till date, have not been translated into any other language; though they said that they are in the process of doing it. One of the officials said that the content of both these Buddhist texts are similar and that both talk about the religious history and sacredness of the whole of Sikkim.

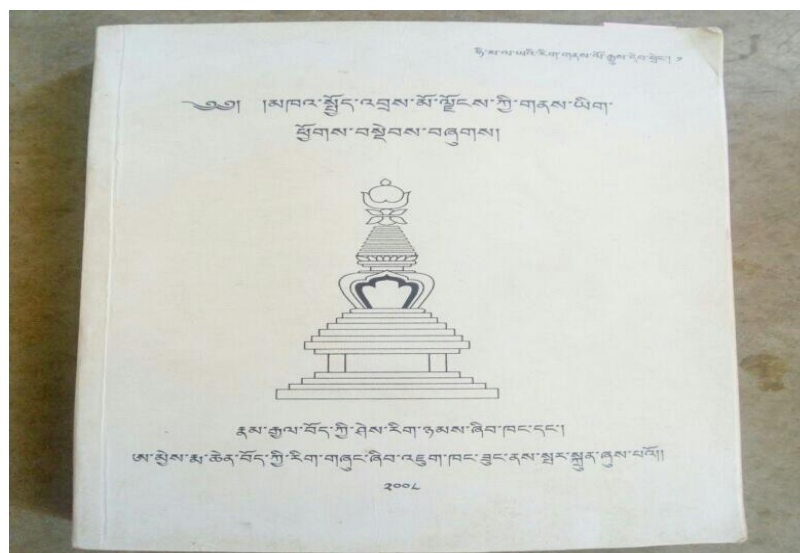
---

<sup>15</sup> The Buddhists believes that the natural environment is guarded by protector deities known as '*Yidam*' in the Tibetan and Bhutia languages.

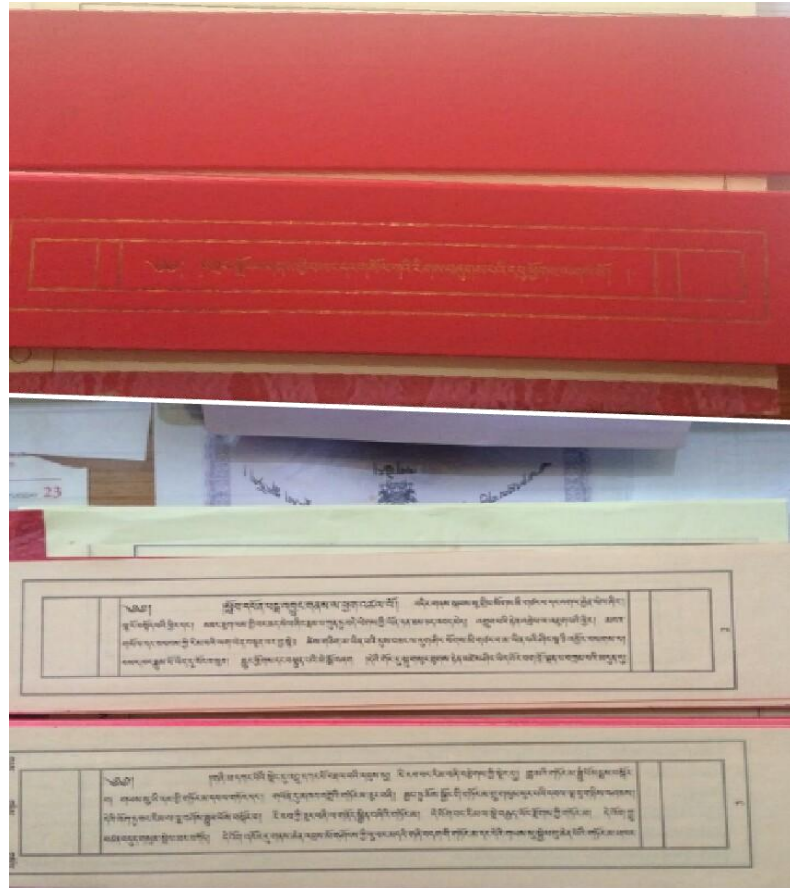
So, any kind of unwanted human intervention in the natural environment of the state is believed to cause disturbance to the sacredness of the state. Hydropower projects are one such human intervention which impinges upon not just on one's culture but also on social, economic and psychological well-being.



Picture 55: *Neysol* text by Lhasun Chempo



Picture 56: *Denzong Neyig tex*



Picture 57: *Rikzing sok-drub* by Lhatsun Chenpo



Picture 58: *Lha-Sang* by Guru Rinpoche



Picture 59: Interaction with the monk of Tashiding monastery

It was also informed by Mr. Tseten Tashi Bhutia that as per the 2006 Supreme Court of India order in the Goa Foundation versus Union of India case, “the project within 10 kilometre radius from the boundary of the National Parks and sanctuaries had to obtain clearance from NBWL (National Board For Wildlife)”. The Tashiding project is five kilometres from the Khanchendzonga National Park, declared as a ‘World Heritage Site’ in the mixed category by UNESCO (The United Nations Educational, Scientific and Cultural Organisation) in 2016. Mr Bhutia expressed his dissatisfaction on the issue on the ground that though the Khanchendzonga National Park of Yuksam, West Sikkim, was declared as India’s first ‘Mixed World Heritage Site’ as it fulfilled the nomination criterion under both nature and culture heritage, the cultural values have been compromised in the same place due to the development of the project on such a sacred river and a sacred place, Tashiding.

In order to confirm these issues, the researcher spoke to an official from the Department of Forest, Environment and Wildlife Department, Govt. of Sikkim, and the official informed that the project is in the fringe area of the heritage site and it does not fall within the heritage site. When the official was further questioned about the Supreme Court Order of 2006, the official put forth another notification by the Ministry of Environment, Forests and Climate Change, New Delhi on August 27, 2014, in which it is clearly stated that “the central government hereby notifies the area upto 200 meters from the boundary of Khangchendzonga National Park in the state of Sikkim as the Eco-Sensitive Zone...The extent of the Eco- Sensitive Zone varied

from 25 metres to 200 metres from the boundary of the Khangchendzonga National Park. The extent of Eco-Sensitive Zone shall be 200 metres, where the area is contiguous with the cold desert in the northern high reaches of the National Park and the extent of Eco-Sensitive zone shall be 25 metres in the remaining portion of the park”.

With this notification being applied to Sikkim, all the charges against the Tashiding hydropower project would be put to rest; however, the struggle continues with the petition having being filed against this notification in the National Green Tribunal, with the decision yet to come.

Recently, as reported by the local media of Sikkim, on July 28, 2017, the High Court of Sikkim issued a notice to the six hydropower projects namely ‘Teesta stage-III’ (Chungthang, North Sikkim), ‘Teesta stage-V’ (Balutar), ‘Tashiding project’, project at ‘Hingdam’ (NHPC), ‘Chisopani project’ (Dans Energy) and the ‘Chujachen project’ (Rongli). The notice has been issued on the basis of non-compliance to the state-directed public safety guidelines by these projects. The respective stakeholders were directed to produce a report on it by August 1, 2017. This has been one most noteworthy progress in the context of the issues related to hydropower projects in Sikkim.

#### Health Issues

The project would require several people migrating to the state as workers and such an increasing inflow of people from outside the state would increase the chances of diseases being spread. The most common diseases that could spread are tuberculosis, HIV/AIDS, viral fever and others. Besides this, the emissions from the project area and the spread of dust in the air would create health problems like breathing problems, skin diseases and many other such diseases.

In addition to this, the reservoir of the project would act as a breeding ground for mosquitoes and other such insects which could make diseases like viral fever, typhoid, malaria, etc. a common phenomena. Though such health issues are associated with hydropower projects, it was informed that community-oriented programmes like health camps, awareness programmes, etc. have been conducted frequently by the project stakeholders.

Besides physical health, it is the responsibility of the project stakeholders to focus on the psychological well-being of the project-affected people. The imposition of sudden changes in the form of inflow of workers from outside the state, changes in land use patterns and acquisition of land would psychologically affect the local residents of the project area. It would generate strong feelings of ‘insecurity’ and ‘scepticism’ among the local population as it fears the dilution of its culture and tradition due to intrusions by external factors. Such feelings could develop mutually among the migrant workers too as they too need to secure their culture and identity in the new society they have entered. The feeling of ‘insecurity’ could transpire into an assertive attitude by the communities which in the long run, if not channelized, could lead to social unrest.

The health-related issues should also be well researched by the project stakeholders along with the environmental impact assessment so that intense damages can be pre-controlled. Therefore, it is the responsibility of the project stakeholders to prepare strategies to mitigate the possible adverse consequences. Such an approach would gradually enable the project stakeholders and policymakers to achieve social validation for such developmental initiatives.

Thus, all these issues reflect the dichotomy between ‘Development’ and ‘Developmental Needs’ in both Bhutan and Sikkim. The big question that remains is: “Is it fair to demonize the developmental model initiated in the form of hydropower projects due to the fallacies attached to it?”

### **2.3 Role of the Civil Society in Bhutan and Sikkim**

Civil society exists as one of the three essential sectors of any society—the other two being the government and business. The activeness of the civil society in the context of the hydropower projects has been witnessed more in Sikkim than in Bhutan.

The construction of dams and the possible displacement and relocation of the people tends to generate resistance from the people which would directly affect the execution of the project activities and in the long run, it could incur huge losses with the increasing costs and also the scrapping of the project completely (Killingtveit 2013: 335).

“The situation has disintegrated to a level where the protestors have shored up their arguments too strongly to pull out and the Government has invested too much into

hydel development to roll back” (Wangchuk 2007: 33). It is here, that the role of civil society can be defined and analysed.

### Role of Civil Society in Sikkim

#### Affected Citizens of Teesta (ACT)

The homepage of the Affected Citizens of Teesta describes the rationale behind forming the organization:

“ACT is an organization of the indigenous Sikkimese citizens to protect the land and the people from the threat to the Biodiversity Hotspot (Kanchendzonga Biosphere Reserve), endangering the demographic profile of the indigenous primitive Lepcha tribes and the right to live in one’s homeland with dignity and security due to implementation of numerous mega hydro-electric power projects in one go”.

The organization was formed on July 18, 2004, by people who were concerned about the impacts of hydropower projects and specifically of projects like Teesta stage III and stage IV located at Chungthang in North Sikkim and Singhik near Mangan (North Sikkim), respectively. This organization was an extension of the Joint Action Committee which was functioning to oppose the Teesta stage V hydropower project in 2002; the project later in 2008 was stalled due to a flash flood in the Teesta river (Wangchuk 2007: 34).

The organization launched a ‘satyagraha movement’ in June 2007, which lasted for three years, and the issues raised were:

1. Harmful ecological impacts of the hydropower projects on the ‘ecologically fragile’ Kanchendzonga.
2. Diversion of the Teesta river affecting the cultural practices of the Lepcha community.
3. Influx of labourers in the “Dzongu reserved area” spreading insecurity among the Lepcha community for fear of the dilution of its identity, rich tradition and culture.

The ACT since 2004 has been working towards the issue of hydropower projects but it was only on June 8, 2006 that the organization publicly voiced its opinions and grievances during the ‘public hearing’ held in Chungthang, North Sikkim, for the hydropower project of Teesta stage III. The organization raised queries regarding the documents related to the project like the ‘Environment Impact Assessment’ and

‘Environment Management Plan’. It also challenged the whole system of public hearing for its inadequacy, which had been held by the State Pollution Control Board (SPCB).

The cause the ‘ACT’ was fighting for gradually deviated and it began to focus solely on the hydropower projects directly or indirectly concerning the Lepcha community and the Dzongu area. The reason for such a deviation was the dissatisfying urge among the locals of Chungthang to fight against the hydropower projects. The people of Chungthang raised their concerns regarding the compensation they would be given in lieu of the land acquired. Though it cannot be refuted that the ‘ACT’ did take the struggle further by discussing the issue with the “National Environmental Appellate Authority” of New Delhi, the decisions taken were not favourable (Ibid.: 35).

Thereafter, the ACT began to solely concentrate its struggle on the hydropower projects affecting the Dzongu area which enhanced the level of support and the nature of cooperation by the Lepchas of Dzongu. Such a positive progress became evident on September 4, 2006, when the members of the ACT along with hundred local Lepcha population blocked the Sankalang bridge<sup>16</sup> over the Teesta river to restrict the entry of the ‘joint-inspection team’ which was to survey the Dzongu area to execute the Panam hydropower project. Again on September 11, 2006, the inhabitants of Passindang of Upper Dzongu resisted the survey of the area, where the power station of the Panam hydropower project was to be established. Later, on December 12, 2006, the ACT decided to carry out a protest march which was supported by the CLOS (Concerned Lepchas of Sikkim), but the rally was called off with the state government representatives willing to discuss the issue with the organization.

One of the breakthroughs for the activists of the ACT was achieved in February 2007 with the Ministry of Environment and Forests, New Delhi, granting the environmental clearance to the Panam hydropower project but it stated clearly that ‘labour colonies’ should not be set up within the Dzongu area. This gave a sigh of relief to the Lepcha community and also the activists of ACT since one of the concerns they had raised was the disruption of their culture and tradition due to the influx of labourers and other outsiders associated with the hydropower projects (Ibid.: 36). Such a clause

---

<sup>16</sup>It is the only access route to Dzongu from North Sikkim.



mentioned by the Ministry restored the faith of the community and encouraged it to take the struggle ahead.

But a year later, the organization opposed the stand of the Ministry of Environment and Forests (MoEF) in the context of the analysis of the carrying-capacity study of the river basin. The MoEF had declared in October 2008 that the stretch of the Teesta river north of Chungthang was a “no go” area for the construction of dams, but the decision was revoked in November 2010.

The organization approached the Supreme Court’s Central Empowered Committee regarding the Panam project which was to be built in the Dzongu area, and as a result of which, the Supreme Court Central Empowered Committee addressed the issue on July 18, 2007.<sup>17</sup>

It was on June 20, 2007, that the ACT along with the support of the CLOS and the SOD (Sangha of Dzongu) continued its struggle in the form of a ‘hunger strike.’ The strike was held near the Bhutia-Lepcha House on Tibet Road in Gangtok (the capital of Sikkim). The indefinite ‘hunger strike’ was joined by the General Secretary of ACT Mr. Dawa Lepcha and a member of CLOS, Mr. Tenzing Lepcha. On the other hand, Mr OT Lepcha (resident of Dzongu) simultaneously began the relay hunger strike. The hunger strikers demanded for the scrapping of all the hydro-power projects in Dzongu and also pledged to continue the ‘hunger strike’ till the same was achieved. The protest carried out by the ACT slowly gained support from the members of the other local population and a blog [www.weepingsikkim.blogspot.com](http://www.weepingsikkim.blogspot.com) was started to discuss the issue and post feedbacks on it. The struggle received support also from the neighbouring Darjeeling district of West Bengal, where the Lepcha Youth Organization (Rong Ong Prongzom) carried out a protest on National Highway 31A.<sup>18</sup> Similarly, the ACT and the Lepcha organization of Kalimpong jointly formed the “Dzongu Holy Land Protection Joint Action Committee” to carry forward the fight.

The struggle of activists like Mr. Dawa Lepcha and Mr. Tenzing Lepcha compelled the state government to intervene and several talks were initiated between the two ‘parties’. The government stakeholders promised to form a review committee and said

---

<sup>17</sup> [http://www.sandrp.in/hydropower/Lepcha\\_Protests\\_against\\_Panan\\_HEP\\_Aug07.PDF](http://www.sandrp.in/hydropower/Lepcha_Protests_against_Panan_HEP_Aug07.PDF) accessed on January 20, 2016.

<sup>18</sup> The protest was held on the West Bengal side of the national highway, below the South Sikkim border.

that the report of the same would be finalized and formulated within one month of its formation. The current Chief Minister Shri Pawan Chamling (who was also the Chief Minister then in 2007) convinced the Lepcha people that the labour camps would not be built within the Dzongu area, monetary compensation would be adequately provided and the unused acquired lands would be given back to the concerned landowner after thirty-five years.

The ACT put forth certain demands:

1. It demanded that the 'Review Committee' be headed by an independent person.
2. The Head of the 'Review Committee' is to be someone well-versed with social, environment, religious and technical 'know-how' of hydropower projects.
3. ACT is to nominate fifty per cent (50%) of the members of the 'Review Committee.'

Later, it was on the 63<sup>rd</sup> day of the indefinite hunger strike that the hunger strikers Mr. Dawa Lepcha and Mr. Tenzing Lepcha withdrew their strike. By then, the health condition of the two had deteriorated to the extent that they were being nose-fed in the government hospital S.T.N.M (Sir Thutob Namgyal Memorial Hospital). But the relay hunger strike continued and completed its 100 days with 208 volunteers participating to sustain the hunger strike.

The efforts made by the ACT materialized with the formation of the 'Review Committee' on September 4, 2007 headed by the Chief Secretary, Government of Sikkim. Other members of the Committee were the Additional Chief Secretary and the Secretaries of Forest and Power Department, the Government of Sikkim, the President of the ACT, the Dzongu residents and an environmentalist. It was put forth by the state government that all the hydropower projects in the Dzongu area would be stalled till the reports of the committee were submitted within 100 days (Ibid.: 48-50). This yet again restored the hopes of the Lepchas but the issue continued to exist.

As mentioned earlier, gradual changes could be noticed in ACT. In the first place, the area of focus of the ACT began initially on a wider scale and later narrowed down to only those hydropower projects which were directly or indirectly affecting the Lepcha community specifically of Dzongu, North Sikkim. This was followed by a shift in the strategy adopted to put forth the struggle. The shift was noticed from an 'indefinite hunger strike' to violence of some sort, though not directly. In other words, four

labourers working in the Teesta stage IV hydropower project were assaulted by three Lepcha youth, for which they were arrested. The ACT organization expressed its response regarding the issue by offering white scarf “*khadas*” to the three Lepcha youth after their bail as a mark of appreciation.

On January 18, 2008, the state cabinet withdrew the ‘Letter of Intent’ of the Lingzya hydro- power project (99MW) of Tholungchu, Dzongu. This led to the scrapping of the project (Wangchuk 2007: 53). So, for the ACT, some portion of the battle was already won but the larger part of the struggle remained.

By this time the ‘hunger strike’ had completed its 250<sup>th</sup> day and again the ‘indefinite hunger strike’ was to resume from March 10, 2008, but this time Mr. Dawa Lepcha and Mr. Tenzing Lepcha were joined by a nineteen-year-old youth named Gaybu Lepcha. This was a very crucial time for the people fighting for the cause, as the Deputy Chairman of the National Planning Commission was on a visit to the state on March 14, 2008, to inaugurate the ‘International Florishow’. As earlier, the protestors had received support for their cause from the National Planning Commission (Wangchuk 2007: 54). So, the protesters wanted to yet again bring the issue into the notice of the official.

Gradually, the struggle had begun to reap fruits as after the scrapping of the Lingzya project, Chief Minister Chamling on April 5, 2008 announced that only those hydropower projects would be carried out further whose Memorandum of Understanding (MoU) had been signed and the rest of the projects whose only ‘LOI’ (Letter of Intent) had been issued, would be cancelled. But unfortunately, the objectives of the ACT were yet to be fulfilled as the Panam hydropower project was to be continued as the MoU for the project had already been signed (Ibid.: 54). This definitely created discomfort among the Lepchas, as the Panam project was going to affect the Dzongu area. In fact, the struggle had begun with this particular hydropower project and despite rigorous efforts the project was to continue.



Picture 60: Hunger strike by ACT in Gangtok (capital) against hydropower project in Dzongu

Source: The Sikkim Times

#### Concerned Lepchas of Sikkim (CLOS)

The organization was formed in December 2006 with the primary objective of resisting hydropower projects in the Lepcha-inhabited areas. It laid down some of its objectives as:

1. Oppose the construction of hydropower projects affecting the Lepcha community.
2. Protest against the 'delimitation' of the 'Dzongu territorial constituency' (Ibid.: 36).

#### Sikkim Bhutia Lepcha Apex Committee (SIBLAC)

SIBLAC has been functioning actively as an NGO in Sikkim addressing varied issues that concerns the rights of the two minority communities of Sikkim, namely, the Bhutia and the Lepcha. Along with it the issue of environment forms one of the core agendas of the organisation. The homepage of the organizations website reads:

“Till we wipe away the fears from the minds of our  
people Till we wipe away the tears of our natives,  
Till we guarantee their secured political future,  
Till we safeguard their identity in the land of their origin,  
Our struggle for survival continues for generations to come!”<sup>19</sup>

The Convener of SIBLAC Mr Tseten Tashi Bhutia clearly stated in a press release on September 23, 2013 that the development of hydropower projects is an infringement of the religious feelings of the people of Sikkim. He further added that the “SIBLAC is not against development but opposing the defilement of sacred lakes, rivers, mountains, heritage and history in the name of development”. In fact, he compares the hydropower project developers with the Taliban for both are executing their task at the stake of the religious sentiments of others<sup>20</sup> (SIBLAC Press release on September 23, 2014).

The SIBLAC has been voicing its demands to stop the Tashiding hydropower project that would affect the Rathongchu river which holds a cultural and religious significance for the Bhutia community. On the other hand, the organization also opposes the hydropower projects in the Dzongu area which are adversely affecting the rights and culture of the Lepcha community. In fact, Mr Bhutia had approached the Union Environment Minister Prakash Javadekar regarding the hydropower projects being developed in Sikkim with special reference to the Tashiding hydropower project. In the words of Mr Bhutia, “Since we, the indigenous Bhutia-Lepcha tribals, have no other place to go in this world ... we may be allowed to live in peace and harmony with our green environment, rivers, mountain and Dharma” (SIBLAC Press release on June 27, 2014).<sup>21</sup>

Furthermore, in an interview with him, he informed that a petition had been filed in the Supreme Court of India against the Tashiding hydropower project but the case had been transferred back to the High Court on the basis that it is a ‘local issue’. In the words of the Supreme Court of India “*The question raised in these writ petitions under Article 32 of the Constitution should, in our view, be first considered by the*

---

<sup>19</sup> <http://www.siblac.org/index.html> (official website of SIBLAC)

<sup>20</sup> [http://www.siblac.org/doc/SIBLAC\\_Press\\_Release\\_23\\_09\\_2014.pdf](http://www.siblac.org/doc/SIBLAC_Press_Release_23_09_2014.pdf).. accessed on 8th February, 2016.

<sup>21</sup> [http://www.siblac.org/doc/SIBLAC\\_Message\\_MoEF\\_27\\_06\\_2014.pdf](http://www.siblac.org/doc/SIBLAC_Message_MoEF_27_06_2014.pdf). accessed on 8th February, 2016.

*Sikkim High Court under Article 226 of the Constitution. There are various issues involved which are local in nature and should be considered at that level” (The High Court of Sikkim, Judgement, Case no. DC.WP(C )No. 22 of 2012).*

The last verdict on the case by the High Court read as *“Having regard to the facts and circumstances, we withhold ourselves from passing any order suspending the Project in question making it clear that the implementation of the Project shall be at the risk and peril of the Respondents No.4 and 5 as indicated in the Office Memorandum dated 02- 12- 2009 of MoEF and shall be subject to the decision of the MoEF which it may take after issuance of the final notification ”*(The High Court of Sikkim, Judgement, Case no. DC.WP(C) No. 22 of 2012). Mr Bhutia informed that the case did not progress thereafter and the construction of the project is in its last phase. So, the hope for the scrapping of the project seems bleak.

Besides, the ACT, CLOS and SIBLAC, the other NGOs supporting the cause are the Sangha of Dzongu (SOD), Citizens Forum of Sikkim, Sikkimese Association For Environment, All-India Lepcha Students Development Organisation, and the Sikkim Association For Environment. In addition to these local organisations the cause has been able to gather support from the neighboring states like Darjeeling, Kalimpong (West Bengal), Medha Patkar (social activist of Narmada Bachao Andolan). The organisation named ‘Lepcha Youth Organizations’ (Rong Ong Prongzom) from Darjeeling and Kalimpong district of West Bengal has provided support for the cause.

The civil society in Sikkim has proved to be very active in addressing the issues concerning the hydropower projects in the state. The success of its efforts can be anticipated with the enormous support it has been able to garner both from within and outside the state for the said cause.

### **Role of the Civil Society in Bhutan**

The civil society in Bhutan has been active in contributing towards the betterment of the society. There are several such organizations in Bhutan like the National Women’s Association of Bhutan, the Bhutan Chamber of Commerce and Industry, the Association of Bhutanese Tour Operators and many others. One of the active organizations concerned with the environmental issues is the ‘Royal Society For Protection of Nature (RSPN)’.

The RSPN was established in the year 1987 and since then has been actively working towards environmental conservation. It also addresses varied environmental issues like solid waste management, climate change, sustainable eco-tourism, wetland conservation, organic farming and many more. One of the important initiatives the organization has taken is the protection of the endangered ‘black-necked crane’ (*Grus nigricollis*).

It may here also be mentioned that the respondents informed the researcher that in Bhutan there has never been a protest against the hydropower projects and this negates any possibility of the role of civil society in voicing its opinion against the hydropower projects. But the civil societies of Assam (the lower riparian state) had displayed active participation in opposing the projects in Bhutan and specifically the Punatsangchhu projects-I and II.

The organizations like Aaranyak, International Rivers and Legal Initiative for Forest and Environment (LIFE), All-Bodo Students’ Union, All-Assam Students’ Union, Kalpavriksha, etc., in 2015 had raised their voice against the Punatsangchhu projects-I and II of Bhutan (*The Assam Tribune*, 19 February 2015). The cause behind such opposition from Assam is as the state is located in the downstream of the trans-boundary river it shares with Tibet (China), and Bhutan, any activity on the river in the upper riparian state would be a cause of concern for the state. The sudden release of water could flood the downstream states and the diversion of river water would lead to the lowering of the flow of river in the downstream. Both situations would prove fatal for the downstream states like Assam.

An environmentalist of Bhutan named Yeshey Dorji highlights in his blog the discrepancies in the designing and location of both the projects on the Punatsangchhu river. He shares in his blog facts about the overflow of water from the aqua-coffer dam barriers of the Punatsangchhu project, as the tunnel lacked the requisite capacity to discharge the water overflow. He further adds that the Punatsangchhu project area is prone to landslides which would add an extra cost to the project. So, the environmentalist claims that the project is economically and ecologically unfriendly for Bhutan.<sup>22</sup> The environmentalist is also critical about the resettlement and rehabilitation policy of the Government of Bhutan. He argues that the commitment

---

<sup>22</sup><http://yesheydorji.blogspot.in/> accessed 16 July 2017.

made by the stakeholders towards developing infrastructures in the project-affected area has not been fulfilled; instead, the project is in a landslide-prone area that could prove fatal for the workers and other people (SANDRP 2015).

It can be drawn from the above arguments that the role of the civil society in Bhutan in the context of the hydropower projects is negligible but its presence is felt strongly with regard to other social issues of the country.

## **2.4 Environmental Policies of Bhutan Relevant for the Study**

Some of the policies concerning the development of the hydropower projects are listed below, highlighting those portions of the Acts that concern the study:

Forest and Nature Conservation Act of Bhutan, 1995

According to the Act, “The Royal Government may declare any private registered land to be Government Reserved Forest...where it considers such action necessary to protect public health and safety, to prevent landslides on highways, to maintain critical watersheds, to conserve wild animals and plants, to preserve scenic areas and for related purposes. In all such cases of a declaration, the Royal Government shall provide monetary compensation or alternative land rights” (National Council of Bhutan).<sup>23</sup>

The Land Act of 2007<sup>24</sup>

The Act states that

1. “The Government may acquire a registered land for public interest.”
2. “The Government may provide substitute land or cash payment, or both, as compensation.”
3. “Acquisition of land shall entail a fair compensation.”
4. “Acquisition of the land occupied by religious monuments shall be avoided.”
5. “The land owner shall have the discretion to opt for substitute land or cash compensation offered by the government in case of the land acquired from rural areas.”

---

<sup>23</sup> <http://www.nationalcouncil.bt/en/business/acts> accessed 16 July 2017.

<sup>24</sup> [http://oag.gov.bt/wp-content/uploads/2010/05/Land-Act-of-Bhutan-2007\\_English.pdf](http://oag.gov.bt/wp-content/uploads/2010/05/Land-Act-of-Bhutan-2007_English.pdf) accessed 16 July 2017.



6. “In case of the land acquired in Thromde,<sup>25</sup> the landowner shall be provided cash compensation. If the land to be acquired is the only plot owned by the landowner in Thromde, the Government shall consider a substitute land in the same Thromde. If the value of substitute land is inadequate, then additional cash compensation shall be provided subject to the value of land.”
7. “Compensation shall be provided for the immovable property on the acquired land.”
8. “Upon acquisition, if the remaining land parcel is less than 10 decimals, such land both in Thromde and rural areas shall also be acquired.”
9. “The landowner shall have no choice over the location of substitute land provided by the government.”

National Environment Act of 2007<sup>26</sup>

According to the Act:

1. “Inspection of any premises, plant, equipment, machinery, manufacturing or other processes, materials or substances and giving, by order, of such directions to such authorities, officers or persons as it may consider necessary to take steps for the prevention, control and abatement of environmental pollution.”
2. “Ensure reasonable amounts of water for environmental flows to protect the fresh water biodiversity and maintain ecosystem functions.”

Bhutan Sustainable Hydropower Development Policy,

2008<sup>27</sup> The Policy states that:

1. “The Royal Government of Bhutan shall acquire land as per the Land Act of 2007, required to construct a hydropower project, the cost of which shall be charged to the project through an annual lease rent. All land required for the project shall be leased to the Developer during the Concession period.”
2. “In addition to the land compensation provided above, the Royal Government of Bhutan shall provide free electricity of 10,000 kWh per annum for every acre of land acquired for the project from the Royalty Energy after the Project comes into

---

<sup>25</sup>Thromde means municipalities.

<sup>26</sup> [http://www.nab.gov.bt/assets/uploads/docs/acts/2014/National\\_Environment\\_act,\\_2007Eng.pdf](http://www.nab.gov.bt/assets/uploads/docs/acts/2014/National_Environment_act,_2007Eng.pdf) accessed 16 July 2017.

<sup>27</sup> [https://www.internationalrivers.org/sites/default/files/attached-files/bhutan\\_sustainable\\_hydropower\\_policy\\_2008\\_reduced.pdf](https://www.internationalrivers.org/sites/default/files/attached-files/bhutan_sustainable_hydropower_policy_2008_reduced.pdf) accessed on 16 July 2017.

commercial operation till the end of the initial CA. The landowner may either avail free electricity or cash in lieu thereof at the export rates from the project. Such benefits will continue beyond the concession period.”

The Water Act of Bhutan, 2011<sup>28</sup>

The Act states that “No person shall develop or otherwise encroach upon bed and banks of watercourses and a strip of land the width thereof as determined in Regulations under this Act except for operation and implementation of activities with an Environmental Clearance.”

These environmental policies of Bhutan are inherently paradoxical as on one hand, the protection of the environment is earmarked as priority and on the other hand, the policies validates the developmental initiatives like hydropower projects. The ‘renewability’ of the projects is a known fact but there exist several other issues surrounding the hydropower projects, which definitely demands an analysis.

## **2.5 Environmental Policies of Sikkim Relevant for the Study**

In Sikkim there are several policies concerning the developmental activities:

The Sikkim Land (Requisition and Acquisition) Act of 1977

This act provides that the state government for any ‘public purpose’ can order in writing, the requisition of any land. But no land used for the purpose of religious worship or used by an educational or charitable institution shall be requisitioned. The concerned person would be notified by the Collector regarding the requisitioning of the land and the compensation would be paid according to the market value of the land.

The State also has provisions providing for the acquisition of land by the state government for three reasons: the government for its own use and control, the transfer of land to the private companies for public purpose and for public-private partnership projects. In cases like the acquisition of land for transferring it to private companies and for public-private partnership, the concerned stakeholders are to get the consent of 80 per cent and 70 per cent of the affected families respectively. The issue of food

---

<sup>28</sup> <http://oag.gov.bt/wp-content/uploads/2010/05/Water-Act-of-Bhutan-2011-English-and-Dzongkha.pdf> accessed on 16 July 2017.

security and rehabilitation-resettlement is also addressed in the policies. In case of the acquisition of the multi-crop irrigated land, the state government is to provide cultivable land to the concerned person. The compensation is to be provided on the basis of the market value (The Sikkim Land (Requisition and Acquisition) Act of 1977).

#### The Rehabilitation and Resettlement Policy

This includes schemes like a subsistence allowance of Rs 3000 per month for each family member for a duration of one year. The affected families are entitled also to jobs through the project or a compensation of rupees five lakh per family (The Right To Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013).

#### The State Policy on Environment, Forest and Land Use, 2000

This policy provides for the maintenance of environmental stability through preservation and where necessary, the restoration of ecological balance which has been disturbed by various developmental activities, preventing the diversion of forestlands and good agricultural land for other purposes, conserving the natural heritage of the state, diversion of ecologically fragile and that environmentally sensitive areas for other uses should be avoided and where such diversions are inevitable, safeguards should be provided (State Policy On Environment, Forests and Land Use 2000).

#### Sikkim Forest Levy of Natural Water Tax Rules, 2015

This Act states that “the competent authority shall install or cause to be installed flow meters within the premises of the user of natural water or at the location of every user or at such other place where the competent authority deems fit for the purpose of measuring the supply of natural water to such user.”

The Act also lists different usage charges for different categories of water usage:

Category of Use	Usage Charge
Industrial purpose	Rs. 50 per KL
Hydroelectric plants	
With Head upto 30m	Rs 0.05/cum
With Head from 31m to 60m	
With Head from 60m to 90m	Rs. 0.12/cum
With Head above 90 m	Rs. 0.15/cum
	Rs. 0.25/cum
Industrial Construction Purpose/Water Usage in Crusher Machines	Rs.0.25/cum/R per TPH Per month

#### Forest Rights Act, 2006

The Act provides the “rights to protect, regenerate or conserve or manage any community forest resource which they have been traditionally protecting and conserving for sustainable use”. The Act further states that:

1. “Ensure that the adjoining catchment area, water sources and other ecological sensitive areas are adequately protected.”
2. “Ensure that the habitat of forest-dwelling Scheduled Tribes and other traditional forest dwellers is preserved from any form of destructive practices affecting their cultural and natural heritage.”
3. “Ensure that the decisions taken in the Gram Sabha to regulate access to community forest resources and to stop any activity which adversely affects the wild animals, forest and the biodiversity are complied with.”

The state of Sikkim has such various policies addressing the multiple environmental issues but the problem lies in its implementation. The development of hydropower

projects has caused and would continue to affect the ecology of the state which poses a huge threat to the eco-friendly objectives of the state.

## **2.6 Hydropower Projects and their Impacts: A comparative analysis of Bhutan and Sikkim**

The methodology adopted for the study of both these states of the Eastern Himalayan belt is the case study method. The research has been primarily a qualitative one with structured and unstructured interviews. The narratives of the respondents have been analyzed.

For a comparative study, two hydropower projects each from Bhutan and Sikkim were analysed. From Bhutan, two projects, namely, the Punatsangchhu-I and II were selected for the analysis and from Sikkim the Panam project and the Tashiding project were selected.

These four projects share great similarities like the Punatsangchhu project-I and II are one of the largest hydropower projects in Bhutan, each with an installed capacity of 1200 MW and 1020 MW, respectively. Similarly, the Panam project with an installed capacity of 300 MW is one of the largest in Dzongu, North Sikkim, and the Tashiding project has an installed capacity of 97 MW.

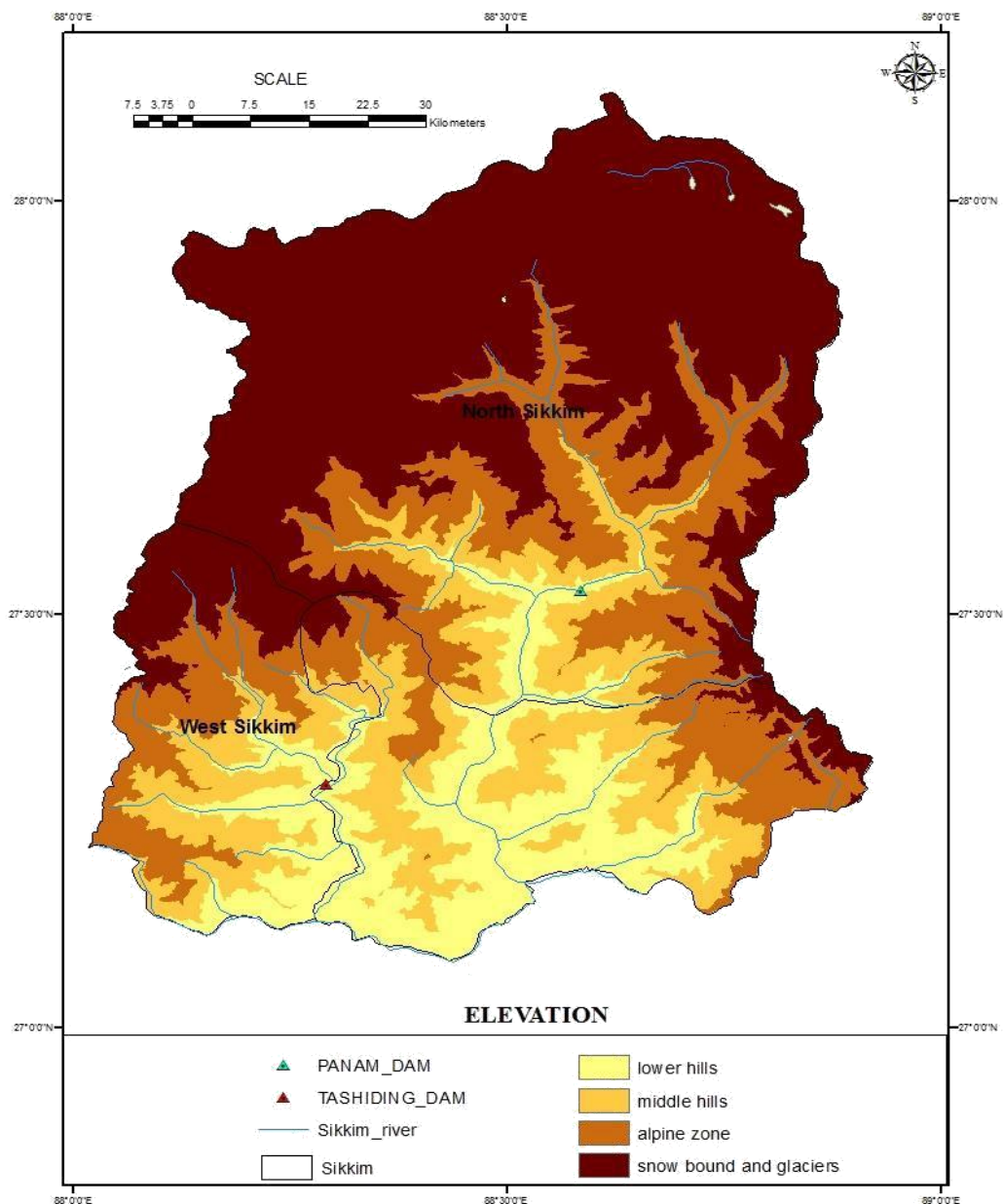
Certain parameters were defined, on which the comparison of the hydropower projects and their impact on Bhutan and Sikkim were carried out. These parameters are:

1. Geographical features
2. Impact on the people
3. Impact on the environment
4. Role of the civil society

Geographical features: The geographical features of Bhutan and Sikkim are very similar, with both having mountains and valleys along with the rugged terrain and steep slopes. So, both these states of the Eastern Himalayan belt are ecologically very fragile with landslides being a common phenomenon, especially during the monsoons.

These two states are blessed with immense water resources but the impact of climate change could cause huge disasters in both the states in the form of floods and glacial

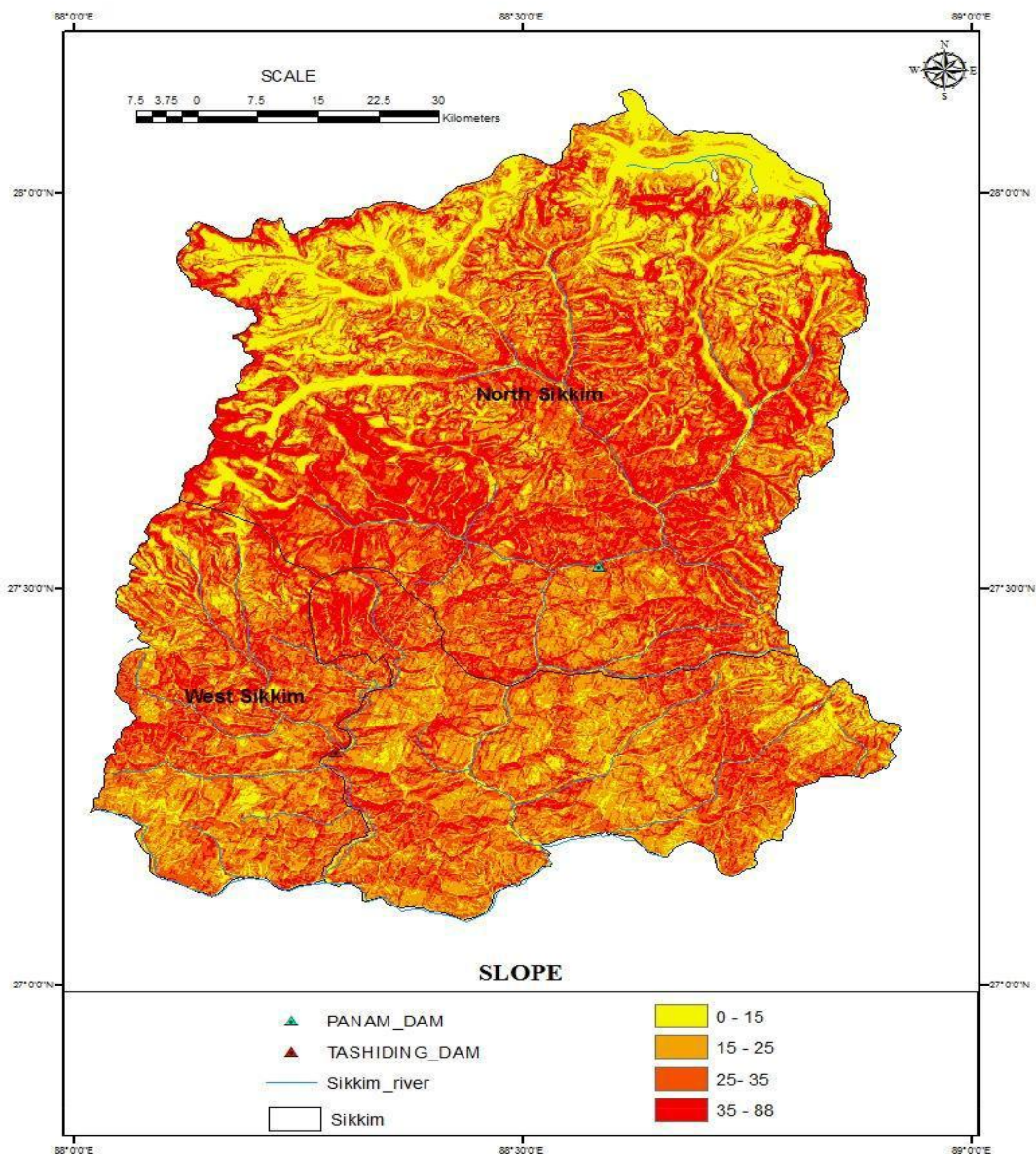
lake outbursts. The rocks found in these two states are primarily sedimentary rocks which indicates that these are young rocks. So any intense activity on this rock would cause huge devastations. As such the hydropower project activity on both these states could have fatal consequences though it has often been justified by the project stakeholders, the hydropower project in these two states are 'run-off the river' (RoR) project, so is eco-friendly. But it is to be accepted that the RoR project would require the diversion of river through a tunnel and the water is stored in reservoirs for dry seasons. So, these would have adverse results, as the mountains are drilled and blasted for the tunnel construction and the water in the reservoirs could overflow during the monsoons. These would intensify the erosion of soil and could lead to irreversible damages.



Map no.3 The Elevation of Sikkim has been generated from the Digital Elevation Model (DEM) Data with the help of a Ph.D scholar of Centre For the Study of the Regional Development (CSRD), Jawaharlal Nehru University, New Delhi

The map shows the elevation of Sikkim above sea level and the focus has been made to North and West Sikkim, which is the area study for this research work. The small red triangle shows the location of the Tashiding dam and the green one shows the proposed location for the power station of Panam Project. The blue lines depict the rivers of Sikkim and the other colours like yellow, orange, mustard and brown/maroon represent the lower hills, middle hills, alpine zone and snow bound/glaciers respectively. It can be understood from the map, that in the Northern

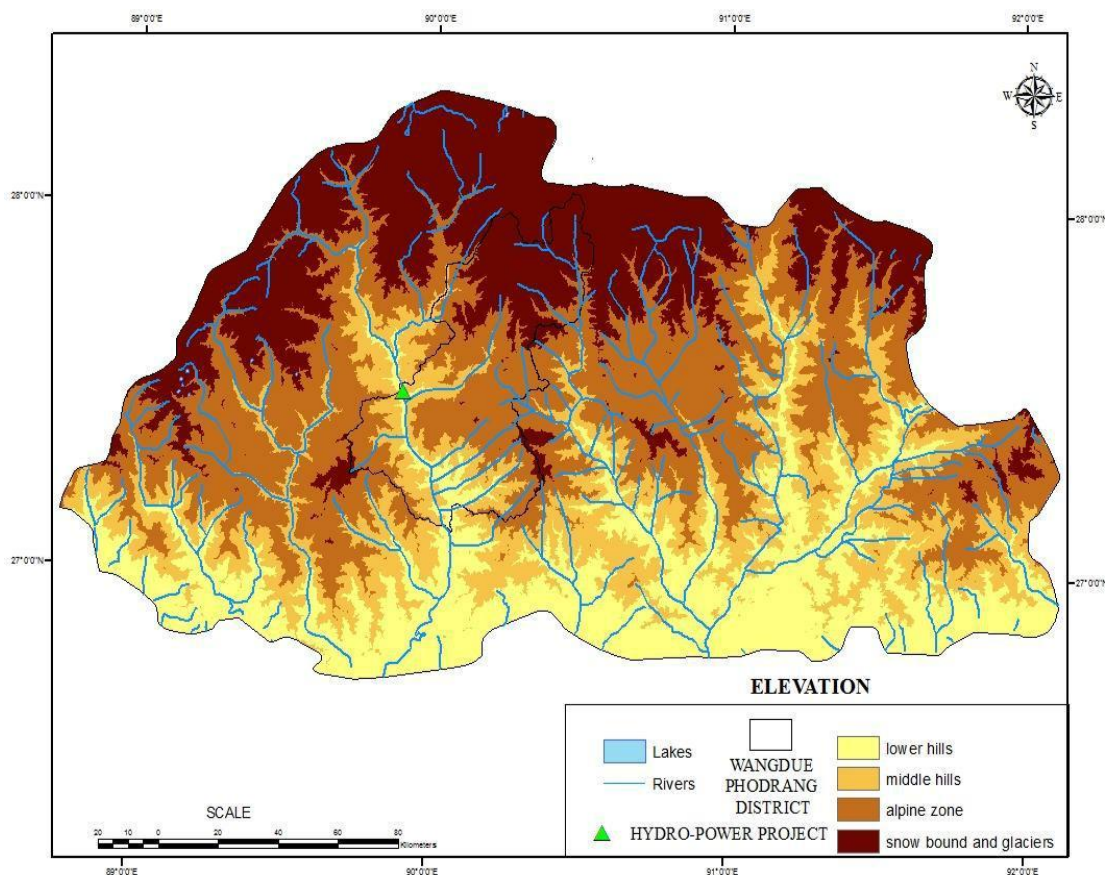
district of Sikkim, there are glaciers, alpine zone, middle hills and less of low hills. Similarly, in West district, there lies lesser glaciers/snow bound as compared to north district. The district is constituted of alpine zone, middle hills and lower hills. The alpine zone is the zone where due to extreme cold climate the trees grown are stunted, shrubs are grown like junipers, rhododendrons (dwarf) and such other shrubs are grown. Further, the map reveals that the Tashiding dam and the power station of the Panam project is built in the low hills of the district.



Map no.4 The Slope map of Sikkim has been generated from the Digital Elevation Model (DEM) Data with the help of a Ph.D scholar of Centre For the Study of the Regional Development (CSR), Jawaharlal Nehru University, New Delhi



The map shows the slopes of Sikkim, the numbers mentioned in the ‘map’s legend’<sup>29</sup> are in degrees, i.e. 0 degree to 15 degree, 15degree to 25 degree and so forth. The location of Tashiding dam and the power station of Panam project is shown in the map through a red and green triangular symbol. It may here be mentioned that the Panam project was stalled and so finding the dam through google earth was not possible, as the construction was in its nascent stage when the project was stalled due to protest and natural calamities.

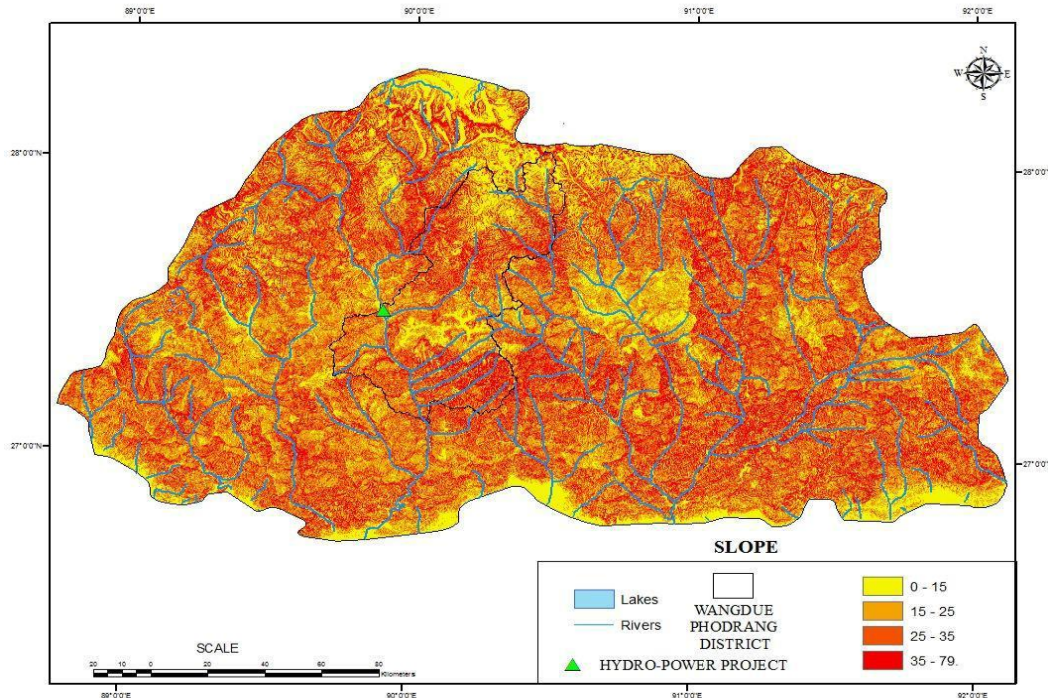


Map no.5 The Elevation map of Bhutan has been generated from the Digital Elevation Model (DEM) Data with the help of a Ph.D scholar of Centre For the Study of the Regional Development (CSR), Jawaharlal Nehru University, New Delhi

This is the elevation map of Bhutan, wherein attempt has been made to locate the district Wangdue Phodrang, which is the area of study for this research work. Within the district the hydro- power project on river Punatsangchhu has been located and the same is indicated through a green triangular symbol. The map indicates that the

<sup>29</sup>Maps legend indicates what the symbols mean.

project is located in the middle hills, the same can be referred to in the map's legend given in the box. The map also shows the lakes and rivers of the district along with its physical features.



Map no.6 The Slope map of Bhutan has been generated from the Digital Elevation Model (DEM) Data with the help of a Ph.D scholar of Centre For the Study of the Regional Development (CSR D), Jawaharlal Nehru University, New Delhi

The map indicates the location of the project through the green triangular symbol and the numbers indicated in the map's legend box is in degrees, i.e. 0 degree to 15 degree, 15 degree to 25 degree and so on. These degrees would help in locating the Punatsangchhu hydro- power project.

### Impact on the People

The hydropower projects in Bhutan and Sikkim have been observed as affecting the people in the form of land acquisition, minimal physical displacement and major cultural displacement. The project-affected people were compensated for the loss of lands (agricultural and non-agricultural) and were both resettled and rehabilitated.

It has also been observed in both Bhutan and Sikkim that the hydropower projects have generated economic benefits for the local population, but such benefits have transpired into short-term gains and long-term losses. The short-term gains have been

in the form of monetary benefits, but in long-term, the loss of land along with the environmental devastation would prove to be fatal for the future generation.

Furthermore, the projects would adversely impact on the health, society and culture of the local population of both Bhutan and Sikkim due to the inflow of migrant workers from outside its borders. The inflow of labourers would in long term pressurize the available natural resources, increase the risk of spreading diseases and enhance the probability of cultural dilution.

During the field work, it was known that in Bhutan the community mostly affected by the Punatsangchhu project is the Ngalong and in Sikkim, it is the Lepcha community and the Bhutia community that are affected. The Ngalong and Lepcha ethnic communities are considered the original inhabitants of their respective states i.e Bhutan and Sikkim, and the Bhutia community is a minority community in Sikkim. So, this indicates that the hydropower projects in Bhutan and Sikkim has affected the original inhabitants of the respective states.

Another major factor in Bhutan and Sikkim is the ‘cultural displacement’ which has affected the people grievously. Though, it is in Sikkim that the loss of cultural values has been focused upon intensely unlike in Bhutan, where the people have not been vocal about it. So, in both these states more than the physical displacement there has been the cultural displacement of people.

But it would be interesting to know that both Bhutan and Sikkim uphold similar cultural values which are primarily guided by Buddhist philosophies and principles. The belief in the local guardian deities inhabiting the natural environment and the protection they provide to the people is considered widely in both these states. Such cultural belief and values are threatened with an unruly intervention in the environment through the hydropower projects. These activities have been opposed in Sikkim by the project-affected people and others too, but in Bhutan such protests have never been initiated.

It can thus be averred that even though the nature of problem is similar between these two states of the Eastern Himalayan belt, the approach to the problem differs. So, the absence of any protest against the hydropower projects in Bhutan should not be considered as the absence of ill-effects or problems associated with the hydropower

projects. Instead, it can be critically analyzed as a lack of environmental awareness and inadequate liberal rational thinking among the people of Bhutan, whereas in Sikkim the people have expressed their dissent against such developmental initiatives, which has led to the scrapping of several hydropower projects in the state like the Lethang project and the Ting- Ting project. But the situation in Bhutan can also be understood as the people's desire for fulfilling developmental needs of their country, as it needs to be understood that it is a small landlocked country. So, for Bhutan self-sufficiency matters and in order to achieve it, they have to 'develop' themselves in all aspects. Thus, the utilitarian concept of "greater good for greater happiness" seems to prevail.

#### Impact on the Environment

The hydropower projects have affected the environment of both Bhutan and Sikkim. There has been felling of trees, the sediment level of the river has increased due to the run-off of the construction materials, the aquatic livestock have been harmed due to the diversion of river water, the turbidity level of the river water has increased due to the deposits during the construction phase, etc. Furthermore, the blasts and drilling have had adverse impacts on the animals in the project area.

Yet again, both the states have adopted divergent ways to tackle such impacts. During the field visit in Bhutan, it was informed by the respondents that landslides had occurred in the project area leading to the deaths of many workers during the building of the first hydropower project, Chukha. Thereafter, certain puja was conducted and a Buddhist stupa was built on the project site to avert such mishaps. Subsequently, the same ritual is followed prior to the initiation of any hydropower project as it proved to be beneficial in averting any mishap. These reflect the cultural values of Bhutan and it would be unfair to demystify such beliefs but it cannot be refuted that such calamities should have been studied and analysed from an environmentalist perspective too.

Sikkim on the other hand, has adopted a pragmatic approach in addressing such natural calamities. Like for instance, in 2016, a massive landslide occurred in Dzongu, near the Panam project area. There were voices raised against such a disaster and the project stakeholders were blamed for increasing the ecological fragility of the area with their activities. Though it must also be acknowledged that there were opinions in the state about the calamities being caused due to the enragement of the local guardian

deities, like it was perceived in Bhutan, but the vulnerability of the environment of Dzongu was one of the core issues that the protestors spoke about.

Therefore, in Bhutan the cultural values and belief systems are very dominant, whereas in Sikkim a fine blend of cultural values, environmental consciousness and pragmatic approach is reflected.

#### Role of the Civil Society

The civil society is more active in Sikkim as compared to Bhutan with regard to the issue of hydropower projects. This could indicate few possibilities like in Bhutan, the hydropower projects have been unanimously accepted by the people of the Bhutan or the people of Bhutan are not so environmentally conscious or it could also mean the dilution of the core elements of 'democracy' wherein the country lacks the space for dissent or it could be that the people of Bhutan understand the need for 'development' and so are ready to bear the losses incurred in the process for the larger good. To the contrary, the people in Sikkim have been given a democratic space to voice dissent and such has been channelized through various organizations and institutions.

But interestingly, in Bhutan, the benign attitude of the people and civil society towards the environment can be strongly observed, with the people frequently engaging in planting saplings. Like for instance in Bhutan, a few years ago, the birth of the Prince of Bhutan was celebrated by planting saplings throughout the country. Similarly, it was also informed during the field visit that the project stakeholders carry out plantation drives in lieu of the deforestation that has been caused due to the project. Such a responsible approach is lacking in the project stakeholders of Sikkim but it also needs to be acknowledged that in Sikkim, every year thousands of saplings are planted on the 'World Environment Day' and other such occasions.

Thus, the renewability of the hydropower projects cannot undermine the unruly consequences it could cause but it also needs to be accepted that they are not devoid of faults but the intensity of the damage caused by them would be lesser than that of the other forms of energy.

## **2.7 Conclusion**

The complexities linked with the hydropower projects in Bhutan and Sikkim have to some extent demeaned the role and importance of such a renewable source of energy. The problematic area in the development of the hydropower projects has been in regard to the authenticity of the study conducted prior to the approval and the initiation of the work. As everything depends on the study conducted by the experts and the government officials, so the same needs to be conducted diligently. It is said that “we don’t inherit the environment from our ancestors; instead, we borrow it from the future generation”. So, the work needs to be done responsibly so that the level of preparedness in the case of any calamity can be enhanced. But on the other hand, it also needs to be understood that ‘development’ has become a necessity, it is a medium for surviving in the globalised world. The process of development will inevitably involve certain losses but at the same time the losses incurred should not include the loss of one’s identity and culture or ecology. So efforts are to be made by the project stakeholders to atleast dilute, if not completely, mitigate the problems.

There were several constraints during the field study; the people of both Bhutan (Wangdue Phodrang), Dzongu and Tashiding were very reluctant to talk about the ill-effects of the hydro- power projects. Collecting information from these places was very difficult with people answering to the queries by saying, “no idea”. Secondly, the accessibility of the places of both Bhutan and Sikkim was a huge challenge due to the frequent landslides, and sometimes they would be so severe that transshipment was also not allowed. In fact, as mentioned above, Dzongu faced a huge landslide in the Panam project area in August 2016 which has made all the villages of the project area difficult to access.

During the World Water Day of 2002 with the theme Water For Development, the Director General of International Atomic Energy Agency (IAEA) said “We can’t keep treating as if it will never run out because there’s a limited quantity of it on earth. To manage it better we need to work together and set priorities that respect its limits because without it human development cannot progress”. On a similar note, the Director General of UNESCO Koichiro Matsuura also said that water touches every aspect of human civilization and so the water crisis could also lead to developmental crisis (IAEA 2002: 5). So, the renewability of water should not be used by the project

stakeholders to initiate rigorous 'damming' activities as multiple factors underlie in this context.

Above all, the underlying issue in Sikkim and Bhutan is not only about land acquisition and physical displacement of the people; instead it is about the 'displacement of one's culture' that transpires as the 'displacement of one's identity'. So, both Bhutan and Sikkim has witnessed hydropower projects induced displacement but it is the loss of culture in the process that has affected the people intensely rather than physical eviction.

## CHAPTER 3

### CHINA AS A FACTOR IN THE EASTERN HIMALAYAS: WITH SPECIAL REFERENCE TO THE DEVELOPMENT OF HYDRO-POWER PROJECTS IN THE EASTERN HIMALAYAN BELT

#### 3.1 Introduction

‘Water’ has been an issue of contention in Asia’s geopolitics due inadequate availability of the water resources. In fact, the UNESCO report 2009 stated that “Water is linked to the crises of climate change, energy and food supplies and prices and troubled financial markets. Unless their links with water are addressed and water crises around the world are resolved, these other crises may intensify and local water crises may worsen, converging into a global water crisis and leading to political insecurity and conflict at various levels”.

According to the Director General of UNESCO, Koichiro Matsuura, “Water is probably the only natural resource to touch all aspects of human civilization—from agricultural and industrial development to the cultural and religious values embedded in society” (IAEA 2002). So ‘water’ indeed is one of the important factors in understanding global geopolitics. This stands true for understanding the role China could play in the development of hydropower projects in the Eastern Himalayas and specifically, Sikkim and Bhutan.

It is logically understood that rivers do not recognize boundaries and since rivers cross several borders, it has often led to social and political tensions between various countries. Such a scenario could in the long term lead to the “proliferation of water wars” (Winterbottom 2015: 1).

In fact, in this context, the geographical position of the states like the lower or upper riparian states is of prime significance. In simple words, any kind of activity on the rivers tends to adversely affect the lower riparian states more compared to the upper riparian states. Such a situation in the long run could trigger conflict between the states (Ray 2014: 1).



### **3.2 Geographical Understanding of the Eastern Himalayan belt vis-à-vis China**

The Eastern Himalayan belt comprises of countries like Bhutan, Nepal (southern, western and central) and the Indian states like Sikkim, Arunachal Pradesh and Darjeeling (district of West Bengal).

The geographical location of Bhutan has often been described as lying between the two Asian giants India and China. Bhutan shares 605 kilometres of border with India and 470 kilometres of border with China. The strategic importance of the location of Bhutan is evident as the country is 'bounded on the north by Tibet, on the west by Sikkim and the Chumbi Valley of Tibet and on the east and south by the Indian states of Assam and West Bengal respectively'.

Similarly like Nepal even Bhutan is a "landlocked country between India and China". The country is surrounded in the 'east, west and south by India and by China's Xizang Autonomous Region (Tibet) in the north'.

Besides the two countries Bhutan and Nepal, some of the north- eastern states of India are also the constituents of the Eastern Himalaya. Sikkim is one of such north-eastern state of India that lies bounded by China-occupied Tibet in the north, Nepal in the west and Bhutan in the east. The importance of the geographical location of Sikkim is enhanced with the existence of various passes in northern Sikkim which connect Sikkim with Tibet. The passes are 'Chorten Nyinma-la', 'Naku-la', 'Kongra-la', 'Chulung-la', 'Bom Chho-la' and 'Sese-la'. Even Eastern Bhutan is connected with the Chumbi Valley of Tibet through passes like the 'Khungyamila', 'Gorala', 'Nathula' and 'Jelepala' (Singh 1985: 9). Out of these passes, one of the passes that holds a great strategic importance for Sikkim and Tibet (China-occupied) is the Nathula Pass, which directly connects Sikkim with the 'core region of Tibet' (Karan and Jenkins 1963: 56).

Even Arunachal Pradesh which is the largest state in the north-eastern region of India, lies in the Eastern Himalayan belt. It extends from latitude 26° 28' N and longitudinally, lies from 91° 30' to 97° 30' East. The state shares international borders with China (Tibet), Myanmar and Bhutan.

The Darjeeling district of West Bengal also lies in the Eastern Himalayas. It is surrounded by the state of Sikkim in the north, Uttar Dinajpur (district) and Bihar in

the south. The district also shares international borders with Bhutan and Bangladesh in the east and Nepal in the West. It lies on the latitude  $27^{\circ} 13'$  north to  $26^{\circ} 27'$  north and longitudinally, it lies on  $88^{\circ} 53'$  east to  $87^{\circ} 59'$  east.

Thus, it can be reiterated from the geographical location of each state of the Eastern Himalayan belt that these states lie in close proximity to China. Such a geographic location makes evident the influence and possible impact that China could have on these individual states and the Eastern Himalayan belt as a whole.



Map no.7 Map showing Himalayan belt and the Himalayan countries lying close to China

Source: Encyclopedia Britannica

### **3.3 China as an Upper Riparian State: Understanding the Dynamics of Sharing the Trans-Boundary Rivers**

The dominant status and geographical position of China makes the analysis of its role in the world politics quite obvious and evident. The nature of its political system, its “economic robustness” and its advance military validates the strong influence of China within its region and beyond (Goswami 2012: 5-6).

As mentioned earlier in the chapter, the river flows do not recognize borders or boundaries. It is this that gives rise to ‘trans-boundary rivers’ which in simple terms, could mean rivers that cross at least one political border (either within a nation or an international border). This is indicative of the fact that the trans-boundary rivers tends to link the states/countries ‘hydrologically, socially and economically’ (UN Thematic Paper 2008: 1). The trans-boundary rivers can prove to be economically viable if the sharing of such resources is well managed by the nations, but such water resources according to the strategic expert Brahma Chellaney, could be used as a ‘political tool’ by nations (*The Diplomat*, 3 April, 2015).

The location or the geographical position of the states plays a very important and influential role in terms of the control over the rivers. As mentioned earlier, any kind of activity on the rivers and specifically the trans-boundary rivers affects the lower riparian states more than the upper riparian states. In other words, the activities like dam-building which could be for multiple purposes like for instance, hydroelectric power generation, storing or divergence of water for irrigation, flood control etc., would lead to controlling and diverging the river flow. Such an act tends to affect the states dependent on that particular river (Salman 2001: 1477). It is in the due course of such an issue that the significance of the location of the ‘riparian state’<sup>1</sup> comes into focus. Like for instance, if any state is positioned in the upper part of the river, closer to its source, then that particular state is referred to as the ‘upper riparian state’. Such states are seen as benefitting more from the river as they can control or divert the river flow to cater to their needs. On the other hand, the riparian states that lay towards the lower part of the river are referred to as the ‘lower riparian states’. Such states are usually in an unfavourable position as the divergence and control of the river flow by

---

<sup>1</sup> ‘Riparian state’ refers to ‘relating to or situated on the banks of a river’.

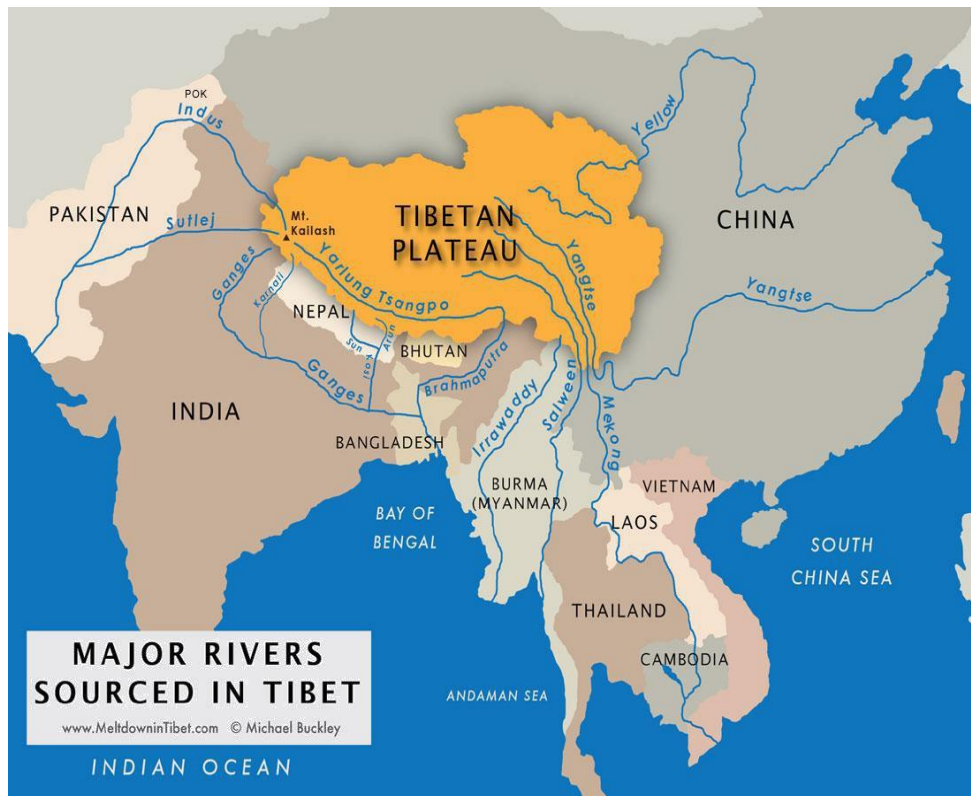
the upper riparian states disrupts their water-related activities. This, then triggers conflict between the upper and lower riparian states.

In this context China enjoys a powerful position as an upper riparian state as compared to the lower riparian nations like India and Bangladesh and as expressed by Selina Ho,<sup>2</sup> China does not consider the trans-boundary river management with India as important due to its position as an upper riparian state for most of the rivers and specifically the river Brahmaputra (Ho 2017: 2).

The sharing of trans-boundary rivers between India and China is complicated due to the institutional gap that exists between the two with reference to the water-sharing issue. There is ‘no water sharing agreements, no joint river commissions and neither dispute settlement mechanisms’ (Ibid.: 1). The only institution that exists is the Memorandum of Understanding (MoU) signed first in 2002 for a duration of five years thereafter the same was renewed on June 5, 2008. The same was renewed after five years on May 20, 2013 and in the same year, on October 23, another Memorandum of Understanding was also signed: the ‘Memorandum of Understanding on Strengthening Cooperation on Trans-Border rivers.’ The MoU’s provided for the sharing of hydrological data by China to India during the flood season (Ministry of Water Resource, River Development and Ganga Rejuvenation, Government of India). But the effective implementation of the provisions is inadequate due to the lack of an external body to ensure it (Ho 2017: 1). As a result, no hydrological data has been released to India by China, which has generated a deep sense of ‘insecurity’ in India. Such insecurities would be difficult to falsify, as has been argued by Rebecca Lowe and Emily Silvester in a report on “Water Shortages threatening Global Security”. They say that the issue of water scarcity when combined with other factors like political instability, climate change and increase in resource demands can enhance the risk of conflicts. So, as of now, till date, only one war has occurred for water, which was in a Mesopotamian city almost 4500 ago, but the conflict over the accessibility of water resources is a common phenomenon. This gets further worsened with factors like the upstream and downstream position of the nations, which is also relevant in case of India-China water sharing (Pak 2016: 56).

---

<sup>2</sup> Selina Ho is a Research Fellow at the National University of Singapore.



Map no.8: Map showing major rivers originating from Tibet<sup>3</sup>

The map shows the major rivers which has its source from Tibetan Plateau. The river flows down towards South Asia and South East Asia.

### 3.4 From Hydro Cooperation to Competitiveness in the Eastern Himalayan Belt: China’s Role and India’s Response

‘Water’ has emerged as one of the contentious issues between states and as stated by Brahma Chellaney, “water is now the world’s most extracted resource” (Ibid.: 56). Similarly, the report on ‘Global Risk’ by the World Economic Forum identifies water ‘as the world’s top risk’ (Lowe and Silvester 2014: 2). So, water-related violence and conflicts can be perceived as inevitable consequences, like for instance, in the 1960s, border conflict occurred between Israel and Syria over the issue of sharing the Jordan river and similarly in the 1970s, the Egypt President Anwar Sadat proclaimed that “We depend on the Nile 100 per cent in our life, so if anyone, at any moment, thinks

<sup>3</sup> Map was taken from [https://www.google.co.in/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0ahUKEwjtxuOV5OrVAhVCOo8KHUOJBbQQjRwIBw&url=http%3A%2F%2Fwww.meltdownintibet.com%2Ff\\_riverbyriver.htm&psig=AFQjCNHnDknlHCIV0emo0VNGmWqacxSOSQ&ust=1503489161366176](https://www.google.co.in/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0ahUKEwjtxuOV5OrVAhVCOo8KHUOJBbQQjRwIBw&url=http%3A%2F%2Fwww.meltdownintibet.com%2Ff_riverbyriver.htm&psig=AFQjCNHnDknlHCIV0emo0VNGmWqacxSOSQ&ust=1503489161366176)

The map is not depicting the political boundaries of any nation, the focus was to highlight the rivers originating from Tibet.

to deprive us of our life, we shall never hesitate (to go to war) because it is a matter of life or death.” This statement was released in response to Ethiopia announcing its intention of constructing dams upstream of the river Nile (Pak 2016: 55-56). So, it can be reiterated that the issue of water-sharing can shape and reshape the nature of global politics and can trigger border clashes.

Similarly, in the context of the water-sharing of the river Bramaputra between India and China, several complexities underlie that impact the water management of the Eastern Himalayan belt too. The problem lies in the presence of China being in the upstream of most of the rivers that flow through South Asia due to its control over the Tibetan Plateau. So, this indicates that China possesses at its disposal the source of the most of trans-boundary rivers that feed various countries like Russia, Kazakhstan, Kyrgyzstan, those of the South Asian region and the peninsula of Indo-China (Chellaney 2013a: 1).

Such a hydrologically powerful position of China was facilitated due to its invasion of Tibet in 1950. It was with this that China could have a free hand over the natural resources of Tibet, with ‘water’ being one of them. Here, it is important to draw a linkage between the water scarcities faced by China on the one hand and on the other, the availability of an ample amount of ‘blue gold’ in the Tibetan Plateau, as this plays a major role in the geopolitics of the Eastern Himalayan belt and South Asia as a whole. In fact, it has rightly been said that the “Tibetan Plateau makes China a potential water power in the way Saudi Arabia is an oil power”. It is in such a situation that China’s control over the natural resources and specifically the ‘water resources’ and the initiation of hydropower projects on these Tibetan Plateau rivers undoubtedly affects the South and South-East Asian countries dependent on these rivers (Chellaney 2013b: 105). So, China has a very important role to play in the water dynamics of the trans-boundary rivers originating from the Tibetan Plateau and affecting the countries of South and South-East Asia. Though it is also argued that since the larger portion of the Brahmaputra river lies in India, the dams built on it or the water diverted by China would not affect the lower riparian nations like India and Bangladesh but it also needs to be realized that such activities would morphologically, ecologically and hydrologically impact upon the lower stream (Iyer 2015: 13).

The hegemonic stand of China is evident with the unresponsive approach it has had towards the conception of “water-sharing” among the countries which was proposed by the United Nations on May 21, 1997 through the Convention on the ‘Law of the Non-Navigational Uses of International Watercourses’ (Chellaney 2013a: 1).

In addition to it, China did not give much importance to the “joint expert level mechanism” that was formed to address to the issue of the Sino-India ‘inter-state’ river waters. It considered the initiative as a “yearly proforma exercise” rather than as an initiative of global importance (Chellaney 2013b: 302).

Thereafter, China also asserted that the upstream countries could enjoy “absolute territorial sovereignty” over the rivers within its international boundary. So, China claimed its absolute right over the rivers within its border and that China as an upper riparian state could divert and use the water resources as it deemed fit. Validating such a stand, China began to propose for the construction of dams on the ‘trans-boundary rivers’ like the ‘Salween, Brahmaputra and Mekong rivers’ which have their sources in the Tibetan Plateau. These rivers flow through both South Asia and South-East Asia, so any activity by China on these rivers can have an overspill in the regions fed by these rivers, thereby triggering hostility in international politics (Chellaney 2013a: 1-2).

Such an approach of China would definitely impact the geopolitics of the South Asian and South-East Asian region as a whole, as the dams being built over the Brahmaputra river directly affect the lower riparian states of South Asia which fall in the Eastern Himalayan belt. Similarly, China’s plans to build dams on the Salween river which flows through the South-East Asian region entails huge ethnic and ecological implications as the ‘upstream basin’ of the river is a biologically and ecologically diverse region, so such ‘damming’ activities would have a direct impact on the inhabitants of that region (Ibid.: 2).

China has often justified its ‘damming activities’ on the Yarlung Tsangpo river/Brahmaputra river as a ‘run of the river projects’; no damage would be caused to the river flow in the downstream. But as pointed out by Ramaswamy Iyer from the Centre for Policy Research, the ‘run of the river projects’ has devastating consequences. He says that such projects would require the construction of dams and the diversion of rivers through tunnels, towards the turbines. So, the water diverted

could be for a very long distance ranging between ten to hundred kilometres. Such a break in the river flow would prove fatal for the riparian states, specifically the downstream riparian states. Further, it is also argued that the water diverted is held back in the reservoir and it is released when there is a need to turn the turbines. Such holding back of rivers if done for long, would affect the aquatic livestock and the lower riparian states (Iyer 2015: 13-14).

Besides this, China has been actively engaged in developing hydropower projects in countries beyond its boundaries too—namely, Laos, Cambodia and Myanmar (Chellaney 2013a: 2). China has also expressed its interest in developing dams in the Mekong River Basin which would directly have a destructive effect on South-East Asia's lower riparian states like Cambodia and Vietnam, but these two states have not been able to counter such an act by China. Similarly, the construction of dams along the Irrawaddy river (a very important waterway for Burma) would also adversely affect the inhabitants of the lower riparian state Burma. Even in the Salween river, China plans to built about 13 dams which would again affect the lower riparian South-East Asian countries (Svensson 2012: 11). This is reflective of the critical role China could play in South and South-East Asia.

It can be reiterated that China has been playing a very crucial role in controlling and manipulating the “water resources” within and beyond its boundary. So, it has rightly been said that China has at its disposal the control over the “Asian tap” (Chellaney 2013a: 3).

Thus, China's attitude and approach has disrupted the balancing initiative undertaken globally to promote international cooperation for water-sharing, thereby replacing cooperation with competitiveness among the countries. Such an understanding illuminates the reality that China definitely has a very influential role not just politically but also hydrologically. Brahma Chellaney rightly says that “Upstream dams, barrages, canals, and irrigation systems can help fashion water into a political weapon that can be wielded overtly in a war, or subtly in peacetime to signal dissatisfaction with a co-riparian state. Even denial of hydrological data in a critically important season can amount to the use of water as a political tool” (*The Diplomat*, 3 April 2015). China can in the future use ‘water’ as a soft power in negotiating with its neighbouring nation like India and the Himalayan region as a whole.



### **3.5 India's Response to China as a Hydro-Hegemon: Trans-boundary Rivers**

In the sharing of trans-boundary rivers the riparian states usually face three situations: cooperation, the stronger riparian controlling the river and competition. The hydro-hegemony can be either a positive one or a negative one. The former would involve the sharing of the resource under the garb of a well negotiated water-sharing treaty and, to the contrary, the latter would be a competition between the riparian states in monopolizing the resource (Zeitoun and Warner 2006: 444).

According to John Waterbury, the riparian states are observed as adopting a unilateral approach to the trans-boundary resources. He categorises the unilateral approach into passive and active unilateralism. The former means that the riparian states do not engage or minimally engage in any activity that alters or controls the flow and quality of the river, whereas the latter indicates the activeness of one of the riparian state in taking full advantage of the lack of any agreement by engaging in building projects that affects the flow or quality of the river (Waterbury 1997: 279).

This theoretical understanding of the riparian states and the hydro-hegemon stands relevant in the case of the India-China trans-boundary river sharing. The absence of any governing treaty between these two nations has led to China adopting an 'active unilateral' approach towards the trans-boundary rivers. This has marked a very competitive attitude between both the riparian states, i.e. India and China.

It is known that China's 'damming activities' on the Yarlung Tsangpo river/Brahmaputra river have been an issue of concern for India and Bangladesh as both are dependent on the flow of the river Brahmaputra. But interestingly, there has been debates about the impact China's damming activities would have on the lower riparian nations. Some negate the possibility of any impact whereas some like Brahma Chellaney and Ramaswamy Iyer assert the high intensity of the impacts of such Chinese activities on the trans-boundary rivers. In fact, in the World Bank report of 1996 it was stated that "the Brahmaputra river and its 52 major tributaries have a total catchment area of 580,000 square kilometers; 33.6 per cent of that lies within India; 50.5 per cent in China; 8.1 per cent in Bangladesh and 7.8 per cent in Bhutan". It is further argued that the precipitation of China contributes only seven per cent to the flow and it is its tributaries flowing from Arunachal Pradesh and the monsoons of India that contribute immensely to the river flow (Limaye 2016: 45). This has been

interpreted as the reason behind India's passive reaction to the Chinese activities on river Brahmaputra.

But the Brahmaputra river holds great importance for India as (Pak 2016: 59):

1. The river accounts for almost twenty-nine per cent of all surface water in India's rivers.
2. It accounts for almost forty-four per cent of India's total hydro-power potential.

Furthermore, Brahma Chellaney also claims that the dam-building activity of China has been expanding towards the Indian side too and as an upstream state, it has been controlling the river flow through its dams. India on the other hand, set up the 'Technical Expert Group' in 2008 comprising the representatives from the Ministry of Water Resources, Ministry of Environment and Forests, Ministry of External Affairs, Department of Roads, Transport and Highways and the State Government of Arunachal Pradesh. The group was endowed with the responsibility to formulate an Action Plan for establishing India's 'user rights' on the river Brahmaputra and its tributaries. The expert group recommended the following (Limaye 2016: 45):

1. Completion of the Lower Subansiri dams along with the Lower Siang and Lower Demwe Dams of Arunachal Pradesh
2. The state government of Arunachal Pradesh to approve and quickly complete a project on the basin close to the international border.

So, the experts in India believe that it should prioritise the development of hydropower projects in Arunachal Pradesh on the one hand, while on the other, it should try to gather support from other riparian and neighbouring nations to counter China (IDSA 2010: 51). Such is the complexity attached with the sharing of trans-boundary rivers between India and China.

In order to assess and analyse the role of China in the hydropower development of the Eastern Himalayan belt, there is a need to closely understand the flow of the Brahmaputra/Yarlung Tsangpo river, which is one of the primary rivers affecting both China and the Eastern Himalayan belt.

### **3.6 A Brief Profile of the Brahmaputra/Yarlung Tsangpo River**

The 'Brahmaputra river/Yarlung Tsangpo' river of South Asia is one of the largest rivers in the world, draining an area of around 5,80,000 sq. km covering four countries, namely, China, India, Bangladesh and Bhutan. The Brahmaputra basin in India covers the states like Arunachal Pradesh, Assam, Nagaland, Meghalaya, Sikkim and West Bengal. In Arunachal Pradesh it flows as river Dihang and later, after 35 km, it is joined by two other rivers named Dibang and Lohit. It is with this confluence that the river widens and flows as river Brahmaputra. Later, several other rivers join the Brahmaputra river as its tributaries like the Burhi Dihing, Dikhou, Dhansiri and Kopili rivers on its left bank and rivers like the Subansiri, Kameng, Manas, Sankosh, Dudhkumar/Raidak, Jaldhaka/Dharla, Teesta and Atrai rivers on the right bank (Mahanta et. al. 2014: 6-10).

The topographic regions of the Brahmaputra river basin include the 'High Tibetan Plateau' which is located in southern Tibet, 'High Himalayan Mountains' located in Bhutan and three Indian states (Arunachal Pradesh, Sikkim and West Bengal), 'Brahmaputra Valley' (part of Assam), 'Lower Mountainous Region' (located in Nagaland, Assam and Meghalaya) and the Plains (located in part of Bangladesh and West Bengal) (Ibid.: 14).

The river originates from the glacier of 'Chema-Yung-Dung' in the 'Kailash range' of Southern Tibet and travels 1,625 km in China, 918 km in India and 337 km in Bangladesh before emptying into the Bay of Bengal (Ibid.: 9).

It is with the occupation of the Tibetan Plateau by China has brought China very close to the Eastern Himalayan belt. In fact, China's presence and influence on the Eastern Himalayan belt can be felt very strongly due to the control of the natural resources like water that originates from the Tibetan Plateau and apparently forms the 'lifeline' of the Eastern Himalayan belt.

To understand the dynamics of the water-sharing of the trans-boundary rivers in the Eastern Himalayan belt, it is equally important to analyze the relation China and India share in the context of the 'water issues'. As the Indian states like Sikkim, Arunachal Pradesh and Darjeeling district are the constituents of the Eastern Himalayan belt, so

the nature of the relationship shared by India with China, specifically in the context of ‘water management’, is of profound importance.

One important commonality between China and India is the issue of the ‘water crisis’. This is a huge problem for both the countries due to its engagement in ‘water-intensive industries’, ‘irrigation’ and an increasing demand for water from the people. Such activities get hampered with the scarcity of water supply and this in turn would adversely affect the economic activities and development as a whole. When faced with such a situation, China seems to have bettered the situation after its occupation of the Tibetan Plateau in the 1950s as the Tibetan Plateau has been blessed with “vast glaciers, huge underground springs and high altitude”, which makes the Plateau one of the world’s largest storehouse of freshwater. So, the control over the Tibetan Plateau provides China with the control over the natural resources of the Plateau as well and the fact lies that almost all of Asia’s major rivers originate from the Tibetan Plateau (Chellaney 2009: 38).

The problem erupts with the ‘damming’ activities of China on its rivers, which involves the diversion and control of the river flow. One of such projects that China started was the ‘South-North Water Diversion’ (SNWD) project, which was initiated to tackle the water disparity between two of China’s rivers, namely the Yangtze and Yellow rivers. The Yangtze river referred to as the Chang Jiang river is prone to flooding due to its heavy flow (the annual flow is 951.3 billion m<sup>3</sup>), and even the cities on the river like Lanzhou (western China, Gansu Province) and Zhengzhou receive heavy rainfall of 87.92mm per month and 136.98 mm per month, respectively. But on the contrary, the Yellow river (Huang He) is prone to drying out, thereby causing scarcity. So, through the South-North Diversion project, attempts would be made to divert water up to 48 billion m<sup>3</sup> (cubic meter) from the Yangtze river in the south to the Yellow river in the north through several inter-basin transfer canals (Magee 2011: 1500).

The ‘South-North Diversion Project’ involves three stages: eastern, central and western routes. The eastern and central routes target the diversion of the Yellow and Yangtze rivers but the western routes involve the diversion of the ‘trans-boundary

rivers' like Mekong,<sup>4</sup> Salween and Brahmaputra. The diversion of these 'trans-boundary' rivers as such can trigger huge water conflicts between the states dependent on these rivers (Jayaram 2015: 5).

In fact, China, in order to achieve its 2020 goal of producing 15 percent of the country's energy with renewable resources, identified some rivers for its economic development in its twelfth Five Year Plan (12<sup>th</sup> FYP)—namely, the 'Jinshajiang, Yalongjiang, Daduhe, Lancangjiang (Mekong), Nujiang (Salween) and Yarlung Tsangpo' (Svensson 2012: 9-11).

In the context of the Eastern Himalayan belt, China's hydropower project activities on the Yarlung Tsangpo river are of prime importance. The project has the total hydropower potential of 114 GW which is a concern for the riparian states. The projects on the Yarlung Tsangpo river are the Zangmu (510 MW),<sup>5</sup> the Lengda, Zhongda, Langzhen and Jiacha projects (Ibid.: 14).

Such rigorous 'damming' activity by China does cause discomfort to the lower riparian Eastern Himalayan states. But China, on the other hand, as mentioned earlier in the chapter has justified its 'damming' activities under the garb of 'run of the river projects.' But it cannot be negated that any kind of 'intervention' in the river would inevitably affect the river flow in the lower riparian states (Ibid.: 14-15).

On the other hand, it is also argued that the pattern of the Yarlung Tsangpo river is such that by the time the Brahmaputra reaches Bangladesh, the flow of the river increases as the tributaries join and also due to the monsoonal rains. So, the lower riparian states are not likely to suffer from water deficiency; instead, ironically, usually in the monsoons, these states are endangered due to heavy flow of the river which causes flooding. But on the other hand, the scenario would be different if China's diversion of the river flow is carried out throughout the year instead of just during the monsoon season. Such an act on the part of the upper riparian state China would then adversely impact the lower riparian states of South and South-East Asia. Though, the interesting fact remains that India possesses on its end 58% of the 'total

---

<sup>4</sup> The Mekong and Salween are trans-boundary rivers in South-East Asia, while the Brahmaputra river flows through South Asia.

<sup>5</sup> The Zangmu dam is built on the Yarlung Tsangpo river, nine km north-west of Gyaca in the Tibet Autonomous Region of China. The construction began in 2009 and its first generator was commissioned in 2014 and was fully operationalised in 2015.

drainage basin' of the Brahmaputra, whereas China has only 20% of the Brahmaputra drainage basin under its control. Yet, it is the position of China as an 'upper riparian' state that gives it a much favourable and advantageous position in the context of using the 'Yarlung Tsangpo/Brahmaputra river' compared to a 'lower riparian' state like India (Jayaram 2015: 6).

Within this, it is China's plan on building hydropower projects on the 'Great Bend'<sup>6</sup> in the 'Brahmaputra river' which is crucial for the lower riparian states of South and South-East Asia as the 'Great Bend' is the bend from where the Yarlung Tsangpo/Brahmaputra river enters southwards towards the Assamese plain. So, any such 'damming' activity on the bend would have a direct impact on the volume of the river flowing towards the lower riparian states which includes those in the Eastern Himalayan belt (Wirsing 2012: 3).

So, China's dams on the Brahmaputra and its implications on the lower riparian states of South and South-East Asia can be witnessed in the form of a reduced volume of the river and as Brahma Chellaney says, "whether China intends to use water as a political weapon or not, it is acquiring the capability to turn off the tap if it wants to, it can use to keep any riparian neighbour on good behaviour" (Sharma 2015: 2).

Thus, two important projects on the Yarlung Tsangpo/Brahmaputra river initiated by China are: the diversion of water from southern China to northern China and the construction of a dam in the 'Great Bend' of the Yarlung Tsangpo with a planned capacity of 40,000 MW. These projects of China would have an altering impact on the lower riparian states which include those of the Eastern Himalayan belt. Such 'water'-related issues clearly define the undercurrents of the issues breeding in the international scenario with China playing a major role in them.

### **3.7 China's Strong Influence in the Eastern Himalayan Belt**

#### **China's Impact on the Development of Hydropower Projects in Bhutan**

Historically, Bhutan has shared a close cultural, religious and economic relationship with Tibet. Since the invasion of Tibet by China in 1950, Bhutan, among many other Himalayan countries, has attracted China's attention, as its border with Tibet prior to

---

<sup>6</sup>The Great Bend is considered as having the highest hydropower potential in the world.

1949 brought it geographically closer to China after Tibet's invasion. It is imperative to understand the role of geo-politics between China and Bhutan in order to assess the influence China could have on the developmental initiatives initiated in Bhutan specifically in the development of hydropower projects.

The geopolitical issues concerning Bhutan vis-à-vis its neighbouring countries is that Bhutan is a small Himalayan kingdom flanked by the two 'Asian giants' India and China (Naidu 1986: 533). Bhutan as such has to cautiously plan its every move to avoid offending any of the two as the fact lies that "the independent existence and internal stability, of the small, landlocked and remote states largely depend on the attitude of the great neighbours in the north and south" (Poulose 1971: 195). Bhutan shares a 470 km-long border with China in the north-east and north-west, but that border lacks any concrete boundary, thereby leading to the problem of incursions by the Chinese (Mitra et al. 2006: 69).

Interestingly, besides the geographical location, Bhutan shares cultural ties with both these Asian great powers. Being precise, the inhabitants of southern Bhutan ethnically and culturally have similarities with the people of the north-eastern region of India and similarly, the western Bhutanese population is believed to have migrated from Tibet (Naidu 1986: 533).

Moreover, Bhutan's geographical proximity with Tibet has been deeply influenced by the Buddhist religion and culture of Tibet and the invasion of Tibet came as a shock for Bhutan as it feared meeting the same fate at the hands of the Chinese. But after Tibet's invasion, China expressed its desire to develop friendly relations with Bhutan and wished to provide economic support too. In fact, in 1955, China decided to provide visas to the Bhutanese citizens but such a friendly approach was short-lived with China occupying the Bhutanese 'enclaves' in Tibet in 1959. Thereafter, the flee of His Holiness the Fourteenth Dalai Lama to India and the inflow of Tibetan refugees in Bhutan, instilled fear and insecurity in Bhutan thereby leading to the termination of all its contacts with Tibet. It also withdrew its troops from western Tibet and also its representatives in Lhasa (Centre for Bhutan Studies and IDE/JETRO 2004: 76).

Such roughening of the relationship further deteriorated with the India-China war of 1962 and Bhutan terminated all contacts with Tibet. So, with the intention of securing

its national interest, Bhutan secured its borders immediately. But later, by the mid-1980s, the relationship between China and Bhutan seemed to have bettered thereby, paving the way for some interaction between the two which gradually culminated into annual border talks (Mathou 2005: 514-515).

Such a bilateral negotiation between China and Bhutan was devoid of any interference from India and the border talks began in 1981. Bhutan went a step ahead and established the 'Boundary Commission of Bhutan' and later in 1983 the representatives of both Bhutan and China met in New York to discuss their bilateral relations. The first formal meeting between the two nations was convened in Beijing from April 17 to 20, 1984, and the same since then has continued alternatively in the capital cities of both nations (Centre for Bhutan Studies and IDE/JETRO 2004: 77).

Prior to such border talks, there have been instances of friendly interaction between the two nations: Bhutan supporting China's seat in the United Nations in 1971 and the invitation to China from Bhutan in 1974 for the coronation ceremony of King Jigme Singye Wangchuk (Roy 2010: 106). Subsequently, in 1977 and 1979, the Bhutanese table tennis teams visited China. This was followed by several diplomatic exchange visits; the 1990 Asian Games hosted in Beijing had Bhutanese sports delegates and the 4<sup>th</sup> World Women Conference held in Beijing in 1995 had a Bhutanese representative (Centre for Bhutan Studies and IDE/JETRO 2004: 79).

It was on December 8, 1998, during the 12<sup>th</sup> border talks, that Bhutan and China entered into an agreement titled "Agreement of Maintenance of Peace and Tranquility in the Bhutan-China border areas". In the agreement, China declared that it would respect the "independence, sovereignty and territorial integrity" of Bhutan. But, the intrusions by China continued, compelling Bhutan to initiate a technical level discussion in 2002 (Ibid.: 77).

Bhutan as a 'buffer state' between China and India has been of prime importance for both these countries. The cultural closeness that Bhutan shares with Tibet led to the Chinese allowing the Bhutanese to enter both Tibet and China without any documents. Such Chinese influence on Bhutan drew India's attention towards Bhutan, which later culminated into Pandit Jawaharlal Nehru visiting Bhutan in 1958 and initiatives being taken to economically develop Bhutan. On the other hand, the Indian government expressed its desire to deploy military personnel in the border areas of



Bhutan so that according to Nehru, “no one from the outside can do any harm to it”. But as a response to the Indian stand, the Bhutanese Prime Minister questioned, “who has the strength in this area to oppose the Chinese?” (Levi 1959: 459). These reveal the deep-rooted influence China has had on Bhutan and the South Asian region as a whole. On the other hand, to counter such Chinese power and influence, India began to aggressively intervene in the economic development of Bhutan with the intention of bettering its relationship with Bhutan. Such a scenario can be interpreted as China changing the nature of the geopolitics in South Asia.

India in its objective of economically developing Bhutan began to harness the natural resources of Bhutan as it is blessed with it. India as such began to finance the development of hydropower projects of Bhutan and also supported it in developing its first Five Year Plan in 1961. Such discomfort on the part of India with regard to China’s close presence vis-à-vis Bhutan is due to China’s repeated claim over Bhutan (Grover 1974: 142-143). Mao in the 1930s had said that “the correct boundaries of China would include Burma, Bhutan and Nepal”. Besides this there has been repeated “cartographic aggression” on the part of China in 1954 and 1958 wherein the maps of China and a document “The Brief History of China” depicted some part of Bhutan as a constituent of China (Penjore 2004: 114-115).

China has been claiming some portion of the north of Punakha and also around 300 square miles of north-eastern Bhutan (Karan and Jenkins 1963: 35). Such Chinese intentions towards Bhutan are evident with China claiming Bhutan along with Tibet, Nepal, NEFA and Sikkim as the “blending of five colours” and similarly, the geographical location of these Himalayan states has been personified as the “molar teeth side by side in a man’s mouth” (Poulose 1971: 195). Such repeated claims of China on the buffer state Bhutan is a cause of concern for India. It is the strong presence of China in the neighbourhood of Bhutan that has compelled both Bhutan and India to engage actively with each other.

The economic engagement between Bhutan and India began with India financing Bhutan’s first hydropower project—the Chukha project—the agreement for which

was signed between Bhutan and the Government of India on March 23, 1974. The project with an installed capacity of 336 MW was commissioned in 1986.<sup>7</sup>

Such economic interactions continued with the construction of several other hydropower projects like the Punatsangchu project and others, but one of the projects which have been of grave concern for both India and Bhutan is the ‘Amochu’ project which is of 540 MW. India refused to finance the Amochu project of Bhutan and it is in the context of this project that the impact of China can be felt very strongly (Namgyel 2014: 1).

India has not been able to give a ‘green signal’ to Bhutan for the Amochu project, despite its ‘financial and technological feasibility’ due to the fact that the project is located in the ‘tri- junction area’ of India, Bhutan and China. So, the construction of such a project could lead to security issues between these three nations. This has had a great impact on the development of hydropower projects in Bhutan, as the Amochu project was included in Bhutan’s 2020 target of generating 10,000 MW of hydropower. This as such is impacting on not just the target of 2020 but also would increase the cost of the project with further delays (Sarkar 2014: 1).

The catchment area of the Amochu river is extended across Cherithang, Dolam and Sinchulam in the north that border China (Rizal 2015: 334). It is as such, in a location close to China and this has raised several issues in the context of the Amochu project, leading to India’s discomfort in this regard.

Moreover, the Chumbi Valley of Tibet, which gives a direct access to Tibet’s core region, lies between India (Sikkim), Bhutan and China (Tibet) (Grover 1974: 143). The location of the Amochu project is very close to this ‘tri-junction’ area of India, China and Bhutan. So, the fear India has is that China’s access to the Chumbi Valley would bring it very close to the ‘Siliguri corridor’ that connects the north-eastern region of India with the rest of India. As such, the presence of China in the neighbourhood and its ‘interest’ towards Bhutan has impacted on the development of hydropower projects in Bhutan and has acted as a undercurrent affecting the nature of the geopolitics of the whole South Asian region.

#### China’s Impact on the Development of Sikkim’s Hydropower Projects

---

<sup>7</sup> <http://www.gatewayhouse.in/hydropower-diplomacy/> accessed on 4<sup>th</sup> September, 2016.

Tracing the history of Sikkim brings forth the crucial role both China and India have and could play in the small Himalayan state. On the other hand, the important role Sikkim could play in determining the nature of relationship between China and India is also of prime concern.

Geographically, Sikkim is located to the south of the Tibet and the communities of Sikkim along with other Himalayan communities of Arunachal Pradesh, Kashmir, Bhutan and upland Nepal are considered as the belonging to the “Tibetanised world”. Sikkim has historically, intensively engaged with Tibet economically, religiously, politically and socially, even prior to the British interventions in Sikkim in the early 19<sup>th</sup> century (Norbu 2013: 3-4). Later, with the signing of the Anglo-Sikkim treaty of 1861, British India sought access to Tibet for trade through Sikkim which was terminated with the occupation of Tibet by China in 1949 (Pletcher 2011: 252). With the Chinese control of Tibet, the relationship between Tibet and the whole of Himalayan states, and Sikkim in particular, ceased to exist.

China has always claimed its rights over some of the Himalayan states and Sikkim is one of them. In fact, China deliberately shoved Sikkim away from the border talks between it and India as it believed that Sikkim was inevitably a part of China. India on the other hand, declared Sikkim as its “protectorate state”. Such was the political significance of the location of the small Himalayan state and so Sir Charles Bell rightly said that the location of Sikkim was like “a dagger thrust at the heart of India” (Patterson 1962: 197). With such Chinese approach towards Sikkim, it is not difficult to anticipate that China would resist any kind of developmental initiatives in the state, which it considers as an “irredentist region”. Though, ironically, the fact lies that China in the year 2003 recognized Sikkim as a part of India.

With such a historical background of Sikkim’s relationship with Tibet (prior to the Chinese occupation) and China, it can be comprehended that complications in the border areas of Sikkim with China do exist. Such complications often resurface in varied forms and one of the primary concerns in this context is the development of ‘hydropower projects’ in Sikkim and China’s intervention in this regard.

The development of hydropower projects in Sikkim has been of a great challenge to the state and the whole country, due to the refusal of the external multi-donor funding agency to fund the hydropower projects in Sikkim. The reason behind it is the

opposition from China over the external agencies like World Bank funding the hydropower projects in Sikkim (Singh 2014: 1).

Such opposition of China can be understood within the context of China's territorial claim over Sikkim. China always claimed that Sikkim was its part though, historically, there has been no proof of any kind of relationship between China and Sikkim (Penjore 2004: 114-115). As mentioned earlier, China refers to the Himalayan states including Sikkim as 'irredentist regions' which need to be reclaimed (Grover 1974: 144-145). China describes the four Himalayan states including Sikkim, Bhutan, Ladakh and Nepal as "the four teeth with which the Chinese will grind their way to the southern seas" (Grover 1974: 143-147).

Historically, it has been observed that a map of China has showed Bhutan and Sikkim as a part of Tibet and later again during the Tuan dynasty, the maps depicted these two states as an integral part of China (Garver 2001: 167-168). Such repeated 'cartographic aggression' is reflective of the fact that Sikkim was of great strategic importance to China.

One of the important factors concerning China is the close location of Sikkim vis-à-vis the Chumbi Valley of Tibet. It is through this valley that the core region of Tibet can be easily accessed and the Chumbi Valley can be easily accessed through the Nathula Pass of Sikkim (Grover 1974: 143). It is through this valley that the Anglo-Indian expedition team moved to invade Shigatze and Tibet (Garver 2001: 167-168).

Nathula Pass exists as one of the important passes for the Sikkim-Tibet border and the road connecting Gangtok (Sikkim) and the Pass was completed and inaugurated in 1958 (Bajpai: 183-190). It is such a strategic importance of Sikkim that has led to China claiming it to be a part of it and that it should be attached to it (Grover 1974: 153). As such, it cannot be refuted that the presence of China in the neighbourhood has a profound influence not just politically but also on the economic development of the state.

China's perspective on the political status of Sikkim vis-à-vis the Sino-Indian border issue stands clear with the construction of the second largest railway line connecting

Lhasa with Xigaze.<sup>8</sup> The railway line stands close to the Sikkim border which tends to breed insecurity and discomfort in terms of the Sino-Indian border issues (*NDTV*, August 15, 2014).<sup>9</sup> Such Chinese moves could possibly in future act as facilitators for executing its concealed agenda in the Himalayan region. The truth lies that the stronger is China's strategic location, the tougher will it act in controlling the fate of the Himalayan belt including Sikkim.

#### China's Impact on the Development of Arunachal Pradesh's Hydropower Projects

An understanding of the influence of China on the development of hydropower projects in Arunachal Pradesh requires an analysis of the political relation between the two. It is the nature of their political relation that has influenced the issue of 'development' in Arunachal Pradesh.

One of the contentious issues concerning the two Asian giants India and China is the territorial claim of China on the Indian side. China claims 90,000 sq. km on the eastern side of the Indian territory, within which the state of Arunachal Pradesh has a crucial position. (Goswami 2010: 2) The eastern sector of India was referred to as the North East Frontier Agency (NEFA) by the Indians and the same sector is referred to by the Chinese as South Tibet (Malone and Mukherjee 2010: 140). As a matter of fact, the Chinese ambassador to India in the year 2006 claimed the whole of Arunachal Pradesh as Chinese territory (Goswami 2014: 1). Such a difference in the understanding and reference of the eastern sector of India clearly showcases the difference of opinion between India and China.

China claims that Arunachal Pradesh historically was a part of Tibet as the Tawang monastery of Arunachal Pradesh and the Lhasa monastery historically shared close ties. So, on the basis of this, China claims Arunachal Pradesh to be a part of Tibet and since Tibet is now a part of China, the state of Arunachal Pradesh is also a part of China (Goswami 2012: 3). Moreover, one of the oldest monasteries of Arunachal Pradesh, the 'Tawang Monastery', is the birthplace of the sixth 'Dalai Lama' and is considered as "one of the powerful bastions of freely practiced Tibetan Buddhism in the region". Besides this, the prediction made by the '14<sup>th</sup> Dalai Lama' in 2008 that

---

<sup>8</sup> The second largest city in Tibet and the seat of the Beijing-recognized Panchen Lama, who is the second important monk in the Tibetan hierarchy after H.H. the Dalai Lama.

<sup>9</sup> <http://www.ndtv.com/india-news/china-inaugurates-new-tibet-rail-link-close-to-sikkim-649304>

his next incarnation would be born outside China-occupied Tibet has led to China's insecurity. So, it was understood that the control of the Tawang Monastery of Arunachal Pradesh could prove favourable if the '15<sup>th</sup> Dalai Lama' is born in Arunachal Pradesh as the Tawang monastery is the second largest Tibetan monastery after Lhasa (Rehman 2009: 2).

Furthermore, China also argues that Arunachal Pradesh was established on three areas "Monyul, Loyul and Lower Tsayul", which originally belonged to China (Chellaney 2015).<sup>10</sup> China on this basis, asserts its claim on the state more strongly, thereby disrupting peace in its border areas with India.

China, as such, is of the view that its claim over Arunachal Pradesh would have a huge reverberating impact on its control over Tibet (Goswami 2012: 11), as the Tawang monastery of Arunachal Pradesh, it is believed, could be possibly the birthplace of the next 'Dalai Lama', i.e the 15<sup>th</sup> Dalai Lama, so its control could give China an added advantage in tackling the socio-political issues in Tibet. This, on the other hand, can be understood also as a reflection of the dubious objective of China.

Moreover, China seems to be fearing the possibility of India providing a firm platform for Tibet-related activities (Ibid.: 11) and so it claims Arunachal Pradesh and specifically the Tawang monastery and Upper Siang district as an "irredentist region"<sup>11</sup> (Bhutia 2013: 61). It has been argued that such a Chinese stand is an effort directed towards obliterating any "pan- Tibetan" rising from the India-China border (Goswami 2012: 12).

It is known that China refuses to accept the "McMahon Line" as the international border separating Tibet and India. The border was recognized in the 'Anglo-Tibetan Simla Conference' of 1914 but the Chinese describe the border as "illegal and colonial". With such a discord over the international border, China claims its rights over Arunachal Pradesh and accuses India of occupying its territory (Arunachal Pradesh) (Richards 2015: 4).

Such territorial claim made by China was loud and clear with several intrusions made by China in Arunachal Pradesh. In 1987, the Chinese intruded into an area that falls in

---

<sup>10</sup><http://chellaney.net/2015/04/30/why-is-narendra-modi-going-to-china/> accessed on 24th August, 2016.

<sup>11</sup>The region which is considered as lost or unredeemed and needs to be reoccupied.

the trijunction between India, Bhutan and China. The area is known as Sumdorongchu (Ganguly 1989: 1130). In fact, such Chinese intrusions have not been mere military ones; instead, the cartographic intervention that China has been engaging in by publishing maps showing Arunachal Pradesh and Jammu and Kashmir as the constituents of its country, does reflect the nature of the India-China relations in a true sense (*The Indian Express*, 14 May 2015).

The nature of China's approach towards the border issues with India, with specific reference to Arunachal Pradesh, resurfaced with the issue of "stamped visas" for the people of Arunachal Pradesh. China announced that the people of Arunachal would be provided with a 'stamped visa', contrary to the normal visa provided to other tourists. China very conveniently puts forth its decision as a "goodwill gesture" dedicated to Arunachal Pradesh in order to cater to its people's "outbound and overseas travel" (Roy 2014: 1).

In response to such Chinese initiatives, Arunachal Pradesh's Member of Parliament Takam Sanjoy in 2013 said "whichever visa is used for other states in the country, the same visas should be used for Arunachal Pradesh, as we are part of India. No need for India to accept stapled visas".<sup>12</sup> The frictional nature of the stand of both India and China seems to prophesize the future of the border issue between the two.

Similar incidences have happened prior to the issue of 'stamped visas' as several times the people of Arunachal Pradesh have been denied visa by China. Like for instance, in 2007, an Indian Administrative Service (IAS) officer from Arunachal Pradesh named Ganesh Koyu was not granted visa for his study visit to Beijing and Shanghai. The reason provided for the denial was that he was a Chinese citizen and so could travel without a visa. Later, in the year 2012, a senior Indian Airforce officer Mohonto Panging of Arunachal Pradesh, who was to visit China under the 'bilateral defence exchange programme' was denied a visa, on the pretext that such visits could trigger complications in the border issue (Gowami 2012: 16-17). These incidences are indicative of the fact that China firmly aims at propagating its stand both verbally and non-verbally vis-à-vis Arunachal Pradesh, which has been generating an intense insecurity for India.

---

<sup>12</sup> [http://arunachalpradesh.nic.in/csp\\_ap\\_portal/pdf/Announcement/no-need-to-accept-stapled-visa.pdf](http://arunachalpradesh.nic.in/csp_ap_portal/pdf/Announcement/no-need-to-accept-stapled-visa.pdf) accessed 18th August, 2016.

With such issues concerning Arunachal Pradesh vis-à-vis China, it can be understood that China does concern itself with any kind of changes or developments in the state. In this regard there is a need to first understand the border issues between the two in order to comprehend the influence China has on Arunachal Pradesh. Such Chinese attitude towards Arunachal Pradesh was evident with China opposing the '2.9 billion dollar' Asian Development Bank loan to India on the pretext that out of the 2.9 billion dollar loan, around 60 million dollars were meant for the water management project in Arunachal Pradesh. The External Affairs Minister of India said, "China did not endorse the Country Partnership Strategy (CPS) 2009-12 for India in the Board of the ADB on the ground that the proposed India-CPS involved technical assistance funding for the Flood and River Erosion Management Project in Arunachal Pradesh which China claims is its territory" (Rehman 2009: 1). This as such, for the first time, led to China claiming its right over the 'disputed territory' Arunachal Pradesh in a 'multilateral forum' like the Asian Development Bank (Goswami 2012: 16).

Consequently, China's intervention led to the withdrawal of the Asian Development Bank funding in 2009 for the project in Arunachal Pradesh (Guha 2012: 28). Similarly, other donor agencies like World Bank also retracted from providing any financial support for the hydropower projects in Arunachal Pradesh due to strong opposition by China (Singh 2014: 1).

Later, in the same year, China resented against the visit of the then Prime Minister of India Dr Manmohan Singh to Arunachal Pradesh. The spokesperson of China's Foreign Ministry Ma Zhaoxu expressed the resentment on behalf of China by saying "such visits trigger disturbances in the disturbed region". Such an attitude of China towards the border dispute continued consistently and it also opposed His Holiness the 14<sup>th</sup> Dalai Lama's visit to Arunachal Pradesh (Goswami 2012: 17).

Such a frictional relationship between India and China has exacerbated with the presence and installation of various advanced military equipments by China along its border with India. Being precise, China has installed an advanced nuclear missile "CSS-5 MRBM" in place of the earlier "old liquid-fuelled nuclear capable CSS-3 (intermediate range)". Besides, China also deployed 13 'Border Defence Regiments'



and ‘Rapid Reaction Forces’ (RRF);<sup>13</sup> airfields were also established near the ‘Line of Actual Control’.

In fact, the RRF’s deployed in Chengdu, a place lying closer to the Indian border, is always in an “operational readiness mode”. It is also interesting to know that the RRF’s were trained in Yunnan (south-west China), the geographical characteristics of which resemble with that of Arunachal Pradesh (Goswami 2012: 7-8). The nature of the strategies adopted by China clearly defines its motives vis-à-vis Arunachal Pradesh and this does compel India to behave more vigilantly towards the security issues involving its border states of the north-east, specifically Arunachal Pradesh.

The intensity of the Chinese influence in India and over the whole of the South Asian region is too loud and strong to be stifled. So, India has also strategized its moves along the ‘Line of Actual Control’ in response to the Chinese strategies, by deploying a ‘supersonic cruise missile’ named *Brahmos* with a flight range of 290 km and also increasing the number of troops along its border with China in the year 2011. Similarly, in the following year, India engaged in several missile tests like those of the Inter-Continental Ballistic Missile (ICBM) named *Agni V*. In the same year, China too tested its Inter-Continental Ballistic Missile (ICBM) named *Dongfeng-31* (D-31), *Dongfeng-41* (D- 41) and JL-2<sup>14</sup> (Ibid.: 8-10).

Such a pattern of geopolitics between China and India, according to Namrata Goswami, is reflective of a “security dilemma” which means that “the first state arms itself; the second state fearing the first state’s armament, in turns arms itself. The first state then responds to the second state’s armament, by further arming itself resulting in a vicious cycle of armament” (Goswami 2012: 10-11). The increasing pace of a “security dilemma” between China and India has been posing a huge challenge to Arunachal Pradesh which is existed till date as a ‘bone of contention’ between the two Asian giants.

But with time, the capricious nature of India’s strategy vis-à-vis China came to the forefront. Like for instance India in the year 2013 took the decision to form a

---

<sup>13</sup>The RRFs are high-tech forces trained to function in any environment. These are constituted of two groups of armies, nine divisions, three brigades and seven regiments or battalions. All the three units of the Chinese military (army, navy and air force) have their respective RRFs.

<sup>14</sup> JL- 2 in English literally means “Giant Wave 2”. It is a submarine launched ballistic missile (SLBM).

‘Mountain Strike Corps’(MSC) in the eastern side covering states like Arunachal Pradesh and Sikkim to counter any Chinese activity on the border. The MSC was to recruit around 40,000 army personnel and an investment of Rs. 64,000 crore was to be made for a duration of seven years. The UPA (United Progressive Alliance) government simultaneously focused on the need to reactivate the ‘Advance Landing Grounds’ stretching along the Arunachal Pradesh-Tibet side of the ‘Line of Actual Control’ in order to station the Indian Air Force (Gokhale 2013).<sup>15</sup> These initiatives by India are reflective of its nature and approach towards China, but on the other hand, they also explicitly identify the role and influence China has in the South Asian region.

Ironically, the ‘capricious’ nature of India’s strategic policies came to the forefront when prior to Prime Minister Narendra Modi’s visit to China, the Ministry of Defence, Government of India, announced the shrinking of the actual strength of the ‘Mountain Strike Corps’ on the pretext of a financial crunch. Similarly, the Bhartiya Janata Party (BJP) President Amit Shah during the same time, cancelled his meeting arranged with the 14<sup>th</sup> Dalai Lama (*The Indian Express*, 14 May 2015).

China, as such, has at its disposal the power to sculpt both the domestic and foreign policy of its neighbours, India being one of them. The situation is carved out in such a way that China blissfully executes its politically and economically driven objectives, and in the process, it is the neighbouring countries which are compelled to redefine their moves in order to avoid offending China. This stands true when analyzing the Chinese intervention in Arunachal Pradesh in the form of the development of railway links closer to Arunachal Pradesh. China plans to build the railway line connecting Lhasa with Nyingchi—the latter lies closer to Arunachal Pradesh.<sup>16</sup> Such a development near the ‘disputed territory’ definitely aggravates the regional insecurity in India and South Asia as a whole.

As mentioned earlier in the chapter, the water issue when clubbed with the border issue would transcend into conflict between the riparian nations. This holds relevance for India and China as it is known that the Brahmaputra basin is constituted of around

---

15 <http://www.vifindia.org/article/2013/october/7/why-mountain-strike-corps-along-the-india-china-border-is-important> accessed on 18th August, 2016.

16 <http://currentaffairs.gktoday.in/china-inaugurates-tibet-rail-link-sikkim-border-08201414492.html> accessed 8th August, 2016.

150 sites for hydropower generation and out of it 80 lie in Arunachal Pradesh (Babalova 2017: 17). So this indicates that if China gets control over Arunachal Pradesh, then it would also gain control over the hydropower generating sites of the Brahmaputra basin.

Thus, it is evident that China's claim over the territories of Arunachal Pradesh is both politically and hydrologically driven. Till date, it has been opposing any developmental initiatives by India on the rivers of Arunachal Pradesh as it believes that through such initiatives, India intends to take control of the "disputed areas" of Arunachal Pradesh (Mahapatra and Ratha 2016: 96). So, an exclusive study of the influence China could have on the developmental initiatives of Arunachal Pradesh would not be possible without analysing the border issues between the two.

#### China's Impact on the Development of Nepal's Hydropower Projects

China has expressed its interest in funding Nepal's hydropower development. So unlike the other constituents of the Eastern Himalayan belt, China shares a cordial relationship with Nepal at least in the context of hydropower development.

Before indulging more into the influence that China has over Nepal's hydropower development, it is important to have an overview of the status of Nepal's hydropower development. One of the interesting paradoxes in Nepal is that the country has one of the highest hydropower potential in the world, but it is facing critical electricity issues with about eighteen hours of 'load-shedding' almost on a daily basis, especially during the dry seasons. The country has not been able to develop its energy sector much, due to an inadequately developed financial system (Nepal Economic Forum 2014: 1). It is with such a scenario that both China and India are extending their support to harness the untapped hydroelectric potential of Nepal.

It is a known fact that Nepal has been blessed with abundant natural resources like water and its geographical features also favour hydropower development, but the country has not been able to harness the potential. In fact, the total potential the country has is about 83,000 MW (Ministry of Water Resources 2001: 2). Despite such a huge potential, Nepal has been able to harness only about 600 MW of the hydropower potential. As a result, only about 40% of Nepal's population has access to electricity in the country (Shah et al. 2006: 15).

With such a background of hydropower development in Nepal, the growing interest of China in Nepal is noticeable. Such an act on the part of China is possible due to the liberalization of Nepal's economy, thereby allowing foreign investors in the country. Such changes in the economic structure of Nepal could be witnessed with the initiation of planned development in 1956 (Shreshtha 2010: 2).

Nepal approached China for a 'soft loan' of worth 400 million USD for the construction of transmission lines for the West Seti Project (750 MW). The loan is to be provided by China's Exim Bank. In fact, both countries (China and Nepal) also signed a memorandum of understanding (MoU) for the project which marked the beginning of friendship between the two.<sup>17</sup>

The factors for Chinese interest in Nepal cannot be confined merely to economic interests; instead, the underlying reality is China's political stake in Nepal vis-à-vis the Tibetan refugees. Historically, it is known that after the Chinese crackdown on Tibet in 1949, several Tibetans fled to neighbouring countries like Bhutan, Nepal and India, thereby making them refugees in these countries.

According to the Central Tibetan Administration and the International Campaign for Tibet, presently, in Nepal there are approximately 20,000 Tibetan refugees though in reality no definite number can be assured due to the presence of a large number of undocumented Tibetans entering the country (Korstanje 2016).<sup>18</sup> Such huge flows of Tibetan refugees were resisted by the host country Nepal and such resistance has been visible since the early 1990s itself (Binkerhoff 2009: 22).

In the period from 1959 to 1989, the Nepalese government provided refugee status to the Tibetans but post-1989, with Chinese intervention, the Nepalese government stalled such practices. But later, Nepal entered into an informal, unwritten "Gentleman's Agreement"<sup>19</sup> with the United Nations High Commissioner for

---

<sup>17</sup> <http://www.globaltimes.cn/content/855460.shtml> accessed on 25 February, 2016.

<sup>18</sup> <https://newint.org/features/web-exclusive/2016/01/11/chinas-influence-in-nepal-endangers-tibetan-refugees/> accessed on 28<sup>th</sup> August, 2016.

<sup>19</sup> According to the agreement, the Tibetan refugees apprehended by the Nepali authorities are to be handed over to the UNHCR for processing and transit to Dharamsala.

Refugees (UNHCR), according to which Nepal was to provide “safe passage to the Tibetans from Tibet to India”.<sup>20</sup>

The nature of the resistance became more rigid with time, as in the year 2005 the Tibetan refugees in Nepal were not allowed to organize mass celebrations, thereby restricting the enjoyment of both their religious freedom and the freedom to organize (Brinkerhoff 2009: 22).

Later in 2008, with the Tibetan uprising in Tibet, China adopted more stringent steps to control the flight of Tibetans from Tibet and also approached Nepal to contribute towards such efforts. Consequently, Nepal was witnessed as engaging rigorously in furthering the Chinese interests by entering into “security and intelligence sharing” agreements with China. Besides this, Nepal indulged in anti-Tibetan activities by curbing to a great extent any public demonstration by the Tibetans and positioning its armed forces in the Tibetan-inhabited areas, especially during politically sensitive occasions like His Holiness 14<sup>th</sup> Dalai Lama’s anniversary, the visit of Chinese diplomats and the International Human Rights Day. In the same year, China blocked the registration of a *de facto* representative office of the Dalai Lama and the Central Tibetan Administration named the Tibetan Welfare Office in Nepal.<sup>21</sup>

In fact, since 1998, Nepal has prohibited the issue of identity cards to refugees which has literally made the Tibetan refugees of Nepal question their existence (*Time*, 17 July 2012). The non-possession of official documents has meant the non-accessibility to any facilities provided by the host country, thereby worsening their already pitiable condition.

The important issue here is not about the inflow or the numerical presence of the Tibetan refugees; instead, the crucial point is how China uses the ‘bilateral relations card’ with Nepal to suffocate the emotions of the ‘Tibetan nationalists’ among the Tibetan refugees in Nepal. Such a perceived influence of China in the refugee-related policies and strategies framed and executed by Nepal can be validated with the words

---

<sup>20</sup> <https://www.hrw.org/report/2014/04/01/under-chinas-shadow/mistreatment-tibetans-nepal> accessed 28th August, 2016.

<sup>21</sup> *Ibid.*, 12.

of one of the Tibetan refugees in Nepal “I thought I would be safe. But now I realize China is telling Nepal what to do about us”.<sup>22</sup>

On a similar note, it has been argued that “for decades Nepal was the main station on an underground railroad for Tibetans fleeing China, which claims sovereignty over Tibet. Now the doors are slamming shut, as Nepal falls under the sway of China’s power and money”. A structural analysis of such a transformation in the attitude of Nepal towards the Tibetan refugees reinforces the fact that Nepal has existed as a quintessential country with a crippling economy and an unstable political structure clubbed with a ‘landlocked’ geographical location (Demick 2015).<sup>23</sup> Such a status of Nepal has served as a “trump card” for China which is to the contrary, economically blooming and politically stable. So, China used its strong position to manipulate its bilateral relations with Nepal and strategically used Nepal as a catapult aimed at hitting the Tibetan community in Nepal.

The success achieved by China in bridging its partnership with Nepal to control the lives of the Tibetans both within Tibet and beyond is apparent from the decreasing number of Tibetans entering Nepal as refugees. The number since the 1990s has reduced from approximately 2,500 per year to 600 in 2007; to 171 in 2013 and to 60 in 2015. It has been candidly stated “as China squeezes Nepal, Tibetan escape route narrows” (*Time*, 17 July 2012).<sup>24</sup>

The strong influence of China can be felt in Nepal not just in the form of policies but even physically, with the presence of the Chinese secret police in Nepal and also the installation of several cameras in the country. The rules for the monk body became much stringent in Nepal and they were debarred from possessing the photographs of His Holiness the 14<sup>th</sup> Dalai Lama or celebrating his birthday and they were not allowed to indulge in Tibet’s independence activities and above all, were prohibited from publicly demeaning the image of China. The changing attitude as shown by Nepal can be rationalized in the words of Nepal’s former Foreign Minister Mahendra

---

<sup>22</sup> Ibid., 12.

<sup>23</sup> <http://www.latimes.com/world/asia/la-fg-tibet-nepal-20150806-story.html> accessed 28th August, 2016.

<sup>24</sup> <http://tibet.net/2012/07/as-china-squeezes-nepal-tibetan-escape-route-narrows/> accessed 28<sup>th</sup> August, 2016.

Bahadur Pandey “Nepal will never allow any forces to use Nepali territory to engage in anti-China activity” (Demick 2015).<sup>25</sup>

Similarly, in 2012, the former Nepali Prime Minister Baburam Bhattarai during the Chinese Premier’s visit declared, “Nepal attaches great importance to China’s core interest, firmly adheres to the One-China policy and deemes Taiwan and Tibet as an integral part of China”.<sup>26</sup>

The reduction in the number of Tibetan refugees could be due to the rigid control of China in the border areas after the Tibetans’ 2008 uprising and secondly, the strong intervention of China in Nepal. This, as such makes crystal clear the strong position that China enjoys in the South Asian region, both economically and politically.

With the cooperative response of Nepal towards the Chinese agenda vis-à-vis the Tibetan community, China has been financially favouring the economically depressed country Nepal. China in 2011 declared to provide US\$ 20 million as military aid and in the following year, Chinese Premier Wen Jiabao provided US\$119 million in aid. Furthermore, China promised to built a “dry port” near the Nepal-Tibet border area in Tatopani and the primary level of the said work began in 2014 (Ibid.). Nepal is in the process of having the second dry port at Timure with Nepal’s Ministry of Commerce and Supplies and the Chinese government signing a Memorandum of Understanding on October 16, 2014. For the project, Nepal would be providing the land and all the costs would be borne by China (*The Himalayan Times*, 5 December 2015).<sup>27</sup>

One of the primary areas where China has been investing is the hydropower development of Nepal. Such an approach of China towards Nepal has been well stated as “checkbook diplomacy” (Ibid.). The intensity of the “checkbook diplomacy”,<sup>28</sup> can be noticed with the increase in aid from US\$24 million in 2014 to US\$128 million in

---

<sup>25</sup> <http://www.latimes.com/world/asia/la-fg-tibet-nepal-20150806-story.html> accessed 28th August, 2016.

<sup>26</sup> <https://www.hrw.org/report/2014/04/01/under-chinas-shadow/mistreatment-tibetans-nepal> accessed 28th August, 2016.

<sup>27</sup> <https://thehimalayantimes.com/business/nepal-china-sign-agreement/> accessed 28<sup>th</sup> August, 2016.

<sup>28</sup> It means the kind of foreign policy that uses economic aid and investments between nations in order to seek favours.

2015. The present Prime Minister of the Tibetan government-in-exile Lobsang Sangay said that “all this financial aid to Nepal is because of Tibet”.<sup>29</sup>

Thus, the change in the nature of relationship that Nepal shared with the Tibetan refugees due to the influence of China, asserts strongly the underlying, deeply rooted control China enjoys and could possibly extend to other states of the Eastern Himalayan belt. The intensity of the Chinese influence can be reiterated from the fact that despite Nepal sharing close historical ties with Tibet, the host country Nepal chose to strengthen its relationship with China at the stake of the existence of the Tibetan refugees.

The relationship between Nepal and Tibet dates back to the 7<sup>th</sup> century, with the Tibetan King Songsten Gampo marrying Bhrikuti (a Nepalese princess), who along with the Chinese princess Wen Cheng is believed to have spread Buddhism in Tibet. Such is the essence of the relationship that historically Nepal has shared with Tibet. Even ethnically, Nepal has shared some ties with Tibet, with reference to the inhabitants of northern Nepal—namely, the Sherpas, Yolmo, Tamang and Melangis—being perceived to be of Tibetan-Burmese origin (Tibet Justice Centre 2002: 26).

With such closeness that Nepal shared with Tibet, it would not be irrelevant for the Tibetan people entering Nepal to expect a benign attitude on the part of the host country Nepal. But paradoxically, Nepal, under Chinese influence, resisted the entry of the Tibetan people fleeing from Tibet and even expatriated them to their original homeland. This stands as a breach of the trust the Tibetan community bestowed on Nepal and on the other hand, it is a violation of the commitment Nepal made through various conventions like the International Covenant on Civil and Political Rights, the International Covenant on Economic, Social and Cultural Rights, Convention Against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment (CAT). In fact, ‘CAT’ includes the principle of ‘non-refoulement’ according to which no refugee is to be sent back to the place where there is a threat to his/her life and freedom. In contrary, Nepal indulged itself into the act of expatriating the Tibetans who fled from Tibet wanting to enter Nepal, thereby breaching the principle of “non-refoulement”

---

<sup>29</sup> <http://www.latimes.com/world/asia/la-fg-tibet-nepal-20150806-story.html> accessed 28th August, 2016.



towards which it had committed itself.<sup>30</sup> This, as such, clearly shows the extent and the intensity of the strong hold that China has over Nepal.

Such a glued relationship shared by the two would be enhanced, with China constructing the railway lines linking Xigaze with the Gyirong County which lies closer to Nepal.<sup>31</sup> China as such, poses a huge challenge to the Himalayan region in particular and to South Asia as a whole, with its all-pervasive nature in terms of regional politics.

Such a pervasive stature enjoyed by China in South Asia as a whole and the Eastern Himalayan belt, per se, is too loud to be muted and too strong to be vanquished. So, the South Asian region, as a whole, needs to efficiently, intelligently and diplomatically tackle the deeply permeating Chinese ironfists in the region.

### **3.8 Conclusion**

Understanding the trans-boundary rivers and the complications this could generate within and between states should not camouflage the possibilities of these rivers being a source of cooperation, friendship and peace among the states. Though challenges for the management of such transboundary rivers do exist due to the variations between the riparian states in terms of socio-economic development, capacity to manage water resources, infrastructure, political orientation and institutional as well as legal context. In order to actualize the possible benefits of transboundary rivers, “adequate legal and institutional frameworks, joint approaches to planning and sharing of benefits and related costs” is needed (UN-Water Thematic Paper 2008: 1-2).

In fact, on the ‘World Water Day 2002’ which was themed as “Water for Development”, Kofi Annan, the then Secretary General of United Nations, said, “Fierce national competition over water resources has prompted fears that water issues contain the seeds of violent conflict. But the water problems facing our world need not be only a cause of tension, they can also be a catalyst for cooperation” (International Atomic Energy Agency 2002).

---

<sup>30</sup> <https://www.hrw.org/report/2014/04/01/under-chinas-shadow/mistreatment-tibetans-nepal/> accessed 28<sup>th</sup> August, 2016.

<sup>31</sup> <http://currentaffairs.gktoday.in/china-inaugurates-tibet-rail-link-sikkim-border-08201414492.html> accessed 8th September, 2016.

The important element for any kind of water cooperation is a transparent dialogue but in the context of China's 'hydro activities' it can be reiterated that China has been very 'secretive' about its 'damming' activities on the rivers originating from the Tibetan Plateau. In fact, the initiative made by India to build mechanisms to discuss the water issue with China was stalled due to the disinterestedness of China. Such an approach could lead to a huge water conflict between nations (Chellaney 2009: 38). The intensity of the issue of water-sharing of the transboundary rivers like Brahmaputra/Yarlung Tsangpo can be understood on the basis that the huge population of South China, South Asia and Central Asia rely completely on the river's origination from the Tibetan Plateau, which has often been referred to as the 'Third Pole' (Senz and Reinhardt 2013: 2).

In fact, China's impact on the Eastern Himalayas undoubtedly is of serious concern for all the states of the Eastern Himalayan belt. The pattern of its strategy and policies towards the Himalayan belt stands well expressed with its initiatives in connecting to the Himalayan region through railway lines; the railway lines connecting Lhasa to Xigaze (near Sikkim), Lhasa to Nyinchi (near Arunachal Pradesh) and Xigaze to Gyirong county (Nepal). So, in order to tackle such hyper-intervention, a diplomatically oriented cooperative approach is needed to understand and discuss the geopolitics concerning the Eastern Himalayan region. An effective and firm regional mechanism needs to be formed to analyze crucial issues affecting the belt, like the issue of water-sharing among the riparian states and border issues.

## CHAPTER 4

### **HUMAN SECURITY IN THE EASTERN HIMALAYAS: A CASE STUDY OF THE IMPACT OF HYDRO-POWER PROJECTS IN BHUTAN AND SIKKIM**

#### **4.1 Introduction**

In international relation, the conceptualization of the term ‘security’ is multi-faceted. Like for instance, the realists understand ‘security’ as “freedom from threats” and on the other hand the social constructivists conceptualize it as “freedom from fear”. But such conceptualizations were challenged after the end of the Cold War, as thereafter, the analysis of the term ‘security’ underwent changes. There was a shift from the state-centered conceptualization of the term ‘security’ to that of it being human centered, which transpired into the concept of ‘human security’ (Schafer 2013: 5-6).

Human security has been defined by T. Shahrbanu and A. Chenoy (2009) as “the protection of individuals from risks to their physical or psychological safety, dignity and well-being”. ‘Human security’ as a concept began to be globally addressed in the 1990s with the issue of the ‘Human Development Report’ of 1994 by the United Nations Development Programme (UNDP). Such an initiative on the part of the UNDP needs to be contextualized for its better understanding. It was the end of the Cold War; the diversion from the ‘traditional’ concept of security was witnessed. The ‘conventional’ notion of security included state security, territorial security, the military form of security but the new understanding of the term ‘human security’ included economy, health, food, environment, personal, community and political securities besides the conventional ones (Acharya et al. 2011: 25).

The UNDP’s Human Development Report of 1994 defines human security as “freedom from fear and freedom from want” and signified it as “safety from chronic threats such as hunger, disease and repression as well as protection from sudden and harmful disruptions in the patterns of life—whether in homes, in jobs or in communities” (Tadjbakhsh and Chenoy 2009: 24).

Security in terms of human security does not just concern the end of a war or any chaotic situation; rather, it also involves the safe execution of one's business or any other endeavour like employment, education for children, etc. So, the absence of such a safe environment could lead to insecurity which would not just include the issue of 'physical safety' but also limited and restricted access to health and education facilities, legal and political rights and social opportunities. Security as such cannot be limited to mere military solutions, rather it should aim at a long term strategy to uphold the goals of development and promotion of human rights (Ibid.: 18).

It is such a shift in the understanding of the concept of 'human security' that has further led to two different ways of conceptualizing the concept of security: one being the shift from territorial security to that of people's security and the other being security through weapons to security through sustainable human development (UNDP 1994: 10).

There are several factors that could cause threat to human security like for instance wars, conflicts (both inter-state and intra-state), food insecurity, environmental degradation, etc. (Brinkman and Hendrix 2011: 4). Such threats to human security can be witnessed to a great extent in the north-eastern region of India like for instance, the rebellion by the Nagas since the 1950s, the Assam movement of 1979-1984, the Bodoland movement, ethnic clashes within a state (Nagas versus Meiteis and Kukis; Karbis against Dimasas and Kukis and many more), intra-tribal clashes (the Bodo intra- ethnic clashes) (Mahanta 2011: 6-8).

Besides these conflicts, the issue of 'Human Security' has also been closely linked to the issue of 'development'. Here, 'development' is being referred to in the context of the hydropower projects and it is evident that the whole of the Eastern Himalayan belt has been undergoing the process of development in the form of constructing innumerable hydroprojects. The area of concern is the impact of such hydro- projects on the 'human security' and society as a whole. But here, it is essential to also know that 'development' is seen as a panacea to underdevelopment, as the latter has been ironically viewed, both by the governments and the armed opposition, as a legitimate reason for violence. So the state too has its vested interest in ensuring development in order to avoid any chaotic situation triggered often due to underdevelopment. Then, the issue that needs to be addressed is that: is it justified to demonize the

‘developmental process’ vis-à-vis the construction of the hydroprojects due to the social and psychological costs attached to them? It is in this context that the ‘human security’ factor needs an analysis.

#### **4.2 Development Induced Displacement: Conceptual Framework and Analysis**

‘Development’ as a discipline was focused upon in the post- Second world war phase wherein the countries shattered due to the war were to be ‘developed.’ During this phase, the term ‘development’ was associated with ‘industrialization.’ So, development was to aim towards enhancing income and providing the poor with goods and services that would improve their standard of living (Rapley 2007: 1). But prior to such conceptualisation of the term ‘development’, in the Greek-Roman civilisations, the term was understood as related to ‘humanity’s well- being’ (Jr. and Quintella 2008: 105).

‘Development’ has also been understood as “improvement” (Seers, 1969). Infact, it is a multi-dimensional process that involves the “radical changes in institutional, social and administrative structures as well as in popular attitudes and in many cases, even customs and beliefs.” In the words of Amartya Sen development “is a process of expanding the real freedoms that people enjoy” (Sen 2008: 3).

Such contemporary understanding of the term ‘development’ was furthered with the Human Development Report of UNDP in 1996, according to which development was perceived as a multi- dimensional concept which was much more than mere increase in per capita income of a country. It also included other multiple factors like education, human development, access to resources, gender sensitisation etc .

Thus, development can be understood as a continuous process concerned with the welfare of the people. According to Amartya Sen in his book ‘Development as Freedom’ he highlights on the need for the removal of the various social evils like inequalities, poverty, economic insecurity that would cause ‘unfreedom’ of the people on one hand and on the other hand, he expressed the need for the enhancement of the economic skills and capabilities of the people (Sen 2008: 3). But the challenge that lies ahead is people’s resistance to development and such resistance is a reflection of the fear of the people of being exposed to such processes and changes which they feel

is a price too heavy to be borne anticipating an enhanced standard of living (Landy 1996: 55).

Rosemond Boohene of University of Cape Coast, Ghana lays down an analysis on the reasons for the members of an organisation resisting change. Boohene argues that the reason behind any change is that changes would lead to increased pressure, stress and uncertainty. Besides these, there is fear of the unknown, loss of freedom and many such other factors (Yilmaz and Kilicoglu 2013: 17). Such an analysis of the people's resistance to change in an organisation can be applied even in case of the resistance of people to changes in the form of development initiatives. So, it needs to be understood and realised by the policy makers and other top stakeholders of development that people are not resisting development but they are resisting the possible 'costs' of development.

### **4.3 Theories of Development**

#### W.W. Rostow's Five Stage Model of Development

Rostow lays down five stages of growth of any society:

1. **The Traditional Society:** Such a society is based on agrarian economy and follows a hierarchical structure. In this society, the economy is stagnant and there is low social mobility.
2. **The Preconditions for Take-Off:** This stage witnesses industrial revolution which then leads to the emergence of development in the society.
3. **Take-Off:** This stage involves economic growth and self-sufficiency, thereby reducing the reliance on the external forces for economic growth. Such 'take-off' according to Rostow would last for twenty to thirty years.
4. **The Drive for Maturity:** This stage witnesses the development of technology and huge enhancement of economy. There would be emergence of new industries like chemical industry, electrical industry and many more. This stage would be accompanied with immense economic progress.
5. **The Age of High Mass Consumption:** In this final stage, according to Rostow there would be economic prosperity and the standard of living of every individual in the society would be enhanced.

Rostow through his five stage model puts forth a 'top- down approach' wherein the Western model of development is to be applied on the developing nations. It is also perceived that 'underdevelopment' is caused due to internal factors and so in order to develop, the intervention of the external factors is a necessity. Such development would be multi-faceted as it involves "social, political-institutional, cultural and technological modernization" (Mallick 2005: 6-8). This theory indicates that the any society in order to shift from being an agrarian economy to that of a self-sufficient developed economy would inevitably require the development of industries, new technologies. All these at the end would improve the living standard of the people thereby achieving the objective of 'larger good.' So, 'development' is essential for any society in order to achieve such long term goals.

Herbert Spencer through his 'law of progressive development of society' on the other hand, puts forth the understanding that development has made things easier for the masses but on the other hand it also poses threats to environment, monuments, wildlife and others. The complexity of such development in the modern society lies in the fact that the people are mandatorily expected to follow the rules with or without one's will. This deteriorates the condition of the displaced population as they lack any voice in the developmental process which has been imposed by the state, which according to Herbert Spencer is the 'supreme power.' So, large numbers of people are suffering under the garb of 'development' (Sharma 2016: 13-14). This is the root cause for people resisting any change in the name of development, they fear being victimized under the garb of development as the benefits of it may just trickle down to the masses while the larger benefits would be enjoyed by few.

Ulrich Beck also like Hebert Spencer highlights through his theory of "Risk Society" certain risks of the industrial society. He propounded that the industrial society are "producers and legitimators of threats they cannot control anymore." So according to Beck the modern industrialized society has been exposed to global risks like climate change which no wealth, status or economic power can evade. Development as such would instigate such risks which would prove fatal in the long run.<sup>1</sup>

Similarly, Anthony Gidden through his theory of 'modernity as juggernaut' claims that development has led to extensive improvement of technology in the form of

---

<sup>1</sup> [www.helsinki.fi/henvi/societalinteraction/Pdf/Massa\\_2013.pdf](http://www.helsinki.fi/henvi/societalinteraction/Pdf/Massa_2013.pdf) accessed 19 August 2017.

enhanced transportation and communication network. With such development people have been able to travel and communicate across the world easily but on the other hand, Giddens also argues that with developmental progress, the chances of people being displaced in order to achieve the development goals would also increase (Ibid 2016: 17). So the achievement of 'development' according to Giddens would incur such cost.

Thus, 'Development' has often been subjected to huge criticisms due to the various losses and damages incurred in its process. One of such inevitable harsh impact of the construction of the hydro- projects in the name of 'development' is 'displacement', which is globally known as 'Development Induced Displacement.' Displacement can be understood with the words of Downing (1996) that "The people may physically persist but the community that was, is no more." Displacement is usually viewed as an undesirable yet inevitable outcome of the developmental projects initiated by the state.

#### **4.4 Understanding Displacement**

Displacement is defined often as the process of expropriation of land and other assets in order to allow a project to proceed for the overall social good. So displacement is not just about physical eviction from a dwelling rather it also involves the expropriation of the productive lands and other assets to make possible an alternative use of the space. Furthermore, displacement also involves the deprivation of the lands and other productive assets without the people being physically evicted from their houses (Dias 2012: 2).

In this context, a distinction needs to be made also between voluntary and involuntary migration. The former involves the will of the people and includes both push and pull factors but the latter comprises only of the push factor. Furthermore, the voluntary migration usually is opted by young families in the early stage of their household life but the involuntary migration is undertaken by the entire population forcefully (Ibid.: 2).

Besides this, a distinction needs to be made also between the disaster induced displacement and development induced displacement. In the case of the former, the



cause of displacement could be war, natural calamities, famine, cyclone etc. In such a situation, there are possibilities of people returning to their original place of residence after a short period and they could be rendered with short term relief measures but in case of the development induced displacement, the nature of displacement is permanent and so there is a need for long term rehabilitation assistance. Here too the distinction between 'resettlement' and 'rehabilitation' needs a focus since these two constitute the post- displacement phase. The former refers to the physical relocation of the displaced people and the latter refers to the restoration of the lost economic and social abilities.

Development induced displacement can be understood as the movement of people who are compelled to migrate as a result of the policies and projects which are said to be intended towards enhancing 'development'. Large scale infrastructural projects which includes dams, roads, ports, airports; urban clearance initiatives; mining and deforestation; and the introduction of conservation parks/reserves and biosphere projects usually tend to lead to the displacement of the original inhabitants. There are guidelines regarding the restoration of affected populations produced by some major donors to these types of projects, such as the World Bank, but in reality there is inadequate access to such compensation. The responsibility for providing an adequate compensation to the affected people is conferred on the respective state/nation. Due to the adverse social and environmental impacts, the sustainability and legitimacy of large dams as 'vehicles of development' are being severely questioned.

Besides this, the affected populations also face psychological issues as displacement leads to the affected population being exposed to a new society with inadequate preparation and the displaced population begins to internalize the value system of the dominant society and begins to consider their own society and culture of little value. Such a psychological pattern of the displaced population makes it difficult for them to rebuild their life and increases their vulnerability to exploitation.

In other words, the process of displacement disrupts the community and kinship networks and it is the dismantling of the traditional support system that affects the displaced population deeply and it is rare that the displaced population is able to regroup themselves like it used to be in their original villages. So a re- establishment

of the lost livelihood may not be an impossible task but putting back life into the social order is a formidable task in resettlement projects.

Such an alarming trend of internal displacement by developmental projects or public projects became evident in the second half of the 20<sup>th</sup> century. Moreover the approach of the stakeholders of such projects was such that they believed that “displacement is the necessary price of progress” (Ibid.: 1). It is such an attitude of the project stakeholders that problematises the social acceptance of such projects.

#### **4.5 Theories of Displacement**

The issue of displacement began to be analysed and discussed only in the 1950s after the Second World War due to a large number of ‘war refugees’. Post-Second World War, Alexander Leighton in 1959 highlighted the health hazards caused due to displacement. He stated that displacement leads to the destruction of an ‘integrated social system’ with that of the ‘disintegrated one’. Such disintegration would affect the sustenance capacity of the displaced groups which in turn would increase diseases and disorders. Like for instance, the displacement of the African-American population led to enhanced levels of diseases and disorders among the displaced community compared to the ‘whites’ in the United States (Fullilove et al. 2010: 200).

Later in 1952, Elizabeth Colson and Thayer Scudder began focussing on the ‘social and ecological’ consequences of displacement. They developed a ‘four-stage model’ which includes (Scudder 1997: 48-49):

1. Planning and Recruitment
2. Physiological, psychological and socio-cultural factors: displacement and thereafter resettlement involves psychologically accepting the losses incurred and also the adjustments in the new place. Such a physiological and psychological stress could increase the rate of ‘morbidity and mortality’ among the displaced population. Besides, the loss of landed property, the loss of natural resources, knowledge and non-transferable assets would lead to socio-cultural losses too. The stress would be very intense, specifically during the initial phase of resettlement, and during this phase, the resettled population is economically very vulnerable leading it towards an

impoverished lifestyle. But this phase would witness the resettled population adjusting to new economic ventures, natural resources and environment.

3. Economic development and community formation: The resettled population gradually begins to acclimatize in the new place and would economically begin to regenerate if the requisite opportunities are provided by the project stakeholders. A good management of the resettlement process would make the displaced population the beneficiary of the project and not a liability. The possibility of such positive development would require community involvement and the active participation of the non-governmental organisations in framing resettlement plans. This stage would involve the establishment of various institutions like educational institutions, health institutions and other such basic institutions.
4. The role of the next generation: the following generations of the resettled population are to be competent enough to sustain themselves in the job market both at the local and national levels.

Michael Cernea also analyzes the ‘development induced displacement’ through his ‘impoverishment risks and reconstruction for resettling displaced population model’ in which he argues that the process of displacement is accompanied with poverty due to lack of/inadequate compensation, resettlement and rehabilitation. So, he identifies eight risks associated with displacement which were later updated with the addition of the ninth risk in 2002. So, the nine risks according to Michael Cernea are:

1. Landlessness: Developmental projects often lead to the ‘expropriation of land’, thereby causing landlessness.
2. Joblessness: Displacement leads to the people losing their employment.
3. Homelessness: Displacement would lead to the loss of one’s home/shelter, though with resettlement, new shelters/houses are provided. However, one’s home is constituted of a ‘cultural space’, family and togetherness. So, displacement causes the disruption of such relationships.
4. Marginalisation: The affected people would face economic, social and psychological marginalisation, whereby they are incapable of using their previously acquired skills in the new resettled place. This then leads to the loss of human capital or it becomes inactive.

5. Food Insecurity: Displacement could lead to the deterioration of the nutrition level consumed by the displaced people, thereby increasing the chances of them suffering from ‘chronic undernourishment.’
6. Increased Morbidity and Mortality: Inadequate/lack of proper sanitation could expose the displaced people to various health-related vulnerabilities like diarrhoea, dysentery, etc.
7. Loss of Access to Common Property: The displaced people tend to lose access to common properties like ‘pastures, forest lands, water bodies’, etc. This could then affect the income and livelihood levels of the displaced people resettled in a new place.
8. Social Disintegration: Displacement causes the disruption of the “existing patterns of social organisation” and also the “life-sustaining informal networks” like trade linkages, etc.<sup>2</sup>
9. Education Loss: Displacement could disrupt the ongoing education of the children and in the resettled place, an inadequate/lack of educational institutions would further deteriorate the education of the displaced children.

This theory comprises of three core elements: “Risk, Impoverishment and Reconstruction” and it puts forth the reality that constitutes the post-displacement phase in the form of risks, poverty and several social, psychological costs, etc. In fact, it is said that the scaling up of the risks factor would dilute the security of the affected people (displaced people) (Cernea 2004: 14). The mitigation of such risks would require the formulation of proper strategies and proper financing to execute the strategies. So, the risks should be replaced with the following (Ibid.: 15):

1. From Landlessness to Land-Based Resettlement
2. From Joblessness to Reemployment
3. From Homelessness to House Reconstruction
4. From Marginalization to Social Inclusion
5. From Increased Morbidity to improved Health Care
6. From Food Insecurity to adequate Nutrition
7. From Loss of Access to restoration of Community Assets and Services

---

<sup>2</sup><http://idp-key-resources.org/documents/0000/d04384/000.pdf> accessed on 20 January, 2016.

## 8. From Social Disarticulation to Networks and Community Rebuilding

This theory as such lays down the ‘risks’ attached with displacement and also defines the ways to mitigate such risks. So, the policymakers and other stakeholders of the developmental projects like hydropower projects could base their study on this particular theory.

Besides Cernea’s theory, another theory that leads to the understanding of developmental initiatives like ‘hydropower projects’ is the utilitarian concept of Jeremy Bentham—the “greatest happiness for the greatest numbers or the concept of utility”. According to Bentham, “Nature has placed mankind under the governance of two sovereign masters, pain and pleasure”. In simple words, Bentham asserts that the factors that would determine anything to be “right or wrong” are the ideas of pleasure and pain. So, anything that promotes or increases pleasure/happiness is right and if it increases pain then it is wrong (Chattopadhyay 1994: 65-66). So, if pain and suffering is inflicted on people in the name of ‘development’ then there is a need to reorient one’s understanding of the concept of ‘development’ and its objectives.

These theories associated with ‘displacement and resettlement’ have well reflected on the multiple aspects of displacement like social, health (physical and psychological), cultural and environmental impacts.

### **4.6 Interlinkages between Development, Displacement, Resettlement and Human Security: An Analysis**

The interlinkage between the issue of human security, development and displacement is such that the state government exercises its power of ‘eminent domain’<sup>3</sup> to acquire any private property or appropriate natural resources on the pretext of public services. Such an approach of the state to propagate various developmental projects like hydroprojects lead to the displacement of people, thereby giving rise to the issue of development-induced displacement (Dias 2012: 1-2).

---

<sup>3</sup> This doctrine gives the state the power to take private land for public purpose, provided the public nature of the usage can be demonstrated beyond doubt.

A conventional understanding of the security issue is limited to a mere ‘territorial security’ but as mentioned earlier, the emergence of a divergent understanding of the security issue has led to the inclusion of the issue of lack of infrastructure, opportunities, poverty, etc. within the security paradigm (Acharya et al. 2011: 4). Such a contemporary understanding of the concept of security has led to the increasing consciousness regarding the issue of development-induced displacement which in the long run gives rise to the issue of ‘human security’.

Some of the causes of displacement associated with development-related alterations in land use are as follows:

1. Acquisition of private land for the execution of a public project
2. Projects causing the restrictive usage of land
3. Indirect impacts of the projects on the lands affected by them in the form of pollution (noise, air and water) and erosion (Dias 2012: 2)

Prior to the conceptualization of the issue of ‘development-induced displacement’ causing threat to human security, it is important to understand the concept of ‘development.’ Universally the term ‘development’ is understood as meaning growth or advancement which is often understood in the context of economy. So, development has been clubbed together with concepts like National Income and the Gross Domestic Product (GDP). Such a paranoid understanding of the term ‘development’ stood challenged with the publication of the first Human Development Report of the United Nations Development Program (UNDP) in 1990. The Human Development Report presented the concept of ‘development’ as a multidimensional concept. In the report, ‘development’ is seen as enabling people to make varied choices concerning political freedom, education, access to resources, healthy life etc. The report bestows on ‘development’ the responsibility to “create a conducive environment for the people, individually and collectively, to develop their full potential and to have a reasonable chance of leading productive and creative lives in accordance with their needs and interests” (UNDP 1990: 1). It is as such evident that the concept of ‘development’ is not just confined to economic growth; instead, it involves a lot more of things.

Development can be understood as a process that caters to the welfare of the people and something that aims at removing social evils like poverty, inequalities, economic insecurity, inadequate access to health, education and other such facilities (Temsunenla 2002: 10).

Development as such implies the enhancement of the individual skills and capacities, greater freedom and material well-being. It is indicative of the “progression towards something better”. Development is a holistic concept involving the enhancement of both material and non-material dimensions of life by improving individual behaviour and also increasing the accessibility to resources like food, water, shelter, good motorable roads, etc. It is thus a ‘multi-dimensional process’ that requires the “re-organization and re-orientation of the entire economic and social system” (Jeffry 2013: 117).

Such an analysis of the concept of ‘development’ is indicative of the fact that development has to be progressive and should aim at enhancing and harnessing the welfare of the people at large. Development should not be restrictive or confined only to few stakeholders, instead the developmental process should be inclusive and needs to cater to the larger good. The concept of development being a comprehensive one, demands a comprehensive understanding and approach.

It can be reiterated that development is a progressive and positive process which strives to make the lives of the people a peaceful and happy one but there exist several paradoxes with regard to such an understanding of the concept of development. This requires the analysis and understanding of the concept of ‘displacement’ which has several interlinkages with the process of ‘development’.

The issue of ‘human spatial mobility’ has been analyzed since the late nineteenth century which continued till the twentieth century. During this time the primary focus was on the economic factor causing the migration of people. It was a German-English geographer named E.G. Ravenstein who pioneered the migration studies focusing on the economic factors. This was followed by the focus on the issue of refugees in the early and mid-twentieth century, which at that time was concerned more about politics and legal issues. It was then later that the issue of internal displacement was

focused upon. Initially, internal displacement was analyzed only in the context of the ‘social consequences’ of economically oriented development (Terminski 2013: 6-7).

The kingpin of the term “displaced persons” was a Russian-American sociologist E. M. Kulischer; he used it to denote all the categories of forced human mobility in Europe. It was in the mid-fifties and early sixties that the issue of development-induced displacement was analyzed. The projects like the ‘Great Dam of Aswan’, ‘Kariba Dam’ on the Zambezi, etc., brought to the forefront the issue of development-induced displacement (Ibid 2013: 7).

Thus, the term displacement can be referred to as the “eviction of people from their habitual homeland without adequate compensation, guarantees or mechanisms of social support, or to initial phase of a process of resettlement”. The process of displacement as such could involve human rights violations and is often considered to be a ‘negative process’ (Ibid.: 13). Understanding and analysis of the concept of displacement brings forth the issue of resettlement as the post-displacement phase constitutes the resettlement processes and it is on the basis of this process that the issue of human security needs to be analyzed, since a good and proper resettlement processes tends to lessen the intensification of the issue of human security.

Resettlement can be defined as “physical, pre-planned relocation, combined with appropriate support mechanisms, including social support, in the new location” (Ibid.: 14). In other words, resettlement is “the process by which individuals or a group of people leave spontaneously or unspontaneously their original settlement sites to resettle in new areas where they can begin new trends of life by adapting themselves to the biophysical, social and administrative systems of the new environment”. The Encyclopedia of World Environmental History defines resettlement as involving two main elements: one being physical relocation to a new place and the restoration of the livelihood of the displaced population in the resettled location. The resettlement process according to Robert Chambers is constituted of two features (Ibid.: 13):

1. Population movement
2. Planning and control



Resettlement as such is a complex process involving not just the physical relocation of the displaced population but is also about reinstating their sources of income. So, the displaced population is to be restored socially, economically and psychologically too. Rehabilitation/Social Rehabilitation on the other hand, as defined by the World Health Organisation as “the integration or reintegration of a disabled person into society by helping him to adjust to the demands of the family, community and occupation, while reducing any economic and social burdens that may impede the total rehabilitation process.” This indicates that the process of rehabilitation is a process aiming to rebuild both the physical and economic livelihood of the displaced population and so to help them cope in the new situation and resettled place (Jaysawal 2013: 26-27).

So, a linkage can be drawn between development which could lead to displacement and displacement which would require resettlement and rehabilitation which on a whole could trigger several ‘insecurities’ to the affected people like economic insecurity, psychological insecurity, physical insecurity, emotional insecurity, etc.

Pertaining to the ‘Impoverishment, Risk and Resettlement model’ proposed by Michael Cernea, it is clearly evidential that displacement caused due to developmental projects could cause various other multiple problems like poverty, landlessness, health issues, etc. It is such impacts of ‘displacement’ that would further unfold the issue of human security.

Displacement caused by development often raises certain ‘ethical questions’ as it reflects inequality in the ‘distribution of development’s benefits and losses’. It is understood that initiatives undertaken for developmental purpose would bring various benefits but on the other hand, displacement caused due to such activities often burden the affected people with multiple problems, thereby making them “worse-off” (Cernea and McDowell 2000: 11-12). In fact, there has been worldwide insistence on the issue like for instance in north-east Brazil, the displacements caused due to the Tucuruí Dam were considered to be some of the most ill- managed resettlement plans. In this project, only the upstream project-affected people were resettled and given financial compensation; the downstream populations were not included in the resettlement framework (Smith 2005: 194-195).

It can be reiterated that displacement has a direct adverse impact on the human rights that every individual possesses in the form of ‘having a home, sustaining one’s family, free movement, etc.’ (Hollenbach 2013: 1).

It is such a negative impact of the developmental projects like hydropower projects that have often been justified under the garb of “greatest happiness for greatest numbers”. Such a justification is seen as overburdening some for the benefit of others. In fact, in the words of Michael Cernea, a “greater good for the greater numbers” “routinely invoked to rationalize forced displacements, is in fact, often abused and turned into an unwarranted justification for tolerating ills that are avoidable. The outcome is an unjustifiable repartition of development’s costs and benefits: some people enjoy the gains of development, while others bear its pains”. So, one of the impacts of displacement is ‘poverty’ which is then supplemented with other such grievous problems like cultural loss, social, physical and economic exclusion and political tensions (Cernea and McDowell 2000: 12).

Such development programmes need to be analyzed judiciously and with a broad view, as it cannot be refuted that economic development is a primary asset for any state or country to survive. Lack or inadequate economic development could trigger varied problems like poverty, violence, chaos, etc. So, the policies needed to tackle such situations lead the policymakers to look into various avenues to generate the economy of the state/country. Such economically driven policies give rise to the development of hydropower projects which unfortunately have often led to various “social pathologies” like political tensions, violence, etc. It is the reaction of the people to such “social pathologies” that comes out as protest, which then simultaneously leads to the state responding to it, which could also involve ‘violent state actions’ (Dias 2012: 8).

With such problems attached to the whole process of executing hydropower projects, the important issues that need to be collectively responded to by all the stakeholders of the hydropower projects are: Can the development initiatives like hydropower projects be promoted and justified on the pretext of bringing about economic growth and sustainable development, while on the other hand, they are causing

impoverishment? Can the development of hydropower projects be actualized based on the theoretical understanding of the “greatest happiness for the greatest numbers?” (Ibid.: 7).

#### **4.7 Role of State in developing Hydropower Projects: Dilemma between Development and Human Security**

As Marx said, ‘class struggle’ is a part of every human history; similar events like ‘displacement/involuntary relocations/forced migrations’, etc., have been an inevitable part of human history though the factors causing them have undergone several alterations (Cernea 1999: 2).

The dilemmas often faced by the state governments are to balance development on the one side and the various unavoidable harsh consequences attached with the developmental process on the other side. It is understood that with the increase in population, there is an increase in the demand for various new infrastructures and changes as a whole. The execution of such changes requires ‘space’ which is often inadequate due to the increasing population pressure. So the ‘space’ that is needed to develop such new infrastructures is often occupied/inhabited by people. This again triggers the issue of ‘development-induced displacement’ because it cannot be denied that any form of development is not possible with a ‘frozen’ nature of the ‘existing patterns of human settlement’ (Ibid.: 2).

So, the process of development compels the restructuring of the settlement patterns which then could give rise to inevitable consequences like displacement and with this several other economic, social, psychological and emotional consequences. Due to the issue of displacement and its after-effects, the institution of ‘state’ has often been harshly scrutinized for indulging too much into the process of development. In fact, the ‘state’ is also exposed to a varied morally and ethical scrutiny for its ‘acts’ which trigger unrest and a compelled rearrangement of the human settlements. But on the other hand, it cannot be refuted that the absence of development or underdevelopment would lead to chronic social issues like poverty, which would then have a chain effect on the quality of life that the people would be leading (Zambakari 2012: 172). Such a situation then would turn out to be like the Hobbesian ‘state of nature’ in which

people lead a very poor, nasty and brutish life and that “every man is enemy to every man”. In other words, underdevelopment and poverty tend to compel people to compete with each other for scarce resources which could in the long run instigate ‘violent outbreaks’.

So, development according to Professor Ujo of the University of Abuja involves two important aspects: development as a physical process and development as a state of mind. In other words, the process of development would involve the change in the physical infrastructure on one hand and on the other hand, a change in the mindset of the people. So, the elements like actions, reactions and interactions are an important part of the process of development (Emeh and Jeffry 2013: 117).

The dilemma that the state faces in prioritizing of development on one hand and securing of human security on the other hand stands sorted if the stakeholders of development including the state understand that development is more about ‘human well-being rather than economic well-being’.

In fact, one of the renowned economists Dudley Seers has rightly said, “The question to ask about a country’s development is therefore; what has been happening to poverty? What has been happening to unemployment? What has been happening to inequality? If all three of these have declined from high levels, then, beyond doubt, this has been a period of development for the country concerned. If one or two of these central problems have been growing worse, especially if all three have, it would be unfair to consider the increase in Gross Domestic Product (GDP) as the epitome of “development”. This applies of course to the future too. A ‘plan’ which conveys no targets for reducing poverty, unemployment and inequality can be rarely considered a ‘development plan” (Seers 1969: 5).

#### **4.8 Response of the People towards the ‘Development’ Initiative: A Case Study of the Development of Hydropower Projects in Bhutan and Sikkim**

At the centrestage of every developmental process lie the people. Man/people are considered both as the “subject and object of development”. In this context, development can be understood as the “ability and capacity of man to adequately

interact with his physical environment and other individuals to constantly improve himself and humanity” (Emeh and Jeffry 2013: 118).

## Development-People Discord in Sikkim: Voices of the Lepcha and Bhutia Communities

### Brief Profile of the Lepcha Community of Sikkim

An understanding of the issue that surrounds the hydropower projects in Sikkim does demand for a clear understanding of the culture and tradition of the Lepcha community of Sikkim. The Lepcha community is one of the three ethnic communities constituting the Sikkimese society. The Lepchas are recognized as the original inhabitants of Sikkim and they have spread also to the adjoining districts of West Bengal like Darjeeling and Kalimpong. As claimed by the scholars like Hooker, Claude White and Risley, the Lepcha community is spread through the ‘forested ravines’ of the Eastern Himalayan belt which includes Sikkim, Darjeeling district (West Bengal), Western Nepal and eastern Bhutan (Subrata 2013: 19).

Population-wise, they constitute only 7% of the total population of Sikkim (Census, 2011). So, the community exists as one of the ethnic minority communities in Sikkim besides the Bhutia community of the state. The latter community is said to have migrated to Sikkim from Tibet in the 13<sup>th</sup> century (Bhutia and Mishra 2014: 322). It was the migration of this community that profoundly impacted on the Lepcha community as its cultural patterns and settlement patterns were affected leading to the marginalization of the Lepcha community. The situation turned from bad to worse due to the influx of the Nepali population into Sikkim. It is in response to such a situation that the then rulers of Sikkim formulated certain policies directed towards the protection of the Lepcha community (Subrata 2013: 19). The protection ensured to the Lepchas was continued even in the post-1974 phase through Article 371F of the Indian Constitution.

## Lepchas: The Protected Tribe

### A Brief Profile

#### Pre-1975 period

After the migration of the Bhutia community from Tibet to Sikkim and thereafter the huge migration of the Nepali population, the rulers of Sikkim sought to provide certain protection to the Lepcha community by categorizing the inhabitations of the Lepcha community as ‘protected areas’. This led to the Chogyal declaring Dzongu,<sup>4</sup> a place in North Sikkim inhabited by the Lepchas, as a ‘reserve area’. According to this, no outsiders could inhabit Dzongu or have the right to inherit, sale or mortgage land, territory and other resources that lay solely with the Lepchas. Such an arrangement experienced alterations with the political event of 1975 that marked an end to the monarchical rule and integrated Sikkim into the Indian Union (Ibid.: 19). Though theoretically, these rights were secure through Article 371F, the effective implementation of the same was very bleak.

#### Post-1975 period

The tribe that felt protected within the Dzongu valley began to feel insecure due to the intrusive character of the world beyond its own that appeared in the form of ‘Development’. So, the struggle lay between ‘Development’ and existence. To understand such an argument it would be necessary to trace the cultural background of the Lepcha community.

By nature, the Lepchas have been rightly described as “free, happy, laughing and playful, no caste; Lepchas the children of the mountain, modest, social and joyous in disposition” (Kotturan 1983: 18). In fact, the Lepchas have often been observed as being a peace-loving people with a very simple lifestyle (Arha and Singh 2008: 254). The Lepchas earlier practiced animism/Bonism, wherein they worshipped nature, spirits etc. (Verma 2005: 13) and they believed in the existence of both good and bad or harmful deities. So, in case of anything good happening in society, they considered as being blessed by the good spirits and similarly in case of any bad happenings, the bad spirits were held to be responsible.

---

<sup>4</sup>Dzongu is a narrow strip of land extending from north to south with a long, narrow extension towards the west on either side of the Rongyoung river (a tributary of the Teesta).

Lepcha priests known as '*Muns*' or '*Bongthing*' practice exorcism (Kotturan 1983: 21). Lepchas later converted to Buddhism in the 18<sup>th</sup> century and then to Christianity in the middle of the 19<sup>th</sup> century (Subba 2008: 251). The Lepchas are considered to be "skilled hunters, food-gatherers and shifting cultivators". As of now they engage in activities like agriculture and animal husbandry. The crops they grow are maize, millets and cash crops like cardamom, ginger and even oranges. As this community is referred to as 'Rongpa' or the ravine folk, these people inhabit the 'riparian sub-tropical forests' of the Eastern Himalayas and have been associated closely with nature (Subrata 2013: 21). The Lepchas have often been living a very untouched life wherein interaction with the outside world was definitely not their priority. They have been addressed usually as "Menthurgya" which meant that the Lepcha community lived in the present and did not worry much about the future or 'tomorrow' (Basnet 1974: 8).

Such was the nature and culture of the Lepcha community, but post-1975, the development initiatives in the form of hydropower projects in the Lepcha-reserved areas triggered varied issues and concerns which encroached into the 'untouched life' of this community.

The Lepcha community viewed the development of hydropower projects as having a detrimental impact on its life as a whole. The settlement patterns and culture form the foundation of every community and the distortion of this foundation would have a pervasive impact on the community. Similarly, the development of hydropower projects in and around Dzongu, gave rise to the feeling of fear and insecurity among the Lepcha community as it would have a direct impact on its settlement pattern and above all, its culture. The Lepcha community could not have afforded to compromise in terms of its culture since it was its unique culture that was the soul of their existence. So, it was a question of the Lepchas' culture and identity being at stake at the hands of such development initiatives like the hydropower projects that included the Panam project (Dzongu), Teesta stage-III (Chungthang, North Sikkim), stage-iV (Heegyathang village, North Sikkim) and stage-V (Dikchu, East Sikkim). These projects would affect the whole of Dzongu and Chungthang which lie in North Sikkim and Dikchu and Singtam (Manparigaon) of East Sikkim.

These projects have been opposed by the Lepchas who are the inhabitants of Dzongu as it would cause a huge and irreversible damage to a greater part of north and east Sikkim. It may also be mentioned here that the development of such projects would pose a huge challenge to the indigenous identity and culture of the Lepcha population, which in another sense would also mean the violation of the old laws of Sikkim that are committed to protect the indigenous tribes of the state.

The notification no. 3069/O.S dated 24 March 1958 placed restrictions on the non-indigenous population working in the restricted areas of North Sikkim without any permit. Similarly, the notification of the Sikkim Gazette of September 1958, clearly mentions that no non-indigenous people can carry out trade and business in the restricted area of North Sikkim, which includes Dzongu too. Further, Article 371F of the Indian Constitution commits to provide ‘special protection to the rights of the Sikkimese’ and also ‘upholds the old, pre- accession laws’ of the state. Dzongu was declared as a ‘restricted area’ and also falls within the ambit of the Kanchendzonga Biosphere Reserve Area of North Sikkim, which also is a protected area. So, any uninvited intrusion into this restricted and protected area definitely raises several issues that would impinge on the ‘human security’ of that area (Bhutia 2012: 11).

So, the Lepchas who are considered to be peace-loving and confined, took to the streets and voiced their resentment against the development of the hydropower projects (Subrata 2013: 19). It is often said that ‘protest may not be the best option but sometimes it is the only option’. This stands quintessential in the case of the Lepcha community protesting against the hydropower projects in Dzongu.

#### A Brief Profile of the Bhutia Community

##### Pre-1975 period

The Bhutia community is considered to be of Tibetan origin and around 15<sup>th</sup>-16<sup>th</sup> century migrated to Sikkim from Tibet. The migration happened in phases, so the ones who migrated in the early phases were referred to as ‘*Denzongpa/ Lhori*’; the ones who migrated around 18<sup>th</sup> or 19<sup>th</sup> century, have been known as ‘*Khampas*’ and the ones who migrated after the Chinese invasion of Tibet in 1950, are known as ‘Tibetans’ (Gurung 2011: 106).



The Bhutias are predominantly *Mahayana* Buddhist followers and it is believed that it was *Guru Padmasambhava/Guru Rinpoche* who spread Buddhism to Sikkim from Tibet.

During this phase, the state had a monarchical set-up and the King was referred to as the '*Chogyal*' who also had Tibetan origins (Buddhist) and so the Bhutia ethnic community was perceived to have been powerful as compared to the other ethnic communities.

Post-1975 period

Post-integration with the Indian Union, the insecurity among the Bhutia ethnic community began to be visible. Such insecurity grew stronger with repeated attacks being made on the culture and identity of the community in the form of the development of hydropower projects on one of the sacred rivers of the Bhutias i.e. the Rathongchu river, Tashiding, West Sikkim. Such infringement on the cultural values of the Bhutia community has led to this community feeling insecure about their rights and cultural values, which in the long run would transcend into the issue of "human security".

Thus, both these ethnic communities of Sikkim were not willing to allow developmental initiatives being executed at the cost of their identity and culture.

#### **4.8.1 Human Security an Issue: The Response of the Lepcha and Bhutia Communities and the People of Bhutan**

Development-People Discord: Voices of the Lepcha Community

According to the Lepcha folklores, the ancestral land of the Lepchas known as 'Nye-Mayel' (Sikkim) had been inundated due to floods. It was their ancestors who went searching for a safe place for the whole community at Mount Tendong and since the community practiced animism, they shared emotive and cultural ties with the nature. So, for the Lepcha community Mt Tendong, Mt Kanchendzonga and rivers like the Teesta and Rangit form an important part of its identity and existence as a whole and any harm to these are considered by the Lepchas as a direct attack on their culture and

identity. So, the sanctioning of several hydropower projects in Dzongu was perceived by the Lepchas as an impingement on their culture and identity. The state government has sanctioned around eight hydropower projects in and around the Dzongu area which is constituted of around 38 villages of the Lepcha community (Subrata 2013: 21) . Some of the projects in Dzongu are listed below in Table no.6:

Hydropower Project	MW
Panam	200
Rangyong	141
Rukel	33
Ringpi	70
Lingzya	99

Out of the 38 villages constituting the ‘Dzongu reserved area’, the Dzongu village is considered as having a great cultural and religious significance. The rationale behind the Lepcha community protesting against the development of the hydropower projects are as follows:

1. Historically, the Lepcha community has been the practitioner of animism or Bon religion, so its members are nature worshippers
2. The proposed hydropower projects are ‘run of the river’ (ROR) projects, which means that the river would be diverted into a tunnel
3. The deprivation of the Lepcha community from the usage of the river water due to diversion has a direct impact on its cultural practices as it worships the rivers Teesta and Rangit and also performs certain rituals on the banks of the rivers.
4. The Dzongu reserved area is geographically located in a very ‘fragile landscape’ which increases the risk of natural calamities like earthquakes, landslides, etc.
5. Fear of ethnocide<sup>5</sup> (Ibid.: 21)
6. Fear of boomtowns.

---

<sup>5</sup> Deliberate and systematic destruction of the culture of an ethnic group.

With regard to the issue of hydropower projects in Dzongu there exist conflicting opinions of the Lepcha community and the stake holders of the hydropower projects including the state government on the other. The firm commitment of both sides towards defending the ‘righteousness’ of their stand would then lead to the whole argument “disintegrating into aggressive confrontations” (Wangchuk 2007: 24). Such an approach has compelled the Lepchas to voice their opinions and form various NGOs and also to organize hunger strikes to reach out to the society at large.

#### Development-People Discord: Voices of the Bhutia Community

One of the institutions directly and actively involved in the issue of the hydropower projects is the SIBLAC (Sikkim Bhutia Lepcha Apex Committee). Initially, the SIBLAC was formed to address the varied issues of rights concerning the Bhutia and Lepcha communities but their horizons were wide and so included other issues like hydropower projects, environment etc., which were concerning the Bhutia and Lepcha communities directly or indirectly and the society at large. The committee, in 2010, stood against the execution of the development of hydropower projects in West Sikkim. The members of the committee clearly stated that the “Khangchengdzonga Yuksam area” where the hydropower projects are planned to be constructed in West Sikkim is a “bio-economic hot spot” and so is constituted of “rare and vulnerable flora and fauna of the Himalayas”. The committee also claimed that the hydroprojects would hamper the socio-cultural sanctity of the place, which would undoubtedly impact the Bhutia and Lepcha communities of the state (Basu 2010).

The issue was raised continuously by the SIBLAC with the President of SIBLAC making constant references to the Buddhist texts *Nesol* and *Denzong Neyig* wherein the sacredness of the area, i.e. of West Sikkim where the projects were to be constructed, has been mentioned (SIBLAC Press Release, 22 December 2010).

It has been observed that the SIBLAC has been the primary actor in raising the issue of hydropower projects on the ‘Rathongchu river’ which is culturally and religiously of paramount significance to the Bhutia community. Such an initiative on the part of the committee has received support to some extent from the monks of the Tashiding and Pema Yangste monasteries, West Sikkim, but not much support from the public

of West Sikkim has been there as no public protest on the issue of hydropower projects in Tashiding has been witnessed.

The projects that were sanctioned on the Rathongchu, West Sikkim is listed in Table no.7:

Project	MW
Rathongchu	30
Lethang	96
Ting-Ting	99
Tashiding	97

The Rathongchu project (30MW) was scrapped in 1997 due to huge protest by the monks of West Sikkim against the project. The opposition to the said project was based on their religiously and culturally oriented history of Yuksam, West Sikkim. It was believed by the people of the West that Yuksam and Tashiding hold great cultural significance to them as it was the first capital of Sikkim, the place where the first King of Sikkim Chogyal Phuntshog Namgyal was coronated. So, the people of West Sikkim consider the place as an abode of protector deities and any intrusions made into it would cause sickness and spread bad omen to the whole state. Besides, every year the *Bumchu* festival is celebrated in Tashiding, West Sikkim. Such a cultural significance of the Rathongchu river and the places of West Sikkim has led the people to oppose the hydropower project, which later was scrapped by the Chief Minister Shri. Pawan Chamling (Bhutia 2012: 85-86).

Later in 2009, another project on the same river Rathongchu named as the Lethang project (96MW) was proposed and the contract was given to a company named Kalpan Hydro. The project had to be stalled in 2010 due to the intervention of the National Wildlife Board, on the pretext of the close location of the Project to the Kanchendzonga National Park (Manish 2012). As per the guidelines of the Ministry of Environment and Forests, Government of India, the extent of the eco-sensitive zone could extend upto 10 km (Ministry of Environment and Forests 2002: 5), so the project would fall within the ambit of the protected area and the continuation of the

project construction would violate several state and national laws. Later in 2012, the scrapping of the two projects namely the Lethang project and the Ting-Ting Project was decided over by the State Cabinet (Gurung 2012).

The issue that lay as the bone of contention is the Tashiding hydroproject which is being constructed on river Rathongchu. The project as such is being opposed by the SIBLAC and the monk community of West Sikkim, though the voices of the local people of West Sikkim on this particular issue still seem mute. The project is being looked after by the construction company Shiga Energy Pvt. Ltd and has a capacity of 97 MW. It is being argued that the project is a replication of the Rathongchu hydropower project that was scrapped in 1997 with the only difference being the name of the project. The struggle continues and such struggles are a reflection of the admixture of religious, cultural and environmental concerns.

#### Development-People Discord: Voices of the people of Bhutan

Bhutan has been able to harness its renewable sources like water resources for the generation of hydropower, which has been contributing constructively to the nation's economy on one hand and on the other hand, has led to the infrastructural development of the country.

Having spoken to some of the Bhutanese people who live in the project area of 'Punatsangchhu-I and II during the field trip, it could be understood that people had accepted 'development' in the form of hydropower projects as a boon for the whole country. As mentioned in earlier chapter, it was informed to the researcher that there has never been any instance of protest against such a development initiative in the country. In fact, the respondent added that the "King can do no wrong". Though, another respondent seemed a little dissatisfied with the development of the hydropower projects and said that it is due to the 'Land Act of Bhutan, 2007' that the Bhutanese people accept the acquisition of their land for the hydropower projects by the Bhutan Government. As such till date, there has been no record of public resentment against the hydropower projects in Bhutan.

#### **4.9 Need for Changes in the Approach towards the Issue of Development-Induced Displacement: A Breakthrough**

The developmental projects like hydropower projects should not be justified merely due to economic benefits like increased food production, enhancement of infrastructures (urban and rural), boosting industrial base, etc. Similarly, the people protesting against such development initiatives should not focus merely on the negative impacts of such projects in the form of poverty, displacement, etc. as development is essential for any state/country to survive. But what is needed is a change in the approach of both the policymakers and the people at large regarding the issue of hydropower projects.

The policymakers and other stakeholders need to view and study the intricacies involved with the development of such projects. Effort needs to be made to analyze the pros and cons of such development initiative and that they should try to at least dilute the adverse impact, if not completely mitigate it. Transparency should be maintained while the details of the projects are being worked out and the same needs to be communicated amicably to the people who are likely to be affected by the project. It is with proper communication that both ‘parties’ concerned with the development of hydropower projects can reach out to some common points.

Even the people, on the other hand, cannot negate the fact that development is essential for the survival of any state/country. Underdevelopment too could lead to the problems of poverty and other such miseries which could lead to chaos and violence. So, ‘development’ is undoubtedly a necessity but efforts should be made to adopt a community-inclusive approach, whereby the people are also the partners in the process of development, rather than as mere ‘beneficiaries’ or ‘victims’.

Besides these, the policymakers and planners need to accommodate and analyze the negative impacts of such development projects on the people. The analysis should not be narrowed down merely to the economic context, as this would lead to the negligence of the human rights issue and other social consequences attached to such activities. The policymakers and other stakeholders tend to “react and not respond” to the issue. It has often been observed that the stakeholders perceive that the “people

living in and around the site of a development project must make sacrifices in the interests of the nation” (Dias 2012: 9-10). Such approach definitely requires a re-orientation as the social acceptance of the development initiatives is crucial in order to ensure the longevity of such initiatives. It needs to be realized by both the people and the policy makers that the issue of hydropower project demands for a healthy and rational discussion rather than debating about the issue. As discussion is more about trying to find out ‘what is right or what could be the best possible right thing’ whereas debate is about ‘who is right.’

#### **4.10 Conclusion**

The issue of ‘human security’ and the whole debate that surrounds the issues of ‘development’ brings forth convincingly a harsh reality that the development initiative in the form of hydropower projects does often trigger ‘grass-root resistance and opposition’ due to its inevitable consequences like ‘displacement and land acquisition’ (Chellaney 2012: 4).

As such, displacement-induced impoverishment has two facets: economic deterioration and the loss of social and psychological infrastructure. In other words, displacement often leads to the displaced population experiencing a feeling of alienation and powerlessness, thereby making them parasitic on the external agencies rather than on facing the challenges themselves.

In fact in 1982, the Supreme Court gave the verdict that “...Before any developmental project is taken up, the social cost involved must be evaluated with a view to balancing the advantages. Every developmental programme must provide for the simultaneous rehabilitation of the persons who are thrown out of their land and houses on account of the acquisition of land for such developmental projects. No developmental project, however laudable, can possibly justify the impoverishment of large sections of people and their destitution” (Kibreab 2000: 293). But unfortunately, the weighing of the possible gains and losses due to the projects is lacking among the project stakeholders.

So, the question that deserves attention is: Is it justified to consider the development achieved at such social and psychological costs, as ‘Development’, since according to

the Human Development Report of the UNDP as mentioned several times in this chapter, is not ‘just about the increase in the ‘per capita income of a country or area’ but it should include factors like education, human development, access to resources, improvement in transport and communication, etc.

This then, illuminates the discrepancy existant between the development theories and the development policies that are executed as development is perceived as something that is directed towards the reduction of poverty but development-induced displacement instead has led to the impoverishment of those affected.

In fact, even the resettlement and rehabilitation policies have often been a failure in several states. This is due to the vacuum at the national policy level which is aggravated by the absence of a comprehensive legal framework which defines the rights and the entitlements of the people affected, the obligations of the agencies performing displacement and the remedies necessary for reconstructing the disrupted livelihoods and communities of those displaced. This can be contextualized on the understanding that ‘the state evades its responsibility when it turns a blind eye on how its decisions affect various population segments’. Such a scenario leads to the perpetuation of a legal void within which the rights of the people could remain undefined and unprotected while the unsatisfactory practices could thrive. The big challenge then is to rationalize the developmental initiatives, technically aimed at reducing poverty and to bring about employment opportunities; yet in reality, it incurs huge losses and damages. So, would it be justified to degenerate the whole developmental process due to such fallacies attached with it (Dias 2012: 1).

It is with right approach that the disruptive impacts of displacement can be lessened, if not eliminated completely. There is a need for a regional initiative and such an initiative needs to be taken as a preventive measure. Besides the regional initiative there needs to be a global initiative undertaken by the developed countries to reach out to the developing countries affected by such issues like displacement (Hollenbach 2013: 3).

Thus, the understanding of the issue of development-induced displacement leads to the issue of ‘human security’ which needs to be understood beyond merely the economic terms. It is essential to recognize that the issue of human security requires a



multi-dimensional analysis as every individual has the right to psychologically, emotionally, culturally and economically secured life.

## CHAPTER 5

### ENVIRONMENTAL IMPACT OF THE HYDRO-POWER PROJECTS IN THE EASTERN HIMALAYAS: SPECIAL REFERENCE TO BHUTAN AND SIKKIM

#### 5.1 Introduction

The hydropower projects have been able to achieve global acceptance for being a ‘clean and renewable’ source of energy. It is ‘clean’ in the sense that it does not aggravate the process of pollution, instead it involves the usage of a renewable source ‘water’ which is returned to the river or stream or lake after the generation of electricity (Foundation of Water and Energy Education 2016).<sup>1</sup> The construction of dams for varied purposes like hydropower projects, irrigation, flood control, etc., involves the storage of water during the surplus period and the same stored water is used during the period of scarcity. Dams are also used to tackle the two extreme situations: floods and droughts. Besides these benefits, the dam structures have also been one of the factors for tourist attraction, thereby contributing to the economy of that particular state/country/region. Dams and reservoirs have grown to be an integral part of the society but on the other hand, the complexities associated with ‘damming’ activities for varied purposes as mentioned above and specifically for hydropower generation in this context, does demand local, regional and global attention. The issue has gained such global attention due to its impact on the environment (International Commission on Large Dams 1997: 1).

The ‘renewability’ of the hydropower projects has been critically analyzed on the pretext that in the process of hydropower generation there is a need to construct and develop several infrastructures like dams, reservoirs, etc. So, though the energy used to produce power is renewable, its constituent structures involved in the process of generation are not renewable. In other words, the sustainability of the storage capacity

---

<sup>1</sup> <http://fwee.org/environment/how-a-hydroelectric-project-can-affect-a-river/how-a-hydro-project-affects-a-river-print/> accessed on 10<sup>th</sup> February, 2016.

reservoirs is not renewable; similarly the sites available for the dams are not infinite and are neither renewable.

So, in order to justify the activities of hydropower projects as a 'renewable' source of energy, it is also important to take into account varied factors like the sustainability of reservoirs, indefinite availability of the sites for dams or the hydropower project construction, the accumulation of the sediments in the process of hydropower generation, etc. (Klienman and McCully 2009: 245).

Furthermore, it is also imperative to understand the possible impacts that the hydropower projects could have on the environment. One of the common effects of the hydropower activities could be the disruption of the volume and flow of the river. This would then have a chain effect on the water bodies by converting the "riverine and terrestrial habitats to lacustrine (lake) habitats" (Ibid.: 247). All these accumulate into the emergence of huge local and regional environmental issues thereby leading to the critical analysis of the hydropower projects. The construction of the dams has altered not just the geography but has also changed the culture and the society at large. It has displaced huge populations, mostly the indigenous people, and has also impacted on the environment in the form of floods and many other such calamities (Oktem 2002: 311).

It is important to differentiate the various types of hydropower projects in order to analyze the impacts of the hydropower projects on the environment. The three types of hydropower projects are storage projects, run-of-the-river projects and pumped storage. In case of the storage projects, the water of the river is stored in a reservoir and the water stored is released with the escalation of the demand for electricity. The water released tends to turn the turbine to generate electricity. On the other hand, the run-of-the-river projects involves the diversion of river flow through a pipeline or tunnel to move the hydraulic turbine which then generates electricity with the help of the generator. The pumped storage involves the storage of water which is pumped from the lower reservoir to the upper reservoir at the time of 'off-peak hours' and during the peak load hours the water is pumped from the upper reservoir to the lower reservoir to generate electricity (Kumar et al. 2011: 451).

These varied types of hydropower projects impact on the various constituents of the environment in different ways like for instance the storage projects would lead to the

diversion of water and also reduce the flow of the river in the lower riparian states and similarly, the pumped storage involves the storage of water for electricity generation which would reduce the volume of the river flow in the lower riparian states. The run-of-the-river projects would require the diversion of water through a tunnel which would then reduce the volume of water throughout the area where the tunnel runs. In the Eastern Himalayas and specifically Bhutan and Sikkim, the kind of hydropower projects are mostly the run-of-the-river projects which needs a critical analysis.

## **5.2 Environment and Development: Interlinkages and Issues**

It is a globally known fact that ‘development’ and ‘environment’ are not two separate cabins of issues; instead, these two are interlinked. In fact, the two are so inextricably linked with each other that for a positive development a healthy environment is seen as an essential requirement, but it has been witnessed that often development has led to the deterioration of the environment thereby leading to a discord between the two. On the other hand, another approach towards the issue of the environment-development discord requires the formulation of policies and decisions considering both ‘economy and ecology’. So, focus is to be directed towards enhancing development on the one hand and simultaneously ensuring the protection of the environment (WCED 2000: 36).

The nature of relationship between the environment and development is dependent on the condition of the environment and on the level of development. Like for instance, a weak environment would lead to a weaker form of development and underdevelopment would lead to weak environmental protection. So, the fact lies that human intervention in the form of developmental activities is a ‘necessary evil’ in a globalised world, where the priority of every sovereign nation is ‘development’. The essential issue is not just the human intervention but it is the nature of human intervention that defines the possibility of achieving a sustainable form of development.

### **5.2.1 Human Intervention in the Natural System: Impacts and Issues**

According to the Reports of World Commission on Dams (2007) the impacts of dams on the environment can be listed as follows:

1. The ‘physical, chemical and geomorphological’ impacts caused due to the blockage of the river flow
2. Impacts on the ‘riverine and riparian plant life and downstream habitats’
3. Changes caused to varied aquatic species (fish, plankton etc.)

Furthermore, such adverse impacts on the environment can be witnessed in the following ways:

1. The construction of ‘dam’ and ‘reservoir’ converts the upper stream from ‘river valley to reservoir’
2. The river flow for the downstream is altered
3. The water quality of the downstream changes due to changes in the river flow<sup>2</sup>
4. Harmful effect on the biodiversity due to the blockage of the free movement of the organisms in the water

Further, the construction of the hydroprojects involves the construction of huge walls to dam the rivers and kilometres-long underground tunnels which would involve the process of ‘blasting’ in order to break down the rocks. Then there would also be the requirement of the construction of the powerhouses, roads and townships along with the mining activities and the establishment of transmission lines stretched over a long distance for power transmission. All these processes involved in the development of hydropower projects would have disastrous irrevocable effect on the mountains and the whole of the ecosystem (Elahi and Sikder 2009: 17).

A Detailed understanding of the impact of the hydropower projects on the various constituents of the environment is discussed below:

#### Impacts on the River and Aquatic Species

The construction of dams and other such constituent parts involved in the hydropower projects affects the river on which the project is being initiated. The impact of such processes can be witnessed in two ways: impact on the upstream and downstream river. Such impacts vary with the different types of hydropower projects like the storage projects, run-of-the-river projects and pumped storage.

---

<sup>2</sup>Water quality change is in the form of changes in the river temperature, nutrient load, dissolved bases, concentration of heavy metals and minerals.

The storage projects impact on the river in the form of a reduced volume of water, especially for the downstream river and also alters the seasonal river flow pattern. In addition to these even the water temperature is affected leading to a change in the water quality (Kumar et al. 2011: 462). In simple words, the storage projects tends to store the water in the reservoir leading to the slowing down of the river flow and it is the slow river flow that traps in a lot of heat from the sun, thereby altering the surface water temperature. This causes a variation in the water temperature at the surface and bottom levels. The surface water is warmer and the bottom level water is colder which leads to the colder water being pushed downwards due to its heavy density compared to the warm surface water. Such layering of water is known as ‘stratification’. The colder water at the bottom has low oxygen levels which when flows downstream affects the aquatic animals and the habitation as a whole (Foundation for Water and Energy Education 2016).<sup>3</sup>

Similarly, the run-of-the-river projects also affect the flow of the river due to the diversion of the water towards the turbines to generate electricity (Kumar et al. 2011: 462). The diversion of the river through tunnels, pipes and dams leads to the pressurizing of the water, thereby affecting the quality of the river. Further, the dams constructed for hydropower projects also lead to the trapping of the sediments of the upstream river. These sediments are essential for the rivers downstream and for the maintenance of the ‘productive deltas, barrier islands, fertile floodplains and coastal wetlands’ (IUCN 2012). The lack of sediments would affect the quality of the water flowing downstream.

On the other hand, the removal of the accumulated or the trapped sediments is another difficult task but it is feasible in the small hydropower projects compared to large hydropower projects, though there is a process of flushing out the sediments from the reservoirs. This process of removal or flushing out of sediments could hamper the working of the reservoirs and the process is compatible with only a specific ‘hydrological and topographical’ set-up (Klienman and McCully 2009: 245). Besides such problems, it has also been observed that the storing of water in the upstream

---

<sup>3</sup> <http://fwee.org/environment/how-a-hydroelectric-project-can-affect-a-river/how-a-hydro-project-affects-a-river-print/on> accessed on 11th February, 2016.

reservoir has led to the river ‘upstream’ of the dam turning into an ‘artificial dam’ from free- flowing rivers.<sup>4</sup>

So, the losses met by the upstream river also affect the downstream river as the sediments lost in the upstream river due to its accumulation behind the reservoir lead to the river flowing downstream eroding the downstream riverbeds and banks. Such an erosion of riverbeds leads to the lowering of the water table which then has an extended effect on the accessibility of water for plants and human beings (IUCN 2012).

It can be reiterated that the building of dams and reservoirs for the hydropower projects could lead to the problem of sedimentation. ‘Sediments’ are the ‘fine organic and inorganic materials’ that flow with the rivers, The dam traps the sediments, thus stripping the downstream flowing river of the sediments, which constitute the organic and inorganic elements which are essential for the species. This would also affect the spawning process as the fishes spawn in the river bed. Apart from this, the accumulation of the sediments behind the dam could attract more organisms that feed on the nutrients available in the sediments. This then leads to the overusage of oxygen which reduces the level of oxygen from the water in the reservoir, thereby depleting the quality of the water (Foundation for Water and Energy Education 2016). Such deterioration of the quality of water affects the aquatic species, vegetation and also the health of the people dependent on that particular river. It can be said that the damming activities impacts adversely on the whole of ecosystem.

Moreover, the existence of dams on the rivers tends to block the free movement of the water species. With the activities of hydropower projects, several changes occur in the quality of the rivers like the temperature change, chemical composition and dissolved oxygen levels, etc. It is such changes in the rivers which affect the aquatic species causing the extinction of varied fish species and also the disappearance of the bird species from the floodplains.<sup>5</sup>

---

<sup>4</sup> <https://www.internationalrivers.org/environmental-impacts-of-dams..accessed> on 9th February, 2016.

<sup>5</sup> Ibid 4.

The construction of reservoirs for the storage projects inevitably involves the process of inundation which causes harm to both the flora and fauna. In fact, often it leads to the endangering of the rare species too. As mentioned earlier, the alteration of the river flow pattern due to the storage of rivers in the reservoir leads to a change in the temperature of the rivers too which directly affects the wide range of water species. In fact, the storage of water also causes the problem of ‘super saturation’, i.e., the trapping of air in the water which leads to an increase in the nitrogen content in the water as air is comprised of 78% of nitrogen. Such high content of nitrogen causes injuries and also could lead to the death of the fishes when they swim from the ‘super saturation’ area to a low pressure area (World Commission on Dams 2000: 75-78).

The existence of the dams and reservoirs does not just physically block the movement of the water species but it also causes injuries to the fishes when they come in contact with the turbines, dam walls and deflection screens (Foundation for Water and Energy Education 2016).<sup>6</sup>

As put forth by World Commission on Dams, Food and Agriculture Organisation and India’s Central Inland Fisheries Research Institute, the ‘freshwater aquatic biodiversity’ in rivers is dependent on various variables like ‘timing, duration, frequency, temperature etc.’, all of which are negatively impacted by dam construction and diversion of the river flow, thereby impacting the environment as a whole (Elahi and Sikder 2009: 17).

Thus, it can be reiterated from the above that human intervention in the rivers and the aquatic species would inevitably lead to irreversible damages. Such compromises being done for the sake of ‘development’ would be one of the major injustices done to the future generation.

---

<sup>6</sup> <http://fwee.org/environment/how-a-hydroelectric-project-can-affect-a-river/how-a-hydro-project-affects-a-river-print/> accessed on 11<sup>th</sup> February, 2016.



## Impact on the Forest/Vegetation and Soil

It is the need of the hour to realize the deeply permeating consequences of the developmental activities that could lead to the loss of vegetation or forests; in fact, the loss of both the rare species of plants and animals. Such losses are irrevocable and would impact on the extent of the diversity of the ecosystem of not just one's state or region or country but also that of the global ecosystem. In the long run such a trend could lead to the loss of cultural heritage too (WCED 2000: 34-35).

The developmental process involved in the construction of hydropower projects involves the construction of roads and other such infrastructures using explosives, which increases the fragility of the rocks. Such fragility of rocks when clubbed with heavy rainfall increases the intensity of the damage by washing away the loose rock materials which then triggers landslides (G.B. Pant Institute of Himalayan Environment and Development 2006: 22).

Furthermore, the activities related to the hydropower projects also mentioned earlier in the chapter would require the construction of reservoirs which would affect the flow of the downstream water by reducing the flow. This is worsened when the water level increases, causing floods which would lead to the loosening of the soil and the submergence of the land making the survival of the species difficult (Pandit and Grumbine 2009: 13).

Thus, the challenge ahead would be to justify and validate such a developmental model which is being achieved at the stake of such immense loss of soil, forest and vegetation.

## Global Impact: Climate Change

### Understanding Climate Change

Climate change refers to “a change in the state of the climate that can be identified by changes in the mean and/or variability of its properties and that persists for an extended period, typically decades or longer”. The factors responsible for climate change could be either natural factors or human-induced. In fact, the United Nations Framework Convention on Climate Change defines climate change as a “change of climate which is attributed directly or indirectly to human activity that alters the

composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods” (UNFCCC 1992: 3). It is the increase in the emission of green house gases<sup>7</sup> (GHGs) that leads to climate change. The greenhouse gases includes “carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), sulphur hexafluoride (SF<sub>6</sub>) and chlorofluorocarbons (CFCs)”. These gases are emitted due to factors like ‘fuel combustion, deforestation, transportation, agriculture, urbanization and industrialization’ (Maharanjan 2012: 51-52).

Climate change has been an issue of ‘global concern’ as its symptoms were witnessed across the globe in the form of a ‘rising temperature of the earth’s surface’ which has further led to the alteration of ‘weather patterns, rise in sea level, melting of glaciers, frequent droughts, storms and other such adverse climatic conditions’(Ibid.: 52).

Infact, the Intergovernmental Panel on Climate Change (IPCC) states that even if by the year 2050 the emission of Green House Gases narrows down by 50% of the current emission level, still a 2% rise in the earth’s temperature will be inevitable. The IPCC as such claims that the 2% rise in the earth’s temperature would be the upper limit after which “the risks of grave damage to ecosystems are expected to increase rapidly” (Ibid.: 52).

Such a trend is seen as worst affecting the developing nations as compared to the developed ones as the people of the developing nations are mostly dependent on the natural resources. In fact, it has been argued that in the current decade around 3.5 billion people (in the developing and least developed countries) are perceived as having been affected by climate change. Further, the World Bank states that “people in the developing countries are affected at 20 times higher the rate of those in developed countries” (G.B. Pant Institute of Himalayan Environment and Development 2006: 22). This leads to the generation of debate over the need and impact of ‘development.’

---

<sup>7</sup> Green House Gases are those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and re-emit infrared radiation.

## Emission of Green House Gases (GHGs) by the Hydropower Projects

On the issue of ‘climate change’ the Intergovernmental Panel on Climate Change (IPCC) stated “the balance of evidence suggests that there is a discernible human influence on the climate” (Meyer 2013: 293). So, human activities have been considered as one of the core factors having a huge detrimental impact on the environment giving rise to the problem of global warming. In this context, the hydropower project activity is one such human activity which has been aggravating the problem of climate change.

The climate change effect in the form of melting Himalayan glaciers, the changing pattern of monsoons and the increase in the sea level has had a huge impact on the pattern of river- flow, biodiversity etc. Such effects of climate change are further aggravated with the activities of hydropower projects (Thakkar 2012: 7). The developmental activities are entangled with the issue of ‘climate change’, as the developmental activities tend to generate and regenerate the GHGs which then deteriorates the environment further (Hoshour 2010: 17).

The reservoirs constructed for the storage of water for hydropower projects lead to the accumulation of rotten vegetation due to the inundation process and the inflow of carbon from the ‘catchment areas’ leads to the emission of the GHGs, thereby contributing to the global problem of climate change (World Commission on Dams 2000: 75). In fact, studies by Ivan Lima and others from Brazil’s National Institute for Space Research (INPE) estimated that the emission of methane (a GHG) from all the reservoirs of the world could be 120 MT per annum (Elahi and Sikder 2009: 17).

Such activities carried out by human beings have been causing environmental disasters, thereby hampering the globe as a whole.

## Climate Change Impact on Hydropower Generation

The developmental initiatives and environment are tied together in a vicious circle wherein intense developmental activities often leads to compromising of the environment and on the other hand the environmental changes in the form of climate change impacts hydropower generation in the following ways (Killingtveit 2013: 336):

1. Volume of the river flow: The rise in the earth's temperature would lead to two extreme situations like drought and floods. The drying up of the rivers would have a direct impact on the hydro-power generation and on the other hand, the rise in the sea level due to the melting of glaciers would also lead to fast-flowing rivers that could wipe out structures like bridges, dams, etc., that fall in its way.
2. Variation in the seasonal river flow: Due to the climate change impact, the level of precipitation has decreased, thereby decreasing the frequency of rainfall and this causes variations in the river flow and the change in the pattern of monsoons too affects the volume of the rivers.
3. Changes in the extreme situations of river flow like floods and droughts: The rise in temperature affects the river flow by either increasing the river flow to the extent of causing floods (due to the melting of snow) or decreasing the river flow to the extent of causing droughts (due to increased evaporation).
4. Alteration of the load of the sediments which affects the storing capacity of the reservoirs: The sediments carried by the rivers are accumulated behind the reservoir due to the blockage of the free river flow, caused by the structures built for the hydropower projects. So, the sediments seeps into the bottom of the reservoir disrupting the water storage capacity of the reservoir on the one hand and on the other, it has an abrasive effect on the blades of the turbines which hampers the generation of electricity.

Such multiple changes in addition with a change in temperature would have a noticeable impact on the hydropower projects. In fact, the hydropower projects with a minimal storage capacity are on the higher risk of being affected by climate change since big storage capacities provide 'flexibility' for the execution of the works. But on the other hand, it cannot be refuted that the enlargement of storage capacities is not economically and environmentally viable (Hamududu and Killingtveit 2012: 307).

### **5.3 An Eco-Friendly Development Approach in the Form of Hydropower Projects**

Besides the regressive impacts of the hydropower projects on the whole of the ecosystem, it is also imperative to accept the positive impacts of the hydropower projects on the environment. Hydropower has been considered as economically and operationally more beneficial and viable compared to other sources of power generation. In fact, the dams constructed for varied purposes including the hydropower projects facilitate the increase in agricultural productivity, flood control and generation of 'cheap' electricity (Oktem 2002: 311). Moreover, it cannot be refuted that the dam projects are an integral part of the "modernization process" of the developing nations.

It is a known fact that there are varied alternatives for the production of electricity but at the same time it cannot be negated that the generation of electricity through 'thermal power plants' has led to the increasing depletion of fossil fuels and that it also causes huge harm to the environment due to the emission of GHGs (Baijal and Singh 2000: 1660). So, the generation of power through hydroprojects is an 'environment-friendly' approach to development.

Further, the development of hydropower projects can lead to the reduction of the reliance of the people on firewood for household work and other purposes. Similarly, the process of 'afforestation' and the treatment of the 'catchment area' are also included as a part of the development of hydropower projects. These processes contribute towards mitigating the problem of soil erosion.

It is also interesting to know that the 'environmental cost' incurred in the electricity generation through thermal projects is 7% of the total project cost while the environmental cost of the hydropower projects ranges between 1.38% to 4.5%. Hydropower projects as such are the 'cheapest power source' as they do not involve the use of 'fossil fuels', thereby reducing the total cost of the electricity generation. So, the hydropower projects are "more economical" compared to the thermal projects, though at the early stage the cost incurred in the development of the hydropower projects could be higher as compared to the thermal projects but in the long run the cost would reduce, thereby making it a cheap source of energy. Furthermore, the

activities of hydropower projects lead to the conversion of the ‘wasteland’ into ‘agricultural land’ by channelizing the water and also storing the water during surplus and using the same during the time of scarcity, like for instance in Western Rajasthan the Indira Gandhi Canal Project has transformed the deserts into agricultural lands (Ibid 2000: 1662-1663).

The hydropower projects positively contribute also towards the reduction of the GHGs. The coal power plants emit about 1000g of carbon dioxide for each kilowatt hour (kWh) generated. Similarly, oil and natural gas power plants emit 800g and 500g/kWh respectively, whereas the hydropower plants emissions are close to zero. So, the hydropower generation could reduce the emission of GHGs between 500 and 1000g/kWh. Hydropower projects are as such considered as “a proven, mature, predictable and price- competitive technology” and also facilitate both water and energy management services (Killingtveit 2013: 337)

It can thus be reiterated that the ‘hydropower projects’ have both positive and negative impacts on the environment but since the world is already grappling with the problem of ‘climate change’, so any action that is escalating the ‘climate change’ issue is liable to huge global attention. So, similarly, irrespective of the positive impacts of hydropower projects, there have been several global debates about the viability of such projects in prolonging the essence of the whole ecosystem.

#### Benefits of Dams and Reservoirs

The advantages of the dams are well expressed in the words of Nelson Mandela in the report of the World Commission on Dams—“The problem is not the dams. It is the hunger, it is the thirst. It is the darkness of a township. It is the townships and rural huts without running water, lights or sanitation” (Binnie 2004: 1). One of the core benefits of dams and reservoirs is that they act as a tool for economic development. Their purpose is limited not just to the generation of hydroelectricity but they also acts as a tool for flood control and irrigation. Moreover, the reservoir stores water during its surplus availability, so that the stored water could be used during the dry seasons. Similarly, the maintenance of the hydropower projects is both economically and environmentally viable in the long run unlike other means of power generation. Such

generation of electricity, makes even the transmission of the electricity across borders easy and efficient.<sup>8</sup>

Hydropower generation as mentioned earlier in the chapter has been widely accepted due to its enhanced efficiency as a reliable source of clean power in comparison to thermal plants and other such energy sources. Like for instance, if the power generated by hydroprojects in United States were to be generated with coal, then there would be an increase in the level of pollution by 16%. Similarly, China has been able to control floods in the flood-prone areas by constructing dams and reservoirs (Manatunge et al. 2006: 9- 13). The dam controls the flood either directly due to its structure or by controlling the high speed river flow, by dispelling the water through the reservoir (Binnie 2004: 7).

Besides, the water stored in the reservoirs can be used for drought areas and during the droughts, for irrigation purpose. On the other hand, the construction of the reservoirs and dams requires both skilled and unskilled labour; this provides employment opportunities to the unemployed and acts a source of income for the economically downtrodden people. In addition, new business ventures like construction material supplies and other such small- scale businesses can be undertaken by the local communities of the hydropower project area (Manatunge et al. 2006: 9-13). Such multiple benefits can be accrued from the hydropower projects.

Furthermore, the construction of the hydropower projects requires the construction of infrastructures like roads and bridges for the smooth flow of construction materials; this would facilitate economic sectors like tourism even in remote places. The development of tourism would contribute economically to the state and would generate several career options for the unemployed. Such development would enhance the living standard of the people by enabling them to earn their livelihood. So, in terms of the social and economic aspects, the development of dams and reservoirs does have advantages for the people and psychologically too, such structures could facilitate recreation.

Despite such advantages, the dams and reservoirs have often been challenged for causing flooding of the lower riparian areas and risking the lives of people and

---

<sup>8</sup> <https://fhgeog12.wikispaces.com/file/view/AdvantagesDisadvantages+of+HydroDams.pdf> accessed 10<sup>th</sup> October, 2016.

livestock. To the contrary, it has also been argued that the dams and reservoirs would act as a defensive structure against a high speed huge volume of river flow, thereby reducing the risk of floods in the downstream.

Hydropower has sustained itself as the source of 20% of the world's energy generation and it is due to such structures like dams and reservoirs that a perennial flow of water for irrigation and other purposes can be expected irrespective of the climatic conditions. This would then ensure 'food security' for the people, otherwise there would be the possibility of a situation wherein all food items would have to be imported. Besides, it cannot be refuted that hydropower generation has contributed towards the reduction of the emission of GHGs, thereby reducing the pace of global warming (Binnie 2004: 5-13).

Thus, hydropower projects contribute positively towards ensuring multiple facets of security like economic security, food security and environmental security in both the short and long term. But it needs to be ensured that there is equitable mass distribution and accessibility of all these benefits along with a transparent and direct communication with the affected people.

#### **5.4 Impact of Climate Change in the Eastern Himalayas: Special Reference to Bhutan and Sikkim**

Considering the Himalayas as one of the 'youngest fast-changing mountains' and blessed with huge glaciers, the effect of climate change in the form of glaciers melting in the Tibetan Plateau has been evident to the global community. The Tibetan glaciers have been observed as melting at a "worrying speed and over the past forty years, Tibetan glaciers have receded 196 sq. km". Such a change causes huge damage to the glaciers feeding most of the rivers of South Asia but despite such a loss the South Asian countries like India, Pakistan, Nepal and Bhutan have been rigorously involved in developing hydropower projects which have an amplifying impact on the degenerating impacts of climate change (Elahi and Sikder 2009: 15).

Irrespective of such ill-effects of developmental activities like that of hydropower projects, their proponents have often justified hydropower projects as a 'clean and renewable' source of energy and that the areas affected by them would be provided with social and financial compensation. But the impacts of the hydroprojects is



evident in the form of huge environmental degradation like the destruction of landscape, contamination of food webs by mercury and the evolution of GHGs (Rosenberg et al. 1995: 20).

Furthermore, The International Centre for Integrated Mountain Development, ICIMOD, in Nepal and the Intergovernmental Panel on Climate Change (IPCC), claim that 'global warming' would lead to more storms and floods, especially in the 'tropical and mountainous regions'. A report by the ICIMOD on the 'Impact of Climate Change on Himalayan Glaciers States' says that "On the Indian subcontinent, temperatures are predicted to rise between 3.5 and 5.5°C by 2100. An even higher increase is predicted for the Tibetan Plateau. Climate change is not just about averages, it is also about extremes. The change in climate is likely to affect both minimum and maximum-recorded temperatures as well as triggering more extreme rainfall events and storms". Such environmental disasters would jeopardize the economic gains of hydropower projects. In fact, according to scientific estimates, the "large dams in India are responsible for about a fifth of the countries' total global warming impact" (Elahi and Sikder 2009: 17).

But on the other hand, it also needs to be agreed that heavy damming of rivers is not the sole contributor to the environmental impacts; several other factors like an accelerating increase in the level of consumption is also responsible for environmental degradation (Chellaney 2012: 23).

According to the IPCC (2007) report, other manmade factors that cause global warming are as follows:

1. Deforestation: It releases carbon dioxide and reduces its absorption by the trees
2. The usage of fossil fuels in transportation, manufacture of cement and other similar activities
3. Agricultural activities release the GHG methane
4. The usage of fertilizers and burning of fossil fuels emits nitrous oxide
5. Use of luxury items like refrigerators and air conditioners emit halocarbon gases like chlorofluorocarbons
6. Industrial activities and other activities like surface mining emit dust in the atmosphere which exists as aerosols

It is also important to be aware about the indicators of climate change in order to strategize the protective mechanisms to tackle it. So the indicators of climate change are as follows (Badola 2009: 36):

1. Melting of glaciers due to a rise in temperature: the increase in temperature tends to melt the glaciers which subsequently leads to the rise in sea level
2. Alterations in the 'seasonal cycle' and adaptability of the species
3. "Prolonged growing period in the vegetation" leading to the change in the plant life cycle and the productivity pattern
4. Variation in the geographical distribution of the species.

#### Climate Change in the Eastern Himalayas: Breaking the Traditional Resilience

Understanding the issue of 'Climate Change' involves both the environmental and human dimensions. So, there is a need to address the issues concerning human lives within the context of climate change. As rightly expressed by the UNHCR, the 'negative' impacts of 'climate change' on human rights would be "felt most acutely by those segments of the population that are already in vulnerable situations owing to factors such as geography, poverty, gender, age, indigenous or minority status and disability". Similarly, even the Chairperson of IPCC and Jim Yong Kim (President, World Bank) state that the vulnerable sections of both the developing and developed nations would be severely affected by 'climate change' (UN 2014: 2). Such adverse impacts of climate change can be witnessed in the Eastern Himalayan belt which is comprised mostly of the developing nations of South Asia like Nepal, Bhutan and some of the states of India like Sikkim, Arunachal Pradesh and Darjeeling (district). This makes it imperative to analyze the impact of climate change in the belt and also the factors causing such environmentally detrimental consequences.

The Himalayas have been a source of 'freshwater', feeding a larger section of the world population, but unfortunately the freshwater source is under serious attack by the climate change impact. Such an impact can be observed in the Himalayas with the accelerated pace of glaciers melting, leading to the formation of lakes which are prone to glacial outbursts causing devastating consequences in the downstream areas. On the

other hand, the ‘traditional water springs’ have also dried up due to climate change, thereby hampering the water supply. It is also interesting to know that the Eastern Himalayas possess diverse living species—there exist around 163 ‘globally threatened species’ which include three largest herbivores of Asia like the Asian elephant, one-horned rhinoceros, wild-water buffalo, and also the tiger. It is only in the Himalayas that two important and threatened animal species namely the Bengal tigers and snow leopards share their habitat. These diverse animal species have been endangered due to the impacts of climate change.

#### Flora and Fauna in the Eastern Himalayas

The Eastern Himalayan belt is comprised of the following flora and fauna as mentioned in Table no.8 (WWF 2016):

Types of Plants	Animal Species (Nos.)				
	Birds	Reptiles	Amphibians	Fish (freshwater)	Mammals
10,000	977	176	105	269	300

Since the Eastern Himalayas are comprised of a wide range of ecosystems,<sup>9</sup> it has been referred to as ‘multi-functional’. Yet, the challenge ahead lies due to the equally available wider range of human activities that is endangering the diverse ecosystem of the Eastern Himalayas (Tsering et al. 2010: 1-5). On the same note, the Eastern Himalayas have been widely considered as “biological hotspots” comprising parts of three ‘global biodiversity hotspots’ namely the Himalayan hotspot (39%), the Indo-Burma hotspot (8%) and the Mountains of South-West China Hotspot (13%) (Das and Chattopadhyay 2013: 90).

<sup>9</sup> Ecosystem refers to the interdependent functioning system of plants, animals and micro-organisms.

It is important to strike a linkage between climate and the ‘mountain ecosystem’ as the biodiversity of the mountains tends to acclimatize in the local climatic condition and so any changes to the climate directly affects the survival of the whole ecosystem. This also affects the human population, since the human beings are also reliant upon the ecosystem and the mountains for both goods and services; but due to the varied changes introduced under the garb of development, the mountain practices have been disrupted which include agriculture and ‘traditional practices of sustainability’, thereby affecting both the mountain landscapes and the mountainous communities (Tsering et al. 2010: 1-5).

The problems are further aggravated with the overexploitation of the natural resources, thereby challenging the ‘sustainability’ of the resources available. Such acts on the part of the human beings have intensified not just the fragility of the immediate environment but have an overspill even on the downstream ecosystem. With such a situation, a mountainous region like the Eastern Himalayas faces environmental vulnerabilities and the mountainous people become socially and economically vulnerable as they completely rely on the ecosystem for survival. The environmental disasters like floods, glacial lake outbursts, earthquakes, etc. have become a part of the Eastern Himalayas which get aggravated further with human activities like hydropower projects like for instance, Bhutan has been prone to glacial lake outbursts, floods and earthquakes; similarly, Nepal too has been prone to earthquakes and flooding and the states like Sikkim and Arunachal Pradesh and the Darjeeling district are prone to earthquakes and landslides (Ibid.: 6-8).

Some of the climate change effects on the Eastern Himalayas (Ibid.: 9) are:

1. **Habitat Loss and Fragmentation:** The issue of climate change affects the vegetation of the Eastern Himalayan belt to a great extent like for instance, the alpine meadows and shrubs found in the belt tend to shift to the top of the mountains in accordance with their climatic requirements. The alpine meadows and shrubs grow in extreme cold temperature but the increase in temperature would compel them to shift upwards towards cold temperature.

2. Invasive Species: The change in climatic conditions makes the survival of the ‘native species’ difficult and instead the changed climatic conditions give birth to non-native species or invasive species.
3. Species Exploitation: The tree species harvested for commercial purposes like subtropical and temperate timber have been adversely affected due to climate change.
4. Environmental Contamination: The process of ‘eutrophication’<sup>10</sup> increases in the freshwater.

So, according to the Millennium Ecosystem (MEA), climate change is one of the important factors affecting the ‘biodiversity’ of the Eastern Himalayan belt (Das and Chattopadhyay 2013: 90). The Eastern Himalayas have been romanticized as the “cradle of flowering plants” as the belt is constituted of “botanically curious and rare species” like the “Sapria Himalayan”<sup>11</sup> and the Rhododendron.<sup>12</sup> But the climate change impact has been very harsh on the flora and fauna of the region, thereby causing a huge concern for the vibrant ecosystem of the Eastern Himalayan belt.

#### **5.4.1 Climate Change and Economic Development in the Eastern Himalayan belt: Issues and Impacts**

The alterations in the climatic conditions across the Eastern Himalayan belt have emerged evidently and the impacts of such alterations are observed as hampering the economic development of the belt. In simple words, some of the primary economic sectors that are common across the belt are agriculture, tourism and hydropower projects, but these income-generating sectors are under huge threat due to the impact of climate change.

The rise in temperature has led to the melting of glaciers which often leads to glacial lake outbursts causing huge damages. Besides, the changes in rainfall patterns, river flows and plant cycles, and the vulnerability of the various animal species due to the

---

<sup>10</sup> The aquatic plants need two nutrients to grow, namely nitrogen and phosphorous, but if the nutrients increase to a great extent then this could again have adverse consequences in the form of a rapid growth of plants and algae leading to the clogging of waterways. This process is called eutrophication.

<sup>11</sup> There are about 700 orchid species in the north-eastern region of India, out of which 545 species (which includes endangered, vulnerable and threatened species) are found in Arunachal Pradesh.

<sup>12</sup> The species are found mostly in Arunachal Pradesh, Manipur, Sikkim and Mizoram.

rise in temperature, have all created hurdles for the execution of economic activities like agriculture and hydropower projects. There has been a shortage of water due to the drying up of natural springs and rivers, which when clubbed with the changing pattern of rainfall, leads to a reduction in the fertility of the soil. On the other hand, the generation of electricity through hydro-projects also gets distorted, so both agriculture and hydro-power projects are adversely affected. In fact, due to the extreme climatic conditions the belt has been facing frequent landslides that disrupts the tourism sector to a great extent, mainly due to a blockage of roads.

So, both climate change and development are entangled in a vicious circle of cause and effect wherein the developmental activities that lead to the emission of GHGs are considered as triggering the problem of climate change and similarly, the impact of climate change is observed as disrupting the developmental activities in the form of extreme climatic conditions, thereby making the people more vulnerable to the effects of climate change.

#### **5.4.2 Impact of Climate Change on Bhutan**

Bhutan's economy is based primarily on agriculture and hydropower projects, with about 70% of the population engaged in agriculture. This indicates that Bhutan is engaged in climate-sensitive sectors. The country has been estimated to have at its end the potential to generate about 30,000 MW of electricity out of which only about 3% has been harnessed (National Environment Commission 2006: 2). Such an economic activity is faced with challenges due to the accelerated change in the climate and on the other hand, the fragile ecology of the country further adds to the problem.

The impact of climate change on Bhutan is of serious concern since Bhutan has a fragile mountain system and is also prone to earthquakes as it lies in the seismic zones four and five. Besides these, the country is also prone to natural disasters like forest fire, glacial lake outbursts, landslides, flash floods and droughts.

The impact of climate change can be strongly felt in Bhutan in the following ways (Rahut 2011: 9-15):

1. Decrease in agricultural productivity: Agriculture contributes about 14% to the country's Gross Domestic Product but since agriculture in Bhutan is highly reliant on the rain-fed irrigation pattern, any change in the duration of rainfall and other such climatic conditions has a regressive impact on the agricultural productivity of the country (Rahut 2011: 9-15). The main cash crops of Bhutan like rice, potatoes, chillies, apples and oranges are "highly sensitive to water and temperature variations", so the impact of climate change is observed as affecting the farmers very severely (National Environment Commission 2006: 2).
2. Threat to biodiversity: Bhutan has been blessed with biodiversity but this is under serious threat due to the impact of climate change. The impact of such has been witnessed in the form of loss of habitats, development of new physical traits, and change in lifecycles.
3. Health risks: The rapid change of climate has led to the birth of several new diseases like vector-borne diseases, heat stroke, malnutrition, etc.
4. Impact on the hydropower sector: The variation in the water level due to a change in the temperature directly affects the generation of hydroelectricity which impacts on the revenue generated by supplying electricity to other nations, thereby affecting the 'Gross Domestic Product' of the country.
5. Impact on the business sector: The variations in climatic conditions have affected the various business sectors like agro industries, power-intensive industries and the tourism industry. Besides this, such a scenario leads to a crunch in employment opportunities.
6. Loss of lives and property due to glacial lake outbursts (GLOFs): Bhutan has two 2,794 glacial lakes out of which 25 glacial lakes are very dangerous. Bhutan as such is very prone to GLOFs and has had several experiences in the past like in the year 1957 followed by 1960, 1968, 1994, 2015. During the field trip to Bhutan, it came to be known that in Bhutan the GLOFs have become a common feature and that the impact of climate change when clubbed with heavy monsoons, brings huge disasters for the country.

## Measures to Mitigate and Adapt to the Impacts of Climate Change in Bhutan: Policies/Programmes and Institutions

### Policies/Programmes

Gross National Happiness (GNH): The term Gross National Happiness was coined by the Fourth Druk Gyalpo, King Jigme Singye Wangchuk, in the year 1972. The concept is the actualization of the vision of the Third Druk Gyalpo, Jigme Dorji Wangchuk, to make the Bhutanese people “prosperous and happy”. GNH was comprised of four main pillars: “sustainable socio-economic development, good governance, cultural preservation and environmental conservation”.<sup>13</sup> So, for Bhutan sustainable form of development was a priority along with their economic development. The GNH provides a balance to both the environmental and economic objectives of the country.

National Environment Strategy (NES): the National Environment Commission of Bhutan on December 17, 1998, declared the country’s National Environment Strategy in order to “ensure the careful stewardship and sustained use of natural resources” in Bhutan. This strategy provides for a “middle path” approach to development and also lays down three issues (National Environment Commission 2000: 3):

1. Effective natural resource management
2. Integrated urban and rural planning
3. Development planning

The National Environment Strategy also identifies three areas that would contribute towards sustainable development (Ibid.: 3):

1. Development of the hydropower sector
2. Food production
3. Industrial Development

Green House Gas Inventory: The first National Green House Gas Inventory was completed in the year 2000 (Rahut 2011: 7). Such an inventory is essential in order to

---

<sup>13</sup> [http://opportunitycollaboration.net/dev/wp-content/uploads/2014/01/GNH\\_Overview.pdf](http://opportunitycollaboration.net/dev/wp-content/uploads/2014/01/GNH_Overview.pdf) accessed on 21 May 2015.



understand the sources of GHGs and sinks in order to tackle well the issue of climate change.

National Adaptation Program of Action (NAPA): The programme is aimed at enabling the Least Developed Countries (LDCs) to identify “their immediate needs and priorities” in order to adapt to the effects of climate change (Ministry of Natural Resource and Environment 2006: 8). Bhutan’s NAPA has facilitated the country to identify and analyze the varied issues related to climate change and to address the vulnerabilities Bhutan is prone to face.<sup>14</sup>

The Bhutan National Adaptation Program of Action identified several vulnerable areas which are Bhutan-specific like (National Environment Commission 2006: 8):

1. Forest and Biodiversity
  - a) Droughts and strong lightning could cause forest fires
  - b) Change in migratory pattern of the trans-boundary wildlife
  - c) Change in the phenological characters of plants
  
2. Agriculture
  - a) Water scarcity could affect agricultural productivity
  - b) Erosion leads to loss of soil fertility
  - c) Heavy rains and hailstorms would adversely affect the quality of agricultural production
  
3. Natural Disasters and Infrastructure
  - a) Glacial Lake Outbursts
  
4. Water Resources and Energy
  - a) The variations in river flow affect the generation of water through hydropower projects
  - b) Increase in the sediment content of the river degrades the water quality
  - c) Increased run-offs trigger erosions

---

<sup>14</sup> <http://www.adaptation-undp.org/projects/bhutan-national-adaptation-programme-action-napa> accessed on 23rd April, 2016.

## 5. Health

- a) Flash Floods and Glacial Lake Outbursts lead to loss of lives
- b) Spread of vector-borne diseases like malaria, dengue, etc.
- c) Decrease in the water quality leading to water-borne diseases.

So, the Bhutan NAPA has aimed at ascertaining the varied facilities that would help in adapting to the impacts of climate change and also to accommodate the risks attached with the climate change while formulating the national policies. These goals of NAPA were to be guided by the developmental goals of Bhutan (Ibid.: 11):

1. Poverty alleviation
2. Increase in food security.
3. Secure the activities of hydropower in order to boost the economy
4. Empowerment of women and gender equality
5. Environment sustainability
6. Reduce child mortality.
7. Minimise the loss of lives and livelihoods caused due to natural and climate-related disasters
8. Make the environment sustainable

### Environmental Institutions in Bhutan

National Environment Commission (NEC): It is a “high level multi-sectoral body” which works towards the “protection, conservation and improvement of the natural environment”. It integrates environment with the country’s plans, policies and programmes. The Chairman of the Commission is the Minister of Agriculture and Forests.<sup>15</sup>

National Climate Change Committee: It was established in the year 1992 and it functions as a “high level cross-sectoral body” headed by the Prime Minister. It is the “national focal agency for climate change in Bhutan, the national focal agency for the

---

<sup>15</sup><http://www.nec.gov.bt/nec1/index.php/about-nec/vision/> accessed on 23<sup>rd</sup> April, 2016.

UN Framework Convention on Climate Change and the Designated National Authority under the Kyoto Protocol for the Clean Development Mechanism”.<sup>16</sup>

Multi-Sectoral Technical Committee for Climate Change (MSTCCC): It was formed with the decision of the National Environment Commission and would coordinate the activities directed towards climate change in Bhutan (National Environment Commission 2015: 7).<sup>17</sup>

Bhutan’s Participation in the International Forums/Institutions: Addressing the Issues of Climate Change

Besides developing such policies Bhutan has been proactive in addressing the issues of climate change in various global platforms. Bhutan despite being a small Himalayan country in South Asia, has been one of the active partners with the rest of the world in raising the challenges faced due to climate change.

Such an approach of Bhutan became evident with the country signing the United Nations Framework Convention on Climate Change (UNFCCC)<sup>18</sup> in 1992. Then, later in 1997, Bhutan became a signatory to the Kyoto Protocol in 1997 and on August 26, 2002, Bhutan signed the Instrument of Accession thereby making it a part of the protocol (National Environment Commission Secretariat 2015: 1). In 2009, Bhutan declared itself to remain ‘carbon neutral’ and also serve as a ‘net carbon sink’ during the Copenhagen Summit held at Denmark (Tobgay 2010: 1).

Bhutan collaborated with countries like the Netherlands, Costa Rica and Benin to form the Sustainable Development Agreement (SDA) and also participated in the South Asia Cooperative Environment Program (SACEP), the UN Commission on Sustainable Development (UNCSD) conferences, the United Nations Environment

---

<sup>16</sup>[http://www.asialeds.org/country\\_profile/bhutan/](http://www.asialeds.org/country_profile/bhutan/) accessed on 23<sup>rd</sup> April, 2016.

<sup>17</sup> <http://www4.unfccc.int/submissions/INDC/Published%20Documents/Bhutan/1/Bhutan-INDC-20150930.pdf> accessed on 23<sup>rd</sup> April, 2016.

<sup>18</sup> The UNFCCC was adopted as a framework for Climate Change in 1992 at the Rio Earth Summit. The Convention aims to prevent the dangerous levels of Green House Gases in the atmosphere. The framework was to be based on the principle of CBDR—“common but differentiated responsibilities”. According to the CBDR principle, the developed nations were to take a lead in reducing the GHG emissions and assist the developing nations in addressing the issue.

Program (UNEP), the Economic and Social Commission for Asia and the Pacific (ESCAP), the World Bank, the Asian Development Bank and the International Center for Integrated Mountain Development (ICIMOD).<sup>19</sup> Therefore, Bhutan has been very active in diversifying the environmental issue, even at the global level.

### **5.4.3 Impact of Climate Change on Sikkim**

The Honorable Chief Minister of Sikkim Shri Pawan Chamling has elucidated the impacts of climate change through his words (Arrawatia and Tambe 2012):

“Climate Change is emerging as a new challenge that governments have to address effectively. Mountain regions are facing accelerating climate change, thereby adversely impacting ecosystem services, biodiversity elements and livelihood security. Mountain ecosystems due to their sensitive and fragile nature act as a laboratory where the impacts of climate change get amplified and can be studied closely and understood better”.

Sikkim is topographically a mountainous state and is blessed with a diverse ecology as mentioned in Table no.9 (Human Development Index 2014: 22-23):

---

<sup>19</sup>The details would be dealt in the chapter on the Role of International Agencies.

Sikkim's Diverse Ecology	
Glaciers	84 (nos.)
Glacial Lakes	315 (nos.)
Orchid	527 species
Flowering Plants	4,458 (nos.)
Medicinal Plant	700 species
Rhododendron	38 species
Mammals	125 species
Birds	574 species
Butterflies	689 species

Besides, the existence of such a biodiversity in Sikkim, the state experiences diverse 'ecological conditions' ranging from "tropical moist to temperate and alpine zones" (Ibid.: 23). This natural ecosystem has been under serious threat due to the effects of climate change.

The impacts of Climate Change on Sikkim can be assessed in the following ways (Arrawatia and Tambe 2012: 36-39):

1. Agricultural Impact: The effects of climate change on the agricultural products usually varies in accordance with the nature of the crops, like for instance the crops grown in temperate climate<sup>20</sup> gets severely affected with a rise in the temperature. Besides, according to the Intergovernmental Panel on Climate Change (IPPC) report of 1990, by the year 2050 the ultra-violet radiation, specifically the UV-B, would increase by 20-25%. Such an increase in the UV-B radiation could affect the rice production which is one of the major crops in Sikkim as the radiation damages the 'leaf tissues in the rice seedlings'. Such an effect would make the leaves 'stunted',

<sup>20</sup>It is characterized with moderate temperatures.

collapse the stomata<sup>21</sup> and decrease the process of photosynthesis. Furthermore, the effects of such harmful radiation on the crops would lead to an increase in the effects of the diseases on plants. The increase in GHGs like carbon dioxide would reduce the rice production and the increase in temperature would shorten the period over which rice is grown. Moreover, the advent of extreme temperatures due to global warming gives rise to harmful climatic conditions like heat waves, monsoons, droughts etc. which in turn affect crop production like for instance, hailstones destroy crops and fogs cause physiological injury to the crops and also affect the process of photosynthesis (Rahman et al. 2012: 36).

2. Impact on water resources: Like the rest of India, even Sikkim has been facing a reduction in the availability of water for irrigation. In fact, the reduction in the total number of rainy days and also the quantity of rainfall especially during the monsoon season and post-monsoon season, has been observed in Sikkim. The number of rainy days has been decreasing during the winter at the rate of 4.50 days every 30 years and during the monsoon season, 8.10 days every 30 years. Similarly, there has been a reduction even in the average seasonal rainfall at the rate of 53.43 mm every 30 years during winter and during monsoons the reduction rate has been 139.01 mm for every 30 years (Ibid.: 38).
3. Impact on the natural springs: Sikkim has been blessed with an enormous number of natural springs but the effect of climate change has led to a decreased flow and has made the springs seasonal in nature (Ibid.: 38).
4. Impact on the animals: The increase in temperature could cause a problem in ‘drying, storing and processing’ of farm produce due to the increased fungal growth and aflatoxin<sup>22</sup> which would lead to a contamination of food which when consumed by the animals could affect their health (Ibid.: 39).

---

<sup>21</sup> Stomata are minute aperture structures on plants found typically on the outer leaf skin layer, also known as the epidermis. They help in the movement of gases like carbon dioxide and oxygen and water vapour in and out of the leaf.

<sup>22</sup> Aflatoxins are poisonous and cancer-causing chemicals that grow in soil or decayed vegetation. They are found in staple foods like rice, corn, peanuts, wheat, etc.

5. Impact on human lives: Global warming could lead to an increase in ‘infant mortality’ due to the rise of several life-risking diseases in infants like malnutrition, skin cancer, vector-borne diseases, etc. (Ibid.: 39).
6. Impact on the glaciers: Global warming and climate change has led to shrinking and the retreat of the glaciers. When the glaciers retreat, the tributary glaciers tend to detach from the main glacial body and exist as independent glaciers or cirques. In Sikkim, the East Rathong glacier has been observed as retreating.<sup>23</sup> Besides the retreating of the glaciers, the melting of the glaciers has also been one of the pertinent issues (Luitel 2012: 59-66). There is a high risk of the GLOFs occurring which could be triggered with a rapid melting of glaciers (Bhattacharya 2012: 320).
7. Impact on the forest vegetation: The changes in climate could affect the types of various forest vegetation (Ibid.: 319).
8. Impact on the geographic distribution of flora and fauna: Some of the animals like the snow leopard could be extinct as due to the change in temperature, such ‘cold-adapted species’ tend to move northwards and the species residing in the north are pushed further north. So, this could lead to congestion in the north, thereby leading to the extinction of various species (Ibid.: 319).
9. Impact on the habitats: The effects of climate change could cause an increase and decrease in the number and types of species and there would be changes in the habitat preference too, like for instance the red panda may experience changes in its habitat as the temperate ecosystem which is the preferred habitat has started to shrink due to the impact of climate change (Ibid.: 319).
10. Impact on livelihoods: Both the quality and quantity of the forests products could be affected due to climate change, which could also affect the livelihoods of the people dependent on such forests products like firewood (Ibid.: 320).

---

<sup>23</sup>Cirque is a valley formed by glacial erosion.

11. Increase in human-animal conflict: The climate change would affect the production of “biomass and fruits” on which the animals feed themselves. So, a reduction in the quantity of the fruits in the forests could compel the animals to move outside the forest in search for food thereby leading to a ‘face-off’ between humans and animals (Ibid.: 320).
12. Impact on medicinal herbs: The high-altitude medicinal herbs are vulnerable to an increase in the temperature caused due to global warming (Badola 2009: 36). The increase in temperature could hinder the production of certain compounds in the plant concerned with the medicinal activity (Aryal 2015: 51).

Moreover, the mean minimum<sup>24</sup> temperature of Sikkim has been increased by 1.95 degree Celsius but the mean maximum temperature has remained the same since the year 1981 to 2010 and currently (July 2017) the average maximum temperature is 24 degree Celsius. Rainfall on the other hand, has increased by 120 mm, but on the basis of the total number of rainy days in a year, rainfall has decreased by 14.40 days in a year (Bawa and Ingty 2012: 415). Such irreversible damage and changes has been observed in Sikkim and the state government has undertaken several initiatives to tackle such issues.

Measures to Mitigate and Adapt to the Impacts of Climate Change:  
Policies/Programmes and Institutions

Policies and Programmes initiated in Sikkim to tackle the climate change (Ibid.: 369-412) are:

1. Building of a “rural water storage infrastructure”
2. Reviving of dried-up lakes
3. Initiation of livelihood institutions like the ‘State Institute of Capacity Building’ which works towards providing skill-based training to the youth

---

<sup>24</sup> The mean minimum temperature means the long term average daily minimum air temperature observed during a month and over the year.



4. The “Sikkim Organic Mission” was initiated on August 15, 2015 with an aim to make the state a fully organic state by the year 2015 and the state achieved the set target with the Centre declaring the state as India’s first organic state in 2016.
5. The “State Green Mission” was launched with the objective of converting the state into a model “Green State”. Due to this mission, the forest cover of the state since 1997 has increased from 44.09% to 47.59 % in 2011 and currently the state has 47.80% forest cover.
6. Prohibiting such activities which lead to the “degradation and defilement” of the “natural heritage sites” like caves, mountains, sacred lakes, etc.
7. Protection of the natural heritage in the form of sanctuaries and national parks which includes 32% of the total geographical area of the state.<sup>25</sup>
8. A “Basin-wise Glacier Inventory” was initiated in the year 1999 by the State Science and Technology Department along with the Space Application Centre, Department of Space, Government of India. This led to the identification of the area under ‘glaciers and snowfields’ in the state.
9. An Afforestation Programme is being implemented efficiently since the year 1995. Under this programme, the felling of trees for commercial and private purposes was restricted and the aim was to plant trees in the “degraded forest” area.
10. A Climate Change-Related Vulnerability Assessment of the Rural Communities at the Gram Panchayat Level
11. Cluster approach in cultivating the ‘Drum Stick’ trees. This tree requires less water and grows fast; it is drought-resistant and has nutritional value.
12. A “Cattle-free” policy for the protected geographical areas. So, cattle-grazing is not allowed in the protected areas, thereby securing the “global biodiversity hotspot.”
13. Sikkim became the “First Nirmal Rajya” in India for achieving hundred a 100% sanitation in the year 2008, thereby completely eradicating the problem of “open defecation”.
14. A “Zero Waste Trail” programme was initiated in the Yuksam-Dzongri trekking trail in the Khangchendzonga National Park in order to maintain the cleanliness and hygiene of the trail. So, for this purpose, a management system was established whereby the records of all the disposable non-degradable items carried inside the trail

---

<sup>25</sup>It is the highest percentage in the country.

were maintained and the disposal of the same in trash bins was ensured after the trekkers' exit. The items disposed in different bins were then sent for recycling.

15. Successful implementation of the national flagship programme “Mahatma Gandhi National Rural Employment Guarantee Act” (MGNREGA) in Sikkim. This facilitated the generation of the “climate resilient annual income” for the rural population which ensured the capacity to buy nutritious food, provide good education, health treatments, etc.
16. “Pokhri Sanrakshan Samitis” (PSS) was a participatory programme initiated by the State Forest, Environment and Wildlife Management Department with an objective to preserve the lakes and their catchments and also to maintain the cleanliness and hygiene of the lakes.
17. “Himal<sup>26</sup> Rakshaks” were formed in order to protect the Himalayan landscapes. Himal Rakshaks refer to the local knowledgeable resource persons who work towards ensuring the protection of the alpine region of the Himalayas.
18. The “Torrent Training Initiatives for Flood Control” programme was started by the ‘State Rural Management and Development Department’ under the national flagship programme MGNREGA in order to control the floods triggered due to the extreme weather conditions like cyclones, hailstorms, cloudbursts, etc. Such a climatic condition leads to extreme precipitation which could convert the mountain streams into furious torrents during the monsoons.
19. Conversion of barren sloping lands into productive terraced fields is being carried out in order to retain soil fertility and enhance groundwater recharge and agricultural production. Such conversion requires the cutting of the hill slope into steps and providing supporting walls and land levelling.
20. The “Green School Programme” (GSP) was started in the year 2009 in every secondary and senior secondary schools of the state. With this programme, the students participate in different environment conservation-oriented programmes like rainwater harvesting, reusing waste water, etc. The students as such get involved in environment management and become the “auditors” of natural resources. In order to encourage the students CM Chamling has announced a cash prize of Rs. 5 lakhs for the top five green schools of the state along with the Chief Minister’s Green School Rolling Trophy.

---

<sup>26</sup>Himal refers to the Himalayan landscape.

21. “Ten Minutes to Earth” was introduced since the year 2009 and is celebrated every year on June 25 wherein plantation activities are carried out across the state. Since 2009, around six lakh saplings have been planted across the state.
22. Planting of fast-growing indigenous tree species like the *Terminalia Myriocarpa* (locally known as Panisaj) and *Alnus Nepalensis* (locally known as uttis).
23. Initiation of contract farming of the flowers Asiatic and Oriental Liliium and exporting of the same across the borders. The initiative was taken by the ‘Nav Uday Self Help Group’ of Lingdong (East Sikkim), and such initiatives which would increase the income generation of the farmers which would then prepare the farmers to adapt to climatic risks.
24. Construction of GENAP water tanks in order to cater to the water needs for irrigation of the community as a whole of various villages. This programme was initiated targeting the problem of water shortage from November to March. The water from the nearby perennial streams were collected and stored in the tanks and utilized for irrigational purposes.
25. Promoting poultry farming as an alternative for irrigation in the drought-prone areas.
26. The shift from maize to baby corn cultivation has been encouraged as maize is a pre-kharif crop grown under rain-fed condition and the profit is also minimal, whereas the cultivation of baby corn provides higher benefits to the farmers due to an increase in the demand for baby corn in the market and the fact that it grows within 60-70 days.
27. The “Dhara Vikas Programme” is intended towards reviving the natural springs by artificially recharging the groundwater (Rahman et al. 2012: 38).
28. The “State Action Plan on Climate Change” was prepared in the year 2012 which comprised of the measures to identify the impact of climate change and to find the possible ways of adapting and mitigating the impacts of climate change.
29. Poverty would increase the vulnerabilities of the people, thereby increasing the impact of climate change. So, the state government focused on making the state a “poverty-free” state. In Sikkim, poverty has reduced from 41.4% in 1994 to 8.2 % in 2011-12.<sup>27</sup>
30. The “Rural Housing Mission” initiated by Chief Minister Pawan Chamling aimed at making the state “katcha (temporary) house-free” state by the year 2013. Such an initiative was an important measure to adapt to the effects of climate change as katcha houses are more vulnerable to collapse during earthquakes, floods, landslides, etc.

---

<sup>27</sup>In the year 2009-2010 the Planning Commission, Government of India, marked a monthly income of less than Rs. 3,364 as the benchmark for the rural poverty line.

31. An effective decentralization of governance was provided in the state which facilitated the efficient identification of the needs and interests of the rural population. This has been strengthened further with the establishment of the Block Administrative Centres which function as a “support office to a cluster of five to six Gram Panchayats”.
32. In order to provide several economic opportunities to the rural areas, the state government has focused on building road connectivity to the rural areas of the state.

In addition to these policies and programmes, the state of Sikkim has also formulated various mechanisms to adapt to the climatic changes.

Various mechanisms to adapt to the impacts of climate change in Sikkim (Ibid.: 320-329)

- a) This would require the determining of “high spatial resolution rainfall measurements, measures of evapo- transpiration” in order to determine the “net water availability”.
- b) Rainwater harvesting can be done to “recharge” the natural springs artificially. This would require the digging of “staggered trenches with hedge row” which would reduce the “surface run-off” of the rain water and increase water percolation. Tambe et al. also argue that such “recharging” of the dried springs would be facilitated further by sloping lands in which the ‘surface run-off’ is higher and also by other irrigational practices like terraced cultivation and paddy cultivation (involving the flooding of the fields) (Tambe et al. 2012: 346).
- c) Dried natural lakes can be filled by diverting the water from other perennial water sources.
- d) Enhance the culture of storing water in the water-crisis areas by constructing water reservoirs.
- e) Organising the people to address to the issues of water shortage by forming associations like the “Water Users Association (WUA)”
- f) Adopt various alternatives and new methods of irrigation and cropping patterns like the “drip and sprinkler irrigation”.<sup>28</sup>

---

<sup>28</sup> It is a process by which the water is directly supplied to the roots of the plants by emitting water through drippers, micro sprinklers, fan jets etc. Such a process would increase the productivity by 30% to 100% and save 50% to 70% of water.

## 2. Ensure Food and Livelihood Security

- a) Provide high-yielding varieties of rice which is compatible with the climatic conditions of the Eastern Himalayan belt.
- b) Introduce the System of Rice Intensification (SRI)<sup>29</sup> which helps to grow paddy with less water.
- c) Promote climate-resilient crops like buckwheat, maize, paddy, rajma, etc., and other fruits like yams, local mango, colocasia, etc.
- d) Promoting of ‘rejuvenation programmes’ for different crops like cardamom, orange, ginger, etc. in order to better manage and control the various diseases and pests destroying the crops.
- e) Besides orchids, other types of flowers are also to be grown in order to adapt to the changing climatic conditions.
- f) Conservation of soil through processes like bench terracing<sup>30</sup> and a regular testing of the soil.
- g) A high spatial resolution weather station is to be established in order to efficiently and timely tackle the ‘climate related risks’.
- h) Promote the mechanization of farms.

## 3. Livestock and livestock Products

- a) A further improvisation of the “Disease Investigation System” for a timely preparation to tackle different new diseases harming the livestock
- b) Preventive health measures to be undertaken in order to improve the health of the livestock and to immunize them from other diseases.
- c) Conservation of the threatened indigenous livestock species
- d) Promote the production of “leguminous fodder crops” which are produced through a mixed crop system and can be managed easily.

## 4. Protecting Forests, Biodiversity, Wildlife and Environment

---

<sup>29</sup>The System of Rice Intensification is aimed at increasing the production of rice through farming. It is a low-water, labour-intensive and organic method that uses younger seedlings which are sowed singly spaced and weeded with hands using special tools.

<sup>30</sup> Bench terraces are a series of level or virtually level strips running across the slope at vertical intervals, supported by steep banks or risers. Its objective is to conserve soil moisture and reduce the run-off, thereby reducing soil erosion and reduce shifting cultivation.

- a) “Secure corridors to facilitate species migration of both flora and fauna” in order to better adapt to the changing climatic conditions.
- b) ‘Sustainable management’ of the forests.
- c) Identification and Conservation of the ‘High Altitude Wetlands’.<sup>31</sup>

#### Environmental Institutions in Sikkim

1. The State Forest, Environment and Wildlife Management Department: It is the pioneer department that works to protect the environment and its ecosystem in the state.
2. Department of Science and Technology and Climate Change: It was created in the year 1996 primarily for ‘Research and Development’ on various fields concerning the state. It undertakes various programmes related to glaciers and climate change, Environmental Information System, etc.<sup>32</sup>
3. Environmental Information System (ENVIS):<sup>33</sup> It was established in the year 2002 and has been operative since 2006. This centre is to collect, store and disseminate information related to the environment and its issues. The centre works under the administrative control of the PCCF-cum-Secretary of the Forest, Environment and Wildlife Management Department, Government of Sikkim (Forest, Environment and Wildlife Management Department 2009: 40).<sup>34</sup>
4. Glacier and Climate Change Commission: This was initiated in January 2008 in order to carry out a focused study of the glaciers and their effects on the state hydrology (Jogesh and Dubash 2014: 1-2).
5. Sikkim State Council for Climate Change: It was launched in January 2009 with the initiative of Chief Minister Pawan Chamling, as an advisory body committed towards the effective implementation of the ‘climate change adaptation programmes’ (Ibid.: 2).
6. State Institute of Capacity Building: The institute came into being on December 10, 2009, with an aim to train and help the unemployed youth in enhancing their skills

---

<sup>31</sup> The wetland is a place where lands are covered with water like for instance ponds, deltas at the mouth of the river, low-lying areas that are usually flooded, etc.

<sup>32</sup> [dstsikkim.gov.in](http://dstsikkim.gov.in) accessed on 23<sup>rd</sup> April, 2016.

<sup>33</sup> It is a plan programme under the Ministry of Environment and Forests, Government of India.  
<sup>34</sup> <http://www.sikkimforest.gov.in/docs/Newsletter/Panda09web.pdf> accessed on 23<sup>rd</sup> April, 2016.

and capabilities.<sup>35</sup> So, this institute though does not directly address the issues related to climate change, indirectly it does contribute towards mitigating the impacts of climate change by generating skilled manpower which could earn its livelihood and better the standard of living.

7. Sikkim State Climate Change Cell (SCCC): It came into being in October 2014 as an autonomous organization under the state Department of Science and Technology, Government of Sikkim. This cell was started under the National Mission for Sustaining the Himalayan Eco-system (NIMSHE).<sup>36</sup> It works towards the ‘conservation of natural ecosystem’ and the study of the effects of climate change on the ‘Himalayan ecosystem’.<sup>37</sup>

Thus, it is evident that both Bhutan and Sikkim have formulated several policies and programmes in order to adapt to and tackle the changes caused by climate change. These initiatives reflect the environmental consciousness of both these Eastern Himalayan states. But on the other hand, the challenge ahead is to balance developmental needs with environmental conservation as the comprising of any one of the two would have adverse impact on both the states.

### **5.5 Sustainable Development: Synchronization of Developmental Needs and Environmental Protection in the Eastern Himalayas**

In simple terms, Sustainable Development can be understood as the effort made to cater to the demands and needs of the ‘present’ without hampering the capacity to meet the demands and needs of the future. This approach of ‘sustainable development’ would “assure that growing economies remain firmly attached to their ecological roots and that these roots are protected and nurtured so that they may support growth over the long term” (WCED 1987: 39-40). According to the Office of The High Commissioner for Human Rights ‘sustainable environment’ is essential for securing the human rights of every individual (UN 2014: 1); so, ‘sustainability’ is an essential requirement for harvesting the larger good.

---

<sup>35</sup> [www.sicbsikkim.com](http://www.sicbsikkim.com) accessed on 23<sup>rd</sup> April, 2016.

<sup>36</sup> This is a mission under the National Action Plan on Climate Change which is supported by the Department of Science and Technology, Government of India.

<sup>37</sup> [www.knowledgeportal-nmshe.in](http://www.knowledgeportal-nmshe.in) accessed on 23<sup>rd</sup> April, 2016.

In 1987, the United Nations Commission on Environment and Development defined ‘sustainable development’ as meeting “the needs of the present without compromising the ability of future generations to meet their own needs” (Soubbotina 2004: 9).

Two important element of sustainable development (Ibid.: 39-40) are:

1. The concept of ‘need’ with reference to the needs of the economically downtrodden.
2. Limitations on the ability of the environment to cater to the needs and demands of both the present and the future.

Three main aspects of ‘Sustainable Development’ (Harris 2000: 5) are:

1. Economic<sup>38</sup>
2. Environmental<sup>39</sup>
3. Social<sup>40</sup>

In economic terms, the neo-classical economic theory defines sustainability as the “maximization of welfare”. According to the ecological perspective, sustainability involves “limits on population and consumption levels”. The social perspective links sustainability to equality, health, education, etc. (Ibid.: 7-17).

So, in order to make ‘development’ a sustainable one in the long run, there needs to be a fine blend of economic goals with that of social and environmental goals because the paranoid understanding of ‘development’ only in economic terms has been replaced with a much wider understanding of the concept of ‘development’. The ‘Development’ as such includes factors like ‘health, education, equity, freedom, safe environment’, etc. besides the economic factors (Soubbotina 2004: 1). The concept of ‘sustainable development’ can also be referred to as “equitable and balanced”; in other words, infinite development would necessarily require the balancing out of the interests of the people across generations (Ibid.: 10).

---

<sup>38</sup> An economically sustainable system must be able to produce goods and services on a continuing basis, to maintain the manageable levels of government and external debt, and to avoid extreme sectoral imbalances which damage agricultural or industrial production.

<sup>39</sup> An environmentally sustainable system must maintain a stable resource base, avoiding an overexploitation of the renewable resource systems or environmental sink functions and depleting the non-renewable resources only to the extent that an investment is made for adequate substitutes. This includes maintenance of biodiversity, atmospheric stability and other ecosystem functions not ordinarily classed as economic resources.

<sup>40</sup> A socially sustainable system must achieve distributional equity, adequate provision of social services including health and education, gender equity and political accountability and participation.



The concept of 'sustainable development' has a very simple logic that the consumption standard globally should be in coherence with the 'ecological' limits. In other words, every individual should monitor the extent of his/her consumption within the goal of 'long-term sustainability' (WCED 1987: 42). Sustainable development as such addresses directly the issue of such consumption pattern globally that surpasses the limits of the available resources which in the long run could trigger irrevocable harmful consequences. Moreover, growth or increased production or the 'development' as a whole is considered as a panacea for resolving the issues of poverty and underdevelopment, but in order to achieve a 'sustainable' form of development, it is essential to harbour the principles of 'non-exploitation and sustainability' along with the principle of 'equal opportunity for all' while formulating the development policies (Ibid.: 42).

Thus, sustainable development "is a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations" (Ibid.: 43). With the approach of 'sustainability', a fine synchronization of the developmental processes and environmental conservation can be attained.

## **5.6 Conclusion**

It is understood that the hydropower projects are 'site-specific' and so their designing, planning and execution are carried out in accordance with the sites at which they are to be constructed. This as such indicates that the nature of their impacts on the environment and society at large depends on their geographical location (Kumar et al. 2011: 461). Unfortunately, both Bhutan and Sikkim lie in ecologically fragile seismic zone IV and V which problematizes the development of hydropower projects in these two states of the Eastern Himalayan belt.

The stability of an ecosystem is determined by its rivers, habitats, species and the content of the sediments and it is these elements which are disrupted with the activities of hydropower projects, thereby distorting the whole ecosystem (World Commission on Dams 2000: 78). Thus, it can be reiterated that almost all types of hydropower projects adversely affect the ecology of the river by altering the river's hydrological features, distorting the transportation of the organic and inorganic

materials (sediments) and hampering the free movement of the fishes due to the construction of various parts of the hydropower projects like dams, turbines, etc. But it is important to articulate that the intensity of all the impacts of such projects on the environment depends largely on the type of the hydropower project and on the location of the project as mentioned above. In other words, the impacts of the run-of-the-river projects and the storage projects differ, and similarly, the geographical location of the project defines the nature and extent of its impact on the environment (Kumar 2011: 463).

Like for instance, the impact of the run-of-the-river projects is milder compared to the storage hydropower projects. It is a reality that in order to better the lives of the people, it is essential to nurture and develop the natural resources. In other words, the natural resources cannot be retained without any changes, though effort needs to be made to protect the environment. The ICOLD<sup>41</sup> has said that “We must cooperate conscientiously with nature’s inherent fragility as well as its dynamism without ever overtaxing its powers of regeneration, its ability to adapt to a new but ecologically equivalent equilibrium” (ICOLD 1997: 1).

Further effort needs to be made to at least monitor and control the adverse environmental impacts of hydropower projects if not completely mitigate them, by opting for small dams over large dams<sup>42</sup>. The hydropower projects could be replaced with the usage of ‘solar and wind energy’ for the generation of electricity, though it is well known that the ‘solar and wind energy’ also have various loopholes like being ‘labour-intensive, dependent on seasonal availability of the energy, etc.’ There needs to be an effective mechanism for ‘energy auditing and energy conservation’. These are to be supplemented with the spread of awareness among the people for energy conservation. However, it needs to be accepted that the hydropower projects would “improve operational reliability, stability of power system and also optimise operational economy” (Baijal and Singh 2000: 1665-1666).

With regard to the impact of climate change on hydropower generation, two kinds of approaches need to be adopted: in places where the hydropower-generating potential has not been tapped enough, efforts need to be made to develop new plants and

---

<sup>41</sup>International Commission on Large Dams

<sup>42</sup>Large Dams (with a height of 15 metres or greater from lowest foundation to crest or a dam between 5 metres and 15 metres impounding more than 3 million cubic metres).

increase the investment in the sector and in case of the exhaustion of the available hydropower-generating potential, an initiative needs to be taken to adopt new technologies to boost the sector and also dispel the harmful impacts of climate change on the hydropower generation (Hamududu and Killingtveit 2012: 319).

Efforts are also to be made for integrating the policies concerning the energy sector with the sectors like environment, health, etc. (Johansson 2012: 35). In other words, production should be integrated with the conservation of resources in order to secure a fine balance between development and environment (WCED 2000: 38). Moreover, it is a known fact that the processes of ‘economic growth and development’ would entail huge alterations to the ‘physical ecosystem’ and such changes, most of the time, are inevitable in order to achieve the set targets of development (WCED 1987: 43). But the strategy of the stakeholders of varied developmental activities like the hydropower projects should be to narrow down the extent of damage, rather than being ambitious enough to try and mitigate any damage to the environment.

In other words, the exploitation of the natural resources, the rate of soil erosion, etc., need to be properly planned and be incorporated in the whole planning process so that such losses could be well tackled. The usage of renewable resources like vegetation cover, aquatic species, terrestrial species, etc. should be within the bounds of ‘regeneration and natural growth’. So, there is a need for the calibration of their usage in accordance with the availability of substitutes and the recovery process of the used or exploited natural resources (Ibid.: 43).

Thus, the generation of electricity through hydropower projects does result in diverse negative consequences, but these disparaging effects cannot overshadow the positively convincing impacts of such projects. It is also a known fact that many a times, people struggle to strike a convincing balance between striving for adequate food and water on the one hand and the alterations in land use leading to its impact on the diverse biodiversity, on the other. Such a balance could be achieved to some extent with a ‘sustainable development approach.’

So, there is a need to enhance the strengths of developmental projects like hydropower projects and at the same time, the weaknesses of the projects need to be trimmed down to a good extent. Such an approach needs to be realized on the basis that the risks attached with such developmental activities tend to increase much faster

than the pace at which the global human community can manage such risks. Efforts as such are to be made to craft policies to befit the practicality and extent of the policy implementation and the execution of the policies needs to accommodate the interest and needs of the people affected by such developmental activities. This nexus needs to be engineered coherently with an accommodative and respectful approach and then a fine blend of environment and development could be reaped and enjoyed by the larger community.

## CHAPTER 6

# ROLE OF INTERNATIONAL ORGANISATIONS AND INSTITUTIONS IN THE DEVELOPMENT OF HYDROPOWER PROJECTS IN THE EASTERN HIMALAYAS

### 6.1 Introduction

International organizations are one kind of international institutions. They are divided into two types: international governmental organizations (IGOs) and international non-governmental organizations (INGOs) (Geeraerts 1995: 7). The international organizations have been perceived also as “inclusive inter-governmental organizations” (Barkin 2006: 1).

International Governmental Organizations are defined as “an institutional structure created by agreement among two or more sovereign states for the conduct of regular political interactions”. Furthermore, the international organizations are understood as the linkage between states as the role of the states in the functioning of the organization is very crucial (Geeraerts 1995: 7). Inclusive organizations are organizations that facilitate interested states to join the organization as opposed to ‘exclusive organizations’ that adopt a restrictive membership facility. Some of such international organizations are the United Nations, World Bank and such several others (Barkin 2006: 1).

On the other hand, International Non-Governmental Organizations are ‘non-profit-making’ organizations constituted of states but the non-governmental agents represent the states, unlike the International Governmental Organizations. Some of the International Non-Governmental Organizations are ‘The International Confederation of Free Trade Unions, International Chamber of Commerce’ and many others. (Geeraerts 1995: 7).

## 6.2 Theoretical Framework

*Realism:*<sup>1</sup> Realists refer to International Organizations as intergovernmental organizations which are formed by a hegemon or through the cooperation of the great powers. According to the realists the International Organizations play two kinds of role in the international system: marginal role and interventionist role. In the case of the former, the International Organizations are observed to have promoted cooperation among the states in the case of common interests of all the states, but they refrain from contributing in the same way in case of controversial issues that could generate opposition and diverse opinions among the member states. So, this indicates that the International Organizations contribute minimally in maintaining ‘international peace and security’. On the other hand, the International Organizations are perceived to have played an ‘interventionist role’ in the international system wherein the International Organizations act as a tool in the hands of the hegemonic powers (Pease 2016: 2).

Despite such a marginal and customized role of the International Organizations as propounded by the Realist school of thought, certain specific and important functions of such organizations have been identified (Ibid.: 2):

1. International Organizations facilitate the collusion of ‘great powers’.
2. International Organizations provide for making certain minor alterations in the international system without impinging on the underlying principles and norms of the international system.
3. International Organizations can be the agents of International Socialization.

*Liberalism:* According to Liberalism, international institutions are institutions that manifest shared interests among the states in an anarchical system.<sup>2</sup> The Liberals have opined that International Organizations would aid in restoring and maintaining peace and security in the international system.

---

<sup>1</sup> Realism perceives the international system as an anarchical system wherein the sovereign states are the actors without any centralized ruling authority. Such a situation then, according to the realists, creates fear and insecurity among the states, thereby leading them to adopt the principle of self-reliance for securing themselves.

<sup>2</sup> <https://stackofideas.files.wordpress.com/.../j- samuel barkin international...accessed> on 23rd April, 2016.

Constructivism:<sup>3</sup> According to the Constructivist theory, the International Organizations have a positive role to play in international relations as they get involved in regulating state behaviour and also in modifying the state interests. Such regulations and modifications channelize the state action in the international scenario towards a cooperative approach (Bayeh 2014: 347).

These three theories of international relations well reflect the role the international organizations would play in international scenario.

### **6.3 History of International Organizations**

The emergence of International Organizations can be traced back to the end of the First World War (1914-1918).<sup>4</sup> Post-War, a major leap was witnessed with the formulation of the “Fourteen Points Program” by the United States President Woodrow Wilson on January 8, 1918. Some of the important points of the programme were (Snell 1954: 367-368):

1. Open international negotiations to be preferred over secret treaties in order to restore international peace
2. Revision of the ‘International Maritime Laws’
3. Equal Trade Opportunities for All Nations
4. Formation of the ‘League of Nations’

Woodrow Wilson as such proposed for the establishment of an international organization named the League of Nations which would be committed to “collective security and elimination of war”. Later on January 10, 1920, the ‘Covenant’ of the League was prepared which comprised of 26 articles and according to which certain structural recommendations were proposed (Moore and Pubantz 2006: 39):

1. Assembly: comprising of all the League members
2. Council: comprising of permanent members like the United Kingdom, France, Italy, Japan and later Germany and the former Soviet Union
3. Secretariat

---

<sup>3</sup> According to Constructivist theory the structures of interaction are determined by shared ideas.

<sup>4</sup> The First World War was fought from July 28, 1914 to November 11, 1918, between two opposing alliances: the Allies based on the Triple Entente that included the United Kingdom, France and Russia and the Central Powers of Germany and Austria-Hungary. Later, other countries joined the war—Italy, Japan and the United States (joined the Allies) and the Ottoman Empire and Bulgaria (joined the Central Powers). The Allies won the war.

#### 4. Permanent Court of International Justice

Besides, these structural recommendations, the Covenant also laid down certain principles like: “disarmament, territorial integrity, political independence of nation-states, mandate system,<sup>5</sup> international cooperation in humanitarian affairs and provisions for amending the Covenant”. The League was able to resolve many conflicts like the Aland Island dispute between Finland and Sweden, prevention of hostilities between Greece and Bulgaria, etc. but despite such contributions, the League of Nations began to be ineffective by the end of 1930s thereby paving way for the formation of a new international organization named the United Nations Organization on October 24, 1945 (Ibid.: 39-43).

The formation of the international organization provided a global platform to address globally sensitive issues like climate change, development and such other critical issues.

#### **6.4 International-Level Initiatives for Environmental Protection and Sustainable Development: Policies and Programmes**

##### Stockholm Conference 1972<sup>6</sup>

The theme of the conference was the “United Nations Conference on Human Environment” which was held from June 5-16, 1972. The conference focused on the importance of the environment for the human beings’ physical and mental growth.

The issue of environmental protection was addressed separately for the developed and developing nations. In other words, it was proclaimed that the problem in the developing nations is ‘underdevelopment’ which is to be tackled by making efforts towards developing the underdeveloped but on the other hand, the issue with the developed nations is the accelerated process of “industrialization and technological development”. So, a controlled approach was to be adopted by the developed nations. Furthermore, a prime emphasis was made on the investment of the collaborative efforts of all nations to protect the environment and also to ensure the sustainability of the natural resources of the environment (United Nations 1972: 3-5).

---

<sup>5</sup> The mandate system meant that the colonial administrators were to prepare the colonial areas for independence.

<sup>6</sup> Details of the conference can be referred to in Annexure...



## World Commission on Environment and Development, 1987

The commission was held under the chairpersonship of the former Norwegian Prime Minister Gro Harlem Brundtland, wherein focus was made on ‘sustainable economic development’. The commission was also referred to as the Brundtland Commission. It was proposed in the commission that economic development and ecological protection were to be cohesively addressed so that the ‘sustainability’ of both the economy and ecology could be secured to a large extent (United Nations 2007: 1).

## Rio Declaration of 1992<sup>7</sup>

The ‘United Nations Conference on Environment and Development’ was held at Rio de Janeiro from June 3-14, 1992. In the conference, several principles addressing the issue of both environment and development were put forward. The principles emphasized on the issue of sustainable development and the “global responsibility” of every nation to contribute towards it (UN 1992: 1-5). The conference was referred to as the “Earth Summit” and the involvement of the ‘non-governmental organizations’ and other ‘non-state actors’ was also encouraged for protecting the environment and furthering the objective of ‘sustainable development’.<sup>8</sup>

## World Summit on Sustainable Development, 2002

The summit was held in Johannesburg, South Africa, from August 26-September 4, 2002. The summit through its political declaration called the “Johannesburg Declaration on Sustainable Development” focused on some of the issues like economic disparity in the world causing global insecurities and the effective actualization of the Official Development Assistance targets of 0.7%<sup>9</sup>, the role of the private sector in removing the economic disparities, use of the renewable source of energy. By 2020 it was aimed to minimize the usage of such chemicals that could prove fatal to the health and environment, thus minimizing the loss of biodiversity by 2010 (Doran 2002: 1- 2).

---

<sup>7</sup> Details of the Principles proclaimed during the conference are mentioned in Annexure ....

<sup>8</sup> [http://geog.ucsb.edu/~carr/DCarr\\_Publications/Norman\\_Carr\\_Rio\\_07.pdf](http://geog.ucsb.edu/~carr/DCarr_Publications/Norman_Carr_Rio_07.pdf) accessed on 17th June, 2016.

<sup>9</sup> The UN Millennium Development Goals stated that all the developed nations should contribute 0.7% of their Gross National Income to the Official Development Assistance in order to develop the developing nations by eradicating poverty.

## **6.5 International Development Assistance Agencies**

### United Nations Development Programme (UNDP)

It was formed on January 1, 1966 with the ‘amalgamation’ of two agencies: the United Nations Expanded Programme of Technical Assistance<sup>10</sup> and the United Nations Special Fund.<sup>11</sup> The headquarters of the organization is located in New York. The organization aims at addressing to the issue of ‘poverty, inequalities and social exclusion’ through three broad themes, namely, ‘sustainable development, democratic governance and climate and disaster resilience’. The United Nations Development Programme thus aims at bringing about “real improvements in people’s lives and in the choices and opportunities open to them” (UNDP 2015: 3-4).

### International Bank for Reconstruction And Development (IBRD)

The International Bank for Reconstruction and Development (IBRD) was established in the year 1945 with the objective of promoting ‘sustainable development and reducing poverty’ (IBRD 2012: 3). The IBRD is an ‘international specialized agency’ of the United Nations and also a ‘development bank’ which is concerned with the mobilization of ‘capital’ from the “capital-exporting” countries to “capital-importing” countries. Often, the former are the developed nations and latter the underdeveloped nations, but the role of the bank is not limited to mere financial transactions; instead, the bank also provides advice to the countries borrowing money for their developmental activities (Cairncross 1959: 4-6).

### The African Development Bank (AfDB)

The AfDB is an entity of the African Development Bank Group which is a “multilateral development finance institution”. The bank was established on August 4, 1963 with the signing of the agreement by 23 newly independent African countries. Until the year 1982, the financial transaction of the bank was confined only to the African countries. The bank aims at bringing about economic and social development of the African countries. Since 2006, the role of the bank has broadened further due to the inclusion of varied areas within its ambit like for instance, infrastructural development, reforming the governance system and economy and furthering sectors

---

<sup>10</sup>It was established in the year 1949.

<sup>11</sup>It was established in the year 1958.

like higher education, ‘vocational training’, technology and such other crucial areas (AfDB 2013: 7-9).

#### The Asian Development Bank (ADB)

The Asian Development Bank is a “multilateral financial institution” catering to the Asia Pacific region. It was established in the year 1966 with the objective of ‘eradicating poverty’ in the region by enhancing the people’s quality of life. The area of focus of the institution ranges from sectors like ‘health, governance, law, policy, infrastructure and social development’ to off late that of ‘education, water supply and many other such economic sectors’. The organization has multiple funds to execute its lending operations like the Ordinary Capital Resources and the Asian Development Fund (Nandakumar et al. 2007: 5).

#### The World Bank (WB)

It was in the Bretton Woods Conference of 1944 that the World Bank came into being as the “world’s largest source of development assistance”. The World Bank is a bank that provides loans and technical assistance and on the other hand, it also serves as an advisory body. The primary objective of the bank is to provide both financial and other kinds of support to the poverty-struck developing nations. The World Bank Group is comprised of five organizations: ‘the International Bank for Reconstruction and Development (IBRD), the International Development Association (IDA), the International Finance Corporation (IFC), the Multilateral Investment Guarantee Agency (MIGA) and the International Centre for Settlement of Investment Disputes (ICSID)’ (World Bank 2005: 19). The Bank provides credit to the countries either for their budget or for development-related projects like the development of infrastructures (Barkin 2006: 103-104).

#### Japan International Cooperation Agency (JICA)

JICA was established in August 1974 as a ‘bilateral’ financial assistance-providing agency. Its vision is to achieve an “Inclusive and Dynamic Development” and for the same it identifies four major goals: global issues like climate change, health, water and such other issues, poverty reduction, enhancing the quality of governance and ensuring human security. To achieve these goals, it also lays down four strategies like

‘integrated assistance, seamless assistance, promoting development partnerships’ and improving the research and dissemination of knowledge.<sup>12</sup> JICA provides “technical cooperation, concessional loans and investment and grant aid” (JICA 2012: 1).

These international funding agencies have been active even in the Eastern Himalayan belt but the nature of their role requires a critical analysis.

## **6.6 International Development Assistance in the Eastern Himalayas with Specific Reference to the Development of the Hydropower Projects**

Nepal

The financial assistance from the various international agencies for the developmental projects in Nepal accounts to almost 20% of the annual budget of the country. So, Nepal is reliant on such funding for its developmental ventures and as the Joint Secretary, Ministry of Finance (Nepal), states, Nepal has formulated varied policies<sup>13</sup> and launched programmes in order to ensure the enhancement of such financial assistance by convincing the funding agencies about the effective and transparent usage of the finances provided (Ministry of Finance 2014: 1).

The Asian Development Bank since 1966 has been providing funds to Nepal for its development and in the same year Nepal joined the ADB as a founding member. Precisely, it has been assisting the country in developing various sectors like agriculture, education, energy, transport, municipality and many more. So, the Asian Development Bank is actively involved in Nepal’s developmental issues and also renewed its partnership with Nepal over development with the approval of its new country partnership strategy (2013-2017) in 2013 (ADB 2013: 4-6). Since 1966, the Asian Development Bank has provided financial assistance amounting to U\$5 billion to Nepal (ADB 2016: 1). It provides funds to Nepal from its Asian Development Fund (ADF) (Ministry of Finance 2014: 76).

---

<sup>12</sup> [www.jica.go.jp/english/publications/.../pdf/jicaprofile2010\\_01.pdf](http://www.jica.go.jp/english/publications/.../pdf/jicaprofile2010_01.pdf) accessed on 25th June, 2016.

<sup>13</sup> Policies like the Development Cooperation Policy, 2014 and also the publication of the important reports like the Development Cooperation Report, Development Partners Profile, etc.

Table no.10

<b>LOAN and GRANTS</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>
<b>LOANS</b>			
SOVEREIGN <sup>14</sup>	154.00	44.80	330.50
NON- SOVEREIGN <sup>15</sup>	0.00	0.00	0.00
TECHNICAL ASSISTANCE <sup>16</sup>	13.59	6.53	11.85
<b>GRANTS</b>	116.00	59.00	45.50
<b>TOTAL</b>	283.59	110.33	387.85

Source: Ministry of Finance, 2014.

The table above shows the financial assistance provided by the Asian Development Bank to Nepal in the form of ‘loans and grants’. The table indicates the decrease in the investment in the year 2012 and then an increase in the year 2013. The decrease in the year 2012 could be due to the multiple earthquakes faced by Nepal in the same year, wherein the focus was shifted from developmental projects to that of relief programmes. According to the Ministry of Finance (Nepal), the financial assistance from the Asian Development Bank constitutes about 23% of the total foreign aid received by the country (Ministry of Finance 2014: 77).

The ADB has been providing financial support to Nepal in various sectors: agricultural sector, education sector and energy sector. Efforts are made to upgrade Nepal’s agricultural sector with a view to enhance the agricultural productivity of the country. Such an initiative of the Bank towards the sector has also involved infrastructural development and so it has provided assistance to the country in

<sup>14</sup> Sovereign loans are loans extended to the government or guaranteed by the government.

<sup>15</sup> Non-sovereign loans refer to any loan, guarantee, equity investments or other financing agreements that are not guaranteed by the government or are conditionally guaranteed by the government. The condition being that the ADB is restricted from accelerating, suspending or cancelling any other loan or guarantee between the ADB and the related sovereign.

<sup>16</sup> Technical assistance deals with capacity development, policy advisory, project preparatory or research and development.

preparing its Agriculture Development Strategy of 2014-2034 (Ibid.: 4). Efforts have been made by the Asian Development Bank towards the development of the educational structure of Nepal. The bank has aimed at remodeling the education system of Nepal by making it more skill-oriented and easily accessible for everyone. The issue of power shortages in Nepal was addressed by the Bank. It initiated several institutional reforms like the facilitation of the ‘power trade’ and ‘private sector investments’ along with the restructuring of the Nepal Electricity Authority (Ibid.: 4).

In 2015, in Nepal, there were 33 ongoing projects funded by the ADB, which amounted to US\$ 1.73 billion. Besides financing the hydropower projects in the country, the ADB has also been involved in reforming and financially restructuring the Nepal Electricity Authority and has been encouraging “regional power trading” (ADB 2015: 2). Besides these, it has been actively involved in providing support and assistance to Nepal in surviving the damage caused due to the 2015 earthquake. So, the ADB as such provided about US\$ 308 million as “post- earthquake relief efforts” (ADB 2015: 1).

Furthermore, it provided financial assistance as ‘technical assistance grants’ amounting to US\$3.9 million in the year 2015. The ADB has been supporting the infrastructural development of the urban sector of the country and also has been focusing on the ‘human capital sector’ of Nepal by supporting programmes like the School Sector Reform Program, the Skills Development Project, etc. (Ibid 2015: 2).

The assistance provided by the ADB extends even to the private sectors in Nepal in the form of ‘direct loans, equity investments, trade finance and other such services’. In fact, until 2015, the ADB’s financial assistance to the ‘private sector and non-sovereign public sector’ amounted to US\$58.6 million. The ADB has also been co-financing Nepal in collaboration with other financing agencies, governmental agencies, etc. In the year 2015, the ADB along with the Japan Fund For Poverty Reduction provided US\$15 million for “Disaster Risk Reduction and Livelihood Restoration for Earthquake-Affected Communities.” Similarly, the Kuwait Fund and ADB together co-financed the “Community-Managed Irrigated Agriculture Sector Project” which amounted to US\$17 million (Ibid.: 3). The table below shows some of the financial assistance provided by the ADB to Nepal until 2015:

Table no.11

<b>Financial Assistance by ADB to Nepal</b>	<b>Amount in US Dollars (US\$)</b>
Technical Assistance Grants	3.9 million
Financial Assistance to private and non-sovereign public sector	58.6 million
Co-financing with Japan Fund	15 million
Co-financing with Kuwait Fund	17 million

In addition to these, 2015 after the earthquake, ADB provided Nepal with a loan of \$27.5 million in addition to this \$200 million in emergency assistance and \$ 3 million as disaster relief grant (ADB 2015:1). Similarly, in 2016 it provided \$120 million loan to Nepal and in 2017 it approved \$150 million loan to Nepal in order to enhance the reliability and efficiency of Nepal’s electricity supply and distribution through the Nepal Electricity Authority (NEA) (ADB 2017:1).

#### International Agencies As Development Partner In Nepal: With Specific Reference To The Development Of Hydropower Projects

Nepal has been receiving financial support from various international agencies in its development endeavours. The international agencies that have contributed majorly as a development partner in Nepal are the Asian Development Bank, the Japan International Cooperation Agency (JICA), the German Development Cooperation

through the KfW<sup>17</sup> and the World Bank. Besides these the other bilateral development partners are China, Finland, India, Korea, Netherlands, Kuwait and Saudi Arabia.<sup>18</sup>

<b>International Agencies/Institutions</b>	<b>Name of the Project</b>	<b>Year/Duration</b>
Asian Development Bank, JICA EIB and ADFD	Tanahu Hydropower Project (127 MW)	2013-2020
KfW	Middle Marsyandi Hydroelectric Project (72 MW)	2001-2008
JICA and JBIC	Kali Gandaki Hydropower Project	2000-2007
ADB and JICA	Kali Gandaki Hydropower Project (144MW)	1996-2002
ADB and IFC	Khimti Hydropower Project (60 MW)	1996-2000
KfW	Marsyandi Hydroelectric Project (60MW)	1989
JICA/IDA	Kulekhani Hydroelectric Project (60 MW)	1975-1978

Table no. 12<sup>19</sup>

<sup>17</sup> KfW stands for the German word Kreditanstalt für Wiederaufbau, meaning the Reconstruction Credit Institute. It is a German government-owned Development bank.

<sup>18</sup> <http://www.adb.org/sites/default/files/linked-documents/44219-014-dc.pdf> accessed on 6th July, 2016.

<sup>19</sup>Source: ADB, World Bank, Government of Japan, Danish International Development Agency, Government of Norway



The financial assistance provided by the Asian Development Bank, JICA and EIB for the Tanahu project amounted to US\$150 million, 184 million and 70 million respectively. Similarly, for the Kali Gandaki hydropower project, the JICA and JBIC provided for US\$ 86.5 million.<sup>20</sup> The German reconstruction credit institution provided euro 180 million for the middle Marsyandi hydroelectric project (72 MW) and for the Khimti hydroelectric project, the ADB and IFC provided US\$ 140 million. Furthermore, for the Kulekhani project the JICA/IDA provided US\$ 68 million.<sup>21</sup> The role of international agencies in the developmental process of Nepal is important which requires further analysis.

#### Development of the Tanahu hydropower project of Nepal and the role of the International agencies and institutions

For the purpose of the development of the Tanahu hydropower project of Nepal, financial assistance was provided by the Asian Development Bank and the Japanese government (JICA). The ADB provided financial assistance in developing the Upper Seti Storage Hydroelectric Project of 127 MW<sup>22</sup> in the ‘Tanahu district’ in the ‘Western Development Region’ and it was with the support of the JICA that an “Upgrading Feasibility Study and Environmental Studies” for the project was carried out in the year 2005 (NEA 2009: 1). The Japanese Official Development Assistance (ODA)<sup>23</sup> for the hydroproject amounted to US\$157 million (approximately) in the year 2012 at the rate of 0.01% interest per annum.<sup>24</sup>

The hydropower project was co-funded by the Asian Development Bank, the (JICA) and the European Investment Bank (EIB). The loan agreement was signed in the year 2013. The details of the financial assistance by these three international agencies/institutions are:

---

<sup>20</sup>Ibid 21.

<sup>21</sup> <http://www.adb.org/sites/default/files/linked-documents/43281-013-nep-dc.pdf> accessed on 10th July, 2016.

<sup>22</sup>Mega Watt is a unit for measuring power that is equivalent to one million watts.

<sup>23</sup> The term indicates the international aid flow. The term was first used in the year 1969 by the Development Assistance Committee (DAC) of the OECD (Organisation for Economic Cooperation and Development).

<sup>24</sup> <http://www.np.emb-japan.go.jp/pdf/infomar2013.pdf> accessed on 13th July, 2016.

International Agencies/Institutions	US million	\$ Purpose
Asian Development Bank	150	ADB's loan is to be used for the construction of head works, rural electrification and transmission lines
JICA	183	JICA's loan is to be used for the construction of the tunnel, the powerhouse and the supply-cum-installation of the hydro- mechanical and electromechanical equipment
EIB	70	Details not available

Table no. 13

Source: NEA, 2013

### Development of the Kali Gandaki Hydro-Power Project and the Role of International Agencies and Institutions

The Kali Gandaki hydropower project is the largest hydropower project of Nepal with the installed capacity of 144 MW and is located in the Western Development Region of Nepal. The project generates about 842 GWh.<sup>25</sup> The major components of the hydropower project lie in the Syangja District (Gandaki Zone) and partially, it covers other districts, namely, the Gulmi, Palpa, Parbat, Kaski and Rupandehi. The project has been financed by the United Nations Development Program (UNDP), the Finnish International Development Agency (FINNIDA) and the ADB. The project's feasibility report was prepared in the year 1979 with the financial assistance provided by the UNDP; the detailed engineering design and the tender documents were

<sup>25</sup>Gigawatt hours denote the energy outputs of large power plants over a long period of time.

prepared with the financial assistance of the ADB, UNDP and FINNIDA (Thanju 2007: 15).

Furthermore, the component construction of the project began in the year 1997 with the financial assistance provided by the ADB and the Overseas Economic Corporation Fund (renamed as Japan Bank for International Cooperation or JBIC). It was later in the year 2002 that the construction of the project was completed and in the same year the working of the generation unit was tested and by August 2002, the commercial production of the project resumed (Ibid.: 15).

#### Development of Kulekhani Hydro-Power Project and the Role of International Agencies and Institutions

The Kulekhani project has been built phase-wise and has been divided into three. The first Kulekhani project-I was located at Dhorsing in Makwanpur with an installed capacity of 60 MW. The project was co-financed by the World Bank, the Kuwait Fund, the OPEC Fund, the UNDP and the Overseas Economic Cooperation Fund (OECF) of Japan and the Government of Nepal. The project had two units and the first was commissioned on May 14, 1982. The total cost of the project was estimated at US\$ 117.843 million (NEA 2016).<sup>26</sup>

The Kulekhani-II project is located at Nibuwatar in Makwanpur with an installed capacity of 32 MW and has been co-financed by the OCEF (Japan) along with the Government of Nepal. The project began in the year 1986 (NEA 2016).<sup>27</sup> The Kulekhani-III project commenced in the year 2008 with an installed capacity of 40.65 GW.<sup>28</sup>

---

<sup>26</sup> Accessed from <http://www.nea.org.np/generation/index.php?page=powerhouse&pid=16> on 16<sup>th</sup> July, 2016.

<sup>27</sup> Accessed from <http://www.nea.org.np/generation/index.php?page=powerhouse&pid=17> on 16<sup>th</sup> July, 2016.

<sup>28</sup> Accessed from <https://prezi.com/xbwekcx6ymisc/kulekhani-iii-hydroelectric-project/> on 16<sup>th</sup> July, 2016.

### Development of the Marsyangdi Hydro-Power Project and the Role of International Agencies and Institutions

The project has an installed capacity of 69 MW and is located at Aanbu Khaireni in Tanahu. The project began in the year 1989 with an estimated total cost of US\$22 million which was co-financed by the International Development Association (IDA)<sup>29</sup>, the KfW, the KFED, the Saudi Fund for Development (SFD) and the ADB along with the Government of Nepal (NEA 2016).<sup>30</sup>

### Development of the Khimti Hydro-Power Project and the Role of International Agencies and Institutions

The project is located in the Dolakha and Ramechhap districts, Eastern Nepal, with an installed capacity of 60 MW. The project began in the year 1996 with the total cost of US\$140 million, out of which 75% has been co-financed by the ADB, the International Finance Corporation (IFC), the NDF (Finland), the Eksportfinans AS (Norway) and NORAD.<sup>31</sup>

Thus, it can be reiterated that the development of hydropower projects in Nepal has witnessed the active engagement of the international agencies and institutions in the form of development partners in Nepal.

### Bhutan

Bhutan, since the very beginning of its Five Year Plan in the 1960s, has been receiving financial support from India. It was later in the same year that the Government of Switzerland and Austria also began providing financial assistance to Bhutan. Thereafter, Bhutan's membership in the United Nations in the year 1971 paved the way for financial assistance from the various agencies of the United Nations. Until 1980, the countries provided finance to Bhutan through the UN

---

<sup>29</sup> It is an international financial institution that provides loans to the world's poorest developing countries. It is a member of the World Bank Group.

<sup>30</sup> accessed from <http://www.nea.org.np/generation/index.php?page=powerhouse&pid=18> on 16<sup>th</sup> July, 2016.

<sup>31</sup> Accessed from <http://www.jvs-nwp.org.np/sites/default/files/Number%20%202023.pdf> on 18<sup>th</sup> July, 2016.

agencies, but later they began to directly channelize the finances to Bhutan. Bhutan as such began to develop its ‘bilateral relations’ with several other countries. Some of the countries and UN agencies are listed below in Table no. 14 (Kelegama 2012: 268):

Bilateral partners	Austria
	Australia
	Canada
	Denmark
	Japan
UN Agencies providing financial assistance to Bhutan	United Nations Development Program (UNDP)
	United Nations Children’s Fund (UNICEF)
	United Nations Population Fund (UNFPA)
	United Nations Capital Development Fund (UNCDF)
	World Health Organisation (WHO)

Bhutan has also been a recipient of financial aid from various international funding institutes like the World Bank, the Asian Development Bank and the International Fund for Agriculture Development (Ibid.: 268). The ADB has been one of the major development partners in Bhutan besides India. The landlocked country Bhutan joined

the ADB in the year 1982 and since 1983 has been receiving support in its developmental process through the Asian Development Fund (ADF)<sup>32</sup> (IMF 2014: 9).

The bank focuses on several sectors in Bhutan like energy, finance, transport, water, urban infrastructure and many others. Such an initiative of the Asian Development Bank would act as a catalyst in Bhutan's development goal of 2020, which claims to achieve a carbon-neutral growth, self-reliance and poverty reduction to 5% or even less (ADB 2014).<sup>33</sup> The Director General of Asian Development Bank's South Asia Department said, "Bhutan has made enormous studies in reducing poverty and boosting economic growth and our goal is to work alongside the government to broaden the economy and ensure equal opportunities for everyone" (ADB 2014).<sup>34</sup>

So Bhutan has been receiving funds from the Asian Development Bank since 1983 and has 'received \$337.46 million through 29 loans, \$135.39 million for 9 grants and \$ 54.89 million for 129 technical assistance projects' till 2013. Besides, Bhutan in collaboration with the ADB has been able to provide electricity to more than 37,000 households which is about 43% of the rural households (ADB 2014).<sup>35</sup>

Since 2006, the ADB has increased its support for hydropower and renewable energy development. One of the hydropower projects financed by the ADB is the Dagachhu hydroproject located in southern Bhutan. It was completed in August 2014 and was the first public-private partnership project in Bhutan. Another ADB-funded project is the Nikachhu hydroproject, which is to begin by mid-2019 under the supervision of the Tangsibji Hydroenergy Ltd. This project is being co-financed by the Indian banks along with the ADB (ADB 2014).<sup>36</sup> Besides, the ADB, the Governments of India and Austria are also engaged in Bhutan's developmental projects as development partners. Like for instance, the hydropower projects like Chhukha, Kurichhu, Tala,

---

<sup>32</sup> Bhutan was classified as a Group A country by the Asian Development Bank and so was eligible to receive funds through Asian Development Fund.

<sup>33</sup> Accessed from <http://www.noodls.com/view/AA4DB84F66B21ABB98878F9D863C49DD8A84B01D?5251xxx1409908805> on 16<sup>th</sup> July, 2016.

<sup>34</sup> Accessed from <http://www.adb.org/news/new-adb-bhutan-partnership-support-inclusive-green-growth> on 16th July, 2016.

<sup>35</sup> Ibid, 35.

<sup>36</sup> Accessed from <http://www.adb.org/news/adb-finance-second-hydropower-plant-ppp-bhutan> on 16th July, 2016.

Punatsangchhu-I and II and Mangdechhu have been financed by the Government of India and the Basochhu hydropower project by the Government of Austria.<sup>37</sup>

### Development of the Dagachhu Hydro-Power Project and the Role of International Agencies and Institutions

The Dagachhu project has an installed capacity of 114 MW and is located in Dagana (south-western part of Bhutan) with an annual approximate energy production of 515 GWh (ADB 2010: 1). The project has been co-financed by the ADB and the Government of Austria along with the Government of Bhutan through the Druk Green Power Corporation (DGPC). The finance provided by the Asian Development Bank amounts to US\$51 million for civil works with an additional US\$39 million. Similarly, the Government of Austria amounting to euro 41.23 million channelized funds for electro-mechanical works (Druk Green 2013).<sup>38</sup>

Bhutan has been a beneficiary of the international funding and it has been able to achieve its development targets through such financial assistance.

### Sikkim

The development of hydropower projects in Sikkim has been a challenging task for the state and the whole country as well, due to the refusal of the external multidonor funding agencies to fund the hydropower projects in Sikkim. Such an attitude of the international agencies and institutions has been due to China's aggressive opposition against the external agencies like the World Bank funding the hydropower projects in Sikkim (Singh 2014: 1).

Though international funding for the development of hydropower projects in Sikkim has been a difficult task, the state has been receiving external financial aids from international agencies like the ADB, the JICA and the World Bank. These funding agencies have been providing funds with the objective of developing the less developed or developing states, regions and nations. So, in Sikkim, as highlighted by

---

<sup>37</sup> <http://www.adb.org/sites/default/files/linked-documents/44444-013-dc.pdf> accessed on 1st July, 2016.

<sup>38</sup> Accessed from <http://www.drukgreen.bt/index.php/44-subsiary-company/dhpc/289-background-of-the-project> on 22nd July, 2016.

the Ministry of Development of the North-Eastern Region, these funding agencies have contributed towards enhancing the infrastructure of the state through the project “North Eastern States Roads Investment Programme (NESRIP)”. Similarly, the JICA has been engaged in the state with the project “Sikkim Biodiversity Conservation and Forest Management”.<sup>39</sup>s

### Darjeeling

The Darjeeling district of West Bengal has been receiving financial aid from international agencies like the World Bank, the International Development Association and the Global Climate Facility Funding institution. In 2011, a minor irrigation project was funded by the World Bank and other sources.<sup>40</sup> Similarly, in 2014, the Gorkha Territorial Administration (GTA) under the project named “Accelerated Development of Minor Irrigation” was allocated with funds amounting to Rs 25 crore. The project was to be funded by the International Development Association of the World Bank and aimed at enhancing the fisheries and agricultural sector of the district. The target groups for this project were the marginalized farmers engaged in producing crops like cardamom, ginger, etc.<sup>41</sup> Furthermore, recently in May 2017, a rainwater harvesting project was approved for Darjeeling and was to be funded by the Global Climate Facility (*The Hindu*, 16 May 2017).

### Development of the Rammam Hydropower Project and the Role of International Agencies and Institutions

The project is being constructed on the Rammam river and its tributary the Lodhama in the Darjeeling district and has been developed in three stages. The project began in 1995 and it is a run-of-the-river project with a capacity of 263 MW. Till last year, only about 51 MW of the total capacity has been functioning and the rest is still under

---

<sup>39</sup> <http://www.moef.nic.in/assets/eap-2013.pdf> accessed 9 July 2017.

<sup>40</sup> <http://www.projects.worldbank.org/P105311/west-bengal-accelerated-development-minor-irrigation?lang=en> accessed 9 July, 2017.

<sup>41</sup> <http://darjeelintimes.com/gta-to-get-r-25-crore-to-support-small-farmers/> accessed 9 July 2017.



construction.<sup>42</sup> The project is being funded by the World Bank along with the National Thermal Power Corporation Limited (*The Times of India*, 8 July 2002).

### Arunachal Pradesh

Arunachal Pradesh like Sikkim has been in controversy in terms of claiming financial aid from the international funding agencies. In simple terms, the territorial dispute of Arunachal Pradesh with China has created difficulties for the international agencies like the Asian Development Bank and the World Bank to provide funds in the state. Such a situation has led to the Indian government withdrawing Arunachal Pradesh along with Sikkim from the power projects concerning the north-eastern region of India. The project was to be funded by the World Bank which initially amounted to Rs 11,000 crore, and later due to the removal of Arunachal Pradesh and Sikkim, the amount for the project reduced to Rs 8115 crore (Rao and Bhaskar 2013).<sup>43</sup> A similar situation had arisen in 2009 when the ADB proposed to fund the water management project in Arunachal Pradesh amounting to US\$60 million. The Chinese opposing the intervention in the project compelled the ADB to issue a disclaimer in the documents of the project specifying its neutral stand in the territorial dispute between Arunachal Pradesh and China. Furthermore, the bank also made it clear that the state (Arunachal Pradesh) is not to seek any financial assistance to initiate projects in the disputed areas. The Chinese influence could not be negated as it is one of the highest contributors in the Asian Development Bank (*The Indian Express*, 14 April 2009).

In 2010 it was reported by the *Telegraph* that China has expressed ending the possibility of all lending programs of the Asian Development Bank to India, if the bank funds the power project in Arunachal Pradesh.

The former Chief Minister of Arunachal Pradesh Shri Nabam Tuki raised the funding issues from the international agencies with the Central Government in New Delhi but no progress was achieved. The reason was China's strong hold on the international

---

<sup>42</sup> <http://www.millenniumpost.in/wbsecl-takes-up-hydro-power-projects-in-north-bengal-rivers-125820?NID=249100> accessed 9 July 2017.

<sup>43</sup> Accessed from <http://www.livemint.com/Politics/LrPjnU5irkTiOeOKyiadKP/Govt-drops-Arunachal-Sikkim-from-proposed-World-Bank-loan.html> on 9 July 2017.

funding agencies and the triggering factor being the territorial dispute between China and Arunachal Pradesh (Hanghal 2013).<sup>44</sup>

### **6.7 The Role of International Agencies and Institutions: A Critical Analysis**

The international agencies and institutions play a critical role in developing the underdeveloped nations. Several international policies have been framed and many funds have been allocated by the international agencies in initiating developmental projects in the underdeveloped regions of the world. One of such areas where an active role of the international agencies and institutions can be witnessed is in the development of the hydropower projects in the developing regions of the world. Such an initiative on the part of the international agencies can be understood as an effort towards actualizing a sustainable form of development and eliminating economic disparities among nations.

On the other hand, few critical issues definitely need attention like for instance the possible adverse consequences of the hydropower projects on the ecology of any society. The justification of the popularity of the hydropower projects has been its reliance on a renewable source of energy, i.e. water. But it cannot be completely negated that in the process of the construction of the hydropower projects several adverse consequences could follow like for instance, an adverse impact on aquatic livestock, intrusions into cultural beliefs and traditions and the effect of boomtowns. With such a scenario, the international agencies to a great extent can be held responsible for contributing towards the multiplication of such adverse consequences in the society.

It needs to be understood that economic benefits are essential but the cost at which they are being achieved needs to be well assessed. So, the development being achieved at the stake of the irreversible losses brings forth several unanswered questions on the viability of such projects.

One of the active international funding agencies is the Asian Development Bank. The primary objective of the bank is to reduce poverty in the Asia and Pacific region. In the fulfillment of the said objective, the bank takes the initiative to fund those projects

---

<sup>44</sup>Accessed from <https://www.thethirdpole.net/2013/11/15/mini-hydro-projects-to-arunachal-pradeshs-rescue/> on 9 July 2017.

that contribute towards lowering the rate of poverty. The bank chooses to adhere to environmentally sustainable developmental models and instill good governance in order to reduce poverty.

One of the important elements here is “people’s participation” in the implementation of the projects. It is also imperative to highlight that the bank subscribes to the ‘economic analysis’ of the projects it funds. In a simple sense, it accepts to fund those projects that ensure the economic return of 12 per cent in terms of the net national product to the host country. The net national product according to the bank includes also the environmental costs and benefits. Such an economic analysis of the bank is conducted in two ways: one which focuses on the country and the other that involves all the benefits and costs affecting at the global level. So, if the analysis is done focusing only on the host country then the return of 12 per cent to the host country’s economy would be the priority, but if assessed at the global level, then a project may be beneficial for the host country but may not prove to be the same at the global level. In such a case, the bank would rarely approve such a project which would be harmful at the global level (Dole and Abeygunawardena 2002: 1-7).

Such principles of the bank calls for a deep critical analysis of the role the Asian Development Bank as a funding agency has been playing. The pertinent issues are:

1. A mere focus on the economic benefits of any project leads to the negligence of the stakeholders of any developmental projects like hydropower projects in pondering upon other factors like socio-cultural factors.
2. If economic benefits are the primary criterion for any project to be approved and funded by the bank, then the refusal of the bank in funding the projects in the disputed areas of Arunachal Pradesh in 2009 stands irrelevant. The question that could be raised is: Why should Arunachal Pradesh be deprived of development with the aid of the international funding agencies, on the pretext of its territorial disputes with China?
3. The bank’s economic analysis is done through two ways, i.e. country-specific and global-level. So the hydro-power projects that have been funded by the bank focusing only on the economic benefits of the host country, could lead to adverse consequences in the neighboring nations. Like for instance, the hydropower projects in the upstream of the river would prove beneficial for the upper riparian states but could hamper the lower riparian states. Similarly, if analysis is done at the global level, then the host

country could be deprived of the economic benefits due to the adverse impact of the project at the global level.

The World Bank in the year 2014 declared that the institution would fund only environment-friendly projects. So, economic benefits would be a factor but the health of the ecology was kept as a priority in funding any project (*The Economic Times*, 10 August 2014). Though World Bank commits itself to reduce poverty, protect the environment and develop the underdeveloped nations, within the context of Arunachal Pradesh and Sikkim, the achievement of the objectives has proved to be a difficult task.

In 2013, the Indian government was compelled to withdraw Arunachal Pradesh and Sikkim from the North-East Power Project, which was duly to be funded by the World Bank. The pretext on which these states had to be withdrawn from the project was due to the territorial disputes of these two states with China. So, with China opposing the funding by the international agencies in Arunachal Pradesh and Sikkim, the World Bank also expressed its hesitation in funding these two states. It also needs to be specified that such an approach of the World Bank stands validated with its policies regarding the projects in the 'disputed areas'. In explicit terms, the World Bank clearly states that "the Bank may support a project in a disputed area if the governments concerned agree that, pending the settlement of the dispute, the project proposed for country A should go forward without prejudice to the claims of country B".<sup>45</sup> Such policies indicate that funding from the international agencies in Arunachal Pradesh and Sikkim would not be feasible as long as China opposes it. This in long term would lead to these two states being deprived of various facets of development.

But recently in 2017, the Asian Development Bank along with the Japanese funding agency expressed its desire to fund the infrastructural projects in Sikkim and Arunachal Pradesh. Such a change of stand by the ADB with regard to these two states lying geographically close to China is reflective of the cryptic role of such international agencies (Bhaskar 2017).<sup>46</sup> In 2009, the same funding agency was reluctant to fund the projects in the 'disputed areas' of Sikkim and Arunachal Pradesh

---

<sup>45</sup> <https://policies.worldbank.org/sites/ppf3/PPFDocuments/090224b08235b3ec.pdf> accessed 9 July 2017.

<sup>46</sup> <http://www.livemint.com/Industry/Cpu19wZ5h3TUj1cylfNGNJ/ADB-signals-funding-approach-shift-to-Indian-states-borderin.html> accessed 17 July 2017.

as China has opposed such activity. In fact, the bank described the whole incident as a “mistake” and also ensured China that the projects in Sikkim and Arunachal Pradesh would not be carried on further. Such a stand according to the ADB Director in China was to evade any problem during the upcoming visit of the bank’s Director Haruhiko Kuroda to China (The Hindu, 17 December 2016).

Interestingly, the ADB shows an interest in funding infrastructural developmental projects in the less developed states of India which undoubtedly include the north-eastern region. Such a stand can be understood as a response to JICA declaring its will to fund the projects in the north-eastern region of India. According to the ADB database, Japan is the highest contributor to the ADB followed by the United States. Both have a share holding of 15.6% in the bank. So, it is obvious that the ADB would want to appease these two nations in order to ensure the flow of contribution. Another assessment of the changing stand of the international funding agency could be the growing bi-lateral relationship between India and the United States. Such a manipulative and dubious role of the international agencies gives rise to skepticism with regard to their policies that aims at sustainable development and equitable development.

## **6.8 Conclusion**

The hydropower projects have been recognized worldwide and accepted as a major source of renewable source of energy but unfortunately they have also been criticized for their adverse consequences. It is here that the role of the international agencies and institutions need to be witnessed, as it is the responsibility of all the stakeholders of the project including the international funding agencies to ensure the minimizing if not the complete uprooting of the possible ill-effects of the projects. If the same is ensured, then the hydropower projects could lead to several benefits as compared to their harmful effects.

The international funding agencies as such are to make effective efforts to ensure the holistic viability of any developmental project instead of prioritizing only the economic benefits out of the project. The socio-cultural factors need to be taken into consideration prior to the approval of the project as ‘development’ cannot be defined merely in economic terms, instead a holistic approach to development is a necessity.

## CHAPTER 7

### CONCLUSION

The Eastern Himalayan belt comprising of five states namely Bhutan, Nepal and the Indian states of Sikkim, Arunachal Pradesh and Darjeeling is considered as one of the world's greatest hubs for rare 'flora and fauna'. As expressed in Kawa and Badur (2013)'s book, *Himalaya: Mountains of Life*, the natural environment of the region along with the mountains are both pristine, fragile and at the same time, mysterious. Such is the beauty of the ecological set-up of the region, but the repeated human interventions in the form of 'developmental projects' has led to a 'nature-human conflict'. Such human intrusions into the natural environment get further worsened with the inevitable effects of 'climate change.'

There has always been a debate between the 'developmental needs' on one hand and the 'environmental protection' on the other. But interestingly, it cannot be evaded that 'underdevelopment' has been witnessed as the primary factor causing conflicts in many societies like those in Africa. As explained in the modernization theory, it is an interplay of the several internal factors of a country that contribute towards the 'underdevelopment' of a nation. Such internal factors are a lack of infrastructure, traditional attitude of the population, illiteracy, low division of labour and others. So, the nations lacking the requisite level of development are more vulnerable to conflicts and chaos. Like for instance, in West Africa, 'economic underdevelopment' has been considered as a major factor causing 'insecurity' in the country. The West African countries despite possessing enormous natural resources have one of the lowest annual GDPs. As such, it can be reiterated that the need for initiating developmental projects is a necessity to meet the larger goals but it also needs to be ensured that the benefits of such projects reach out to the grassroots level (Yella 2005: 4-5). Often, people are not against 'development' but they are against the disparity in the distribution of the benefits of development. So, the stakeholders of development are to ensure the equitable distribution of the benefits of development.

It is evident from the experience of the West African nations that the issue of development and underdevelopment follows a vicious circle of 'cause and effect'. The lack of development generates several socio-economic and political problems which lead to the exploitation of the available natural resources in order to enhance the economy. But such usage of natural resources often leads to only a few being benefitted, which triggers discontentment which often transcends into conflicts. It is such a process of 'cause and effect' that has led to the 'demonization' of the developmental projects like hydropower.

All such issues have been witnessed in the Eastern Himalayan region as well, which has led to a huge debate concerning the developmental projects like hydropower. The issue of hydropower projects in Bhutan and Sikkim has been critically analyzed in this research work. The problematic areas in these two states regarding the hydropower projects have been:

1. Both Bhutan and Sikkim are ecologically fragile and located in the seismic zones IV/V. These seismic zones are one of the most seismically active zones. In simple words, these seismic zones are prone to earthquakes and other such hazardous natural calamities.
2. Both Bhutan and Sikkim have rich water resources in the form of rivers, spring, lakes and glaciers.
3. Both these states are agrarian states.
4. Besides the agricultural sector, tourism and hydropower projects form the core economic sector for these two states.
5. But the development of hydropower projects in such ecologically fragile areas of both these states is unacceptable to the people, specifically the people of Sikkim.
6. More than physical displacement, it is the cultural displacement of the local communities of Sikkim (Dzongu and Tashiding) that rose as a major factor for opposing the hydropower projects.

The field study of these two states of the belt revealed that in Bhutan, displacement has taken place and the affected people have been financially compensated. In Sikkim, the project-affected people were also financially compensated but the people in general opposed the projects as it was impacting their culture, identity and environment. It may here be mentioned again that the physical displacement in both these states of the Eastern Himalayan belt is minimal to negligible, but there has been an enormous displacement of culture. So, the hydropower projects have induced cultural displacement in these two states.

The justification of the initiation of the hydropower projects as one of the best energy alternatives stands challenged due to such several factors. Though the hydropower projects are based on a renewable source of energy, this has not been able to validate as 'unique selling proposition' (USP) of the projects, as it is a known fact that the process of the development of such projects involves several losses, some of which are irreversible and cannot be compensated.

The development of the hydropower projects would undoubtedly generate economic benefits but such benefits if are to be achieved at the stake of great losses in the form of deforestation, pollution of rivers, air pollution, landslides and floods, then it is considered no less a 'bane' than a 'boon'. Moreover, it needs to be realized that 'growth' can be positive or negative, but 'development' has to be positive as it refers to the enhancement of income, development of infrastructures and improvement of basic facilities.

It is as such the responsibility of the stakeholders of the developmental projects like hydropower projects to ensure that the 'development' which is being guaranteed through such projects gets actualized. The success of a 'developmental model' of any nation would require the acceptance of the same by the people of that country. So, the involvement of the local communities as one of the stakeholders of such projects should be effectively ensured. As in the context of Sikkim, it was observed that the lack of communication between the project stakeholders and the local people has triggered confusion and misunderstandings. As expressed by one of the Lepcha activists, the core problem is that the 'developmental model' has been imposed on the people, while, ideally, the same should have been discussed with the people. So, the



people of Sikkim are not opposing 'development', but they are opposing the way it is being initiated.

All these problematic areas generate the issue of 'human security'. As opposed to the earlier conceptualization of the term 'security' which is mostly military in nature, the concept of 'human security' as defined by the United Nations Development Programme in the Human Development Report of 1994 is "freedom from fear and freedom from want". In simple words, human security means the physical, psychological, economic and cultural security of the people. But all these stand violated with the development of the hydropower projects as such projects have entailed adverse consequences like displacement, impoverishment, cultural loss, etc. These issue of 'human security' get worsened further in the Eastern Himalayan belt with the geographical proximity of China.

China has the control of the "Asian tap" of the Tibetan Plateau which has an impact on the whole of the Eastern Himalayan region and beyond. This is valid in terms of the trans-boundary rivers that flow from the Tibetan Plateau into the Eastern Himalayan belt and other regions further down. Besides, China uses 'economic diplomacy' in the belt to counter India's powerful status in South Asia. So, China is engaged in funding the hydropower projects in Nepal and is also in the process of initiating border talks with Bhutan in order to improve their bilateral relations and in the case of Sikkim and Arunachal Pradesh, it has been using 'economic diplomacy' as a tool to oppose the international funds to these two states.

The stand of the international agencies like the Asian Development Bank and the World Bank in the case of Sikkim and Arunachal Pradesh is reflective of their dubious role. Both Sikkim and Arunachal Pradesh had to be removed from a North-East Transmission Project due to China's opposition and thereafter, the reluctance of the funding agencies. Such an event leads to the development of scepticism and also criticism for the international agencies making global commitments.

In the midst of all these varied yet interlinked issues surrounding the hydropower projects, it also needs to be accepted consciously by the project stakeholders that the geographical and ecological fragility of the Himalayas do constrain such developmental activities. So an attempt is to be made to strategize developmental activities on a long term basis considering the 'terrain, agro-climatic conditions,

background and needs of the local people, as well as their aspirations and resources'. Such an initiative would then to some extent sober the discord between environment and development, since it can be reiterated that the root cause of the conflict between developmental activities and environment is due to the divergent interests over the resources. Thus, there is definitely a need to revisit the role played by all the development stakeholders and to initiate desirable changes (G.B. Pant Institute of Himalayan Environment and Development 1992: 28-32).

Further, prior to the initiation of any developmental projects like hydropower projects, the stakeholders are to closely observe and analyze the 'trend of water flows, melting of snow and glaciers and evaporation of water'. These would help in designing and making the operation of the hydropower projects efficient and acceptable. Besides, there needs to be a strong institutional back-up for ensuring a safe operation of such developmental activities. So, there needs to be a 'sampling station network' for measuring the rate of water flows, the amount of soil loads in the rivers through computerization, etc. With the help of such an institutional back-up the stakeholders of development are to focus more on establishing 'small run-over-river' projects, which would incur less investment and would cater to the needs of both the masses and the developers (Ibid.: 38-39). Furthermore, it needs to be ensured that the benefits of such developmental activities are channelized to the local people in the form of drinking water, water for irrigation and other such purposes. As mentioned by the G.B. Pant Institute, "water resources as a natural asset of the region should be harnessed for national needs following the local needs instead of maintaining a competition between the two".

Since it is understood that the hydropower projects are site-related projects, so for such activities, suitable sites are needed. In other words, the stakeholders of development are to ensure the establishment of hydropower projects in suitable sites and for such an ensurance, the projects should be part of the 'Watershed Management Plans'. In tune with such initiatives, the project developers are to involve the local people in both the operation and installation activities by training them. Such an initiative would then lower the chances of conflict between the project developers and the interests of the local people (Ibid.: 47).

Thus, the crucial part is this whole issue is the sustenance of the developmental strategy being applied in the region. The project stakeholders are to ensure the retention of their integrity and also sustain the 'ecosystem's integrity', as the needs of the future generation must also be taken care of (WCED 1987: 43). Further, there are no doubts about the 'water resources' being renewable resources but the aggressive impact of the climate change does not seem to spare even the renewable resources. The increasing temperature, retreating glaciers, drying up of rivers, all reflect a possible fearful picture of future. So, the usage or the harnessing of the natural resources is acceptable, but not their exploitation.

On the other hand, the perceptions on 'development' would always vary from people to regions to nations, as such perceptions reflect 'value judgements' which cannot be expected to be universally accepted and applied (United Nations 2008: 18).

So, it could be that with time people would realize the need for development and even the policymakers would understand the need for active community involvement in order to make any developmental model a success. The policymakers should also make efforts to synchronize the developmental needs with the local needs, so that both can co-exist. Though, it must be admitted that both Bhutan and Sikkim have made efforts to secure the local needs while initiating such hydro-power projects. Like for instance, during the field trip in Bhutan, a respondent from Thimphu informed that the location of the construction of the Kholongchu hydroproject was left to the public to decide, so that the religious sentiments of the people were not harmed. The project was located in the east district, Trashiyangste district, which is considered very sacred. Such an act on the part of the policymakers is reflective of the democratic commitments of the policymakers towards the masses.

Similarly in Sikkim, the scrapping of two hydropower projects Rathongchu and Ting-Ting is an example of the local sentiments being prioritized over economic gains. Though, of course, underneath lie several complexities, but such decisions can be perceived as a reference point for the future decisions too. The protest against the hydropower projects in Dzongu and Tashiding must be positively endorsed by the policymakers as the people have been able to restore their faith in the system due to the Rathongchu and Ting-Ting project episodes. So, expectation is where the hope lies and it is the responsibility of the concerned state stakeholders to uphold such

expectations of that particular community but without compromising with the common interests or the developmental interest of the state.

## ANNEXURE-I

### Questionnaires for Wangdue- Phodrang, Bhutan Month of Field Visit: November 2015, May 2016 and June 2017.

1. Name of the respondent:
2. Address:
3. Gender:
4. What all development has taken place in your area?
5. Are you satisfied with the developments initiated in your area?
6. Are you aware of the hydro- power projects being built in your district?
7. Was 'public hearing' programme done?
8. How many hydro- power projects are there in your area?
9. What are your expectations from the Punatsangchhu hydro- power projects?
10. Did you sell your land for the projects?
11. Were the project affected people financially compensated?
12. Do you know anything about the displacement of the project affected people?
13. Are people happy with such development?
14. What all differences have you noticed /observed in your district prior and after the commencement of the project?
  - a) River
  - b) Forest
  - c) Air
  - d) Noise pollution
15. Has the Hydro- power project company initiated any community oriented programmes? Give Details
16. Have the local communities been employed in the hydro- power project construction sites?

17. What expectations do you have after the completion of both the projects?
18. Do you feel the need for more hydro- power projects? If Yes/ No..  
Give reasons.

\*The anonymity of the identity of most of the respondents have been maintained on request.

## ANNEXURE-II

### Questionnaires for Tashiding, West Sikkim Month of Field Visit: April 2015, June 2016 and January 2017

1. Name:
2. Religion:
3. Address:
4. Year of settlement in the district?
5. What all developments have taken place in your district?
6. Are you satisfied with the developments?
7. Are you aware of the hydro- power projects in the district?
8. Was 'public hearing' programme done?
9. Was Gram Sabha held? Was it fruitful?
10. What is your opinion on such development of the projects?
11. Was your landed property affected by the project?
12. Were you financially compensated?
13. Do you know anything about the displacement of the project affected people?
14. Are people happy with such development?
15. What all differences have you noticed /observed in your district prior and after the commencement of the project?
  - e) River
  - f) Forest
  - g) Air
  - h) Noise pollution
16. Are you aware of the *Bumchu* festival in Tashiding monastery?
17. Do you think the Rathong chu river on which the project is being built has religious significance?
18. What is your opinion on the hydro- power project being built on the Rathong chu river?

19. Has the Hydro- power project company initiated any community oriented programmes? Give Details.
20. Have the local communities been employed in the hydro- power project construction sites?
21. What expectations do you have after the completion of both the projects?
22. Do you feel the need for more hydro- power projects? If Yes/ No.. Give reasons.

\*The anonymity of the identity of most of the respondents have been maintained on request.



### ANNEXURE-III

#### Questionnaires for Dzongu, North Sikkim Month of Visit: April 2015, June 2016, January 2017

1. Name:
2. Religion:
3. Address:
4. Year of settlement in the district?
5. What all developments have taken place in your district?
6. Are you satisfied with the developments?
7. Are you aware of the hydro- power projects in the district?
8. Was 'public hearing' done? Was Gram Sabha held?
9. What is your opinion on such development of the projects?
10. Was your landed property affected by the project?
11. Were you financially compensated?
12. Do you know anything about the displacement of the project affected people?
13. Are people happy with such development?
14. What all differences have you noticed /observed in your district prior and after the commencement of the project?
  - i) River
  - j) Forest
  - k) Air
  - l) Noise pollution
15. What is your opinion on the hydro- power project being built on the Rongyong chu river?
16. Have the local communities been employed in the hydro- power project construction sites?
17. Do you feel the need for more hydro- power projects? If Yes/ No..  
Give reasons

\*The anonymity of the identity of most of the respondents have been maintained on request.

## ANNEXURE-IV

### Article 371 F

PART XXI TEMPORARY, TRANSITIONAL AND SPECIAL PROVISIONS 371F. Special provisions with respect to the State of Sikkim.—Notwithstanding anything in this Constitution,—

(a) the Legislative Assembly of the State of Sikkim shall consist of not less than thirty members;

(b) as from the date of commencement of the Constitution (Thirty-sixth Amendment) Act, 1975 (hereafter in this article referred to as the appointed day)—

(i) the Assembly for Sikkim formed as a result of the elections held in Sikkim in April, 1974 with thirty-two members elected in the said elections (hereinafter referred to as the sitting members) shall be deemed to be the Legislative Assembly of the State of Sikkim duly constituted under this Constitution;

(ii) the sitting members shall be deemed to be the members of the Legislative Assembly of the State of Sikkim duly elected under this Constitution; and

(iii) the said Legislative Assembly of the State of Sikkim shall exercise the powers and perform the functions of the Legislative Assembly of a State under this Constitution;

(c) in the case of the Assembly deemed to be the Legislative Assembly of the State of Sikkim under clause (b), the references to the period of five years, in clause (1) of article 172 shall be construed as references to a period of four years and the said period of four years shall be deemed to commence from the appointed day;

(d) until other provisions are made by Parliament by law, there shall be allotted to the State of Sikkim one seat in the House of the People and

the State of Sikkim shall form one parliamentary constituency to be called the parliamentary constituency for Sikkim;

(e) the representative of the State of Sikkim in the House of the People in existence on the appointed day shall be elected by the members of the Legislative Assembly of the State of Sikkim;

(f) Parliament may, for the purpose of protecting the rights and interests of the different sections of the population of Sikkim make provision for the number of seats in the Legislative Assembly of the State of Sikkim which may be filled by candidates belonging to such sections and for the delimitation of the assembly constituencies from which candidates belonging to such sections alone may stand for election to the Legislative Assembly of the State of Sikkim;

(g) the Governor of Sikkim shall have special responsibility for peace and for an equitable arrangement for ensuring the social and economic advancement of different sections of the population of Sikkim and in the discharge of his special responsibility under this clause, the Governor of Sikkim shall, subject to such directions as the President may, from time to time, deem fit to issue, act in his discretion;

(h) all property and assets (whether within or outside the territories comprised in the State of Sikkim) which immediately before the appointed day were vested in the Government of Sikkim or in any other authority or in any person for the purposes of the Government of Sikkim shall, as from the appointed day, vest in the Government of the State of Sikkim;

(i) the High Court functioning as such immediately before the appointed day in the territories comprised in the State of Sikkim shall, on and from the appointed day, be deemed to be the High Court for the State of Sikkim;

(j) all courts of civil, criminal and revenue jurisdiction, all authorities and all officers, judicial, executive and ministerial, throughout the territory of the State of Sikkim shall continue on and from the

appointed day to exercise their respective functions subject to the provisions of this Constitution;

(k) all laws in force immediately before the appointed day in the territories comprised in the State of Sikkim or any part thereof shall continue to be in force therein until amended or repealed by a competent Legislature or other competent authority;

(l) for the purpose of facilitating the application of any such law as is referred to in clause (k) in relation to the administration of the State of Sikkim and for the purpose of bringing the provisions of any such law into accord with the provisions of this Constitution, the President may, within two years from the appointed day, by order, make such adaptations and modifications of the law, whether by way of repeal or amendment, as may be necessary or expedient, and thereupon, every such law shall have effect subject to the adaptations and modifications so made, and any such adaptation or modification shall not be questioned in any court of law;

(m) neither the Supreme Court nor any other court shall have jurisdiction in respect of any dispute or other matter arising out of any treaty, agreement, engagement or other similar instrument relating to Sikkim which was entered into or executed before the appointed day and to which the Government of India or any of its predecessor Governments was a party, but nothing in this clause shall be construed to derogate from the provisions of article 143;

(n) the President may, by public notification, extend with such restrictions or modifications as he thinks fit to the State of Sikkim any enactment which is in force in a State in India at the date of the notification;

(o) if any difficulty arises in giving effect to any of the foregoing provisions of this article, the President may, by order, do anything (including any adaptation or modification of any other article) which appears to him to be necessary for the purpose of removing that

difficulty: Provided that no such order shall be made after the expiry of two years from the appointed day;

(p) all things done and all actions taken in or in relation to the State of Sikkim or the territories comprised therein during the period commencing on the appointed day and ending immediately before the date on which the Constitution (Thirty-sixth Amendment) Act, 1975, receives the assent of the President shall, in so far as they are in conformity with the provisions of this Constitution as amended by the Constitution (Thirty-sixth Amendment) Act, 1975, be deemed for all purposes to have been validly done or taken under this Constitution as so amended. ....

## ANNEXURE-V

### EXCHANGE OF NOTES BETWEEN GOVERNMENT OF INDIA AND GOVERNMENT OF PAKISTAN I.

Note dated 19th September 1960, from the High Commissioner for India in Pakistan, Karachi, to the Minister for Foreign Affairs and Commonwealth Relations, Government of Pakistan.

19th September, 1960 I have been instructed by my Government to communicate to you the following : "The Government of India agrees that, on the ratification of the Indus Waters Treaty 1960, the Inter-Dominion Agreement on the Canal Water Dispute signed at New Delhi on 4th May 1948 (of which a copy is annexed hereto) and the rights and obligations of either party thereto claimed under, or arising out of, that Agreement shall be without effect as from 1st April 1960. The position of the Government of India stated above and Your Excellency's Note of to-day's date stating the position of the Government of Pakistan on this question will form part of Annexure A to the Indus Waters Treaty 1960."

Accept, Excellency, the renewed assurance of my highest consideration.

#### ANNEX

A dispute has arisen between the East and West Punjab Governments regarding the supply by East Punjab of water to the Central Bari Doab and the Depalpur canals in West Punjab. The contention of the East Punjab Government is that under the Punjab Partition (Apportionment of Assets and Liabilities) Order, 1947, and the Arbitral Award the proprietary rights in the waters of the rivers in East Punjab vest wholly in the East Punjab Government and that the West Punjab Government cannot claim any share of these waters as a right. The West Punjab Government disputes this contention, its view being that the point has

conclusively been decided in its favour by implication by the Arbitral Award and that in accordance with international law and equity, West Punjab has a right to the waters of the East Punjab rivers.

2. The East Punjab Government has revived the flow of water into these canals on certain conditions of which two are disputed by West Punjab. One, which arises out of the contention in paragraph 1, is the right to the levy of seigniorage charges for water and the other is the question of the capital cost of the \*Madhavpur Head Works and carrier channels to be taken into account.

3. The East and West Punjab Governments are anxious that this question should be settled in a spirit of goodwill and friendship. Without prejudice to its legal rights in the matter the East Punjab Government has assured the West Punjab Government that it has no intention suddenly to withhold water from West Punjab without giving it time to tap alternative sources. The West Punjab Government on its part recognises the natural anxiety of the East Punjab Government to discharge the obligation to develop areas where water is scarce and which were under-developed in relation to parts of West Punjab.

4. Apart, therefore, from the question of law involved, the Governments are anxious to approach the problem in a practical spirit on the basis of the East Punjab Government progressively diminishing its supply to these canals in order to give reasonable time to enable the West Punjab Government to tap alternative sources.

5. The West Punjab Government has agreed to deposit immediately in the Reserve Bank such ad hoc sum as may be specified by the Prime Minister of India. Out of this sum, that Government agrees to the immediate transfer to East Punjab Government of sums over which there is no dispute.

6. After an examination by each party of the legal issues, of the method of estimating the cost of water to be supplied by the East Punjab Government and of the technical survey of water resources and the

means of using them for supply to these canals, the two Governments agree that further meetings between their representatives should take place .

7. The Dominion Governments of India and Pakistan accept the above terms and express the hope that a friendly solution will be reached.

JAWAHARLAL NEHRU GHULAM MOHD N. V. GADGIL  
SHAUKAT HYAT KHAN SWARAN SINGH MUMTAZ  
DAULTANA NEW DELHI, May 4, 1948 .

II. Note dated 19th September 1960, from the Minister for Foreign Affairs and Commonwealth Relations, Government of Pakistan, to the High Commissioner for India in Pakistan, Karachi. \* \* \* 19th September, 1960

EXCELLENCY: I have been instructed by my Government to communicate to you the following : "The Government of Pakistan agrees that, on the ratification of the Indus Waters Treaty 1960, the document on the Canal Water Dispute signed at New Delhi on 4th May 1948 (of which a copy is annexed hereto) and the rights and obligations of either party thereto claimed under, or arising out of, that document shall be without effect as from 1st April 1960. The position of the Government of Pakistan stated above and Your Excellency's Note of to-day's date stating the position of the Government of India on this question will form part of to the Indus Waters Treaty 1960."

Accept, Excellency, the renewed assurance of my highest consideration.

#### ANNEX

A dispute has arisen between the East and West Punjab Governments regarding the supply by East Punjab of water to the Central Bari Doab and the Depalpur canals in West Punjab. The contention of the East Punjab Government is that under the Punjab Partition (Apportionment of Assets and Liabilities) Order, 1947, and the Arbitral Award the



proprietary rights in the waters of the rivers in East Punjab vest wholly in the East Punjab Government and that the West Punjab Government cannot claim any share of these waters as a right. The West Punjab Government disputes this contention, its view being that the point has conclusively been decided in its favour by implication by the Arbitral Award and that in accordance with international law and equity, West Punjab has a right to the waters of the East Punjab rivers.

2. The East Punjab Government has revived the flow of water into these canals on certain conditions of which two are disputed by West Punjab. One, which arises out of the contention in paragraph 1, is the right to the levy of seigniorage charges for water and the other is the question of the capital cost of the \*Madhavpur Head Works and carrier channels to be taken into account .

3. The East and West Punjab Governments are anxious that this question should be settled in a spirit of goodwill and friendship. Without prejudice to its legal rights in the matter the East Punjab Government has assured the West Punjab Government that it has no intention suddenly to withhold water from West Punjab without giving it time to tap alternative sources. The West Punjab Government on its part recognises the natural anxiety of the East Punjab Government to discharge the obligation to develop areas where water is scarce and which were under-developed in relation to parts of West Punjab.

4. Apart, therefore, from the question of law involved, the Governments are anxious to approach the problem in a practical spirit on the basis of the East Punjab Government progressively diminishing its supply to these canals in order to give reasonable time to enable the West Punjab Government to tap alternative sources.

5. The West Punjab Government has agreed to deposit immediately in the Reserve Bank such ad hoc sum as may be specified by the Prime Minister of India. Out of this sum, that Government agrees to the immediate transfer to East Punjab Government of sums over which there is no dispute.

6. After an examination by each party of the legal issues, of the method of estimating the cost of water to be supplied by the East Punjab Government and of the technical survey of water resources and the means of using them for supply to these canals, the two Governments agree that further meetings between their representatives should take place .

7. The Dominion Governments of India and Pakistan accept the above terms and express the hope that a friendly solution will be reached.

JAWAHARLAL NEHRU GHULAM MOHD N. V. GADGIL  
SHAUKAT HYAT KHAN SWARAN SINGH MUMTAZ  
DAULTANA NEW DELHI, May 4, 1948.

## APPENDIX- VI

### **Bhutan-China Agreement On Maintenance Of Peace And Tranquility Along The Sino-Bhutanese Border Areas, 1998 December 8, 1998**

Agreement between the Government of the people's Republic of China and the Government of the Kingdom of Bhutan on the Maintenance of Peace and Tranquillity Along the Sino-Bhutanese Border Areas The Government of the People's Republic of China and the Government of the Kingdom of Bhutan, in accordance with the five principles of mutual respect for each other's sovereignty and territorial integrity, mutual non-aggression, mutual non-interference in each other's internal affairs and peaceful co-existence and for the purpose of maintaining peace and tranquility along the Sino Bhutanese border, have reached the following agreements:

Article 1 Both sides hold the view that all countries big or small, strong or weak are equal and should respect one another. The Chinese side reaffirmed that it completely respects the independence, sovereignty and territorial integrity of Bhutan. Both sides stand ready to develop their good-neighborly and friendly cooperative relations on the basis of the Five Principles of Peaceful Co-Existence.

Article 2 Both sides are of the view that during the ten rounds of talks that have been held so far, they have reached consensus on the guiding principles on the settlement of the boundary issues and narrowed their differences on the boundary issues in the spirit of mutual accommodation, mutual trust and cooperation and through friendly consultations. The mutual understanding and traditional friendship between the two countries have been deepened. Both sides stand ready to adhere to the above-mentioned spirit and make joint efforts for an early and fair solution of the boundary issues between the two countries.

Article 3 Both sides agreed that prior to the ultimate solution of the boundary issues, peace and tranquillity along the border should be maintained and the status quo of the boundary prior to March 1959 should be upheld, and not to resort to unilateral action to alter the status quo of the border.

Article 4 Both sides reviewed the progress made after ten rounds of border talks. As both sides have already expounded each other's stand on the disputed areas, both sides agreed to settle this issue through friendly consultations.

Article 5 This agreement will come into force on the date of signing.

This agreement was signed on December 8, 1998 in Beijing, done in two copies in the Chinese, Bhutanese and English languages, all three languages are authentic. If differences arise, the English text will be the standard text.

Tang Jiaxuan (signed)

Representative of the Representative of the of the of the People's Republic of China

Jigme Thinley (Signed) Representative of the Government of the Kingdom of Bhutan

## **ANNEXURE-VII**

### **THE SCHEDULED TRIBES AND OTHER TRADITIONAL FOREST DWELLERS (RECOGNITION OF FOREST RIGHTS) ACT, 2006**

**NO. 2 OF 2007**

**[29th December, 2006]**

An Act to recognise and vest the forest rights and occupation in forest land in forest dwelling Scheduled Tribes and other traditional forest dwellers who have been residing in such forests for generations but whose rights could not be recorded; to provide for a framework for recording the forest rights so vested and the nature of evidence required for such recognition and vesting in respect of forest land.

WHEREAS the recognised rights of the forest dwelling Scheduled Tribes and other traditional forest dwellers include the responsibilities and authority for sustainable use, conservation of biodiversity and maintenance of ecological balance and thereby strengthening the conservation regime of the forests while ensuring livelihood and food security of the forest dwelling Scheduled Tribes and other traditional forest dwellers;

AND WHEREAS the forest rights on ancestral lands and their habitat were not adequately recognised in the consolidation of State forests during the colonial period as well as in independent India resulting in historical injustice to the forest dwelling Scheduled Tribes and other traditional forest dwellers who are integral to the very survival and sustainability of the forest ecosystem;

AND WHEREAS it has become necessary to address the long standing insecurity of tenurial and access rights of forest dwelling Scheduled Tribes and other traditional forest dwellers including those who were forced to relocate their dwelling due to State development interventions. BE it enacted by Parliament in the Fifty-seventh Year of the Republic of India as follows:-

#### **CHAPTER 1**

#### **PRELIMINARY**

## Short title and commencement

1. Short title and commencement. - (1) This Act may be called the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006. (2) It extends to the whole of India except the State of Jammu and Kashmir. (3) It shall come into force on such date as the Central Government may, by notification in the Official Gazette, appoint.

## 2. Definitions

In this Act, unless the context otherwise requires,- (a) "community forest resource" means customary common forest land within the traditional or customary boundaries of the village or seasonal use of landscape in the case of pastoral communities, including reserved forests, protected forests and protected areas such as Sanctuaries and National Parks to which the community had traditional access;

(b) "critical wildlife habitat" means such areas of National Parks and Sanctuaries where it has been specifically and clearly established, case by case, on the basis of scientific and objective criteria, that such areas are required to be kept as inviolate for the purposes of wildlife conservation as may be determined and notified by the Central Government in the Ministry of Environment and Forests after open process of consultation by an Expert Committee, which includes experts from the locality appointed by that Government wherein a representative of the Ministry of Tribal Affairs shall also be included, in determining such areas according to the procedural requirements arising from sub-sections (1) and (2) of section 4;

(c) "forest dwelling Scheduled Tribes" means the members or community of the Scheduled Tribes who primarily reside in and who depend on the forests or forest lands for bona fide livelihood needs and includes the Scheduled Tribe pastoralist communities;

(d) "forest land" means land of any description falling within any forest area and includes unclassified forests, undemarcated forests, existing or deemed forests, protected forests, reserved forests, Sanctuaries and National Parks;

(e) "forest rights" means the forest rights referred to in section 3;

(f) "forest villages" means the settlements which have been established inside the forests by the forest department of any State Government for forestry operations or which were converted into forest villages through the forest reservation process and includes forest settlement villages, fixed demand holdings, all types of taungya settlements, by whatever name called, for such villages and includes lands for cultivation and other uses permitted by the Government;

(g) "Gram Sabha" means a village assembly which shall consist of all adult members of a village and in case of States having no Panchayats, Padas, Tolas and other traditional village institutions and elected village committees, with full and unrestricted participation of women;

(h) "habitat" includes the area comprising the customary habitat and such other habitats in reserved forests and protected forests of primitive tribal groups and pre-agricultural communities and other forest dwelling Scheduled Tribes;

(i) "minor forest produce" includes all non-timber forest produce of plant origin including bamboo, brush wood, stumps, cane, tussar, cocoons, honey, wax, lac, tendu or kendu leaves, medicinal plants and herbs, roots, tubers and the like;

(j) "nodal agency" means the nodal agency specified in section 11;

(k) "notification" means a notification published in the Official Gazette;

(l) "prescribed" means prescribed by rules made under this Act;

(m) "Scheduled Areas" means the Scheduled Areas referred to in clause (1) of article 244 of the Constitution;

(n) "sustainable use" shall have the same meaning as assigned to it in clause (o) of section 2 of the Biological Diversity Act, 2002;

(o) "other traditional forest dweller" means any member or community who has for at least three generations prior to the 13th day of December, 2005 primarily resided in and who depend on the forest or forests land for bona fide livelihood needs. Explanation.-For the purpose of this clause, "generation" means a period comprising of twenty-five years;

(p) "village" means- (i) a village referred to in clause (b) of section 4 of the Provisions of the Panchayats (Extension to the Scheduled Areas) Act, 1996; or (ii) any area referred to as a village in any State law relating to Panchayats other than the Scheduled Areas; or (iii) forest villages, old habitation or settlements and unsurveyed villages, whether notified as village or not; or (iv) in the case of States where there are no Panchayats, the traditional village, by whatever name called;

(q) "wild animal" means any species of animal specified in Schedules I to IV of the Wild Life (Protection) Act, 1972 and found wild in nature.

## CHAPTER II FOREST RIGHTS

3. Forest rights of Forest dwelling Scheduled Tribes and other traditional forest dwellers.-

(1) For the purposes of this Act, the following rights, which secure individual or community tenure or both, shall be the forest rights of forest dwelling Scheduled Tribes and other traditional forest dwellers on all forest lands, namely:-

(a) right to hold and live in the forest land under the individual or common occupation for habitation or for self-cultivation for livelihood by a member or members of a forest dwelling Scheduled Tribe or other traditional forest dwellers;

(b) community rights such as nistar, by whatever name called, including those used in erstwhile Princely States, Zamindari or such intermediary regimes;

(c) right of ownership, access to collect, use, and dispose of minor forest produce which has been traditionally collected within or outside village boundaries;

(d) other community rights of uses or entitlements such as fish and other products of water bodies, grazing (both settled or transhumant) and traditional seasonal resource access of nomadic or pastoralist communities;

(e) rights including community tenures of habitat and habitation for primitive tribal groups and pre-agricultural communities;

(f) rights in or over disputed lands under any nomenclature in any State where claims are disputed;



(g) rights for conversion of Pattas or leases or grants issued by any local authority or any State Government on forest lands to titles;

(h) rights of settlement and conversion of all forest villages, old habitation, unsurveyed villages and other villages in forests, whether recorded, notified or not into revenue villages;

(i) right to protect, regenerate or conserve or manage any community forest resource which they have been traditionally protecting and conserving for sustainable use;

(j) rights which are recognised under any State law or laws of any Autonomous District Council or Autonomous Regional Council or which are accepted as rights of tribals under any traditional or customary law of the concerned tribes of any State;

(k) right of access to biodiversity and community right to intellectual property and traditional knowledge related to biodiversity and cultural diversity;

(l) any other traditional right customarily enjoyed by the forest dwelling Scheduled Tribes or other traditional forest dwellers, as the case may be, which are not mentioned in clauses (a) to (k) but excluding the traditional right of hunting or trapping or extracting a part of the body of any species of wild animal;

(m) right to in situ rehabilitation including alternative land in cases where the Scheduled Tribes and other traditional forest dwellers have been illegally evicted or displaced from forest land of any description without receiving their legal entitlement to rehabilitation prior to the 13th day of December, 2005.

(2) Notwithstanding anything contained in the Forest (Conservation) Act, 1980, the Central Government shall provide for diversion of forest land for the following facilities managed by the Government which involve felling of trees not exceeding seventy-five trees per hectare, namely:-

(a) schools;

(b) dispensary or hospital;

(c) anganwadis;

(d) fair price shops;

- (e) electric and telecommunication lines;
- (f) tanks and other minor water bodies;
- (g) drinking water supply and water pipelines;
- (h) water or rain water harvesting structures;
- (i) minor irrigation canals;
- (j) non-conventional source of energy;
- (k) skill upgradation or vocational training centres;
- (l) roads; and
- (m) community centres: Provided that such diversion of forest land shall be allowed only if,- (i) the forest land to be diverted for the purposes mentioned in this subsection is less than one hectare in each case; and
- (ii) the clearance of such developmental projects shall be subject to the condition that the same is recommended by the Gram Sabha.

### CHAPTER III RECOGNITION, RESTORATION AND VESTING OF FOREST RIGHTS AND RELATED MATTERS

4. Recognition of, and vesting of, forest rights in forest dwelling Scheduled Tribes and other traditional forest dwellers. - (1) Notwithstanding anything contained in any other law for the time being in force, and subject to the provisions of this Act, the Central Government hereby recognises and vests forest rights in-

- (a) the forest dwelling Scheduled Tribes in States or areas in States where they are declared as Scheduled Tribes in respect of all forest rights mentioned in section 3;
- (b) the other traditional forest dwellers in respect of all forest rights mentioned in section 3.

(2) The forest rights recognised under this Act in critical wildlife habitats of National Parks and Sanctuaries may subsequently be modified or resettled, provided that no forest rights holders shall be resettled or have their rights in any manner affected for

the purposes of creating inviolate areas for wildlife conservation except in case all the following conditions are satisfied, namely:-

- (a) the process of recognition and vesting of rights as specified in section 6 is complete in all the areas under consideration;
- (b) it has been established by the concerned agencies of the State Government, in exercise of their powers under the Wild Life (Protection) Act, 1972 that the activities or impact of the presence of holders of rights upon wild animals is sufficient to cause irreversible damage and threaten the existence of said species and their habitat;
- (c) the State Government has concluded that other reasonable options, such as, co-existence are not available;
- (d) a resettlement or alternatives package has been prepared and communicated that provides a secure livelihood for the affected individuals and communities and fulfils the requirements of such affected individuals and communities given in the relevant laws and the policy of the Central Government;
- (e) the free informed consent of the Gram Sabhas in the areas concerned to the proposed resettlement and to the package has been obtained in writing;
- (f) no resettlement shall take place until facilities and land allocation at the resettlement location are complete as per the promised package: Provided that the critical wildlife habitats from which rights holders are thus relocated for purposes of wildlife conservation shall not be subsequently diverted by the State Government or the Central Government or any other entity for other uses.

(3) The recognition and vesting of forest rights under this Act to the forest dwelling Scheduled Tribes and to other traditional forest dwellers in relation to any State or Union territory in respect of forest land and their habitat shall be subject to the condition that such Scheduled Tribes or tribal communities or other traditional forest dwellers had occupied forest land before the 13th day of December, 2005.

(4) A right conferred by sub-section (1) shall be heritable but not alienable or transferable and shall be registered jointly in the name of both the spouses in case of married persons and in the name of the single head in the case of a household headed

by a single person and in the absence of a direct heir, the heritable right shall pass on to the next-of- kin.

(5) Save as otherwise provided, no member of a forest dwelling Scheduled Tribe or other traditional forest dweller shall be evicted or removed from forest land under his occupation till the recognition and verification procedure is complete.

(6) Where the forest rights recognised and vested by sub-section (1) are in respect of land mentioned in clause (a) of sub-section (1) of section 3 such land shall be under the occupation of an individual or family or community on the date of commencement of this Act and shall be restricted to the area under actual occupation and shall in no case exceed an area of four hectares.

(7) The forest rights shall be conferred free of all encumbrances and procedural requirements, including clearance under the Forest (Conservation) Act, 1980, requirement of paying the 'net present value' and 'compensatory afforestation' for diversion of forest land, except those specified in this Act.

(8) The forest rights recognised and vested under this Act shall include the right of land to forest dwelling Scheduled Tribes and other traditional forest dwellers who can establish that they were displaced from their dwelling and cultivation without land compensation due to State development interventions, and where the land has not been used for the purpose for which it was acquired within five years of the said acquisition.

#### 5. Duties of holders of forest rights.-

The holders of any forest right, Gram Sabha and village level institutions in areas where there are holders of any forest right under this Act are empowered to-

(a) protect the wild life, forest and biodiversity;

(b) ensure that adjoining catchments area, water sources and other ecological sensitive areas are adequately protected;

(c) ensure that the habitat of forest dwelling Scheduled Tribes and other traditional forest dwellers is preserved from any form of destructive practices affecting their cultural and natural heritage;

(d) ensure that the decisions taken in the Gram Sabha to regulate access to community forest resources and stop any activity which adversely affects the wild animals, forest and the biodiversity are complied with.

#### CHAPTER IV AUTHORITIES AND PROCEDURE FOR VESTING OF FOREST RIGHTS

6. Authorities to vest forest rights in forest dwelling Scheduled Tribes and other traditional forest dwellers and procedure thereof.

(1) The Gram Sabha shall be the authority to initiate the process for determining the nature and extent of individual or community forest rights or both that may be given to the forest dwelling Scheduled Tribes and other traditional forest dwellers within the local limits of its jurisdiction under this Act by receiving claims, consolidating and verifying them and preparing a map delineating the area of each recommended claim in such manner as may be prescribed for exercise of such rights and the Gram Sabha shall, then, pass a resolution to that effect and thereafter forward a copy of the same to the Sub-Divisional Level Committee.

(2) Any person aggrieved by the resolution of the Gram Sabha may prefer a petition to the Sub-Divisional Level Committee constituted under subsection(3) and the Sub-Divisional Level Committee shall consider and dispose of such petition: Provided that every such petition shall be preferred within sixty days from the date of passing of the resolution by the Gram Sabha: Provided further that no such petition shall be disposed of against the aggrieved person, unless he has been given a reasonable opportunity to present his case.

(3) The State Government shall constitute a Sub-Divisional Level Committee to examine the resolution passed by the Gram Sabha and prepare the record of forest rights and forward it through the Sub-Divisional Officer to the District Level Committee for a final decision.

(4) Any person aggrieved by the decision of the Sub-Divisional Level Committee may prefer a petition to the District Level Committee within sixty days from the date of decision of the Sub-Divisional Level Committee and the District Level Committee shall consider and dispose of such petition: Provided that no petition shall be preferred directly before the District Level Committee against the resolution of the

Gram Sabha unless the same has been preferred before and considered by the Sub-Divisional Level Committee: Provided further that no such petition shall be disposed of against the aggrieved person, unless he has been given a reasonable opportunity to present his case.

(5) The State Government shall constitute a District Level Committee to consider and finally approve the record of forest rights prepared by the Sub-Divisional Level Committee.

(6) The decision of the District Level Committee on the record of forest rights shall be final and binding.

(7) The State Government shall constitute a State Level Monitoring Committee to monitor the process of recognition and vesting of forest rights and to submit to the nodal agency such returns and reports as may be called for by that agency.

(8) The Sub-Divisional Level Committee, the District Level Committee and the State Level Monitoring Committee shall consist of officers of the departments of Revenue, Forest and Tribal Affairs of the State Government and three members of the Panchayati Raj Institutions at the appropriate level, appointed by the respective Panchayati Raj Institutions, of whom two shall be the Scheduled Tribe members and at least one shall be a woman, as may be prescribed.

(9) The composition and functions of the Sub-Divisional Level Committee, the District Level Committee and the State Level Monitoring Committee and the procedure to be followed by them in the discharge of their functions shall be such as may be prescribed.

## CHAPTER V OFFENCES AND PENALTIES

7. Offences by members or officers of authorities and Committees under this Act.- Where any authority or Committee or officer or member of such authority or Committee contravenes any provision of this Act or any rule made thereunder concerning recognition of forest rights, it, or they, shall be deemed to be guilty of an offence under this Act and shall be liable to be proceeded against and punished with fine which may extend to one thousand rupees:

Provided that nothing contained in this sub-section shall render any member of the authority or Committee or head of the department or any person referred to in this section liable to any punishment if he proves that the offence was committed without his knowledge or that he had exercised all due diligence to prevent the commission of such offence.

8. Cognizance of offences.- No court shall take cognizance of any offence under section 7 unless any forest dwelling Scheduled Tribe in case of a dispute relating to a resolution of a Gram Sabha or the Gram Sabha through a resolution against any higher authority gives a notice of not less than sixty days to the State Level Monitoring Committee and the State Level Monitoring Committee has not proceeded against such authority.

#### CHAPTER VI MISCELLANEOUS

9. Members of authorities, etc., to be public servants.- Every member of the authorities referred to in Chapter IV and every other officer exercising any of the powers conferred by or under this Act shall be deemed to be a public servant within the meaning of section 21 of the Indian Penal Code.

10. Protection of action taken in good faith. - (1) No suit, prosecution or other legal proceeding shall lie against any officer or other employee of the Central Government or the State Government for anything which is in good faith done or intended to be done by or under this Act.

(2) No suit or other legal proceeding shall lie against the Central Government or the State Government or any of its officers or other employees for any damage caused or likely to be caused by anything which is in good faith done or intended to be done under this Act.

(3) No suit or other legal proceeding shall lie against any authority as referred to in Chapter IV including its Chairperson, members, member-secretary, officers and other employees for anything which is in good faith done or intended to be done under this Act.

11. Nodal agency.- The Ministry of the Central Government dealing with Tribal Affairs or any officer or authority authorised by the Central Government in this behalf shall be the nodal agency for the implementation of the provisions of this Act.

12. Power of Central Government to issue directions.- In the performance of its duties and exercise of its powers by or under this Act, every authority referred to in Chapter IV shall be subject to such general or special directions, as the Central Government may, from time to time, give in writing.

13. Act not in derogation of any other law.- Save as otherwise provided in this Act and the Provisions of the Panchayats (Extension to the Scheduled Areas) Act, 1996, the provisions of this Act shall be in addition to and not in derogation of the provisions of any other law for the time being in force.

14. Power to make rules. - (1) The Central Government may, by notification, and subject to the condition of previous publication, make rules for carrying out the provisions of this Act.

(2) In particular, and without prejudice to the generality of the foregoing powers, such rules may provide for all or any of the following matters, namely:-

(a) procedural details for implementation of the procedure specified in section 6;

(b) the procedure for receiving claims, consolidating and verifying them and preparing a map delineating the area of each recommended claim for exercise of forest rights under sub-section (1) of section 6 and the manner of preferring a petition to the Sub-Divisional Committee under sub-section (2) of that section;

(c) the level of officers of the departments of Revenue, Forest and Tribal Affairs of the State Government to be appointed as members of the Sub-Divisional Level Committee, the District Level Committee and the State Level Monitoring Committee under sub-section (8) of section 6;

(d) the composition and functions of the Sub-Divisional Level Committee, the District Level Committee and the State Level Monitoring Committee and the procedure to be followed by them in the discharge of their functions under sub-section (9) of section 6;



(e) any other matter which is required to be, or may be, prescribed.

(3) Every rule made by the Central Government under this Act shall be laid, as soon as may be after it is made, before each House of Parliament, while it is in session, for a total period of thirty days which may be comprised in one session or in two or more successive sessions, and if, before the expiry of the session immediately following the session or the successive sessions aforesaid, both Houses agree in making any modification in the rule or both Houses agree that the rule should not be made, the rule shall thereafter have effect only in such modified form or be of no effect, as the case may be; so, however, that any such modification or annulment shall be without prejudice to the validity of anything previously done under that rule.

K. N. CHATURVEDI, Secy. to the Govt. of India

## ANNEXURE-VIII

### CONSENT TO PARTICIPATE IN A RESEARCH STUDY

**Title of Study:**

---

#### **Introduction**

- You are being asked to be in a research study.
- We ask that you read this form and ask any questions that you may have before agreeing to be in the study.

#### **Purpose of Study**

- The purpose of the study is to analyze the impacts of hydro-power projects.
- The study is a part of Ph.D. research work.

#### **Risks/Discomforts of Being in this Study**

- There are no reasonable foreseeable (or expected) risks.

#### **Benefits of Being in the Study**

- There are no expected benefits as such but you would be contributing in the research work.

**Confidentiality** [*choose one of the following*]:

- Anonymity: Yes  
No

#### **Payments**

- There will be no payment.

#### **Right to Refuse or Withdraw**

- The decision to participate in this study is entirely up to you. You may refuse to take part in the study *at any time* without affecting your relationship with the

investigators of this study Your decision will not result in any loss or benefits to which you are otherwise entitled. You have the right not to answer any single question, as well as to withdraw completely from the interview at any point during the process.

### **Right to Ask Questions and Report Concerns**

- You have the right to ask questions about this research study and to have those questions answered by me before, during or after the research. If you have any further questions about the study, at any time feel free to contact me at [chung12you86@yahoo.co.in](mailto:chung12you86@yahoo.co.in) or by telephone at [*phone number*].

### **Consent**

- Your signature below indicates that you have decided to volunteer as a research participant for this study, and that you have read and understood the information provided above.

Respondent's Name:

\_\_\_\_\_

Respondent's Signature:

Date:

\_\_\_\_\_

Investigator's Signature:

Date:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## REFERENCES

### BOOKS

Acharya, Amitav et.al. (2011) “Introduction: Human Security from Concept and Practice” in Amitav Acharya et.al. (eds.) *Human Security: From Concept to Practice Case Studies from North- east India and Orissa*, London: World Scientific Publishing Co. Pte.

\*ADB (2010), *Dagachhu Hydro- Power Project: First Cross Border*, Philippines: ADB.

\*ADB (2013), *Nepal: Country Partnership Strategy: 2013- 2017*, Philippines: ADB.

\*ADB (2015), *Asian Development Bank Member Factsheet*, Philippines: ADB.

\*ADB (2015), *Asian Development Bank Member Factsheet*, Philippines: ADB.

\*ADB (2016), *Asian Development Bank and Nepal: Factsheet*, Philippines: ADB.

\*AfDB (2013), *AfDB in Brief*, Tunisia: AfDB.

Aryal, Dr. Ravi Sharma and Gautum Rajkarnikar (2011), *Water Resources of Nepal In The Context of Climate Change*, Nepal: Water and Energy Commission Secretariat.

Asiwaju, Anthony (1996), “Overcoming Marginalization” in Sam C. Nolutshungu (ed.) *Margins of Insecurity: Minorities and International Security*, New York: University Rochester Press.

Bajpai, G.S. (1999), *China’s Shadow over Sikkim: The Politics of Intimidation*, New Delhi: Lancer Publishers.

Banerjee, Jasodhara (2012), *Can trade bridge a political chasm?: Economic and Political Relations between India and China in the 21<sup>st</sup> Century*, United Kingdom: University of Oxford.

Basnet, L. Bahadur (1974), *Sikkim: A Short Political History*, New Delhi: S.Chand and Co. Pvt. Ltd.

Bhattacharjee, J. (2013), “ The Indus Water Treaty: Issues and Concerns” in A. Kolas et.al. (eds.) *Water Scarcity in Bangladesh: Transboundary Rivers, Conflict and Co- operation*, Oslo: Peace Research Institute.

Bhattacharya, Sumana et.al. (2012), “Vulnerability of Sikkim to Climate Change and Strategies for Adaptation” in M.L. Arrawatia and Sandeep Tambe (eds.) *Climate Change in Sikkim: Patterns, Impacts and Initiatives*, Gangtok: Information and Public Relations Department.

Bhutia, Dr. Doma (ed.) (2012), *Independent People’s Tribunal on Dams, Environment and Displacement*, New Delhi: Human Rights Law Network.

Binnie, C.J.A (2004), “The Benefits of Dams to Society”, in Thomas Telford (ed.) *Long- term benefits and performance of dams*: London.

Brinkerhoff, Jennifer. M (2009), *Digital Diasporas: Identity and Transnational Engagement*, Cambridge: Cambridge University Press.

Brinkman, Henk- Jan and Cullen S. Hendrix (2011), *Food Insecurity and Violent Conflict: Causes, Consequences and Addressing the Challenges*, Rome: World Food Programme.

Cairncross Alec (1959), *The International Bank for Reconstruction and Development*”, Princeton: Princeton University.

Carpenter, Russell B. and Blyth C. Carpenter (2002), *The Blessings of Bhutan*, USA: University of Hawaii Press.

\*Census of India (2011), *District Census Handbook- Darjeeling*, West Bengal: Directorate of Census Operations.

Cernea, Michael. M. (1999), *Development's Painful Social Costs*, in S. Parasuraman *The Development Dilemma: Displacement in India*, London: Macmillan Press Ltd.

Chellaney, Brahma (2012), *From Arms Racing to Dam Racing in Asia: How to Contain the Geo- Political Risks of the Dam- Building Competition*, Washington D C: Transatlantic Academy.

Chellaney, Brahma (2013), *Water: Asia's New Battleground*, Washington D.C.: Georgetown University Press.

Choden Tashi and Dorji Penjore (2004), "Economic and Political Relations between Bhutan and the Neighbouring Countries", in *Sub-Regional Relations in the Eastern South Asia: With Special Focus on Bangladesh and Bhutan*, Japan: Institute of Developing Economies- Japan External Trade Organization (IDE- JETRO).

Choden, Sonam (2009), *Sediment Transport Studies in Punatsangchu River*, Bhutan, Sweden: Lund University.

Chowdhury, D.P. (1978), *The North- East Frontier of India (1865- 1914)*, Calcutta: Asiatic Society.

Das, Pushpita (2006), *The India- Bangladesh Border:A Problem Area for Tomorrow*, New Delhi: IDSA.

Das, Pushpita (2012), *Drug Trafficking in India:A Case For Border Security*, New Delhi: IDSA.

Dias Anthony (2012), "Development and its human cost: land acquisition, displacement and rehabilitation of Tribals", New Delhi: Rawat Publications.

Dole, David and Piya Abeygunawardena (2002), *Environmental Economics at the Asian Development Bank: Acid Rain Control by Improved Energy Efficiency in China*, Philippines: Asian Development Bank.

Dorji, Yeshey (2016), *Water: Securing Bhutan's Future*, Thimphu: Asian Development Bank/ National Environment Commission.

Dutta, P.C. and D.K. Duarah (1990), *Aspects of Culture and Customs of Arunachal Pradesh*, Itanagar: Directorate of Research, Government of Arunachal Pradesh.

Elahi, K.Maudood and M.Tajuddin. Sikder (2009), *Mega dams in the Himalayas: An assessment of environmental degradation and global warming*, Bangladesh: Stam Ford University.

Fullilove, Mindy Thompson et.al. (2010), "The Ghetto Game: Apartheid and the Developer's Imperative In Post- Industrial American Cities", in Chester Hartman and Gregory Squires (eds.) *The Integration Debate: Competing Futures For American Cities*, New York: Routledge.

Futehally, Ilmas et.al. (2010), *The Himalayan Challenge: Water Security in Emerging Asia*, Strategic Foresight Group: Mumbai.

Garver, John. W. (2001), *Sikkim and Bhutan*, Seattle: University of Washington Press.

Gogoi, Prof J.K.et.al. (2009), *Problems of Border Areas in North- East India: Implications for the Thirteenth Finance Commission*, Dibrugarh.

Gokhale, Nitin (2013), "Why Mountain Strike Corps Along the India-China Border is Important?", New Delhi: Vivekananda International Foundation (Online: web) Accessed 18 August 2016 URL: <http://www.vifindia.org/article/2013/october/7/why-mountain-strike-corps-along-the-india-china-border-is-important>.

Gokmen, Semra Rana (2010), *Geopolitics and the Study of International Relations*, Ph.D , Turkey: Middle East Technical University.

Goswami, Namrata (2012), *China's Territorial Claim on Arunachal Pradesh: Alternative Scenarios 2032*, New Delhi: Lancer's Books.

\*Government of India (2002), "Guidelines for Declaration of Eco-Sensitive Zones Around National Parks and Wildlife Sanctuaries", Ministry of Environment and Forests.

\*Government of Sikkim (2015), *Human Development Report 2014*, New Delhi: Routledge.

Grover, B.S.K (1974), *Sikkim and India*, New Delhi: Jain Brother's Publication.

Higuchi Keiji et.al. (2010), *Glaciers of Nepal- Glacier Distribution in the Nepal Himalaya with Comparisons To The Karakoram Range*, United States: U.S. Geological Survey.

\*IBRD (2012), *Management's Discussion and Analysis and Financial Statements*, Washington: World Bank.

\*IMF (2014), *Bhutan: 2014 Article IV Consultation- Staff Report; Press Release and Statement by the Executive Director for Bhutan*, IMF.

\*Indian State Forest (2009), *Arunachal Pradesh*, Forest Survey of India.

International Commission on Large Dams (1997), *Position Papers On Dams and the Environment*, Paris: ICOLD.

IPCC (2007), *Climate Change 2007: The Physical Science Basis*, UK and New York: Cambridge University Press.

Islam, M.F. (2016), *Water Use and Poverty Reduction*, New York: Springer.

Ismailov, Eldar and Vladmier Papava (2010), *Rethinking Central Eurasia*, Singapore: Central Asia- Caucasus Institute and Silk Road Studies Program.



Iwata, Shuji (2010), *Glaciers of Asia- Glaciers of Bhutan- An Overview*, Washington: United States Government Printing Office.

Kamaljit, S. Bawa and Tenzing Ingty (2012), “Climate Change in Sikkim:A Synthesis”, in M.L. Arrawatia and Sandeep Tambe (ed.) *Climate Change in Sikkim: Patterns, Impacts and Initiatives*, Gangtok: Information and Public Relations Department.

Karan, P.P and William Jenkins (1963), *The Himalayan Kingdoms: Bhutan, Sikkim, Nepal*, Princeton: Van Nostrand.

Katel, Om et.al.(2014), “Transboundary Water Resources Management in The Context of Global Environmental Change: The Case of Bhutan Himalaya”, in Sangam Shrestha et. al. (eds.) *Managing Water Resources Under Climate Uncertainty: Examples From Asia, Europe, Latin America and Australia*, London: Springer.

Kelegama, Saman (2012), *Foreign Aid in South Asia: The Emerging Scenario*, India: Sage Publications.

Kharat S. Rajesh (2015), “Introduction”, in Rajesh S. Kharat (ed.) *Bhutan: Contemporary Issues and Perspectives*, New Delhi: Adroit Publishers.

Kibreab Gaim (2000), “Common Property Resources and Resettlement”, in Michael M. Cernea and Chris McDowell (eds.) *Risks and Reconstruction: Experiences of Resettlers and Refugees*, World Bank.

Killingtveit, Anund (2013), “Hydropower”, in Detlef Stolten and Viktor Scherer (eds.) *Transition to Renewable Energy Systems*, Germany: Wiley Publishers.

Klienman, Jonathan Issac and Pratrck McCully (2009), “Environmental Effects of Hydropower Plants including Thermal, Tidal and Wave Power” in Goldemberg, Jose (ed.) *Interactions: Energy/ Environment*, United Kingdom: EOLSS Publishers Co. Ltd.

Kolas, Ashild et.al. (2013), *Water Scarcity in Bangladesh: Transboundary Rivers, Conflict and Co-operation*, Oslo: Peace Research Institute.

Kotturan, George (1983), *The Himalayan Gateway: History and Culture of Sikkim*, New Delhi: Sterling Publishers.

Kumar, Arun et. al. (2011), “Hydropower”, in O. Edenhofer et. al. (eds.) *IPCC Special Report on Renewable Energy Sources and Climate Change Mitigation*: Cambridge: Cambridge University Press.

Lee, Y.C (2014), *Human Trafficking Across Borders and The Need For a Global Response*, Master Thesis, New York: City College.

Luitel, Keshar. Kr. et.al.(2012), “Impact of Climate Change on East Rathong Glacier in Rangit Basin, West Sikkim”, in M.L. Arrawatia and Sandeep Tambe (ed.) *Climate Change in Sikkim:Patterns, Impacts and Initiatives* Gangtok:Information and Public Relations Department.

Magee, Darrin (2011), “Moving the River? China’s South-North Water Transfer Project”, in Stanley D. Brunn (ed.) *Engineering Earth:The Impacts of Megaengineering Projects*, New York: Springer.

Mahanta, Nani G. (2011), “Human Security Mapping in Conflict Zones: The Case of North- East India”, in Acharya, Amitav et. al.(eds.), *Human Security: From Concept to Practice:Case Studies from North-East India and Orissa*, Singapore: World Scientific Co. Ltd.

Mahanta, Prof. Chandan et. al. (2014), *Physical Assessment of the Brahmaputra River,; Ecosystems For Life:A Bangladesh- India Initiative*, Dhaka: Jagriti Prokashony.

Mallick, Oliver Basu (2005), *Development Theory Rostow’s Five Stage Model of Development and 1<sup>st</sup> Relevance in Globalization*, New Castle: University of New Castle.

Mathou, Thierry (2004), *Bhutan- China Relations: Towards a New Step in Himalayan Politics*, Thimpu: Centre for Bhutan Studies.

Mehrotra, L.L (2000), *India's Tibet Policy: An Appraisal and Options*, New Delhi: Tibetan Parliamentary and Policy Research Centre.

Meyer, Aubrey (2013), "The Kyoto Protocol and the Emergence of Contraction and Convergence as a Framework for an International Political Solution to Greenhouse Gas Emissions Abatement", in Olav Hohmeyer and Klaus Rennings (eds.) *Man- Made Climate Change: Economic Aspects and Policy Options*, Germany: Springer Science and Business Media.

\*Ministry of Environment and Forest (2009), *Arunachal Pradesh, India State of Forest Report*, Forest Survey of India.

\*Ministry of Finance (2014), *Profiles of Development Partners*, Kathmandu: International Economic Co- operation.

\*Ministry of Natural Resources and Environment (2006), *National Adaptation Programmes of Action On Climate Change*, Democratic Republic of Sao Tome and Principe: World Bank.

Mitra et.al. (2006), *A Political and Economic Dictionary of South Asia*, London and New York: Routledge.

Mool, Pradeep K et.al, (2001), *Inventory of Glaciers, Glacial Lakes and Glacial Lake Outburst Floods: Monitoring and Early Warning Systems in the Hindu- Kush Himalayan Region Nepal*, Nepal: International Centre For Integrated Mountain Development.

Mool, Pradeep K. (2011), *Glacial Lakes and Glacial Lake Outburst Floods in Nepal*, Nepal: International Centre For Integrated Mountain Development.

Moore, John Allphin and Jerry Pubantz (2006), *The New United Nations: International Organization in the Twenty- First Century*, New Delhi: Dorling Kindersley.

Nai, Chong Chi (2004), *Project Completion Report on the Kali Gandaki I "A" Hydro- Electric Project*, Nepal: ADB.

Nanda, Neeru (1982), *Tawang: Land of the Mon*, New Delhi: Vikas Publishing House.

Nandakumar A.K.et. al. (2007), *Asian Development Bank: Overview of Structure, Funding, Policy and Programs; with emphasis on the Health and Agriculture Sectors*, USA: Brandeis University.

\*National Commission on Environment (2000), *First Greenhouse Gas Inventory*, Thimphu: Kuensel Corporation.

\*National Electricity Authority (2009), *Environmental Impact Assessment of Upper Seti Storage Hydro- electric project: Final Report*, Kathmandu: NEA.

\*National Environment Commission (2006), *Bhutan National Adaptation Programme of Action*, UNDP.

Negi, Sharad Singh (1991), *Himalayan Rivers, Lakes and Glaciers*, New Delhi: Indus Publishing, reprinted 2004.

Pandit, Maharaja.K. and R. Edward, Grumbine (2009), “Potential Effects of Ongoing and Proposed Hydropower Development on Terrestrial Biological Diversity in the Indian Himalaya”, University of Delhi: *Centre for Interdisciplinary Studies of Mountain & Hill Environment*.

Pease, Kelly Kate (2016), *International Organizations*, New York: Routledge.

Pletcher, Kenneth (ed.) (2011), *Understanding India: The Geography of India , Sacred and Historic Places*, New York: Britannica Educational Publishing.

Premkumar, Lakshmi (2016), *A Study of the India- Bhutan Energy Co-operation Agreements and the Implementation of Hydropower projects in Bhutan*, New Delhi: Vasudha Foundation.

Rahman, H. et.al. (2012), “An Analysis of Past Threee Decade Weather Phenomenon in the Mid- Hills of Sikkim and Strategies for

Mitigating Possible Impact of Climate Change on Agriculture” in M.L. Arrawatia and Sandeep Tambe (ed.) *Climate Change in Sikkim: Patterns, Impacts and Initiatives*, Gangtok: Information and Public Relations Department.

Rapley, John (2007), *Understanding Development: Theory and Practice in the Third World*, United States: Lynne Reineer Publishers.

Rizal, Dhurba P.,(2015), *The Royal Semi-Authoritarian Democracy of Bhutan*, London: Lexington Books.

Roy, Meenu (2010), *India and Her Sub- Continent Neighbours: New Pattern of Relationships*, New Delhi: Deep and Deep Publications.

SAC and SSCST (2010), *National Wetland Atlas: Sikkim*, Ahmedabad: SAC/ISRO.

Schafer, P.J (2013), *Human and Water Security in Israel and Jordan*, New York: Springer.

Scudder, Thayer (1997), “Social Impacts of Large Dam Projects”, in Anthony H.J. Dorsey (ed.) *Large Dams: Learning from the Past Looking at the Future: Workshop Proceedings*, Washington DC: World Bank Group.

Sen, Amartya (2008), *Development as Freedom*, New Delhi: Oxford University Press.

Sevensson, Jesper (2012), *Managing the Rise of a Hydro- Hegemon in Asia: China’s Strategic Interests in the Yarlung- Tsangpo river*, New Delhi: IDSA.

Shahrbanu Tadjbakhsh and Anuradha M.Chenoy (2009), *Human Security: Concepts and Implications*, United States: Routledge Publications.

Sharma, Radhika (2016), *Development Induced Displacement A Study of Population Affected by Jaipur Metro Project*, Ph. D, Jaipur: IIS University.

Shrestha, Prakash Kumar (2010), *Structural Changes and Economic Growth in Nepal*, New York: New School for Social Research.

Singh, Nagendra (1985), *Bhutan: A Kingdom in the Himalayas a study of its Land, its People and its Government*, New Delhi: S. Chand and Company Ltd.

Soubbotina, Tatyana.P. (2004), *Beyond Economic Growth: An Introduction to Sustainable Development*, Washington: World Bank.

Subba, J.R. (2008), *History, Culture and Customs of Sikkim*, New Delhi: Gyan Publishing House.

Tambe, Sandeep and M.L.Arrawatia (2012), “Climate Change Initiatives in Sikkim”, in M.L. Arrawatia and Sandeep Tambe (ed.) *Climate Change in Sikkim: Patterns, Impacts and Initiatives*, Gangtok: Information and Public Relations Department.

Tambe, Sandeep et.al. (2012), “Reviving Dying Springs: Climate Change Adaptation Experiments from the Sikkim Himalaya”, in M.L. Arrawatia and Sandeep Tambe (ed.) *Climate Change in Sikkim: Patterns, Impacts and Initiatives*, Gangtok: Information and Public Relations Department.

Temsumenla (2002), “Women In Development in Bangladesh : Role of Non- Governmental Organisations (NGO’s), Thesis, South Asian Studies, SIS, JNU, New Delhi.

Tibet Justice Centre (2002), *Tibet’s Stateless Nationals: Tibetan Refugees in Nepal*, California: TJC.

Tse-ring, Karma et.al. (2010), *Climate Change Vulnerability of Mountain Ecosystems in the Eastern Himalayas*, Nepal: International Centre For Integrated Mountain Development.

\*UN (1992), *United Nations Framework Convention on Climate Change*, New York: Oxford University Press.

\*UN (2014), *A New Climate Change Agreement Must Include Human Rights Protection For All*, Human Rights Office Of The High Commissioner, New York: Oxford University Press.

\*UNDP (1990), *Human Development Report 1990*, New York: Oxford University Press.

\*UNDP (2015), *A Beginner's Guide to the United Nations Development Programme*, Denmark: UNDP JPO Service Centre.

\*United Nations (1972), *Report of the United Nations Conference on the Human Environment*, Washington D.C: United Nations.

Upreti, Trilochan (2006), *International Watercourses Law and Its Application in South Asia*, Nepal: Pairavi Prakashan.

Verma, Rajesh (2005), *Sikkim: A Guide and Handbook*, New Delhi: Narendra Bhatia and Company.

Virmani, Arvind (2006), "India- China Economic Co-operation", in Jahangir Aziz et.al. (eds.) *China and India: Learning From Each Other Reforms and Policies for Sustained Growth*, Washington: International Monetary Fund.

Waslekar, Sundeep et. al. (2013), *Restructuring India- Bangladesh Relations*, Mumbai: Strategic Foresight Group.

\*WCED (1987), *Our Common Future*, United Nations World Commission on Environment and Development, New York: Oxford University Press.

Wild, John J. et.al. (2009), *International Business: The Challenges of Globalization: Global Edition*, London: Pearson.

\*World Bank (2005), *World Development Indicators*, Washington: International Bank for Reconstruction and Development.

\*World Commission on Dams (2000), *Dams and Development : A New Framework For Decision Making*, London and Sterling: Earthscan Publications Ltd.

\*WWF (2009), *Eastern Himalayas: Empowering Communities to protect Sacred Lands*, Washington: WWF.

## Articles

ADB (2014), “ADB to Finance Second Hydro-Power Plant PPP in Bhutan”, (Online: web) Accessed 16 July 2016 URL:

<http://www.adb.org/news/adb-finance-second-hydropower-plant-ppp-bhutan>.

ADB (2014), “Bhutan Prime Minister Visits ADB to Celebrate Three-Decade Partnership”, (Online: web) Accessed 16 July 2016 URL: <http://www.noodles.com/view/AA4DB84F66B21ABB98878F9D863C49DD8A84B01D?5251xxx1409908805>.

ADB (2014), “New ADB-Bhutan Partnership to Support Inclusive, Green Growth”, accessed from <http://www.adb.org/news/new-adb-bhutan-partnership-support-inclusive-green-growth> on 16th July, 2016.

Ageta, Yutaka et.al. (2000), “Expansion of Glacial Lakes in Recent Decades in the Bhutan Himalayas”, *Proceedings of Debris Covered Glaciers Workshop*: Washington.

Ahsan, S.A and Bhumitra Chakma (1993), “Bhutan’s Foreign Policy: Cautious Self-Assertion”, *Asian Survey*, 33 (11): 1043-1054.

Anuradha (2015), “Bhutan Hydropower Developments in 2015”, *SANDRP*, (Online: web) 16 July 2017 Accessed URL <https://sandrp.wordpress.com/2016/01/26/bhutan-hydropower-developments-in-2015/>.

Aryal, Pabitra (2015), “Climate Change and Its Impact on Medicinal and Aromatic Plants: A Review”, *Climate Change*, 1 (1): 49-53.



- Badola, H.K. (2009), “Phenology: A Tool to Monitor Climate Change; A Need in Sikkim Himalaya”, *Panda*, 2(1): 1-41.
- Baijal, Pradip and P.K.Singh (2000), “Large Dams: Can We Do Without Them?”, *Economic and Political Weekly*, 35 (19): 1659-1666.
- Banerjee, Nirmalya (2008), “Sikkim is part of India, concedes Chinese envoy”, *Times of India*, Kolkata, 22 June 2008.
- Barking, J.Samuel (2006), *International Organization: Theories and Institutions*, New York: Palgrave MacMillan.
- Basu, Jayanta (2010), “Hydel Plan on Sikkim ‘Holy River’ Hit”, *Telegraph*, Kolkata, 28 December 2010.
- Bayeh, Endalcachew (2014), “Theories on the Role of International Organisations in Maintaining Peace and Security”, *IJMRD*, 1 (7): 347-350.
- Berry, Kate A. (2000), “Water along the Borders: An Introduction to Water Issues in the U.S-Mexico Borderlands”, *Natural Resources Journal*, 40 (4): 755-758.
- Bhusal, Jagat K. (2008), “Assessment Of Water Availability In Major River Basins Of Western Nepal”, Presented on 1-4 September 2008 at the World Water Congress: France.
- Bhutia, Zigme Wongchuk and Dr. P.K. Mishra (2014), “Bhutia tribe in Sikkim: A Sociological Study”, *International Journal of Innovative Research and Development*, 3 (11).
- Bolton, Kerry Raymond (2010), “Water Wars: Rivalry Over Water Resources: A Potential Cause of Regional Conflict In Asia and The Geopolitical Implications”, *World Affairs*, 14 (1).
- Bothe, Winnie (2012), “The Monarch’s Gift: Critical Notes on the Constitutional Process in Bhutan”, *European Bulletin of Himalayan Research*: 40.

Ceglowski, Janet (1998), “Has Globalization Created a Borderless World?”, *Business Review*.

Centre for Bhutan Studies and IDE/JETRO (2004), “Economic and Political Relations: Between Bhutan and Neighbouring Countries”, *Monograph*.

Cernea, Michael.M. (2004), “Impoverishment Risks, Risk Management and Reconstruction: A Model of Population Displacement and Resettlement”, *Paper presented in UN symposium on Hydropower and Sustainable Development held at Beijing October 27-29*.

Chattopadhyay, Gauriprasad (1994), “A Few Notes on Bentham’s Concept of Utility”, *Indian Philosophical Quarterly*, 21 (1).

Chellaney, Brahma (2009), “Coming Water Wars”, *International Economic Policy Magazine*.

Chellaney, Brahma (2013), “China’s Hydro- Hegemony”, *The NewYork Times*, 17 February, 2013.

Chellaney, Brahma (2015), “Why is Narendra Modi going to China?”, (Online: web) Accessed 24 August 2016 URL: <http://chellaney.net/2015/04/30/why-is-narendra-modi-going-to-china/>.

Chhetri, Bishal and Lakpa Tamang (2013), Population Growth and Associated Problems: A Case Study of Darjeeling Town, *International Journal of Humanities and Social Science*, 2 (5): 63-67.

Chowdhury, Jayanta Roy (2010), “Snag in NE Power Loan”, *The Telegraph*, New Delhi, 25 June 2010.

CNBC (2017), “Trump Wants to Built 30 Foot High Wall at Mexican Border”, *CNBC*, 19 March 2017 (Online: web) Accessed 10 January 2017 URL: [https://cdm.unfccc.int/filestorage/H/M/6/HM6VZ1UXNIK5J4YDBTG LASC7RW2O39/308.49\\_PDD\\_PHPA\\_I\\_clean\\_v07?t=eHR8b2p6NHF1fDCeehgZy5KwppX5Pw3crIza](https://cdm.unfccc.int/filestorage/H/M/6/HM6VZ1UXNIK5J4YDBTG LASC7RW2O39/308.49_PDD_PHPA_I_clean_v07?t=eHR8b2p6NHF1fDCeehgZy5KwppX5Pw3crIza).

Das, Deepak Kumar (2006), "Environmental Impact of Inter-Basin Water Transfer Projects: Some Evidence from Canada", *Economic and Political Weekly*, 41 (17): 1703-1707.

Demick, Barbara (2015), "Tibet's Road ahead: Tibetan's lose a haven in Nepal under Chinese pressure", *Los Angeles Times*, Nepal, 6 August 2015.

Dhakal, Dr. Suman (2003), "Nepal-Bhutan Relations-A Study of the Past", *Ancient Nepal-A Journal of the Department of Archeology*, 152.

Do, Quy- Toan and Lakshmi, Iyer (2009), "Geography, Poverty and Conflict in Nepal", *Working Paper*.

Dokhampa, Rigzin.N. (2003), "Origins of the Bumchu (bumchu) of Drakar Tashiding (Brag dkar shis sdings)", *Bulletin of Tibetology*, 39 (1): 25-30.

Doran, Dr. Peter (2002), *World Summit on Sustainable Development (Johannesburg)-An Assessment for IISD*, Briefing Paper.

Druk Green Corporation Ltd. (2017), "Salient Features", (Online: web) Accessed 12 July 2017 URL: <http://www.drukgreen.bt/index.php/thp-menu/salient-thp>.

ET (2014), "World Bank to Fund Ecologically Safe Power Projects", *Economic Times*, Kolkata, 10 August 2014.

G.B.Pant Institute of Himalayan Environment and Development (2006), "Himalayan Ecology", *Envis Bulletin*, 14 (1): 1-87.

Ganguly, Sumit (1989), "The Sino- Indian Border Talks, 1981- 1989: A View From New Delhi", *Asian Survey*: 29 (12).

Gautam, P.K (2008), "Buddhism in the Himalayan Belt", *Bulletin of Tibetology*, 44 (1&2): 5-201.

Geeraerts, Gustaaf (1995), "Analysing Non- State Actors in World Politics", *Pole Papers*, 1 (4).

Gosain, A.K. and A. Singh (2004), “Water Rights in Indian Transboundary Watercourses”, *Jalvigyan Sameeksha*, 19: 1-2.

Goswami, Namrata (2010), “China’s Territorial Claim on Arunachal Pradesh: Crafting an Indian Response”, *IDSIA Issue Brief*.

Goswami, Namrata (2014), “The ‘Myth’ behind China’s Territorial Claims: Implications for North- east India”, *SSPC Issue Brief*.

Guha, Keshava.D. (2012), “Sino- Indian Relations: History, Problems and Prospects”, *Harvard International Review*.

Gurung, Bijoy (2012), “Sikkim scraps two power plants on holy river”, *The Telegraph*, Kolkata, 3 February 2012.

Gurung, Deo Raj et.al.(2017), “Tsho Glacial Lake Outburst Flood (GLOF) in Bhutan: Cause and Impact”, *Environment Risk Assess Remedial*, 1 (2).

Hamududu, Byman and Aanund Killingtveit (2012), “Assessing Climate Change Impacts On Global Hydro- Power”, *Energies*, 5 (2): 305-322.

Hande, Ravindra D. and Kishor P. Kadam (2012), “India- China Trade Relation and its Changing Scenario”, *Electronic International Interdisciplinary Research Journal*, 1 (3).

Hanghal, Ninglun (2013), “Mini Hydro- projects to Arunachal Pradesh’s rescue”, (Online: web) Accessed 9 July 2017 URL: <https://www.thethirdpole.net/2013/11/15/mini-hydro-projects-to-arunachal-pradeshs-rescue/>.

Harris, Jonathan. M. (2000), “Basic Principles of Sustainable Development”, *G- DAE Working Paper No. 00-04*.

Hollenbach, David.S.J (2013), “Accompaniment, Service and Advocacy: Responding to Global Poverty and Displacement”, *Conversations on Jesuit Higher Education*, 44 (6).

Hoshour, Cathy (2010), “Development as Usual in a Changing Global Climate”, *15<sup>th</sup> Annual International Metropolis Conference*: Netherlands.

Hughes, Linsay (2016), “India- Nepal Relations: From Dominance to Equality”, *Strategic Analysis Paper (Future Directions International)*.

Indian Express (2015), “China’s CCTV Channel shows India’s map without J & K and Arunachal”, New Delhi, 14 May 2015.

INFOJAPAN (2013) “Japan extends Loan Assistance for the Tanahu Hydro-Power Project”, *INFOJAPAN*, 34 (Online: web) Accessed 13 July 2016 URL: <http://www.np.emb-japan.go.jp/pdf/infomar2013.pdf> on 13th July, 2016.

INRM/IIMA/IISc (2011), “Arunachal Pradesh State Action Plan On Climate Change”, (Online: web) Accessed 11 July 2017 URL: <http://www.indiaenvironmentportal.org.in/files/file/Arunachal-Pradesh-SAPCC.pdf>.

International Atomic Energy Agency (2002), “World Water Day 2002: Water For Development”, (Online: web) Accessed 9 February 2016 URL: <https://www.iaea.org/newscenter/pressreleases/world-water-day-2002-water-development>.

International Atomic Energy Agency (2002), “World Water Day 2002: Water For Development”, (Online: web) Accessed 9 February 2016 URL: <https://www.iaea.org/newscenter/pressreleases/world-water-day-2002-water-development>.

Jahangir, Md. J.H (2013), “Bangladesh: Transboundary Rivers Problems and Prospects”, Presented on 6-7 June 2013 at the Expert Scoping Workshop On Quantifying the Benefits of Transboundary Water Cooperation: Amsterdam.

Jailly, Eammanuel Brunet (2010), “The State of Borders and Borderlands Studies 2009:A Historical View and a View from the Journal of Borderlands Studies”, *Eurasia Border Review*, 1 (1).

Jayaram, Dhanasree (2015), "China's Dams and Regional Security Implications: An Indian Perspective", *Institute of Peace and Conflict Studies*, 259.

Jeffrey, I.E and Emeh (2013), "Dependency Theory and Africa's Underdevelopment: A Paradigm Shift from Pseudo-Intellectualism: the Nigerian Perspective", *International Journal of African and Asian Studies- An Open Access International Journal*, 1.

JICA (2012), "Japan International Cooperation Agency Annual Report", (Online: web) Accessed 25 June 2016 URL: <http://www.jica.go.jp/english/publications/reports/annual/2012/c8h0vm00002qe6vj-att/all.pdf>.

Jogesh, Anu and Navroz K. Dubash (2014), "Mainstreaming Climate Change in State Development Planning: An Analysis of the Sikkim Action Plan on Climate Change", *Centre For Policy Research Working Paper*.

Johansson, Thomas B. (2012), "Global Energy Assessment- Towards a Sustainable Future" Keynote Address on 10th October 2012 in *Stanford University 10<sup>th</sup> Anniversary of the Global Climate and Energy Project*: Cambridge and Luxemburg.

Jr. Jair Soares and Rogerio H, Quintella (2008), "Development: An Analysis of Concepts, Measurements and Indicators", *Brazilian Administrative Review*, 4 (2): 104-124.

Khalid, Iram (2010), "Trans- boundary Water Sharing Issues: A Case of South Asia", *Journal of Political Studies*, 1 (2): 79-96.

Kharat, Rajesh (2004), "Bhutan's Security Scenario", *Contemporary South Asia*, 13 (2): 171-185.

Khawas, Vimal (2004), "Sustainable Development and Management of Water Resource in Mountain Eco- system: Some examples from

Sikkim Himalaya”, (Online: web) Accessed 11 July 2017 URL: <http://lib.icimod.org/record/11725/files/26.pdf>.

Komori, Jiro et. al. (2012), “Glacial Lake Outburst Events in Bhutan Himalayas”, *Global Environmental Research*, 16: 59-70.

Korstanje, Emily (2016), “China’s influence in Nepal endangers Tibetan refugees”, *New Internationalist Magazine: People, Ideas and Action for Global Justice* (Online: web) Accessed 24 August 2016 URL: <https://newint.org/features/web-exclusive/2016/01/11/chinas-influence-in-nepal-endangers-tibetan-refugees/>.

Kumar, Dr. Amit (2016), “Nepal PM K P Oli’s Visit to China”, *Indian Council of World Affairs*.

Lama, Mahendra P. (2016), “BBIN Initiatives: Options For Cross-Border Power Exchange”, *ORF Issue Brief*, 137.

Landy, Marc.K. (1996), “The Cruel Choice: A New Concept in the Theory of Development by Denis Goulet”, *Atheneum*.

Levi, Werner (1959), “Bhutan and Sikkim: Two Buffer States”, *The World Today*, 15 (12): 492-500.

Lotay, Yeshey (2015), “Bhutan: Disaster Management”, *Visiting Researcher Program*.

Malhotra, Pia (2010), “Water Issues Between Nepal, India and Bangladesh”, *IPCS Special Report*.

Malone, David .M. and Rohan Mukherjee (2010), “India and China: Conflict and Co-operation”, *Survival*, 52 (1).

Manatunge, J. et.al. (2006), “Environmental and Social Impacts of Reservoirs: Issues and Mitigation”, *Oceans and Aquatic Ecosystems*, 1.

Mandhana, Niharika (2012), “As China squeezes Nepal, Tibetan Escape Route Narrows”, *Time Magazine* (Online: web) Accessed 28 August 2016 URL: <http://tibet.net/2012/07/as-china-squeezes-nepal-tibetan-escape-route-narrows/>.

Manish, Sai (2012), “The sacred will be dammed. That’s the Fear in Sikkim”, *Tehelka Magazine*, 9(7) (Online: web) Accessed 9 February 2016 URL:

[http://archive.tehelka.com/story\\_main51.asp?filename=Ne180212sacred.asp](http://archive.tehelka.com/story_main51.asp?filename=Ne180212sacred.asp).

Mathou, Thierry (2005), “Tibet and Its Neighbours: Moving Towards a New Chinese Strategy in the Himalayan Region”, *Asian Survey*, 45 (4): 503-521.

Naidu, A.G. (1986), “Bhutan Looks Outwards: Its Search for Identity?”, *The Indian Journal of Political Science*, 47 (4): 533-545.

Namgyel, Tenzin (2014), “The 10,000 MW Dream- Dead in the Water?”, *Kuensel*, (Online: web) Accessed 17 February 2016 URL <http://kuenselonline.com/archive/the-10000mw-by-2020-dream-dead-in-the-water>.

NDTV (2014), “China Inaugurates New Tibet Rail Link Close to Sikkim”, (Online: web) Accessed 8 August 2016 URL: <http://www.ndtv.com/india-news/china-inaugurates-new-tibet-rail-link-close-to-sikkim-649304>.

NEA (2013), *Tanahu Hydro- power Limited: About the Project*, NEA: Kathmandu (Online: web) Accessed 14 July 2016 URL: <http://thl.com.np/index.php?nav=projects>.

NEA (2016), “Kulekhani- I Hydro- power station”, (Online: web) Accessed 16 July 2016 URL: <http://www.nea.org.np/generation/index.php?page=powerhouse&pid=16>.

NEA (2016), “Kulekhani-II Hydro- power station”, (Online: web) Accessed 16 July 2016 URL: <http://www.nea.org.np/generation/index.php?page=powerhouse&pid=17>.

NEA (2016), “Marsyangdi Hydro- power station”, (Online: web) Accessed 16 July 2016 URL: <http://www.nea.org.np/generation/index.php?page=powerhouse&pid=18>.



Nepal Economic Forum (2014), “Hydro- Power Development in Nepal: Summary Reports”, (Online: web) Accessed 25 February 2016  
URL:

[www.nepaleconomicforum.org/uploads/publications/file/Hydropower Development in Nepal Final\\_20150413010749.pdf](http://www.nepaleconomicforum.org/uploads/publications/file/Hydropower%20Development%20in%20Nepal%20Final_20150413010749.pdf).

Norbu, Tenzin (2013), “Tibet: The Third Pole and The Himalayas”, (Online: web) Accessed 7 September 2016 URL: <http://tibet.net/wp-content/uploads/2013/05/FNVA-Sikkim-Tibet-The-Third-Pole-the-Himalayas.pdf>.

Oktem, Kerem (2002), “When Dams are Built on Shaky Grounds: Policy Choice and Social Performance of Hydro-Project Based Development in Turkey”, *Economic and Political Weekly*, 56 (3): 310-325.

Panthi, Jeeban et. al. (2015), “Spatial and Temporal Variability of Rainfall in the Gandaki River Basin of Nepal Himalaya”, *Climate*, 3: 210-226.

Patranobis, Sutirtho (2016), China blocks Brahmaputra tributary, impact on water flow in India not clear”, *The Hindustan Times*, New Delhi, 1 October 2016.

Patterson, George.N. (1962), “Recent Chinese Policies in Tibet and Towards the Himalayan Border States”, *The China Quarterly*, 12: 191-202.

Pelden, Sonam (2010), “Looking Beyond Hydro- power”, *Bhutan Observer*, 2 April 2010.

Penjore, Dorji (2004), “Security of Bhutan: Walking Between Two Giants”, *Journal of Bhutan Studies*, 10: 108-131.

Poulose, T.T. (1971), “Bhutan’s External Relations and India”, *The International and Comparative Law Quarterly*, 20 (2): 195-212.

Prasad, Uma Shankar (2015), “Study of Nepal’s Economic Relationship with China”, *The Journal of Development and Administrative Studies*, 23 (1-2): 23-32.

Project detail document (2013), “Punatsangchhu project- I”, (Online: web) Accessed 16 July 2017 URL: [https://cdm.unfccc.int/filestorage/H/M/6/HM6VZ1UXNIK5J4YDBTG LASC7RW2O39/308.49\\_PDD\\_PHPA\\_I\\_clean\\_v07?t=Q1Z8b3Q2ZW94fDANz7f4RSrGherPGsj64RT3](https://cdm.unfccc.int/filestorage/H/M/6/HM6VZ1UXNIK5J4YDBTG LASC7RW2O39/308.49_PDD_PHPA_I_clean_v07?t=Q1Z8b3Q2ZW94fDANz7f4RSrGherPGsj64RT3).

Pyatt, Geoffrey (2011), “Hydro- diplomacy For Regional Co- operation Over Himalayan Watersheds”, *South Asia Journal*, 1.

Rahaman, M.M. (2009), “Principles of International Water Law: Creating Effective Transboundary Water Resources Management”, *International Journal of Sustainable Society*, 1 (3).

Rahut, Dil Bahadur (2011), Climate Change in Bhutan: Adaptation and Mitigation, paper presented in South Asia Climate Change Focal Points and Experts Consultation Meeting held on 16<sup>th</sup>- 17<sup>th</sup> November, 2011: South Asian University.

Rao, Kirthi V. and Utpal Bhaskar (2013), “Govt. Drops Arunachal, Sikkim From Porposed World Bank Loan”, *Livemint (Online: web)* Accessed 9 July 2017 URL: <http://www.livemint.com/Politics/LrPjnU5irkTiOeOKyiadKP/Govt-drops-Arunachal-Sikkim-from-proposed-World-Bank-loan.html>.

Rasheed, K.B.S, “Water Security in Eastern Himalayan Region, *South Asia Journal*.

Ray, Prof. Pranab, Kumar (2014), “Rivers of Conflict or Rivers of Peace: Water Sharing Between India and China”, *Observer Research Foundation Seminar Series*, 1 (13).

Rehman, Iskander (2009), “Sino- Indian Border Skirmishes Towards a Limited Confrontation?”, *IPCS Issue Brief*: 117.

- Richards, Katherine (2015), “China-India: An Analysis of the Himalayan Territorial Dispute”, *Indo-Pacific Strategic Papers*.
- Rosenberg, D. M. et al. (1995), “Environmental and Social impacts of large scale Hydroelectric development: Who is Listening?”, *Global Environmental Change*, 5 (2).
- Routray, Bibhu Prasad (2002), “Growing Tentacles of Insurgency in Arunachal Pradesh”, *Institute of Peace and Conflict Studies*.
- Roy, Shubhajit (2014), “Stapled Visa for Arunachal resident’s a goodwill gesture, says Chinese Chief Minister”, *Foundation for National Security Research* (Online: web) Accessed 18 August 2016  
URL:  
[http://www.fnsr.org/index.php?option=com\\_content&view=article&id=7854:stapled-visa-for-arunachal-residents-a-goodwill-gesture-says-chinese-foreign-minister&catid=67:news&Itemid=118](http://www.fnsr.org/index.php?option=com_content&view=article&id=7854:stapled-visa-for-arunachal-residents-a-goodwill-gesture-says-chinese-foreign-minister&catid=67:news&Itemid=118).
- Salehin, Mashfiqus et.al. (2011), “Opportunities for Trans- Boundary Water Sharing in the Ganges, the Brahmaputra, and the Megha basins”, *India Infrastructure Report*.
- Samanta, Pranab Dhal (2009), “At ADB Beijing Blocks India’s \$60 million Project for Arunachal Pradesh”, *The Indian Express*, New Delhi, 14 April 2009.
- SANDRP (2007) “Lepcha Protests Against Panan HEP in Sikkim”, *Dams, Rivers and People* (Online: web) Accessed 20 January 2016  
URL:  
[http://www.sandrp.in/hydropower/Lepcha\\_Protests\\_against\\_Panan\\_HEP\\_Aug07.PDF](http://www.sandrp.in/hydropower/Lepcha_Protests_against_Panan_HEP_Aug07.PDF).
- Sarkar, Debasis (2014), “India’s indecision keeps Bhutan’s 540 MW Amochu project under uncertainty”, *ET Bureau*.
- Sarkar, Debasis (2017), “Open Borders with Nepal, Bhutan Pose Security Threat”, *ET Bureau*.

Schwabach, Aaron (2015), “Transboundary Environmental Harm and State Responsibility: Customary International Law”, *Encyclopedia of Life Support Systems*.

Seers, Dudley (1969), “The Meaning of Development”, Institute of Development Studies.

Senz, Anja and Dieter, Reinhardt (2013), “Cross Boundary Water Resource Management in a Non- Cooperative Context: The Case of Eastern Himalaya”, *ECPR Annual Conference*, Bordeaux.

Shah, Dr. Sandip et.al. (2006), “Nepal- India Cooperation on Hydro-Power: Final Report”, Independent Power Producer’s Association Nepal Confederation of Indian Industry (Online: web) Accessed 25 February 2016

URL:<http://cii.in/WebCMS/Upload/CII%20%20Nepal%20India%20Cooperation%20on%20Hydropower.pdf>.

Shakabpa, Tsepon W.D (1984), *Tibet: A Political History*, New York: Potala Corporation.

Sharma, Diksha (2015), “China’s Dam Rush and Its Implication on India”, (Online: web) Accessed 14 August 2017 URL: [http://cpadelhi.org/papersreports/Issues%20in%20Foreign%20Policy/ISINFP\\_DIKSHA%20SHARMA\\_1\\_July\\_2015.pdf](http://cpadelhi.org/papersreports/Issues%20in%20Foreign%20Policy/ISINFP_DIKSHA%20SHARMA_1_July_2015.pdf).

Shelley, Louise I (), *Border Issues: Transnational Crime and Terrorism*,

Shrestha, B.N (2014), *Case Study: Nepal- India Border Management and Its Challenges and Opportunities*”, Presentation delivered on 16-21 June 2014 at the FIGXXV Congress, Kuala Lumpur, Malaysia.

Shrestha, Gyanu Raja (2003), *Nepal- India Bi- Lateral Trade Relations: Problems and Prospects*, New Delhi: Research and Information System.

Singh, Bikash (2014), “With multi- donor backing out, GoI to fund transmission lines in Arunachal Pradesh and Sikkim” *ET Bureau*.

Snell, John.L.(1954), “Wilson on Germany and the Fourteen Points”, *The Journal of Modern History*, 26 (4): 364-369.

Spiegel, Carolin (2005), “International Water Law: The Contributions of Western United States Water Law to the United Nations Convention on the Law of the Non- Navigable uses of International Watercourses”, *Duke Journal of Comparative and International Law*, 15: 333.

Subrata, Purkayastha (2013), Hydro- Power Development and the Lepchas: A Case Study of the Dzongu in Sikkim, India, *International Research Journal of Social Sciences*, 29 (8): 19-24.

Terminski, Bogumil (2013), “Development Induced Displacement and Resettlement: Theoretical Works and Current Challenges”, Geneva (Online: web) Accessed 17 January 2016 URL:

<https://dlc.dlib.indiana.edu/dlc/bitstream/handle/10535/8833/Bogumil%20Terminski,%20developmentInduced%20Displacement%20and%20Resettlement.%20Theoretical%20frameworks%20and%20current%20challenges.pdf?sequence=1>.

Thakkar, Himanashu (2012), “Dams, Rivers and People”, *SANDRP*, 10 (8-9).

Thanju, Rajendra P. (2007), “Hydro Nepal”, *Journal of Water, Energy and Environment*, 1 (1): 15-21.

The Assam Tribune (2015), “Concern over Impact of Bhutan Hydel projects”, *The Assam Tribune*, Guwahati, 18 February 2015.

The Hindu (2017), “WB Govt. to implement rainwater harvesting project in Darjeeling”, *The Hindu*, Kolkata, 16 May 2017.

Thiemann, C et. al. (2010), “The Structure of Borders in a Small World”, *PLoS One*.

Times of India (2016), “How India plans to Use Indus Water Treaty To Turn The Heat On Pakistan”, *The Times of India*, New Delhi, 28 September 2016.

Times of India (2002), “Lodhama Residents protest Rammam Hydel Project”, *The Times of India*, Kolkata, 8 July 2002.

Tobay, Tshering (2010), “Carbon Neutral”, *Life and Politics in Democratic Bhutan*”, (Online: web) Accessed 12 April 2016 URL: <http://www.tsheringtobgay.com/government/2010/carbon-neutral.html>.

United Nations (1992), “Rio Declaration on Environment and Development 1992”, (Online: web) Accessed 14 June 2016 URL: <http://www.jus.uio.no/lm/environmental.development.rio.declaration.1992/portrait.a4.pdf>.

United Nations (2007), “Sustainable Development in Action: United Nations Commission on Sustainable Development”, (Online: web) Accessed 14 June 2016 URL: [http://www.un.org/esa/sustdev/csd/csd15/media/backgrounder\\_brundtland.pdf](http://www.un.org/esa/sustdev/csd/csd15/media/backgrounder_brundtland.pdf)

United Nations (2008), Transboundary Waters: Sharing Benefits, Sharing Responsibilities, *Thematic Paper*.

United Nations Office on Drugs and Crimes (2013), “Bhutan working against Human Trafficking”, accessed on 12 July 2017 <https://www.unodc.org/southasia/frontpage/2013/April/bhutan-working-against-human-trafficking-focussing-on-rights-not-on-numbers.html>.

Vishal, Ravi Shekhar and B. Muthupandian (2015), “India’s Border Trade with China: Current Status and Potential of Trade Route through Nathu La”, *SMS Varanasi*, 9 (2).

Walcott, Susan M. (2010), “Bordering the Eastern Himalaya: Boundaries, Passes, Power Contestants”, *Geopolitics*, 15 (1): 62-81.

Walters, J and P.H.Davis (2011), Human Trafficking, Sex Tourism and Child Exploitation On the Southern Border, *Journal of Applied Research On Children: Informing Policy For Children At Risk*, 2 (1).

Wangchuk, Pema (2007), “Lepchas and Their Hydel Project”, *Bulletin of Tibetology*, 43 (1-2).

Winterbottom, Vaughan (2015), “Water wars: China’s Rivers are set to be a Source of Conflict”, *World Review*,(Online: web) Accessed 9 February 2016 URL: <http://www.worldreview.info/content/water-wars-china-s-rivers-are-set-be-source-conflict>.

WWF- US (2005), “Critical Ecosystem:Partnership Fund”, (Online: web) Accessed 16 July 2017 URL: <http://www.cepf.net/Documents/final.ehimalayas.ep.pdf> .

Yilimaz, Derya and Gokhan Kilicoglu (2013), “Resistance to Change and Ways of Reducing Resistance in Educational Organisations”, *European Journal of Research On Education*, 1 (1): 14-21.

Zambakari, Christopher (2012), “Underdevelopment and Economic Theory of Growth : Case for Infant Industry Promotion”, *Consilience: The Journal of Sustainable Development*, 8 (1): 171-187.

#### Internet sources

[http://shodhganga.inflibnet.ac.in/bitstream/10603/18345/9/09\\_chapter%202.pdf](http://shodhganga.inflibnet.ac.in/bitstream/10603/18345/9/09_chapter%202.pdf) accessed 10<sup>th</sup> January, 2017.

[http://shodhganga.inflibnet.ac.in/bitstream/10603/99320/8/08\\_chapter%201.pdf](http://shodhganga.inflibnet.ac.in/bitstream/10603/99320/8/08_chapter%201.pdf) accessed 28 May 2017.

[https://cdm.unfccc.int/filestorage/H/M/6/HM6VZ1UXNIK5J4YDBTGLASC7RW2O39/308.49\\_PDD\\_PHPA\\_I\\_clean\\_v07?t=eHR8b2p6NHF1fDCe\\_ehgZy5KwppX5Pw3crlza](https://cdm.unfccc.int/filestorage/H/M/6/HM6VZ1UXNIK5J4YDBTGLASC7RW2O39/308.49_PDD_PHPA_I_clean_v07?t=eHR8b2p6NHF1fDCe_ehgZy5KwppX5Pw3crlza) accessed 10<sup>th</sup> January, 2017.

[http://shodhganga.inflibnet.ac.in/bitstream/10603/18345/9/09\\_chapter%202.pdf](http://shodhganga.inflibnet.ac.in/bitstream/10603/18345/9/09_chapter%202.pdf) accessed 10<sup>th</sup> January, 2017.

<https://borderlandshistory.org/2016/12/12/new-book-border-flows/> accessed 20<sup>th</sup> January, 2017.

<http://economictimes.indiatimes.com/news/economy/foreign-trade/indias-trade-deficit-with-china-jumps-to-53-billion-in-2015-16/articleshow/53492853.cms> accessed 28th January, 2017.

<http://mea.gov.in/Portal/ForeignRelation/Bhutan-February-2012.pdf> accessed on 21 May 2015

[https://www.mea.gov.in/Portal/ForeignRelation/Bhutan July 2016.p df](https://www.mea.gov.in/Portal/ForeignRelation/Bhutan_July_2016.p df) accessed on 2 February, 2017

<https://mea.gov.in/Portal/ForeignRelation/Bhutan-February-2012.pdf> accessed 4 May 2017.

<http://www.nepalembassy.in/socioculrel.html> accessed 12 February 2017.

[http://trade.ec.europa.eu/doclib/docs/2006/september/tradoc\\_113424.pdf](http://trade.ec.europa.eu/doclib/docs/2006/september/tradoc_113424.pdf) accessed 12 February 2017.

[https://www.mea.gov.in/Portal/ForeignRelation/India-Nepal Bilateral Brief for MEA website - Oct 2015.pdf](https://www.mea.gov.in/Portal/ForeignRelation/India-Nepal_Bilateral_Brief_for_MEA_website_-_Oct_2015.pdf) accessed 12 February 2017.

<http://164.100.47.134/intranet/India-Bhutan%20Relations.pdf> accessed 23 February 2017.

[http://mekong.riverawarenesskit.org/html/1.11.2\\_description\\_transboundary.html](http://mekong.riverawarenesskit.org/html/1.11.2_description_transboundary.html) accessed 9 July 2017.

[shodhganga.inflibnet.ac.in/bitstream/10603/10659/10/10\\_chapter%203.pdf](http://shodhganga.inflibnet.ac.in/bitstream/10603/10659/10/10_chapter%203.pdf) accessed 11 July 2017.



<http://defence.pk/pdf/threads/by-building-the-sawalkot-dam-is-india-using-water-as-a-weapon-against-pakistan.484690/> accessed on 10 July 2017.

<http://www.asiapacificadapt.net/sites/default/files/pdfs/seminars/6th-sharing-learning-seminar/water-resources-management-bhutan.pdf> accessed 11 July 2017.

<https://www.researchgate.net/file.PostFileLoader.html?id...assetKey> accessed 12 July 2017.

<http://www.forestrynepal.org/images/Retreating%20the%20Himalays%20Glaciers%20Alarming%20Situation%20in%20Nepal.pdf> accessed 12 July 2017.

<http://www.ippan.org.np/HPinNepal.html> accessed 12 July 2017.

<http://www.sikkimtourism.gov.in/Webforms/General/SikkimAtAGlance/HotSprings.aspx> accessed 12 July 2017.

[http://shodhganga.inflibnet.ac.in/bitstream/10603/149403/7/07\\_chapter\\_02.pdf](http://shodhganga.inflibnet.ac.in/bitstream/10603/149403/7/07_chapter_02.pdf) accessed 12 July 2017.

[https://www.slideshare.net/cindipatten/geopolitics-key?next\\_slideshow=1](https://www.slideshare.net/cindipatten/geopolitics-key?next_slideshow=1) accessed 16 July 2017.

<http://www.gnhc.gov.bt/wp-content/uploads/2011/04/salient-feature-of-4th-Plan.pdf> accessed on 11 July 2017.

<http://www.drukgreen.bt/index.php/thp-menu/about-thp> accessed 13 July 2017.

[http://www.intecc.com/prjdesc\\_tala.asp](http://www.intecc.com/prjdesc_tala.asp) accessed 12 July 2017.

[https://www.internationalrivers.org/sites/default/files/attachedfiles/bhutan\\_sustainable\\_hydropower\\_policy\\_2008\\_reduced.pdf](https://www.internationalrivers.org/sites/default/files/attachedfiles/bhutan_sustainable_hydropower_policy_2008_reduced.pdf) accessed on 16 July 2017.

<http://oag.gov.bt/wp-content/uploads/2010/05/Water-Act-of-Bhutan-2011-English-and-Dzongkha.pdf> accessed on 16 July 2017.

<http://yesheydorji.blogspot.in/> accessed 16 July 2017.

<http://www.nationalcouncil.bt/en/business/acts> accessed 16 July 2017.

<http://www.globaltimes.cn/content/855460.shtml> accessed on 25 February, 2016.

<http://countrystudeis.us/nepal/21.htm> accessed on 10 February 2016.

[http://arunachalpradesh.nic.in/csp\\_ap\\_portal/pdf/Announcement/no-need-to-accept-stapled-visa.pdf](http://arunachalpradesh.nic.in/csp_ap_portal/pdf/Announcement/no-need-to-accept-stapled-visa.pdf) accessed 18th August, 2016.

<https://www.hrw.org/report/2014/04/01/under-chinas-shadow/mistreatment-tibetans-nepal> accessed 24th August, 2016.

<https://thehimalayantimes.com/business/nepal-china-sign-agreement/> accessed 28<sup>th</sup> August, 2016.

<http://www.gatewayhouse.in/hydropower-diplomacy/> accessed on 4<sup>th</sup> September, 2016.

<http://currentaffairs.gktoday.in/china-inaugurates-tibet-rail-link-sikkim-border-08201414492.html> accessed 8th September, 2016.

<http://www.ndtv.com/india-news/china-inaugurates-new-tibet-rail-link-close-to-sikkim-649304>.

<http://www.siblac.org/index.html> accessed on 8<sup>th</sup> February, 2016.

[http://www.siblac.org/doc/SIBLAC\\_Press\\_Release\\_23\\_09\\_2014.pdf](http://www.siblac.org/doc/SIBLAC_Press_Release_23_09_2014.pdf).. accessed on 8th February, 2016.

<http://idp-key-resources.org/documents/0000/d04384/000.pdf> accessed on 20 January, 2016.

<http://www.census2011.co.in/census/state/sikkim.html>

[http://www.siblac.org/doc/SIBLAC\\_Message\\_MoEF\\_27\\_06\\_2014.pdf](http://www.siblac.org/doc/SIBLAC_Message_MoEF_27_06_2014.pdf).. accessed on 8th February, 2016

[http://www.siblac.org/chronicle\\_2010.html](http://www.siblac.org/chronicle_2010.html) accessed on 9th February, 2016.

[http://opportunitycollaboration.net/dev/wp-content/uploads/2014/01/GNH\\_Overview.pdf](http://opportunitycollaboration.net/dev/wp-content/uploads/2014/01/GNH_Overview.pdf) accessed on 21 May 2015.

<https://www.internationalrivers.org/environmental-impacts-of-dams..accessed> on 9th feb 2016

<http://fwee.org/environment/how-a-hydroelectric-project-can-affect-a-river/how-a-hydro-project-affects-a-river-print/> accessed on 11<sup>th</sup> February, 2016.

<http://www.adaptation-undp.org/projects/bhutan-national-adaptation-programme-action-napa> accessed on 23rd April, 2016.

<http://www.nec.gov.bt/nec1/index.php/about-nec/vision/> accessed on 23<sup>rd</sup> April, 2016.

[http://www.asialeds.org/country\\_profile/bhutan/](http://www.asialeds.org/country_profile/bhutan/) accessed on 23<sup>rd</sup> April, 2016.

<http://www4.unfccc.int/submissions/INDC/Published%20Documents/Bhutan/1/Bhutan-INDC-20150930.pdf> accessed on 23rd April, 2016.

<http://www.sikkimforest.gov.in/docs/Newsletter/Panda09web.pdf> accessed on 23rd April, 2016.

[www.sicbsikkim.com](http://www.sicbsikkim.com) accessed on 23<sup>rd</sup> April, 2016.

[www.knowledgeportal-nmshe.in](http://www.knowledgeportal-nmshe.in) accessed on 23<sup>rd</sup> April, 2016.

[www.dstsikkim.gov.in](http://www.dstsikkim.gov.in) accessed on 23<sup>rd</sup> April, 2016.

<https://fhgeog12.wikispaces.com/file/view/AdvantagesDisadvantages+of+HydroDams.pdf> accessed 10<sup>th</sup> October, 2016.

[www.jica.go.jp/english/publications/.../pdf/jicapprofile2010\\_01.pdf](http://www.jica.go.jp/english/publications/.../pdf/jicapprofile2010_01.pdf) accessed on 25<sup>th</sup> June, 2016.

<http://www.adb.org/sites/default/files/linked-documents/44444-013-dc.pdf> accessed on 1st July, 2016.

<http://www.adb.org/sites/default/files/linked-documents/44219-014-dc.pdf> accessed on 6th July, 2016.

<http://www.adb.org/sites/default/files/linked-documents/43281-013-nep-dc.pdf>

accessed on 10th July, 2016.

<http://www.jvs-nwp.org.np/sites/default/files/Number%20%2023.pdf> on

18<sup>th</sup> July, 2016.

<https://prezi.com/xbwecx6ymsc/kulekhani-iii-hydroelectric-project/> on 16<sup>th</sup> July, 2016.

<http://www.drukgreen.bt/index.php/44-subsiary-company/dhpc/289-background-of-the-project> on 22nd July, 2016.

<http://www.projects.worldbank.org/P105311/west-bengal-accelerated-development-minor-irrigation?lang=en> accessed 9 July, 2017.

<http://darjeelingtimes.com/gta-to-get-r-25-crore-to-support-small-farmers/> accessed 9 July 2017.

<http://www.millenniumpost.in/wbsedcl-takes-up-hydro-power-projects-in-north-bengal-rivers-125820?NID=249100> accessed 9 July 2017.

<http://www.moef.nic.in/assets/eap-2013.pdf> accessed 9 July 2017.

<https://policies.worldbank.org/sites/ppf3/PPFDocuments/090224b08235b3ec.pdf> accessed 9 July 2017.

\*Primary sources