

THE ROLE OF WATER GOVERNANCE IN HYDROPOWER IN BHUTAN: A CASE STUDY  
OF MANGDECHHU HYDROELECTRIC PROJECT



Mr. Sangay Tashi

จุฬาลงกรณ์มหาวิทยาลัย

CHULALONGKORN UNIVERSITY

A Thesis Submitted in Partial Fulfillment of the Requirements  
for the Degree of Master of Arts Program in International Development Studies

Faculty of Political Science

Chulalongkorn University

Academic Year 2013

Copyright of Chulalongkorn University

บทคัดย่อและแฟ้มข้อมูลฉบับเต็มของวิทยานิพนธ์ตั้งแต่ปีการศึกษา 2554 ที่ให้บริการในคลังปัญญาจุฬาฯ (CUIR)

เป็นแฟ้มข้อมูลของนิสิตเจ้าของวิทยานิพนธ์ ที่ส่งผ่านทางบัณฑิตวิทยาลัย

The abstract and full text of theses from the academic year 2011 in Chulalongkorn University Intellectual Repository (CUIR) are the thesis authors' files submitted through the University Graduate School.

บทบาทของการบริหารจัดการน้ำในโครงการไฟฟ้าพลังน้ำในประเทศภูฏาน : กรณีศึกษาโครงการ  
ไฟฟ้าพลังน้ำมั่งคูชู



นายชานเกย์ ทาชิ

จุฬาลงกรณ์มหาวิทยาลัย

CHULALONGKORN UNIVERSITY

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาศิลปศาสตรมหาบัณฑิต

สาขาวิชาการพัฒนาระหว่างประเทศ

คณะรัฐศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

ปีการศึกษา 2556

ลิขสิทธิ์ของจุฬาลงกรณ์มหาวิทยาลัย

Thesis Title	THE ROLE OF WATER GOVERNANCE IN HYDROPOWER IN BHUTAN: A CASE STUDY OF MANGDECHHU HYDROELECTRIC PROJECT
By	Mr. Sangay Tashi
Field of Study	International Development Studies
Thesis Advisor	Jakkirt Sangkhamanee, Ph.D.

---

Accepted by the Faculty of Political Science, Chulalongkorn University in Partial  
Fulfillment of the Requirements for the Master's Degree

..... Dean of the Faculty of Political Science  
(Professor Supachai Yavaprabhas, Ph.D.)

THESIS COMMITTEE

..... Chairman  
(Carl Nigel Middleton)

..... Thesis Advisor  
(Jakkirt Sangkhamanee, Ph.D.)

..... External Examiner  
(Chayanis Krittasudthachaeewa, Ph.D.)

จุฬาลงกรณ์มหาวิทยาลัย  
CHULALONGKORN UNIVERSITY

ชานเกย์ ทาชิ : บทบาทของการบริหารจัดการน้ำในโครงการไฟฟ้าพลังน้ำในประเทศภูฏาน : กรณีศึกษาโครงการไฟฟ้าพลังน้ำมังกเดชชู. (THE ROLE OF WATER GOVERNANCE IN HYDROPOWER IN BHUTAN: A CASE STUDY OF MANGDECHHU HYDROELECTRIC PROJECT) อ.ที่ปรึกษาวิทยานิพนธ์หลัก: Jakkirt Sangkhamanee Ph.D., 156 หน้า.

งานวิจัยนี้มีวัตถุประสงค์ในการศึกษากระบวนการการตัดสินใจที่เกี่ยวข้องกับการพัฒนาโครงการโรงไฟฟ้าพลังน้ำในประเทศภูฏาน โดยมองผ่านกรอบของการบริหารจัดการและความยั่งยืน การที่รัฐบาลภูฏานมีเป้าหมายที่จะบรรลุเป้าหมายของ “การพึ่งพาตนเองทางเศรษฐกิจ” ในปี ค.ศ. 2020 นั้น ได้ส่งผลให้มีการเร่งการก่อสร้างโรงไฟฟ้าพลังน้ำหลายแห่ง อย่างไรก็ตามด้วยข้อจำกัดในการปฏิบัติการในการบริหารจัดการอย่างมีประสิทธิภาพและการมีส่วนร่วมอย่างแท้จริงจากทุกภาคส่วนได้ทำให้โครงการพัฒนาโรงไฟฟ้าพลังน้ำเกิดผลกระทบและการต่อต้านจากผู้คนในท้องถิ่น

งานวิจัยนี้ใช้โครงการการพัฒนาโรงไฟฟ้าพลังน้ำมังกเดชชู ซึ่งเป็นโครงการที่กำลังอยู่ในช่วงของการพัฒนาในเขตตอนกลางเป็นกรณีศึกษาเพื่อตรวจสอบกระบวนการการตัดสินใจ การศึกษาใช้การสัมภาษณ์บุคคลที่เกี่ยวข้องจำนวน 25 คน รวมถึงเจ้าหน้าที่โครงการการพัฒนาโรงไฟฟ้า เพื่อศึกษาพลวัตของโครงการดังกล่าว นอกจากนี้ ผู้วิจัยยังเก็บข้อมูลจากการอภิปรายกลุ่มแบบมีส่วนร่วมเพื่อศึกษามุมมองของประชาชนต่อโครงการฯ ตลอดจนเอกสารทางราชการ รายงาน และสิ่งตีพิมพ์จากสื่อมวลชนต่างๆ ด้วย

งานวิจัยนี้พบว่า โครงการก่อสร้างโรงไฟฟ้าพลังน้ำมังกเดชชูนั้นยังไม่มีการจัดการน้ำอย่างเหมาะสม งานชิ้นนี้เสนอว่ากระบวนการของการพัฒนาการบริหารจัดการน้ำอย่างรอบด้านนั้นกำลังอยู่ในขั้นตอนของการพัฒนา และต้องเผชิญกับปัจจัยแทรกแซงต่างๆ จากทั้งภายในและภายนอกประเทศภูฏานจึงเป็นเพียง “ระบบราชการของการจัดการน้ำ” มากกว่าที่จะเป็นระบบการบริหารจัดการน้ำอย่างแท้จริง กระบวนการการตัดสินใจที่เป็นอยู่นั้นยังเป็นไปในลักษณะบนลงล่าง ปรากฏการณ์ที่น่าสนใจอีกประการหนึ่งคือแนวคิดเรื่องของการมุ่งการพัฒนาเพื่อตอบสนอง “ผลประโยชน์ของชาติ” ซึ่งปรากฏอยู่ในวิถีความคิดและการปฏิบัติงานของหน่วยงานรัฐและชุมชน ได้ทำให้แนวทางในการพัฒนากระบวนการการตัดสินใจแบบใหม่ๆ เช่น กระบวนการการตัดสินใจแบบล่างขึ้นบนและแบบราบหญ้า นั้นไม่สามารถเกิดขึ้นได้ ความเข้าใจดังกล่าวนี้เองได้ช่วยให้เราเข้าใจปฏิสัมพันธ์ของประชาชนและรัฐต่อผลประโยชน์แห่งชาติมากขึ้น และชี้ให้เห็นว่าในทางปฏิบัติการคำนึงถึงแต่ผลประโยชน์ของชาติเป็นหลักนั้นจะส่งผลให้กลุ่มคนจำนวนหนึ่งในสังคมที่เน้นเรื่องของความสุขมวลรวมแต่กลับได้รับผลกระทบและต้องเผชิญกับปัญหาได้อย่างไร

อย่างไรก็ตาม ในอีกแง่หนึ่งก็พบว่ามีความขัดแย้งจากรัฐบาลที่ชี้ให้เห็นถึงความพยายามที่จะพัฒนาการบริหารจัดการน้ำอย่างเป็นระบบของรัฐบาลที่ครอบคลุมโครงการทั่วประเทศ งานวิจัยนี้ สรุปว่าการเปลี่ยนแปลงลักษณะของกระบวนการการตัดสินใจในการพัฒนาโครงการโรงไฟฟ้าพลังน้ำจากเดิมที่รัฐเป็นศูนย์กลางไปเป็นไปในลักษณะการกระจายอำนาจในการตัดสินใจมากขึ้นนั้น จำเป็นอย่างยิ่งต่อโครงการการพัฒนาโรงไฟฟ้าพลังน้ำในประเทศภูฏานอย่างยั่งยืน โดยเฉพาะในเมืองมังกเดชชู แม้ว่าสิ่งนี้จะเป็นเรื่องยากที่จะประสบความสำเร็จ แต่ก็เป็นอย่างยิ่งในการพัฒนาเศรษฐกิจของประเทศที่ตั้งอยู่บนพื้นฐานของแนวความคิด “ความสุขมวลรวมประชาชาติ”

สาขาวิชา การพัฒนาระหว่างประเทศ

ปีการศึกษา 2556

ลายมือชื่อนิสิต .....

ลายมือชื่อ อ.ที่ปรึกษาวิทยานิพนธ์หลัก .....

# # 5581107724 : MAJOR INTERNATIONAL DEVELOPMENT STUDIES

KEYWORDS: WATER GOVERNANCE HYDROPOWER EQUITY AND SUSTAINABILITY DECISION-MAKING PROCESS

SANGAY TASHI: THE ROLE OF WATER GOVERNANCE IN HYDROPOWER IN BHUTAN: A CASE STUDY OF MANGDECHHU HYDROELECTRIC PROJECT. ADVISOR: JAKKIRT SANGKHAMANE, Ph.D., 156 pp.

This study investigates hydropower development in Bhutan, and analyses its roles of sustainability through the frame-work of water governance, focusing on the decision making process. The Royal Government of Bhutan's aspiration to achieve "economic self-reliance" by the year 2020 has accelerated the construction of hydropower in various river basins. However, with its limitations on the implication of effective decision-making process and the nation's water governance, impacts and resistance have emerged at the local level where the hydropower project are developed.

The ongoing Mangdechhu Hydroelectric Project development at Trongsa is taken as a case study to examine decision making process in water governance. To understand the dynamism, twenty five key informants from various organizations including Mangdechhu Hydroelectric Project authority were extensively interviewed. Besides, two participatory focus group discussions in the villages of Samcholing and Kungarabten were held to understand people's perspective. Lastly, this study also draws data from official reports, documents and Medias.

Using the concept of water governance, this study argues that there is a lack of water governance in Mangdechhu Hydroelectric Project. The study shows that while the process towards water governance is ongoing and being challenged by internal and external factors, the situation in country's whole management can be considered merely as "water government". The decision making process is still of traditional nature, a top-down approach. The other interesting phenomenon observed is the notion of "national interest" which indeed has overshadowed the new approach of decision making, i.e. the bottom-up or grassroots approach. This analysis helps us to understand why general public and the government tend to correspond to a call for greater national interest; at the time leaving a section of affected society unhappy in the GNH driven society.

However, there is strong indication from the government in working towards water governance. Therefore, a paradigm shift from "water government" or from "state centric" to more "decentralized" integrated water governance is necessary for sustainable hydropower development in the country in general and Mangdechhu in particular.

Field of Study: International Development Studies

Student's Signature .....

Academic Year: 2013

Advisor's Signature .....

## ACKNOWLEDGEMENTS

First of all, I would like to express my deepest gratitude and special thanks to Dr. Jakkrit Sangkhamanee for being my thesis advisor and providing me continuous academic support and moral guidance throughout the course of my work. Sincerely, without his benevolent guidance and wonderful supervision in the academic field, I would never have had accomplished this work successfully. I am really impressed with his academic outstanding, encouragements and incredibly lasting patience. I would also acknowledge and express my highest gratitude to my other committee members - Carl Middleton, Ph.D. and Chayanis Krittasudthacheewa, Ph.D. for their constructive comments and valuable insightful that are very useful in leading to the present shape of my work.

Secondly, I would like to extend my gratitude to all the interviewees and supporters during the field work; especially to the Water Shed Management Division, Department of Hydropower and Power System (Ministry of Economic Affairs), Gross National Happiness Commission, Trongsa Dzongkhag Administration, Mangduechhu Hydropower project Authority (Trongsa), Drakten Geog Administration extending their full support during my field visit and people of Drakten and Langthel Geog for their genuine cooperation. I owe gratitude to many other people which I cannot enlist their names one by one, but have contributed significantly in the path of my journey.

Thirdly, I would like to thank to the Royal Government of Bhutan and Thai International Development Corporation Agency for financial and logistic support to undertake a master degree program in the field of International Development Studies intensively. Without their financial and logistic support, it would not have been possible to study under such a paramount university (Chulalongkorn) in Thailand. Furthermore, many thanks go to Chayata Viria for helping me in proof-reading process. Finally, with greater love and affection, I pay this tribute to my family members especially to my wife Ugyen Wangmo for her devotion and care; besides constantly supporting and having confidence in me to overcome all the obstacles and hardship.



จุฬาลงกรณ์มหาวิทยาลัย  
CHULALONGKORN UNIVERSITY

## CONTENTS

	Page
THAI ABSTRACT .....	iv
ENGLISH ABSTRACT .....	v
ACKNOWLEDGEMENTS .....	vi
CONTENTS .....	vii
CHAPTER I .....	1
INTRODUCTION .....	1
1.1 Research Background .....	1
1.2 Research Problems .....	9
1.3 Research Questions .....	11
1.4 Research Objectives .....	12
1.5 Conceptual and Theoretical Framework .....	12
1.6 Research Methodology .....	18
1.6.1. Research Interview Conducted in Thimphu .....	18
1.6.2 Research Interview Conducted at Trongsa .....	20
1.6.3 Data Treatment and Translation .....	22
1.7 Research Limitations .....	24
1.8 Significance of the Research .....	25
CHAPTER II .....	27
LITERATURE REVIEW .....	27
2.1 Bhutan's Economic Development Policy .....	27
2.2 Hydropower Development .....	29
2.3 Water Governance .....	34
2.4 Institutional Arrangements .....	37
2.5 Stakeholder Decision Making .....	42
2.6 Legitimacy .....	43
2.7 Accountability .....	44
2.8 Equality .....	45

	Page
2.9 Stakeholder Participation.....	46
2.10 Gross National Happiness and Development.....	48
2.11 Case Studies.....	51
2.12 Conclusion.....	54
CHAPTER III.....	56
A CASE STUDY OF MANGDECHHU HYDROELECTRIC PROJECT.....	56
3.1 Project Background.....	57
3.1.1 Physical Structure.....	58
3.1.2 Management Structure.....	62
3.1.3 Financial Structure.....	64
3.2 General Laws and Policies Relating Hydropower and Water.....	66
3.3 Customary Practices.....	69
3.4 Stakeholders.....	72
3.4.1 State Stakeholders.....	73
3.4.2 Non-State Stakeholders.....	80
3.5 Conclusion.....	85
CHAPTER IV IMPACTS OF PROJECT TO THE COMMUNITY.....	86
4.1 Introduction.....	86
4.2 Social and Cultural Impact.....	88
4.3 Economic Impact.....	99
4.4 Impact on Environment.....	105
4.5 Mitigation Work.....	111
CHAPTER V CONCLUSION AND RECOMMENDATIONS.....	113
5.1 Hydropower Development and Economic Policy.....	114
5.2 Impact of Mangdechhu Hydroelectric Power project.....	117
5.3 Water Governance the Way Forward.....	121
5.3.1 Decision Making.....	123



	Page
5.3.2 Participations .....	125
5.3.3 Accountability.....	127
5.3.4 Equality.....	130
5.3.5 Legitimacy.....	131
5.4 Policy and Academic Recommendations .....	133
5.4.1 Policy Recommendation .....	133
5.4.2 Recommendation for Further Research.....	134
REFERENCES .....	155
VITA .....	156

## LIST OF TABLES

Tables	pages
1.1 Summary of In-depth Interview at Thimphu .....	19
1.2 summary of In-depth Interview at Trongsa.....	21
2.1 Summary of Hydropower Plants to be Constructed.....	34
4.1 Details of Affected Villagers and families.....	99
4.2 Occupational Profile of the Affected People.....	107
4.3 Number of Flora and Fauna likely to be Impacted by the Project.....	111

## LIST OF FIGURES

Figures	Page
1.1 Political Map of Bhutan .....	2
1.2 Map of Protected and Biological Corridor .....	6
1.3 Conceptual Framework .....	15
2.2. Resource Management and Ownership .....	42
2.2 Regulating Authority for Resource Development.....	43
3.1 Map of Mangdechhu Hydroelectric Project Construction Areas.....	62
3.2 Organizational Structure of MHPA .....	66
3.3 Financial Composition of various Hydropower Projects .....	69
3.4 Empower Joint Group of MHPA.....	83
4.1 Map showing Settlement under Trongsa Dzongkhag.....	92
4.2 Various Cracks the Wall of Dzong .....	96
4.3 View of Trongsa Dzong from Dam Construction Site .....	98
4.4 Affected People's view on Project .....	103
4.5 Impact of Project to the Village .....	112
4.6 Summary of hydropower project .....	115
4.7 Mitigation Work .....	117

## ABBREVIATIONS

BBS	Bhutan Board Casting Services
BoIS	Bureau of Indian Standards
CDCL	Construction Development Corporation Limited
DGPC	Druk Green Power Corporation
DGM	Department of Geology and Mines
DPR	Detail Project Report
DHI	Druk Holding and Investment
DT	Dzongkhag Tshogdue
GLOFs	Glacial Lake Outburst Floods
GNH	Gross National Happiness
GOI	Government of India
GT	Geog Tshohde
ICIMOD	International Centre for Integrated Mountain Development
MHPA	Mangdechhu Hydroelectric Power Authority
MHP	Mangdechhu Hydropower Project
MoAF	Ministry of Agriculture and Forestry
MoEA	Ministry of Economic Affairs
MW	Mega watt
NGO	Non-Government Organization
RGoB	Royal Government of Bhutan
RSPN	Royal Society for Protection of Nature
UNDP	United Nation Development Program
WCD	World Commission on Dams
YEC	Yachiyo Engineering Company Limited

## CHAPTER I

### INTRODUCTION

#### 1.1 Research Background

Bhutan is a small Buddhist kingdom sandwiched between two Asian giants, Tibet-China in the north and India in the south. It has a total area of 46,500 sq.km, with east-west extension of 300 kilometers and the north-south of 150-170 kilometers, which is characteristically rugged high mountains covered with thick vegetation through which large rivers cascade. The population is roughly more than 700,000 people with fairly equal ratio of men and women. The country is further divided into 20 *Dzongkhags* [districts] (see figure 1.1) and 205 *Gewogs* [blocks]. Each gewog comprises of several villages depending on its size and location. The villages are sparsely settled, scattering all over the mountain slopes and riverbanks.

Bhutan's natural steep mountains, deep gorges, and fast-flowing rivers have created abundant hydropower potentials, which is estimated up to 30,000 megawatts (hence MW). There are over 20 major rivers flowing from North to South joining Brahmaputra in India before pouring into the Bay of Bengal. Taking advantages of geographical location, the Royal Government Bhutan (RGoB) has started to explore the possibility of hydropower project construction from 1970s. Starting from 1970s, hydropower has become engine of Bhutan's economic development which is guided

by the country unique development policy which is popularly known as ‘Gross National Happiness’ (GNH)

Figure 1.1: Political Map of Bhutan



Source: [http://www.nationsonline.org/oneworld/map/bhutan\\_map.htm](http://www.nationsonline.org/oneworld/map/bhutan_map.htm)

The country's history of hydropower goes back to commissioning of *Jungshina* mini hydropower in 1967 on the *Samtenlingchu* River in Thimphu lighting the capital city by replacing the diesel generators. Following the success of this first mini hydropower project, the major expansion of hydropower project has started in 1975 on the *Wangchhu* River known as '*Chukha* Hydrel'. The *Chukha* Hydrel project

with a capacity of 336 MW was successfully commissioned in 1986. During the same year, the transmission line was synchronized with the Indian grid enabling both the countries in electricity trade. According to *Far Eastern Economic Review report (1998)* “Bhutan’s economic growth in 1997 was estimated to have grown by 6%, solely because of the availability of cheap electricity enabling new heavy industries like cement, fruit processing, and hydroelectric power” (*Far Eastern Economic Review, 1998, p. 84*).

By 1991, besides the ‘Chukha Hydrel’, there were seven mini-hydropower and twelve micro-hydropower plants, each averaging 7,350 kilowatts; 340 kilowatts capacity respectively. However, the domestic consumption has been just over 16 MW of which more than 80 percent was consumed by the domestic industries and the surplus was exported to India. Another hydropower plant capacity of 60 MW was proposed at *Kurichu* in eastern Bhutan in the Sixth Five Year Plan (1987–92). It was an attempt on part of government’s effort to bring balanced development in the country. The Kurichu hydropower project was successfully commissioned in, 2001: thus lighting hundreds of houses in eastern Bhutan. Consequently, the Rivers of Bhutan to Bhutanese people has become ‘moving gold’, because of its economic value. This is evident in the year 2012 that, Bhutan’s earning from selling electricity was *Ngultrum*<sup>1</sup> (Nu) 10 billion (*MoEA, 2012*).

---

<sup>1</sup> Ngultrum is Bhutanese official currency pegged at par to Rupee Indian currency

At the same time, recognizing the importance of ecological balance, RGoB has declared 20% of the total areas as a wildlife sanctuary and reserve enabling all natural flora and fauna to flourish in accordance to ‘The Bhutan Forest Act 1969’ and ‘The National Forestry Policy 1974’. Furthermore, the 2008 Constitution of Bhutan mandates the government to keep 60% of total land area under forest cover for all the years to come. Presently, it is estimated to have 74% of the total areas under forest cover. As a result of such effort, Bhutan is dubbed as the “crown jewel” of the Eastern Himalayas, and recognized as a global biodiversity hotspot in the region (see Gupta, 1999) thereby attracting thousands of tourists from all over the world to Bhutan. According to the Ministry of Finance, the tourism sector was the third largest revenue generator of the country in 2012 which contributed 3.8% of total revenue estimated about at Nu. 787.822 million (MoF, 2012).

Today there are 28 existing hydropower plants (including large, medium, small and mini) in various places in Bhutan (NSB, 2012). Additionally, ambitious plans are drafted to build more mega hydropower plants (see table 2.1) and numerous bilateral agreements are being signed between India and Bhutan. In year 2009, bilateral agreement was signed with India to build 10 mega hydropower plants in Bhutan within the year 2020 which includes the ongoing Mangdechhu Hydroelectric project at Trongsa Dzongkhag.

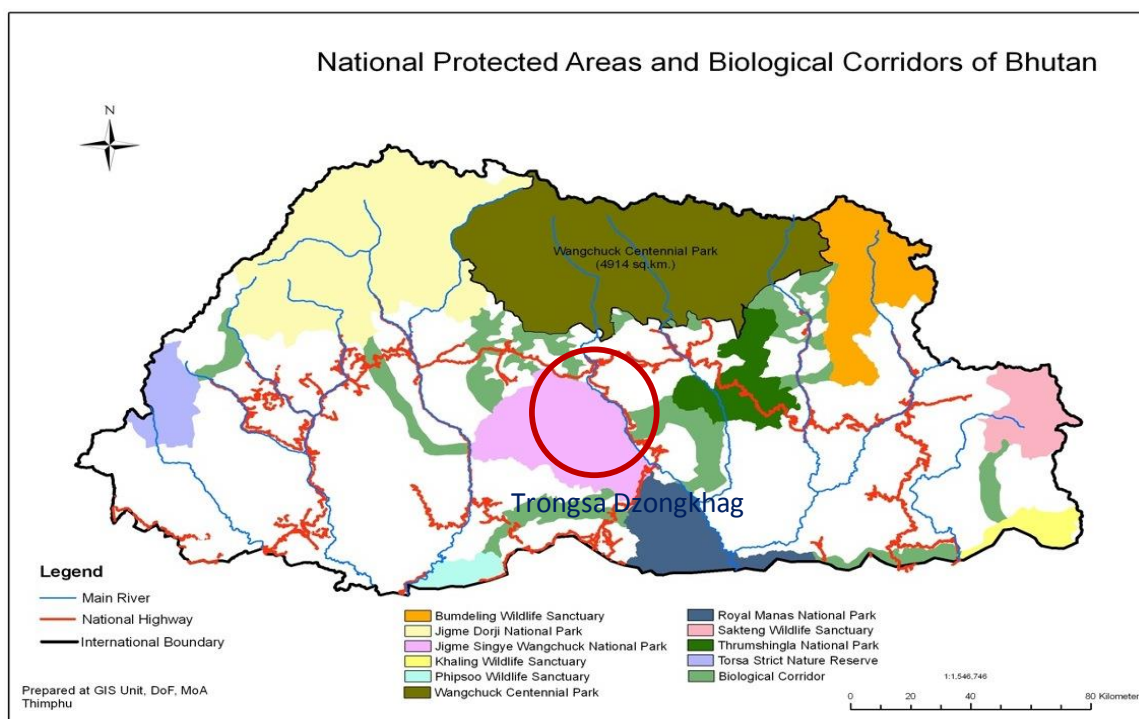
Trongsa Dzongkhag is located in the central region of the country (see figure 1.2) and Mangdechhu flows through the heart of Trongsa Dzongkhag. This Dzongkhag



has an area of about 1807 km square, with elevation ranging from 800 meters to 4800 meters above sea level. The Dzongkhag enjoys a mixed climate, that is warm humid and warm temperate with sandy loam and clayey loam soil. The population is bit over 13,428 (NPHCB, 2005). People from this Dzongkhag make their living by agriculture farming, collecting natural forest product both for consumption and sale in the market as well.

Historically and culturally, Trongsa Dzongkhag is one of the important Dzongkhags in the kingdom. As per the history of the country, it was used as headquarter of the eastern region and have been the seat of *Trongsa Penlop* [eastern governor] the most powerful ruler in the country ruling eight eastern dzongkhag; who later became the first hereditary king of Bhutan in the year 1907. Even today, the crown prince of Bhutan has to be formally investure as *Trongsa penlop* before becoming the hereditary king of Bhutan. The dzongkhag is also linguistically diverse with inhabitants speaking number of local dialects such as *Bumthangkha, Khengkha, Nyenkha, Lakha* and national language *Dzongkhag*.

Figure 1.2 Map of National Protected Areas and Biological Corridors of Bhutan



Source <http://www.bhutantrustfund.bt>

Unfortunately, a tiny community of autochthonous “*Olekha or the Black Mountain Monpa*” speakers living in the mid-south have disappeared already (Carpenter & Carpenter, 2002)

Ecologically, most part of Trongsa falls under protected area (figure 1.2), Wangchuck Centennial Park in the north (*Nubi Gewog*) and Jigme Singye Wangchuck National Park in central, western, and southern Trongsa (*Langthil and Tangsibji Gewogs*). In fact, the whole area serves as biological corridors to other protected areas of Bhutan. Biological corridors mostly occupy substantial portions of the

Southeast and Northeast, leading to the Thrumshingla National Park and Royal Manas National Park in neighboring *Dzongkhags of Bumthang and Zhemgang*.

It is known that the northeastern part of India is the most active seismic zone (Ni, J. & Barazangi, M. 1983; 1984). Bhutan's proximity to the northeastern part of the India's active seismic zone is a concern, because most part of the country falls either under Zone IV or V (Ni, & Barazangi, 1983; Drukpa, et al, 2006). A study conducted by UNDP in 2010, reports that Bhutan is located in one of the most seismically active zones in the world. The past and the recent earthquakes of 2009 and 2011, has caused huge damage to the country's infrastructure; signaling clear warning for the RGoB to re-examine its development activities and re-evaluate the existing policies.

In addition, Glacial Lake Outburst Floods (hereafter GLOFs) is not isolated phenomena in Himalayan countries (e.g., Yamada & Sharma, 1993; Xu & Feng, 1994). GLOFs are among the most serious natural hazard potentials in the country. According to a recent study conducted by the Department of Geology and Mines (DGM) in collaboration with the International Centre for Integrated Mountain Development ICIMOD confirmed 2,674 glacial lakes in Bhutan, of which 562 are associated with glaciers (DGM, 2012). The study has identified 24 glacial lakes as 'potentially dangerous lakes' that could pose a threat in the near future (DGM, 2012; Komari, et al, 2012). Another study conducted by the Yachiyo Engineering Co. Ltd (YEC) in year 2008 reported that one out of seven glacier lakes feeding Mangdechhu is highly potential of GLOF. YEC also reported that GLOF could happen at any time

due to various reasons detailed in the report (*Bhutan Observer, 2008*). Moreover, the DGM report 2012 indicates that the effects of global warming, glaciers in the Himalayas are shrinking rapidly, thus possibly accelerating glacial retreat in this region. The record also shows that the GLOFs have taken place in Bhutan in the year 1957, 1960 and 1994 causing huge damage to the country (DGM, 2012; Yamada & Sharma, 1993; Xu & Feng, 1994; Komari, et al, 2012).

Even though studies have indicated potential GLOF outbursts in the future, RGoB is pushing forward with the mega hydropower projects as a part of government's effort to bring regional balanced economic development and partially to mitigate some of the above mentioned problems explicitly. However, people are not convinced implicitly, and there are major concerns raised among the Bhutanese public regarding hydropower development in the country and viability of venturing, partly people are not aware of the decision making process. Some people are skeptical of government's over ambitious plan to achieve economic self-reliance by 2020, while compromising the comprehensive detail impact assessment involving various expertise and stakeholders (Bisht, 2011)

The risk is pertinent in either way. The Government's plan will not only cause social, economic and environmental problems within the area but also cause "geopolitical concerns" (Chellaney, 2009). Should there be any ecological disaster in upstream, there is a concern that the impact may trickle down to many settlements of the country, as well as Indian state of Assam (*Times of Assam, 2011*) and not to

mention, *Manas Park*, which houses many endangered flora and fauna is at risk (Bisht, 2011).

## 1.2 Research Problems



On one hand, Bhutan's economic development is guided by the overarching policy of GNH (see detail Thinley, 2005) with environmental conservation as one of the four pillars. However, on the other hand, the changing political and economic situation of the country (as discussed in the beginning of the chapter and more detail in Chapter II), which characteristically centered strongly towards the policy of achieving economic self-reliance by year 2020. Thus, creating challenges to the policy of achieving GNH in the country. Furthermore, there is an ambiguity and a gap in common pool resource (water) management and governance: chiefly, the grassroots participation in the country's mega developmental activities. In particular, there has been poor grassroots participation in the planning and decision making process for mega hydropower projects despite the fact that the country has embarked on what Chellaney (2012) refers as 'Dam racing' in Asia. Thus, good water governance can be the basis for achieving socially equitable and ecologically sustainable hydro-power project.

As detailed in the beginning of this chapter, Trongsa Dzongkhag falls under protected and also considered to be the core of Bhutanese culture. On contrary, the Mangduechhu hydropower project construction work is in full swing in various areas of the Dzongkhag. Any disruption in such areas can partially or completely breakdown the ecological system resulting in both immediate and long term environmental and social impacts to the communities (Lopez, 1994). It is also known that the deliberate modification of the natural river system has resulted in loss of endangered species of animals, fish, plants and trees (see Goudie, 2000, pp 121-131) and also destroys age old local practices. Amidst all trajectories, the Mangdechhu hydropower project has started in the Dzongkahg. Therefore, local practices are an important factor to bring people and government together in the decision making process.

By and large, there is little evidence of water governance in Bhutan which in essence helps to bring all the actors and stakeholders together (Banducci, et al., 2004). It is also known that the multi-stakeholder participation: communities, state and non-state actors in water governance will bring positive change in hydropower development (Awakul, & Ogunlana, 2002; Foran, 2006; Roberts, 2001). However, there has been no systematic study done on water governance in hydropower development in Bhutan, whereby creating an entire gap of knowledge.

For that reasons, various stakeholders participation trough out the project stage is crucial in bringing socially equitable and ecologically sustainable hydropower. A comprehensive water law is the key to resolve the problem(s) of water governance. Hence this research will focus on three key issues: policies and laws (formal and informal), identification of actors and their roles and lastly the possible impacts (economic, social and environment) on the community which will be studied by employing the concept of water governance.

### 1.3 Research Questions

1. What are the current policies and laws for water governance and hydropower development in Bhutan? How the actual decision making process being carried out?
2. Who are the actors behind the Mangduechhu hydropower project and how have they shaped decision making towards the project?
3. What are the impacts and how are the problems encountered by people from the development have been managed?
4. Whether the Mangduechhu hydropower project socially equitable and ecologically sustainable? And what kind of governance needs to improve the sound practice of the project?

## 1.4 Research Objectives

The Objectives of this Research are:

1. To analyze the policies and process of water governance and how it will lead socially equitable and ecologically sustainable hydro power
2. To evaluate the actors and drivers behinds the Mangduechhu power project which will contribute to greater understanding of other hydro power projects in Bhutan
3. To evaluate the impacts and how is the problem encountered by people from the development being managed
4. To analyze whether the Mangduechhu hydropower project socially equitable and ecologically sustainable

## 1.5 Conceptual and Theoretical Framework

The concept of water governance is used to study hydropower development in Bhutan. The principles of governance: *decision making, participation, accountability, equality, legitimacy* will be used to examine the impact of hydropower project on the community.



The following model shown in the figure 1.3 explains the conceptual model to understand the development of hydropower project in Bhutan. The logical flow is that the economic development has literally forced the government to venture into hydropower business which apparently considered being the viable option for the country. This is because the country pursuing the policy of GNH and clean and green energy policy. Hydropower project may sound ideal, but in reality it creates huge negative impact on the natural environment triggering social problem and geopolitical concern as well (Chellaney, 2009)

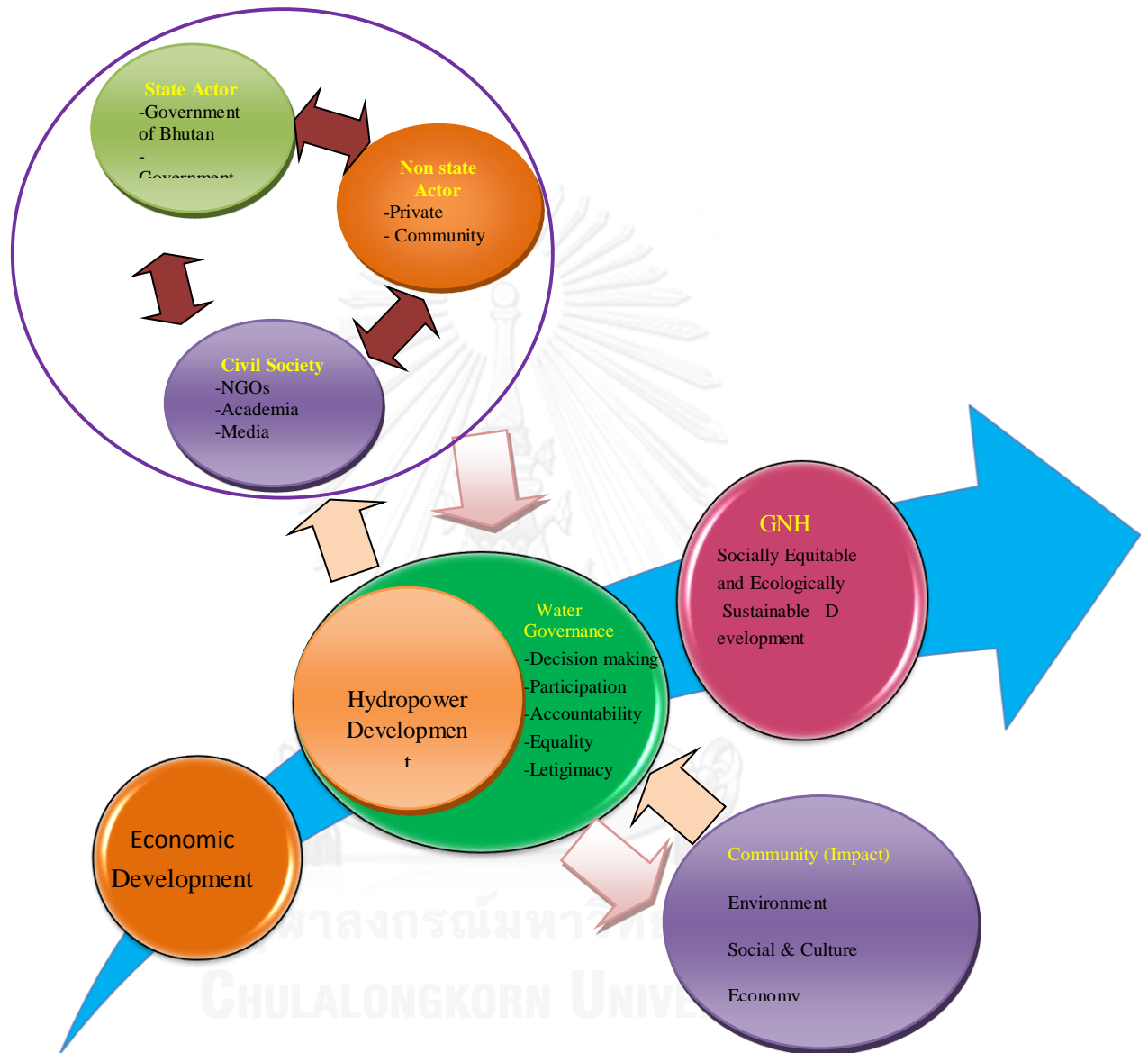
Therefore, water governance is used here to study the impact of hydropower development and to suggest the possible solution by bridging all the different actors and drivers concerning with the Mangdechhu hydropower project. It is very important to consider each and every actor, drivers, because each one's decision will have great impact on the project as well as to the communities either positively or negatively. Therefore, by balancing the principles of water governance, it is deemed to reach sustainable hydropower development.

Moreover, the figure 1.3 explains the logical flow and functionality between various circles as shown. Firstly, the economic development has led to hydropower development in the country. For the development hydropower project there are various actors (state, non state and civil society) involved. To explain the functional relationship between these actors, the concept of political ecology is employed. Obviously the hydropower project will generate huge impact on the community's

environment and culture, social and economic. So in order to find better ways to minimize the impact produced by the hydropower development and share the common pool resources, the concept of water governance is used to explain the complexities.

Although there are many explanations, in this context, only basic principles such as “decentralized decision making”, “legitimacy”, “accountability”, “equality” and “participation” is considered. These principles are used for analysis, how it will contribute to reaching the goal of socially *equitable and ecologically sustainable development* or GNH. Some of the concepts are briefly introduced in the following and more detail in Chapter II.

Figure 1.3 Conceptual Frameworks



- **Economic Development** has been defined as “the process by which a community creates, retains, and reinvests wealth and improves the quality of life” (David Dodson, MDC, Inc.). On the other hands, the economic

development is a policy intervention aims to increase economic growth and social wellbeing of people. Amarth Sen points out that “economic growth is one aspect of economic development” (Sen, 1999). Too often economic development is taken at the face value of industrializing country to double “Gross Domestic Product”. Economic growth is seen as part of the solution, and markets and technology will produce a richer world that is more ecologically stable (Hopwood, et al, 2005). It can be understood as an increase in physical and human capital improving living standard of people with the help of technology. While Bhutan’s approach to economic development is quite different from the mainstream development paradigm, its development is driven by overarching principal of GNH.

- **Political Ecology** seeks to explain the relationship between economic, political and social factor with environment and social change (Robins, 2004). As shown in the figure 1.3, the relation between various actors and drivers like state, non state and NGOs on one side and community on the other side. This stalemate can be bridged through institution of water governance. However, to secure the human well-being and safeguard the dynamic capacity of the natural environment, there is an urgent need to design an institution(s) (Arrow, et al., 1995).

- **Water Governance** may differ in different context; here, it will refer to the level but generally viewed as a social process of dialogue, decision making and negotiations to manage common pool resource, water. According to the Global Water Partnership, ‘water governance’ refers to the range of political, social, economic and administrative systems that are in place to develop and manage water resources, and the delivery of water services, at different levels of society (Rogers & Hall, 2003). On the other hand, Bakker distinguishes differences between water governance and management. ‘Water governance’ refers to the decision-making process that followed, whereas ‘water management’ refers to the operational approaches we adopt. Governance refers to how we make decisions and who gets to decide; management refer to the models, principles and information we use to make those decisions (Bakker, 2006).
- **Gross National Happiness** is an alternative development paradigm pursued in Bhutan to gauge the degree of development. The GNH is a development paradigm based on four pillars: (1) sustainable equitable socioeconomic development, (2) conservation of the environment, (3) preservation and promotion of culture, and (4) promotion of good governance (Thinley, 2005).

## 1.6 Research Methodology

To understand the dynamism of decision making process in the ongoing Mangdechhu Hydroelectric Project at Trongsa; this paper draws data from government reports, related laws and detail project report (DPR). And field notes, interview transcripts gather from over twenty five key informants from various organizations who were extensively interviewed. In addition, two small participatory focus group discussions were conducted with eight to ten villagers from the village of *Samcholing* and *kungarabten* under *Darkteng Gewog*.

### 1.6.1. Research Interview Conducted in Thimphu

Thimphu is the capital city of Bhutan and all the ministries, departments and organizations' head office is based in capital. Considering the importance of time constraint, I used my parent department i.e. Department of Culture as my based office to proceed with my in-depth interview and also make new appointments under three categories: state actor, non state and NGOs. I centered my questions on the role and decision making process, participations, institutions and sustainability of the project considering economic, socio-culture and environmental impact. A summary of the key informants, interviewed in Thimphu is shown in the following table.

Table 1.1 Summary of In-depth Interview in Thimphu

Name	Organization	Date	Interview type
Chencho Tshering Joint Managing Director	Mangdechhu Hydroelectric Project	10//6/2013	Interviewed at Trongsa
Lham Dorji (Ph.D) (Executive Director)	Royal Society for protection of Nature	17/6/2013	In-depth Interview
Lhaba Tshering (Dy. Chief Program Officer)	Gross National Happiness Commission. Sustainable development Office	18/6/2013	In-depth Interview
Thinley Namgyel (Chief Planning Officer)	Gross National Happiness Commission. Perspective and Planning Division	14/6/2013	In-depth Interview
Jigme Nidup (Dy. Chief Environment Officer )	National Environment commission. Water Resource Coordination Division	14/6/2013	In-depth Interview
Yeshi Dorji (Director General)	Department of Hydro Power and Power System	19/6/2013	In-depth Interview
Karma P. Dorji (Chief Engineer)	Department of Hydro Power and Power System	19/6/2013	In-depth Interview

Dorji Tshering (Director General)	Department of Culture	14/6/2013	In-depth Interview
Jigme Tenzin (Forest Officer)	Water Shed Management Division, MoA	19/6/2013	In-depth Interview

### 1.6.2 Research Interview Conducted at Trongsa

On my arrival to Trongsa Dzongkhag, the very first thing is to meet Dzongdag [District Commissioner] in order to seek necessary approval to enable me to proceed with my survey-works. Although, I had to seek higher authority's approval to proceed with my work in-hand, everything went very well as scheduled, all because of the moral supports and the priority of importance rendered on this study including from Dzongdag. In addition, Trongsa Dzongkhag Cultural officer helped in arranging my appointments with all local stake-holders in order to obtain the required key-informants. He also informed the Gewog administration for the arrangement of group-focus discussion. The conduct of participatory discussions was fully completed having a strong support from the Gewog administration and people as well.



Table 1.2 Summary of In-depth Interview in Trongsa

Name	Organization	Date	Interview type
Tshering Yangzom (Dzongkhag Env't. Officer)	Dzongkhag Administration	11/6/2013	In-depth Interview
Gyem Dorji (Dzongkhag Forest Officer)	Dzongkhag Administration	4/6/2013	In-depth Interview
(Dzongkhag Land Record Officer)	Dzongkhag Administration	18/6/2013	In-depth Interview
Karma Lethro (Dy. Chairperson, DT cum Town Representative)	Dzongkhag Tshogdu,	13/6/2013	In-depth Interview
Sujaman Thapa (Trongsa Reporter)	Bhutan Broadcasting service	13/6/2013	In-depth Interview
Sonam Phuntsho (Forest Ranger)	Range office	13/6/2013	In-depth Interview
Sonam Farmer	Samcholing Drakteng Geog	9/6/2013	In-depth Interview
Penjor Shopkeeper	Town	4/6/2013	In-depth Interview

Sangay Envrionmrt Officer	Social and Environment Division MHPA	10/6/2013	In-depth Interview
Sonam Wangdi (Chief Personal and Administrative Officer)	MHPA, Trongsa	10/6/2013	In-depth Interview
Nidup Dorji (Dy.Chairperson)	Geog Tshongde Darktheng	12/6/2013	In-depth Interview
Choni (Personal and Administrative Officer)	Gammon Company Kungarabten	22/6/2013	In-depth Interview

Overwhelmingly, besides chairperson of *Draktheng* Gewog being out of the station, the deputy Chairperson had joined in both group discussions which comprises of equal number of men and women among the groups.

### 1.6.3 Data Treatment and Translation

During the field research, information collected was recorded by note taking, audio recording [for important discussions] and photographs taken in communities

and construction sites. The information and data collected from different key informants was translated and recorded in the computer in a systematic manner to ensure the safety of data collected. The important quotes from the data collected were sent to the respective informants for correction through e-mail upon their request to ensure accuracy or to avoid misinformation in the quotations.

Data is analyzed using descriptive analysis. Descriptive analysis was based on four main research questions. Firstly, the information collected from different sources was analyzed: who are the actors behind the Mangduechhu hydroelectric project and how they have shaped decision making towards the project. Thus, this information collected answers the question of whether the Mangduechhu hydroelectric project is socially equitable and ecologically sustainable. Why or why not. And who are the actors behind the Mangduechhu hydroelectric project and how have they shaped decision making towards the project?

Secondly, information collected from the field study was further grouped under two categories namely the role of water governance and impact of the project on the community. Information about the water governance was analyzed based on the main principles: decision making, participation, accountability, equality and legitimacy. Therefore, this helped to answer the question what are the current policies and laws for water governance in Bhutan. For the impact analysis, collected data from the field was sorted out based on the four key areas, i.e., economic, environment, social and cultural. By doing so, it helped to answer what are the

impacts and how is the problem encountered by people from the development resolve?

Thirdly, concerning about the validity and reliability of the data collected from the field. Triangulation method was applied to substantiate and authenticate. Triangulation refers to sources of data, from the various sources of data collected is triangulated to validate, by open-ended interviews questions combined with quantitative data from secondary sources. Moreover, researcher triangulation was applied to the ongoing discussions of problems and findings with key players in the hydropower sector and water governance. Data was triangulated namely government (center, district and local), non government (NGOs, media, academicians and private) and community (affected villagers).

### **1.7 Research Limitations**

Considering the timing and geographical location of the area for the case study, there were some constraints. Firstly, the key informants were mostly government officials; as a result, the researcher was unable to meet some of the right people on right time and place. The government officials were out of station to attend meeting, seminar within and outside the country.

Secondly, the 2<sup>nd</sup> parliamentary election of Bhutan was in the full swing, the official campaign started on 13<sup>th</sup> June 2013 to 13<sup>th</sup> July 2013. Most of the officials were on election duty, besides there was strict order from the election commission that no one is allowed to conduct public gathering within that period. However, I was accorded approval from the central government, and cautioned not to talk about party politics and to have huge public gatherings. Whereby data represented in this study would not be sufficient to represent the valuable opinions of the general public.

Lastly, the mode of my interview was in different language, language that the informant was comfortable to express their view; consequently, the exact meanings and some explanations would have lost in translations. In addition to above mentioned limitations, my official position [Cultural Officer] indeed have restricted disclosure of certain crucial information - which otherwise would be shared. The researcher was aware of all the constraint and limitations for this research and cautiously considered in the course of data collection with all possible means.

### **1.8 Significance of the Research**

First of all, Bhutan's ambition to attain economic self reliance by the year 2020 has led to many hydropower constructions. So far, no studies have been done

on construction of mega hydropower in Bhutan using concept of water governance. This study hopes to offer water governance – a better option than the water government in the hydropower projects. Today water –a common pool resource is becoming scarce in the country, due to many factors; which may drag all parties to close confrontation or common tragedy.

Secondly, this case study reveals the relation of various actors and their power in decision makings. Obviously, certain actors were given better chance while more important actors are left out, due to certain discrepancies in policies and laws of the government. This study intends to provide more holistic overview and stress importance on participation of grassroots actors, NGOs and CSOs to achieve socially just and ecologically sustainable hydropower project.

Lastly, the researcher put forward a new concept of water governance – holistic approach, which is amalgamation of both top down and bottom up. For that reason, minimizing the impact on the communities' economy, socio- cultural and environment, thus providing a better approach to deal such impacts as everyone is in the same level playing field. Moreover, this study serves as a guidance or reminder to the other hydropower project policy maker and to the people to look into the possibilities towards gearing for more dynamic approach to govern the common pool resource (water) for everyone's benefit

## CHAPTER II

### LITERATURE REVIEW

This chapter looks into different policies and factors contributing towards ecologically sustainable and socially equitable hydropower development. This chapter further reviews literature related to hydropower development and water governance.

#### 2.1 Bhutan's Economic Development Policy

Bhutan formal economic development started in 1962, with financial assistance from India. The first five-year (1962-1967) development plans started with basic infrastructure such as road, school and health. However, the subsequent plans saw a rapid increase in economic activities and at the same time rise in social and environmental destruction. In the early 1970s, the Fourth King of Bhutan envisioned an alternative development paradigm different from conventional development (discussed in 2.10). Gross National Happiness (GNH) was a policy intervention that aims to increase economic growth and social well being of people without compromising the environment (Planning Commission, 1999).

Normally, economic development is often taken at face value of the growth (GDP) which swathes “real development”. The push for free market or ‘invisible hand’ will escort the country to exploitative path to serve only the interest of few people/countries. The dependency theory, for instance, argues that poor developing countries experience only economic growth but no economic development. Therefore, Sena (1999) argues that development should not simply sum total of the numbers but must go beyond the figures. In contrast to Adam Smith’ “invisible hand”, a “visible state hand’ is necessary to go beyond figure to secure human well-being. Therefore a strong institution and good policy should be the basis for development for poor countries. In other words, economic development and sustainable resource (water) use ultimately depend on ‘institutions that can protect and maintain the environment’s carrying capacity and resilience’ (Arrow, et al., 1995).

Seeing the importance of institutions, RGoB took a leading role in developing a systematic approach to development to at least avoid what Hardin describes as “tragedy of commons”. With cautious consideration, Bhutan has adopted a five-year economic development plan model with ample guiding principles (see Planning Commission, 1999). The first economic development plan embarked by the government was a crucial gateway for the subsequent plans. It has brought about significant structural changes in the economy, moving away from the primary sector towards secondary and tertiary sectors under the direction of the state.



The role of state is clearly reasserted firmly in the plan document, *Bhutan 2020: A vision of peace and prosperity*. Bhutan's economic development policy is guided by the GNH paradigm. For instance, the prime minister's state of the nation reported to the 7<sup>th</sup> session of the first parliament on based on four pillars of GNH (Thinley, 2009). His importance to the policy was echoed in his coronation speech, the Fifth King, His Majesty Jigme Khesar Namgyel Wangchuck, said

*"I have been inspired in the way I look at things by Bhutan's development philosophy of Gross National Happiness... to me it signifies simply Development with Values"* (2008).

Presently, Bhutan' economic development policy circles around the policy paradigm of "*Gross National Happiness (GNH) or the Middle Path*" placing environmental conservation and human happiness as a way for a sustainable future. Increasingly, hydropower is consistently argued to be a renewable, green and clean energy source. Indeed, that is a possible reason why hydropower projects (figure 2.1) are vehemently pursued by the RGoB.

## 2.2 Hydropower Development

Hydropower development is a type of development that identifies river basins where power can be generated by falling water on turbine to produce

electricity. Generally, it is considered as cheap and eco-friendly and renewable energy. Bhutan's hydropower dates back to the 1970s driven by new rapid economic development initiated by RGoB. It was not only because of a rapid economic growth but also policy guided by GNH for the development of the country.

Peimani (2011) writes the "rapid economic growth," which has created "huge energy insecurity in the 21<sup>st</sup> century" and the current global debate on climate change has pushed countries closer into hydropower business. There are over 45,000 dams in the world and every year 1000 dams are being built for various purposes (WCD, 2000). The WCD (2000) - shows that more than half of the total numbers of dam is in Asia; displacing 30 to 60 million people and the construction of large dams displaces every year 2 million people. Chellaney (2009) raises concerns that Asian countries are moving from "arms racing to the dam racing" - which is a disaster in the making, because many dams are built on transnational rivers without proper dialogue amongst the countries (Mekong, Brahmaputra basins) heading towards "tragedy of the commons" (Hardin,1968). It is clear that opponents of large dams are "not-against the dam construction" but - only object to the ways (Chellany, 2009) and pace at which the dams are being built, resulting in "conflict" over sharing "scarce resource" (Percival & Homer-Dixon, 1998) or otherwise driven by a political and economic factor (Chellaney, 2009 ,2011; Dalby, 2009:126).

Bhutan government's long term vision to attain 'economic self-reliance' accompanied by "energy security" reflected in the plan document *Bhutan 2020: A vision of peace and prosperity*. This 20 year plan that started in the year the 2000 under different sectors became the outline for plans in subsequent years. For instance, under economic sector, the most important visions which emphasize the importance of hydropower are as follows:

- The availability of low-cost hydropower energy and resource endowments deriving from electricity export revenues are anticipated to help transform the industrial landscape in Bhutan with the development of a wide range and host of clean industries and high-technology enterprises.
- Exports to international markets of high-value Bhutanese niche and eco-based products are also projected to contribute significantly to the national economy and gain notable prominence for their quality.

In addition, the global move to "green and clean energy" has given leverage and legitimacy to concentrate on hydropower related development. Thus, the hydropower development has become much easier with less justification to offer. There are other mineral deposits in the country but due to unfavorable geographical location, other national and international norm makes the recovery difficult and expensive. Therefore, both government and people view hydropower as an important source of income as well as fulfilling global cause. Chellaney (2011);

however, mentions that it is Indian government's effort to keep its foothold in a neighboring country after losing most to the Chinese control. Nevertheless, today the hydropower sector contributes 40 percent of Bhutan's GDP, topping rest of the entire sector's contribution (DGPC, 2012).

Obviously, India is the only country that has major ecological footprints in Bhutan's hydropower sector; most of the hydropower projects are built by Indian companies. The potential risk portrayed here is RGoB's excessive emphasis on 'hydropower economy' or '*Hydro-Rupee*' is risky, in which there are lots of internal and external factors to be considered - such as political, economic, and ecological conditions. The deal of buying and selling fairly depends on the political situations of the countries. Therefore, there is certainly a danger of 'scraping deals' due to unavoidable political circumstances, which will be a grave concern for all the people (Mollinga, 2008; Yergin, 2006). While, Biswas (2012) praises Bhutan and India hydropower development model as a successful model, he further encourages other SAARC member countries to follow such model (Biswas, 2012). However, Bhutan should cautiously approach sustainable power deal looking grim because of unreliable Indian political structure with multiparty system swinging left and right.

Table: 2.1: Summary of hydropower plants to be constructed

Sl. No.	Name of the Project	Location	Capacity (MW)	Start Date	Commission Date	Mode	Remark
1	Sunkosh Reservoir	Wangdiphodrang	2560	2012	2019	Bilateral	Within 2020
2	Punatsangchu I	Wangdiphodrang	1200	2009	2015	Bilateral	Within 2020
3	Punatsangchu II	Wangdiphodrang	1020	2010	2019	Bilateral	Within 2020
4	Mangdechhu	Trongsa	720	2010	2017	Bilateral	Within 2020
5	Chamkarchu I	Zhemgang	770	2012	2021	Joint venture	Within 2020
6	Wangchu	Thimphu	570	2012	2020	Joint venture	Within 2020
7	Amochu	Samtse	540	2012	2020	Bilateral	Within 2020
8	Kholong chu	Trashiyangtse	600	2012	2020	Joint venture	Within 2020
9	Bunakha	Thnpfu	180	2012	2020	Joint venture	Within 2020
10	Kuri Gongri	Monngar	2640	2012	2023	Bilateral	Within 2020

12	Nikachhu	Trongsa	208	2012	2017	DGPC- PPP	
12	Khomachhu	Lhuntse	327	2014	2017	DGPC- PPP	
13	Rotpashong	Lhuntse	918	2012	2019	DGPC- PPP	
14	Gamri	Trashigang	102	2013	2017	DGPC- PPP	
15	Dagachhu	Dagana	114	2009	2013	DGPC - PPP	

### 2.3 Water Governance

Water is an important element for all living being including plants. With increasing population, the demand for water has increased manifold bringing people in a conflicting situation. In order to solve the emerging water related problems, water governance is necessary. Water governance can be understood as the interaction of political, social, economic and management system (Bakker, 2006). Bakker (2006) also differentiates ‘water management’ and “water governance”. Management refers to the operational approaches we adopt and also the models, principles and information we use to make those decisions, governance refers to how we make decisions and who gets to decide.

There are many forms of water governance such as ‘integrated’ and ‘distributed’ water governance. It can be either market driven or state driven. From the neo-liberal perspective, that the water governance is understood as “market” driven (Rogers, 2002; Hall, 2004). However, a market driven model is bound to fail, as it will not be able to provide social obligation due to commercial motive. Whatsoever, broadly speaking, water governance should comprise these principles: legality, democratic legitimacy, justice, efficiency, and effectiveness bottom-up decision-making process (Ostrom, 1996). Water governance cannot be achieved hastily by ‘using blueprints from a given country or region’ but should develop according to the choice of the local people (Merrey et al., 2005; Rogers & Hall, 2003).

In Bhutan, as per constitution 2008, and Water Act 2011, all the resources within the jurisdictions of state belong to state which has full authority over the resources (see appendices 115-117). Nevertheless, the state is mandated to provide a fair distribution of resources to the citizen and things are gradually changing for example, decentralization of community forest throughout the country has initiated by Ministry of Agriculture. Decentralization and other aspects of integrated water resource management is considered to be important components for the sector reform to achieve effective water governance (Roger & Hall, 2003) and to be effective, “improvements in water governance systems obligatory” (Moriarty, et al., 2004).

Under the leadership of Fourth King, a series of reforms in governance has been carried out starting from 1980; decentralization of power from central government to Dzongkhag and Geog level was initiated in line with the GNH policy. For instance, the development committee known as Dzongkhag Tshogdu (DT), established in 1981 and Gewog Tshogde (GT) in 1991 for Dzongkhag and Geog respectively. DT and GT were created to encourage people to participate in the decision making process. Consequently, Bhutan is currently moving away from conventional forms of governance, which usually is dominated by bureaucratic elites “top-down supply-driven approaches” (ADB, 2010). Realizing bottom-up demand driven approaches are more practical because of long term experience, situational knowledge and understanding of various local groups of people which helps to minimize negative consequences on resource and maximize human happiness (UNDP, 2007b).

Another irking issue is gender; gender has become the main issue in almost all the development activities and water governance is no exception. According to Cleaver (2007), current writing on governance and particularly water governance tends to be gender blind. In Bhutan, there is so far no report on gender discrimination in the development field, however there are some area and place based on strong religious beliefs and traditional opinion restrict women. Such things are not isolated events as they are found all around the world and have no



connection to [good] water governance. Apparently, water governance in Bhutan is very wooly, and lacks strong institutions for that purpose.

## 2.4 Institutional Arrangements

Institutions plays a major and important role in achieving good governance, be it water or any other resources. Without proper institutions, there are difficulties in monitoring and allocating resources to the people in a fair and just way - according to the laws of the state. Rogers and Hall (2003) argue importance of “systems” – the system that are in place to develop and manage water resources to deliver water resources at different levels of society. Unless a systematic institution is not considered by the state or other actors, the resource rather becomes “curse” inviting conflicts and confrontations among the end users (Swain, 2011).

Institutions can be both formal and non-formal. Formal describes the state lead bureaucratic hierarchal systems and non- formal can be understood as market /network lead, private, or NGOs based. These institutions in general are meant for enabling better governance or to solve various problems, water in this context. Be it is formal or informal institution, improving water governance is a key solution to water insecurity in developing countries (Rogers & Hall, 2004; Gopalakrishnan, et al., 2004). For instance, The World Water Vision Report 2000 blamed bad institutions,

bad governance, bad incentives, and bad allocations of resources as the root causes of the problem(s) (Cosgrove & Rijsberman, 2000). In true sense, there are a number of NGOs, CSOs and private agencies competing for resource governance. Some are genuine while others simply seek public interest to maximize personal gain. It becomes more problematic when all these bodies function independently for their vested interest.

Some scholars like Watson, et al (2009) argue that reallocating responsibility among a range of public, private and civic groups has become problematic, because water bureaucracy loses its accountability and legitimacy. On the other hand, the newer collaborative arrangements have little real influence over the direction of water policy. With such new arrangement, the fixing of accountability becomes more vague, inviting more corruptions and non-transparent in the systems. Such problems have remained un-addressed theoretically and empirically. Many scholars remain deeply divided over these issues; given the degree of complexity and difficulty in practicality in normal application.

The hydropower projects (Chukha, Kurichhu & Basochhu) upon commissioning were corporatized under one single body called the Drunk Green Power Corporation (DGPC) in 2008 and the erstwhile the Department of Power was also restructured into the Department of Energy responsible for policy and planning for all aspect of energy and power, Bhutan Power Corporation- responsible for transmission and distributions; and Bhutan Energy Regulation - responsible for regulating the electricity industry - a

continuous preemptive measure to resolve some of the emerging institutional problems.

On the legislative side, enacting laws such as *Water Act of Bhutan, 2011*; *Economic policy of Bhutan, 2011*; *Sustainable Hydropower Development Policy, 2008*; *Foreign Direct Investment Policy 1997 (revised, 2010)*; *(Draft) Renewable Energy Policy, 2012*; apart from *The Bhutan Forest Act 1969* and *The National Forestry Policy 1974*, is a sign of adaptive response to the changing needs of the country. Bhutan Government's recent move to pass various aforementioned laws and acts seems genuine and justifiable in itself but there are great deals of uneasiness growing amongst the citizen about ill attempt to re-centralization, inserting bureaucratic approach to achieve good governance. Understandably, it is nothing more than to defuse peoples' resistance to important national projects particularly hydropower projects; fuelled by the targeted goal of economic self reliance by 2020 which is contradictory to the policy of GNH in true sense. Positivity towards such move will increase legitimacy, transparency and accountability with the given system as shown in the following figure 2.1 and 2.2.

Figure 2.1 Resource Management/ownership

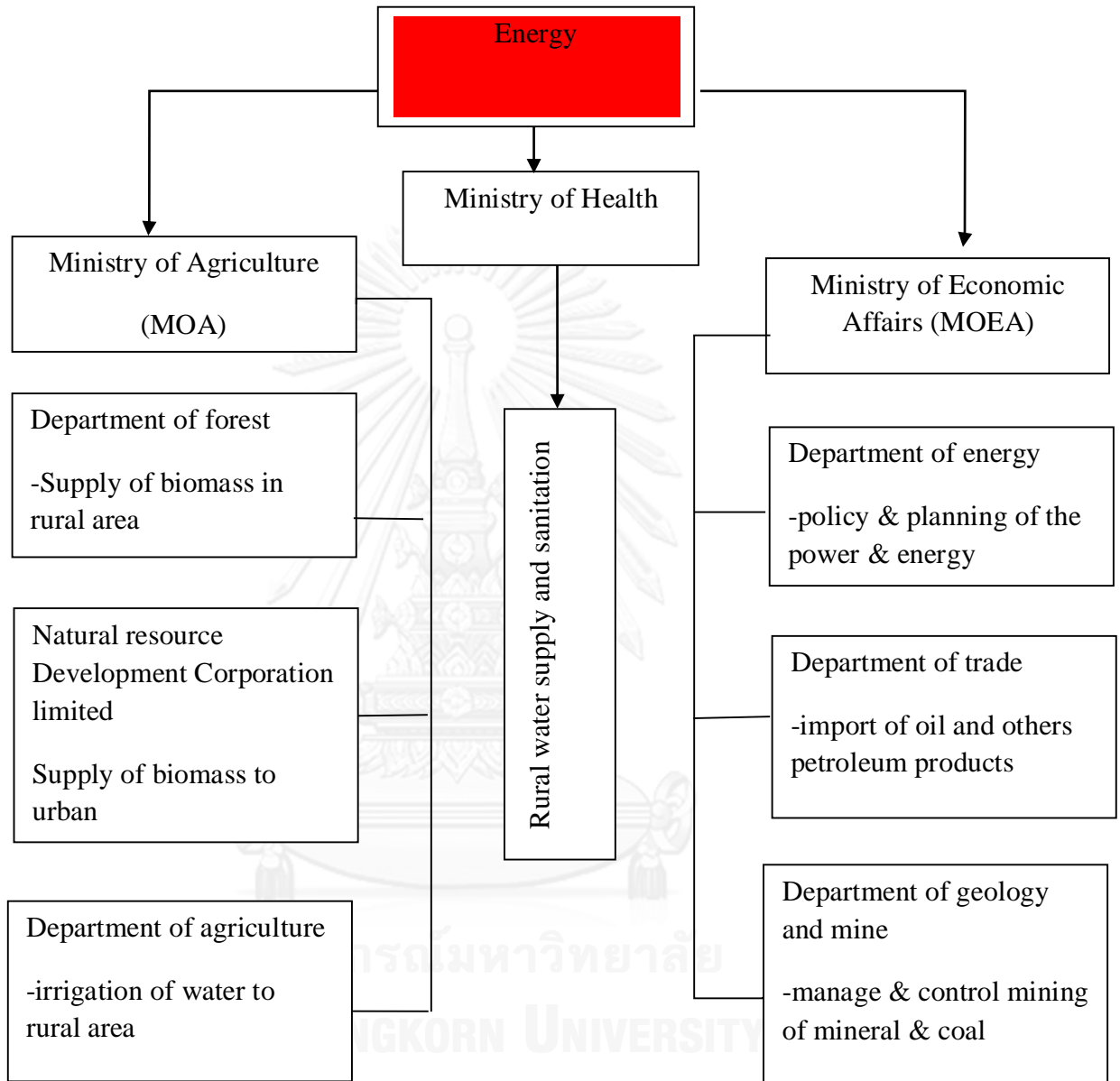
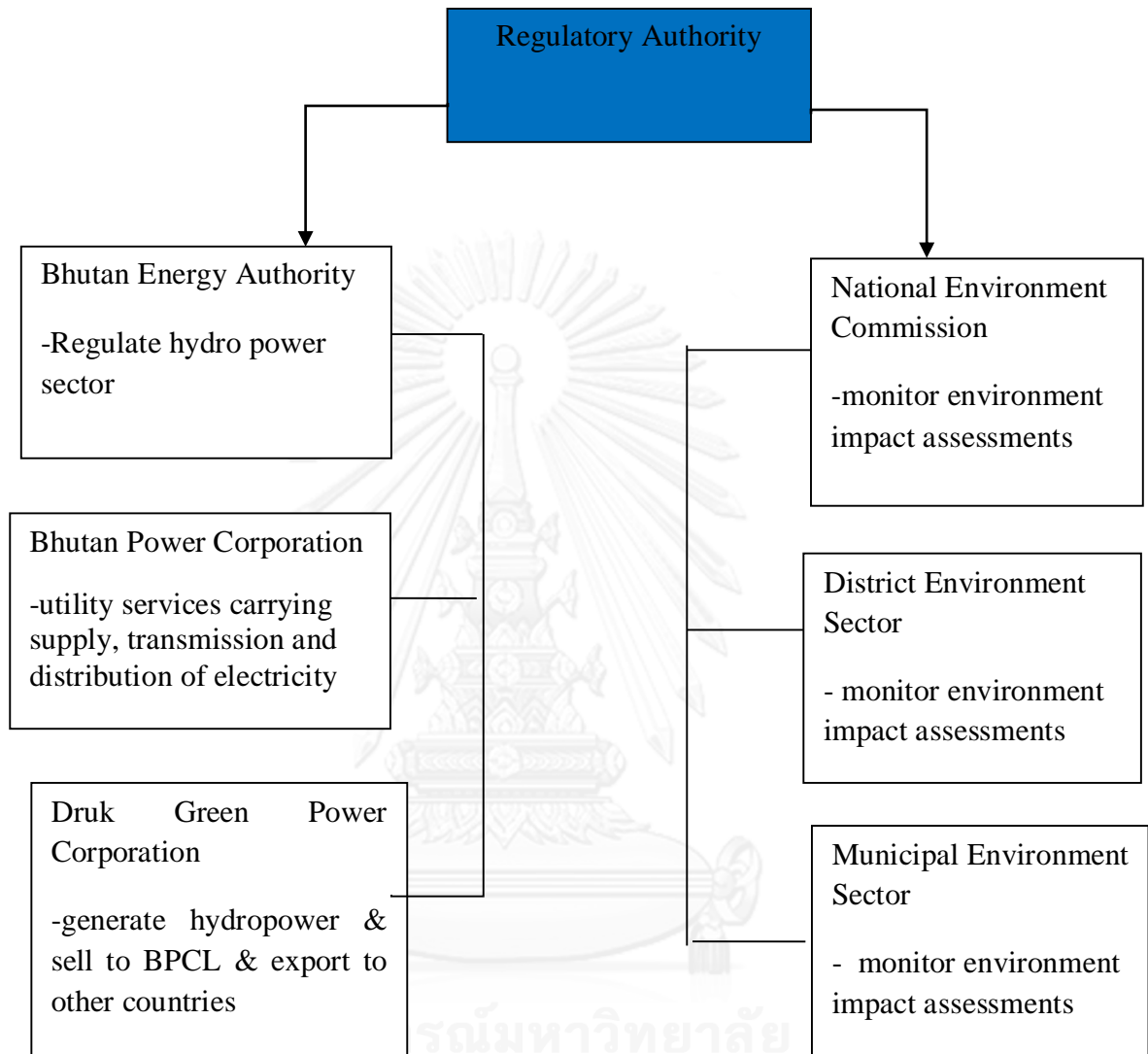


Figure 2.2 Regulatory Authorities for the Resource Development



## 2.5 Stakeholder Decision Making

A stakeholder can be understood as a single or multi-party (people or organization) directly or indirectly involved in “common pool resource” water (Steins & Edwards 1998). Among single stakeholder, decision making process is mostly taken by the government; centralized state dominated by bureaucratic elites, a top-down approach. However in multi-party stakeholder, the decision making process is democratic, involving all relevant stakeholders (community, NGOs, private and individuals), rather a decentralized bottom-up approach. Steins and Edwards (1998) states:

*“Decision-making body (voluntary or statutory) comprising different stakeholders who perceive the same resource management problem, realize their interdependence for solving it, and come together to agree on action strategies for solving the problem” (Steins & Edwards, 1998, p310).*

However, Watson, Deming and Trefny (2009) argue that reallocating responsibility among a range of public, private and civic groups has become problematic because the water bureaucracy has lost some of its accountability and legitimacy, the newer collaborative arrangements have little real influence over the direction of water policy. There is also a concern that decentralized decision could have a negative impact on poverty (e.g. Cleaver, et al., 2006).

In recent times, decision making has become more difficult especially when dealing with sharing trans-boundary river basins, because each individual country domestic interest becomes the focus point over other shared interest or does not want to participate in the process, for example, the river basins of Mekong and Brahmaputra (Chellaney, 2011). At least for now, Bhutan does not have to confront such challenges (Biswas, 2012); however, there is growing discontentment in a neighboring Indian state of Assam (*The Times of Assam, 2011*).

In case of Bhutan, there is no literature suggesting exclusion of stakeholder in the decision making process. But on the contrary, *Kuensel* (2012) has revealed that only high level and bilateral stakeholder meetings are conducted concerning the projects. In contrast, Bhutan's Prime Minister defends in the "meet the press" that all the plans and activities have been consulted with the people and 10<sup>th</sup> five year plan is no exception (*Kuensel, 2013*).

## 2.6 Legitimacy

Legitimacy is a state of being legitimate or lawful. To be more explicit, "legitimacy is a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions" (Suchman, 1995: 574). Suchman further categorizes legitimacy into three types: *pragmatic, moral and cognitive*. While the

German political philosopher Dolf Sternberger said, “Legitimacy is the foundation of such governmental power as is exercised, both with a consciousness on the government’s part that it has a right to govern, and with some recognition by the governed of that right” (Sternberger, 1968, p314).

In water governance it can be understood in two dimensions: legitimate institutions to enforce the law, rule and regulations formulated and will of public to abide by laws, rules and regulations. The first dimension is that all the actors should have a [formal] right to participate in the decision making process. Secondly, the enforcing bodies should have a [formal] right to empower all the stakeholders and public and enforce, otherwise it will become illegitimate. Legitimacy in water governance is necessary as it is a crucial component. For instance, different stakeholder’s participation is only legitimate, if they are [formally] representing a direct stakeholder; be it government, private or any organization.

## 2.7 Accountability

In water governance, constituting of different stakeholders, state and non-state, civil society and community, accountability is very important. Its importance can be realized only, if roles of all the stakeholders are made very clear. Failing to do so will result in blame game where the community or the weaker section of



stakeholders is cornered. Roger and Hall (2003) consider that the roles of legislative and executive process need to be clear. Each stakeholder/institutions must explain and take responsibility what each does. In other words, the “rules of game” must clearly spell out, anyone if happens to violate the rules, he/she must subjected to the penalty as set out.

Accordingly, accountability will be strengthened as well; all the parties will be accountable to the people/ community and to the institution. The decision maker in state/government, civil society and private are accountable to the public. Clear delegation of authority among the stakeholder would not only lead to better governance but also instill the sense of responsibility among all the stakeholders. However, accountability will differ depending on the organization whether the decisions are made internally or externally (Roger & Hall, 2003)

## 2.8 Equality

The general trends in governance are that the elite or most influential dominated the meeting or discussion, while others merely remain spectator or just for the sake of participation. Roger (2004) explains equality as “equity between and among the various interest groups, stakeholders, and consumer-voters need to carefully monitor throughout the process of policy development and

implementation. It is essential that the penalties for malfeasance be, and be seen to be, equitably applied”.

Equal representation is another factor, simply participation is not enough. Heterogeneous representation (state, non-state and civil society) from different level, with special focus, affected communities and minorities. In most developmental work or in politics, apparently a structural gender discrimination and marginalization of minority is visible. According to the minority empowerment thesis, “minority representation strengthens representational links, fosters more positive attitudes toward government, and encourages political participation” (Banducci, et al., 2004). Above all, water governance has to be strong based upon the ethical principal of the society in which it functions and based on the rules of law. “...This manifests itself most strongly in the issue of justice, property rights for use, access and ownership of water” (Roger & Hall, 2003, p28).

## 2.9 Stakeholder Participation

Unlike traditional systems, the new system of governance gives due importance of multiple level participation. The stakeholder participation – internationally recognized as an important component of sustainable water resource management (Global Water Partnership, 2000). On the contrary, participation

sometimes becomes ritualistic or else normative in the decision making process. Participation should be “spontaneous” not “deliberate” to create meaningful contribution. There is a risk of only having “participatory” but no freedom of expression, simply creating an opportunity to put forth state’ interest/agenda. Participation should not limit to a few selected ones, but have to include as many as possible. The inclusion should not exclude women and minority.

In other words, participation should not have gender discrimination and an exclusion of minority and indigenous people. Leach (1992); however, warns us that especially when it comes to women’s participation in water management/governance, a calculated contemplation should be taken into consideration, otherwise it will add up to their long list of care taking roles. However, participation has dual benefits, the government can learn and understand the reality while people can understand government policy to common pool resources thereby can change the perceptions and have better or mutually beneficial outcome.

On the other end, Ostrom (1990) and other critiques argue that such inclusion has a purposive agenda, but should consider the social and cultural complexities, especially in Asia. It is unfortunate that a minority and indigenous people has always been the victim of developmental activities. Inclusion of indigenous and minority people has become a must before any developmental activities now a days, because the local indigenous people living in the area know the better about the

area and the resources around them but the external actors or stakeholders are the opposite (e.g. Roberts, 2001).

Therefore, sustainability of common pool resources like water depends on [good] water governance. Water governance with multi-stakeholders involved in adhering to the principles like decentralized decision making, legitimacy, participants, equity and effectiveness, lastly accountability.

## 2.10 Gross National Happiness and Development

The concept of "Gross National Happiness" hence is referred to as GNH, was advocated by the 4<sup>th</sup> hereditary king of Bhutan in 1970s as an alternative development to the mainstream development paradigm. As articulated in the GNH concept, eventually any development must lead to 'happiness' through various strategies and 'institutions' (Bok, 2010). The main philosophical idea is that any development should lead to happiness and caring society living harmoniously with nature, and should be able to understand the cause and effect present and future of society. The Fourth King's main vision was:

*"Bhutan seeks to establish a happy society, where people are safe, where everyone is guaranteed a decent livelihood, and where people enjoy universal access to good education and health care. It is a society where*

*there is no aggression and war, where inequalities do not exist, and where cultural values get strengthened every day. A happy society is one where people enjoy freedom, where there is no oppression, where art, music, dance and culture flourish” (King Jigme Singye Wangchuck, 2000).*

Many scholars and social scientists still consider GNH to be an idealist and romantic idea. In contrast, Fishman (2010) argue that it is not only lofty words of romantization, but also visible action translated on the ground. GNH philosophy is based on four pillars: (1) Sustainable equitable social-economic development, (2) Conservation of the environment, (3) Preservation and promotion of culture heritage and (4) Promotion of good governance (Thinley, 2005).

- **Sustainable equitable socio- economic development** confronts capitalist model of economic development focusing only on material gain ignoring other externalities. As a result, today 20% of the world richest people own 80% of resources because the majority of the global population has nothing at their disposal. Thus, the first pillar tries to emphasize on balance approach to social and economic development.

- **Conservation of the environment**, the second pillar defines economic development that it would not be possible without environment conservation. This development must be carried out within the carrying capacity of environment without damaging the biological productivity and diversity of the natural environment.
- **Preservation and promotion of culture**, in neoliberal society people have right to choose and change any culture according to their choice. Whereas this pillar in particular pursues people to follow certain cultural values honored and respected hundreds of years that glued society in good and bad times. The main reason behind this is by preserving the spiritual and emotional values that give happiness.
- **Promotion of good governance** can be viewed from different context; basically it asserts the democratic idea of people making decisions for their development. The degree of happiness depends on the quality of the relationship between the institution and people. Institution improvement to discuss quality of services to the people qualifies the level of happiness.

For Bhutan, GNH has become the guiding principle of “country’s development policy” as it is reflected in all the plan documents (Thinley, 2009). On

the contrary, the speed of economic development due to globalization is a serious challenge to the principle of GNH. However, the Royal government of Bhutan has introduced this concept to United Nations General Assembly and in 2011, the UN passed a non-binding resolution on “Happiness: Towards a holistic approach to Development”. Derek Bok (2010) in his book titled “*The politics of Happiness: What Government Can Learn From the New Research on Well-Being*” suggests that the US government should adopt “happiness” in government policy as done in Bhutan. We can safely say the conventional development based on GDP has failed to address the real development. As Joseph Stiglitz points out that an increase in GDP may actually contribute to a worsening of living standard (Stiglitz, 2009). Therefore, GNH is a better option to pursue development hereafter.

### 2.11 Case Studies

In this section, two case studies from other countries are being analyzed to find out how hydropower development has impacted society at large and communities in particular. To solve the problem or minimize the impact, what are the approaches being applied and what is the lesson learnt?

First, the Pak Mun hydropower project in Thailand. The Pak Mun- literally, Mouth of the Mun (river), just upstream of the confluence of Mun and the Mekong.

The dam project initiated by the Electricity Generating Authority of Thailand (EGAT) during 1919-1994, ever since the initial approval in 1989, has sparked controversy - linked to villagers' networks that have sought to defend, mitigate and restore fisheries dependent livelihoods (Awakul, & Ogunlana, 2002; Foran, 2006; Roberts, 2001).

Unlike other hydropower projects which are predominately engineering and economic resulted in planning dispute and practices (Foran, 2006). In case of the Pak Mum hydropower project, it offers a typically interesting example. It is not only the conventional problem of technical and policy problems in water governance but also the “knowledge discourse” (Foran, 2006). The knowledge (scientific and local/rhetoric) contest over livelihood between EGAT and other elites and lay/community (Awakul, & Ogunlana, 2002). The community challenge on the topics such as fish passage design and socioeconomic assessment (Roberts, 2001) where they set up a Tai Baan research and publish their own finding based on local knowledge. On the contrary, in some fields it was outside of EGAT's core expertise, leading EGAT to rely on commissioned studies, some of which opponents later criticized as “methodologically narrow” (Amornsakchai, et al., 2000a; SRR-PMD).

From this case (see detail, Awakul, & Ogunlana, 2002), it infers that the lack of “water governance” or exclusion of certain actors, thus, leads to protracted problem. For instance, in this case, the deliberative venues are rare. Knowledge discourses do not contribute to an “epistemic community” (Haas, 1992). Therefore, it suggests the



“better water governance practice” with certain institutional reforms and structural adjustment are the key solution for such controversial problem in hydropower development (Awakul & Ogunlana, 2002; Foran, 2006; Roberts, 2001).

The second, drawing upon a case study carried by Dore, et al., (2012) a framework for analyzing transboundary water governance complexes on Mekong river. The Mekong River starts from Tibetan highland and runs through Myanmar, Laos, Thailand, Cambodia and Vietnam, before spilling into the South China. There have been increasing development activities (dam construction) on the upstream of Mekong River and its tributaries causing a huge impact to downstream triggering possible conflicts (Dore, et al., 2012). For instance, Lancang-Mekong River development in China’s Yunnan province is threats to the Tonle Sap ecosystem that would be disastrous for Cambodia and other downstream. Without meaningfully engaging all the actors (state, non state) in transboundary river governance will remain static if not, get worse.

The ways of negotiating with non-state actors like China, which is not the member of, Mekong River Commission (MRC) but has a very important role too in the governance. The other argument raised here it that the different state actors of MRC have overwhelming domestic interest over regional interest. Lack of consensus among the various actors makes the transboundary water governance in MRC more complex and difficult. Therefore, Dore, et al. (2012) suggests that in the Mekong that water resources-related allocation choices can be improved by bringing into arenas

different perspectives and fostering deliberation to inform and shape negotiations and decisions of different actors.

## 2.12 Conclusion

The literature review shows that there is a whole range of complexities looming over water resources in Asia. In case of Bhutan, there is a serious debate amongst the elite groups to balance between economic development and Gross National Happiness. It also reveals that perhaps due to political set up or lack of capacity, no grassroots movement against or in support of project is visible. Decades of planned and controlled development plans, and good bilateral relations with India have not resulted in a major problem in water resource development (Biswas, 2012) and priority of national interest has so far not resulted in major problems.

However, critique points out that the pace of hydropower development in Bhutan is a major cause of concern (Bisht, 2011; Mehta, 2013). What is more, is a lack of available literatures written about Bhutan on such issues especially “hydropower development?” However, literatures on other Asian countries like Nepal, India and china reveal that such development causes upstream and downstream impacts mainly due to bad or no water governance. Thus, creating an entire knowledge gap in the context of Bhutan’ hydropower development and water governance.

For that reason, this study will explore this particular gap by employing water governance as a framework to find the ground realities. Otherwise try and find out alternatives from this study, whereby to provide a common plate form to address the emerging problem related to hydropower development in Bhutan.



## CHAPTER III

### A CASE STUDY OF MANGDECHHU HYDROELECTRIC PROJECT

This chapter provides the background of the Mangdechhu Hydroelectric project, followed by discussions on laws and policies related to water and hydropower development in Bhutan. As Bhutan is a culturally rich nation, without discussing its customary laws/practices, this work will be incomplete. Therefore, some customary laws/practices related to the resource utilization and the impacts of hydropower development will be discussed in this chapter. Sustainability of hydropower development on the common pool resources depends on push and pull factors of various actors and stakeholders while their roles in the project are being studied in this chapter. This part of the study will answer the following research questions: firstly, what are the current policies and laws for water governance and hydropower development in Bhutan? Secondly, who are the actors behind the Mangdechhu hydroelectric project? And lastly, how do different actors play their role in decision making as regards the Mangdechhu hydroelectric power project?

### 3.1 Project Background

The Mangdechhu River flows below the majestic Trongsa Dzong<sup>2</sup>, perching on the rocky hill top for the past 369 years. Interestingly, this Dzong stands as living Bhutanese history and architectural grandeur of the country apart from being a priceless treasure of the country and pride of the community. About a kilometer away from this priceless monument, however, another massive modern structure is in full progress. With capacity of 720 MW, the Mangdechhu Hydroelectric Project's dam construction site is located in the virgin forest, home to numerous flora and fauna. Breaking and dislodging of the hard rock underneath, alteration of certain spiritual and cultural beliefs associated within the places though regrettable but unavoidable can be referred as "collateral damage."

As detailed in Chapter I, Trongsa is a historically and ecologically important place in the country. In other words, the whole area serves as an important "cultural center" as well as "biological corridor to other protected areas" of Bhutan (Gupta, 1999). Indeed any physical alteration in this area demands technical precision and systematic maneuvers. Furthermore, not only ecological equilibrium but also paralyze economic and socio-cultural function, resulting in dysfunction of society. I am not deliberately drawing gloomy ground; however, there is possibility of positioning wrong direction of development compass. The Lesotho highland water

---

<sup>2</sup> Fortress in the past but now used as administrative office and religious center

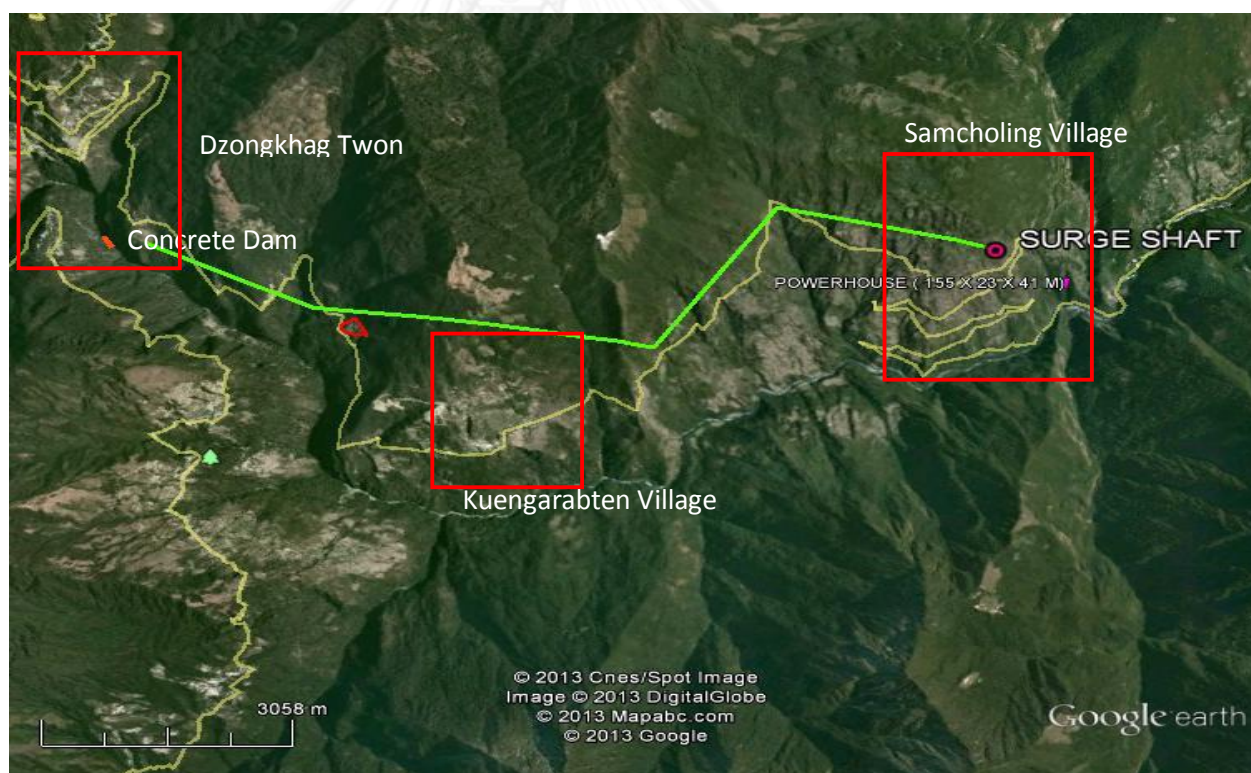
project (see detail Nusser,2003) stated that the impact of privatization of water in Bolivia and the three Gorge Dam in China had displaced 1.3 million people and people were jailed and beaten for requesting better resettlement condition (Fearnside,1988; Gleick,1998; McCully, 2001) as cited in Nusser (2003). These are some of the diverse examples.

### 3.1.1 Physical Structure

The ongoing Mangdechhu Hydroelectric Project (MHP) is constructed across the banks of Mangdechhu River which covers a total area of 325.15 hectares including 8.5 hectares under submergence. The construction component consists of building of concrete gravity dam (152 meter height x 42 meter length x 10 diameter), an underground power house, surge shaft, several tunnels (Addits, I to V) and 400 KV transmission line. The underground Power House is located at *Yurmung* (about 45 kilometers away from the dam site). The four units of 180 MW Peloton-turbine-driven generators will be installed in the underground power house, estimated to generate 2923.25 GWh of electricity annually after the completion in 2017 (NHPC, 2008). As for the energy generation, it will be connected by 13.544 kilometers long Head Race Tunnel from the dam reservoir.

The concrete dam is constructed at *Chuenjupang* which is about 14 kilometers away from Trongsa Dzong. However, it is less than one kilometer from the Dzong excluding curves and considering crow-fly distance. As far as the site is concerned, the dam construction is located further away from the human settlements (as there is no human settlement in the core area and the nearest village in the vicinity is Chuenjupang and Trongsa town).

Figure 3.1 Mangdechhu Hydroelectric Project Construction Areas



From the field study (June, 2013) and other documentary evidence (DPR, 2009), the reservoir capacity is estimated at 2.128 million cubic meter of water

running almost 2.5 kilometers upward (official estimated of 800 meters) touching the base of rocky hill on which the Dzong is perched. There are early indications of inadequate socio-culture, environment and ecological emphases taken into accounts which are likely to pose problems in the area (detail discussion in chapter IV). Therefore, there is need for transparent and thorough technical study to clarify public disillusion. However, such disenchantment and ambiguity could jeopardize the credibility of this project, sending ripple effect to other projects' activities which are under process.

Furthermore, the underground power house is constructed at *Yurmong* near the right bank of Mangdechhu River, approximately 45 kilometers away from the dam construction site. The construction of various project components (Adits i-v and Surge Shaft) alongside the Trongsa–Zhemgang highway is in progress. The quiet and green villages of *Drakteng Geog* have witnessed increased in activities. The huge number of heavy vehicles plying on the small road (one line road which was obviously not built for such heavy vehicles) coupled by presence of hundreds of foreign and national labors has literally changed the social fabric of the Geog; potentially portraying practical risk in those areas.

The Surge Shaft is located in the *Samcholing* village. The approach road to the surge shaft has dissected landed property of several farmers; besides, the surge shaft itself is constructed on the farm land (field observation, June 2013). There are



five Addits tunnels constructed in various areas, of which three falls in Kuengarabten and Samcholing villages. Indeed, this activity has caused huge impact on the communities in their daily functioning according to *App*<sup>3</sup> Tshering from Samcholing which is discussed in chapter IV of this study.

Initially, the pre-feasibility study was conducted in 1993 and 1999 by Nor Consultant - NORAD, funded by Norwegian government. The study found the possibility of producing 360 MW. However, later in 2004, based on a hydrological report, it was then reported the possibility of producing 670 MW. Following this, MoU was signed with the Indian government to get technical assistance in the preparation of the Detailed Project Report (DPR) in 2005. Subsequently, the National Hydroelectric Power Corporation of India (NHPC) was assigned to conduct the Detailed Project Report (DPR) with Nu. 79 million grant from India. The NHPC submitted its first DPR report to the Royal Government of Bhutan (RGoB) in the year 2008 and the final draft was presented in the year 2009. According to the approved Detailed Project Report (DPR), the estimated cost of the project is Nu. 33,821.58 million (March, 2008). The project was expected to be completed within 6 years from the commencing year of 2010 and likely to be operational by September 2017 (NHPC, 2008).

---

<sup>3</sup> Usually refer to father and here I used for married man

### 3.1.2 Management Structure

The Mangdechhu Hydroelectric Project Authority (MPHA) was established in June, 2010. The MPHA Board has a chairperson (by default - Ministry of Economic Affairs) and seven members - four from the Royal Government of Bhutan (Dzongdag as the default member) and three from the Government of India as Empower Joint Group (EJG). In addition, the project management is working towards achieving their vision, which states:

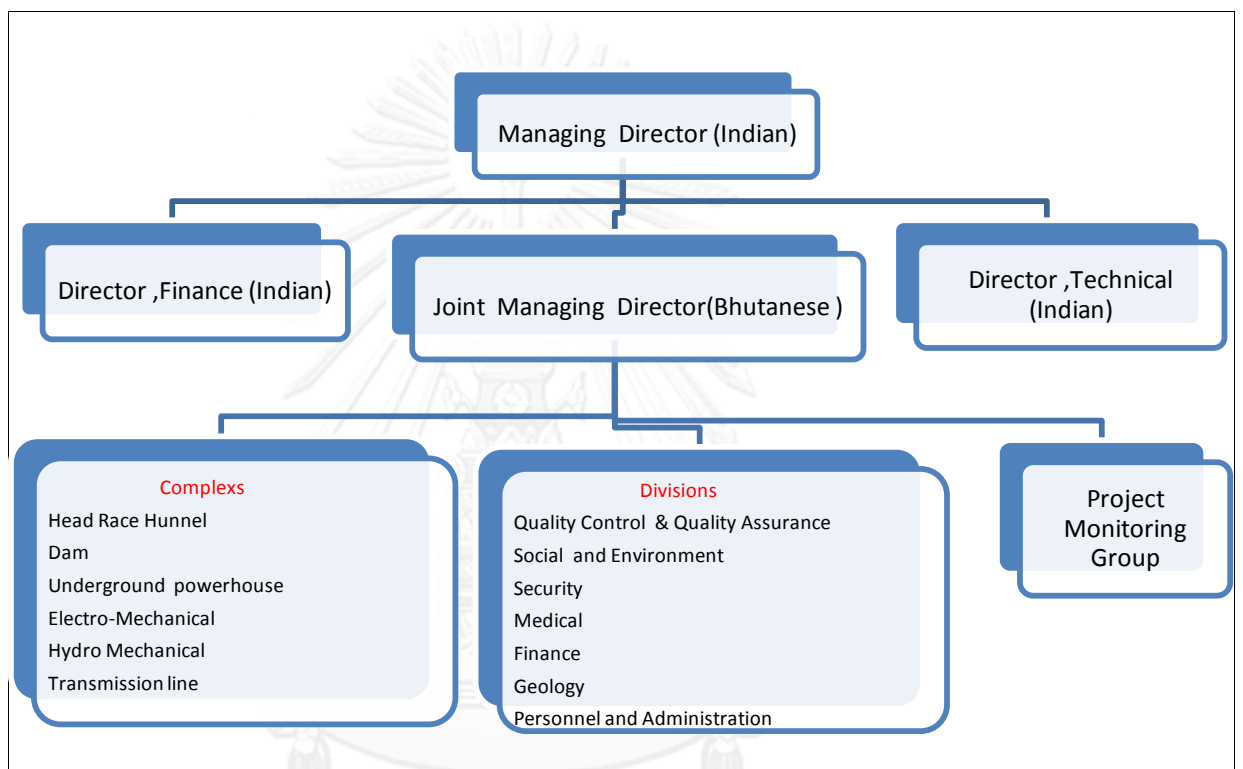
*“Working towards setting a standard benchmark in the construction of hydro project, without compromising on quality and environment” (MHPA, 2013).*

The project has its offices at Langjophakha in Thimphu and at Sherubling in Trongsa. The project is headed by a Managing Director, assisted by a Joint Managing Director, and two Directors - technical and finance, to carry out day to day functions of the project as shown in figure 3.2 below.

The figure 3.2 shows the organizational set up of the project with various complexes and divisions dealing with particular project’s activities. The project management is committed to improving the socio-economic conditions of the local people around the project site (discussed in chapter IV). It is obvious that the

creation of various divisions under the project management office, particularly social and environment division is of concern in this study.

Figure 3.2 Organizational Structure of MHPA



Such articulation in the project management system with a genuine desire to reduce maximum negative impact from project to the society and environment is an exemplary step. However, to avoid void rhetorical policies materialized into real achievable action, a reliable and viable funds or finance should be included in the calculus, which is explained in the following section.

On the whole, the major components of project construction works are awarded to the Indian companies. The construction of a concrete dam (56 meters high above river basin with 141.28 meters length ) and the construction of underground power house by M/s Jai Prakash Associates Ltd ; the Head Race Tunnel (HRT) which is 13,561 meters long to M/s Gammon India Ltd and M/s Marti India Ltd, and the construction of 400 KV transmission line are carried out by M/s Kalpataru Power Transmission Ltd. There are also a few Bhutanese contractors engaged in minor civil works; for example, construction of approach roads, staff quarter, etc. These companies and contractors employ approximately 10,000 (peak season) Indian laborers including a few hundred Bhutanese people (field study, June 2013).

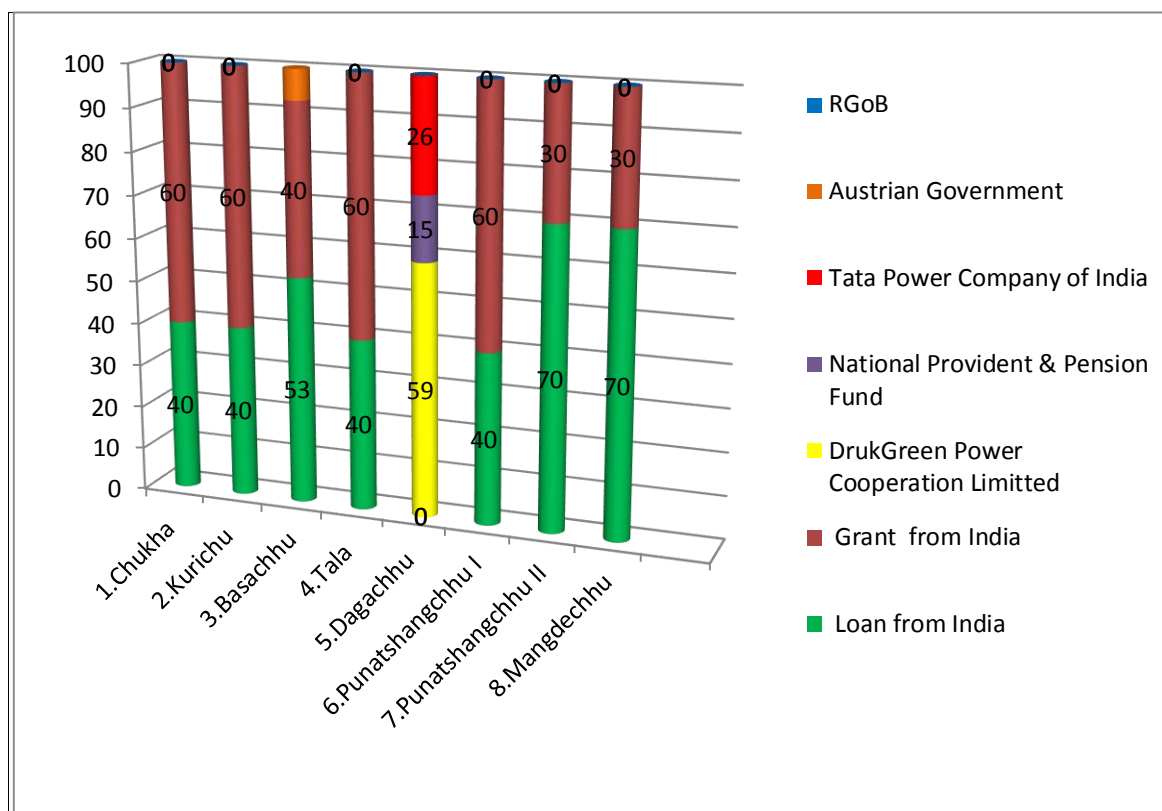
### 3.1.3 Financial Structure

Mangdechhu Hydroelectric project is funded by the Government of India under the bilateral agreement signed in 2009 between Bhutan and India. The serial number 6, 7 and 8, shown in the figure 3.3 is being termed as “second phase” hydropower project (Bisht, 2011). The “second phase” hydropower project’s financial modalities are slightly different from the first phase (figure 3.3, serial no. 1, 2 & 4). Mangdechhu Hydroelectric is funded with 30% grant and 70 % loan at 10 % of

interest with initial estimation of Nu. 28 billion at March 2008 price (NHPC, 2008). However, one school of thought is critical about the net income from this project; because the huge chunk has to be paid to the Gol as loan repayment at the rate of 10 % per annum. Considering the project funding modalities (the second phase hydropower development) as presented in figure 4.2 in a chronological order, from past to the current projects, which is self-explanatory of whether the project is beneficial or not. A simple cost - benefit analysis can predict the economic benefit as it is empirically not as beneficial as it ought to be.

However, after less than two years into the construction process, the cost has escalated to 25 % from the initial estimate. The revised price of the project is estimated at Nu. 37 billion (June, 2013) and even expected to reach Nu 45 billion towards the project completion in 2017. This is mainly due to the general state of global economy (as it is still recovering from 2008 recession); in particular, the poor performance of Indian economy and massive devaluation of Indian currency. Considering all aforementioned factors, the estimation will even scale up over expected amount (Kuensel, 2013d).

Figure 3.3 Financial Compositions of Various Hydropower Projects



Source: DGPC, 2013

### 3.2 General Laws and Policies Relating Hydropower and Water

Prior to 1959, Bhutan did not have centralized legislation(s) pertaining to resources; such as land, water, forest, etc. The resources were shared and governed by customary practices based on Buddhist and Bon percepts.<sup>4</sup> For example, the principle of interdependence, mutual coexistence and sustainable harness of nature

<sup>4</sup> Living harmony with nature, interdependence among all form of life and worshiping nature as a protective deity

in which Buddhist precepts forbids disturbing nature or otherwise excessive exploitation of nature. People enjoyed the freedom to utilize the resources according to their convenience and shared interest as elucidated in the “tragedy of common” (Hardin, 1968) without a question. Conventionally, Bhutanese possess god and spirit fear – largely influenced by the Buddhist concept of causality or the “karmic law” depending on one’s own action(s).

The *Thrimzhung-Chenmo*<sup>5</sup> of 1959, the first ever forestry- related legislation has shifted power from the community to the central government, thereby changing its traditional unwritten customary laws to formal written/codified law. After 1961, a sudden shift of forestry policy was implemented in the country which in turn was greatly influenced by the Indian forest policy. There were more regulations and restrictions imposed on the people under the ban of sustainable forest resources. The idea was to systematize usage of common pool resources in more scientific way or an appropriate managing system. For the communities, it was more of inconvenience than an enabling factor to improve their indigenous way of life according to Dorji of Samcholing village (field report, 2013).

The changes in regulating mechanism were then followed by many other laws namely, *The Bhutan Forest Act 1969*, *The National Forestry Policy 1974*, *The Land Act 1979 (revised 2007)*, *The Social Forestry Rule 1990*, *The Forest Policy of Bhutan 1991*, *The Bhutan Forest and Nature Conservation Act 1995*, *Foreign direct*

---

<sup>5</sup> Supreme law of Bhutan

*investment policy 1997 (revised, 2005, 2010). The National Environment protection Act 2007, The Constitution of Bhutan 2008, Sustainable Hydropower development policy 2008, Economic policy of Bhutan 2010, Water Act of Bhutan 2011, Renewable energy policy 2012(Draft). Some of the sections of acts and laws of specific articles are highlighted in the appendix (p.158-161).*

In 2008, Bhutan adopted a constitutional democratic monarchy from the absolute monarchy with the election of *Druk Phunsum Tshogpa* Party to form a new democratic government among two political parties that contested in the first national election in the country's history. Among scores of important events, the adoption of the Constitution and its implement thereafter were the most important milestone as it came in effect the supreme law in Bhutan. Some of the articles related to this study are highlighted in the following paragraphs as to how the decision making process is determined in the country.

In summary, we can confidently see the connection that all the important laws, policies and rules have considerable importance to the state, where it has centralized control over all the vital common pool resources. The law; however, leaves little or no room for the people and civil societies to resort to challenge the state with regards to common pool resources, because such attempts become illegitimate, disrespectful for "rule of the game" or unlawfulness. For example, there are conflicting clauses among the various laws ( in article 1 and article 9 of the Constitution, 2008; Section 156 on land act of Bhutan 2007 (see details in appendix,



p. 158-161) rules and policy which further confuses the general public. The more important impulses behind the confusion are not only the acts, laws and policies but also inability to efficiently empower citizen about the new shifting developmental paradigms (it is physical as well as by laws and policies, both at national and international arena).

Nevertheless, a better result could be achieved by harmonizing certain sections of laws, whereby people can have more freedom and greater role and responsibilities to protect and conserve the common pool resources. Dominance of traditional practice of “the narrow perspective of government as the main decision making political entity” must capitulate to new reality of participatory process where people decide and the government facilitate (Roger & Hall, 2003). Optimistically, it helps to have inclusive local customary practices - or even would in some ways revive the dying customary practices, thus strengthening better resource sharing.

### 3.3 Customary Practices

After relinquishing its self imposed isolation, Bhutan’s modernization project has “literally punctured rich traditions” and exposed to alien culture or system (Hodge, 1992). However, pools of different customary practices in different places are still vibrant for which Trongsa is no exception. In the first place, it can be attributed

to the strong belief in Bonism<sup>6</sup> as well as Buddhism, passed down from past generations to the present generation. Secondly, the government's strong policy towards persevering these unique culture and tradition is embraced as the foundation of Bhutan's sovereignty and unifying force that binds citizens together.

Although there are differences between two beliefs, Bonism and Buddhism, both basically consider 'nature' as the prime source of human sustenance. Hence, it is the best interest of people to protect nature - the doctrine of interconnectedness for the Buddhist has argued for many centuries. Furthermore, the big rocks, cliffs, big trees and rivers are considered as *Ney* (holly site) in a way the whole or part of nature is considered to be possessed by certain spirits, ghost, deity and even god. Human encroachment in such area requires great *lama* (great religious master) to appease them; otherwise, natural disasters will be triggered on the communities. Such beliefs are still vibrant in the project's affected areas, according to the deputy chairman of Trongsa Dzongkhag Tshogdue (June 2013 interview).

The other customary practices are: astutely sharing natural resources in time of need and restricting exploitation in certain area(s); and considering certain areas having spiritual and religious connotations associated with it. Neglecting such practices will yield negative consequences or in other words natural calamities. Perhaps the lacks of scientific explanation, but strong belief in such phenomenon

---

<sup>6</sup> Practice of making animal sacrifice and worshipping non-living objects such as mountains, lakes, rivers, trees and rocks(<http://answers.yahoo.com>)

still exists in Bhutan. With developmental projects booming in the country, there is a sense of urgency in the mind of local people to not to disturb the old tradition and their customary practices (field interview June, 2013). Pertaining to hydropower development, it has significance set back to the customary practices which will have substantial negative impact on the cultural and social ideologies of the people (Hodge, 1992). For example, the impact of building large dam on people and its culture in the Honduras (Crow & Sultana, 2002; Derman, 1998; Loker, 1998; as cited in Feldman, 2007).

Trongsa is historically and culturally a very important place as discussed in chapter I. In this regard, any developmental activity in the area is bound to impact such important sites, devastating existed intricate human - nature relationship, which is not a positive sign. For instance, areas of dam, reservoir, construction of staff colony and Adit construction areas and several stone quarry sites have historical and associated customary beliefs (interview with deputy chairman of Trongsa Dzongkhag Tshogdue, June 2013).

In response to such cultural issues, the project authority has appointed one monk for spiritual related purposes. He has been paid to perform necessary religious rituals as required by the Buddhist customs such as for daily offering to the deities and other displaced spirit from the construction place. In other words, the designated monk is to seek apology and offer reconciliation with deities, spirit not to wage wrath to the community and to the project work in progress. Occasionally, the

project authority and companies working in various sites invite great *lama* to perform rituals and seek their blessings, guidance according to *Choni*, administration and personnel officer of Gammon Construction Company (field interview June, 2013).

In short, there are both convergence and divergence between formal laws and informal customary practices. For example, the convergence point is promoting GNH policy, where one pillar stresses on preserving rich tradition and culture. While the divergence point is centralization of common pool resources, tightening the leverage given by customary practices for centuries. Thus, dealing with such common pool resources entangled with webs of formal and informal customary practices need a careful consideration of various actors and stakeholders. On the whole, a careful consideration of complex matrix is not a privilege but necessity; otherwise, the calculus of sustainable development, indeed may not be sustainable (Feldman, 2007).

### 3.4 Stakeholders

We are familiar with a common saying of “too many cooks spoil the broth” for which I rather disagree, instead, I encourage having many cooks (implied as stakeholders) in this context. A stakeholder can be understood as a single or multi-party (people or organization) directly or indirectly engaged in “common pool

resource” water (Steins & Edwards 1998). On the one hand, in single stakeholder’s decision making process is mostly taken by the government; centralized state dominated by bureaucratic elites, mainly a top-down approach. On the other hand, in multi-party stakeholder, the decision making process is relatively democratic, involving all relevant stakeholders (community, NGOs, private entities and individuals) inclined more on decentralized bottom-up approach. Eden and Ackermann (1998) and De Lopez (2001) cited in Reed et al., (2009) classifying stakeholder as (i) key player, (ii) context settler, (iii) subject and (iv) crowd. This study highlights on the importance of state, non - state and the role of civil society; how each is represented in the decision making process of MHP. Generally, the pertaining issue is, the issue of balancing multiple interests of multiple unequal political powers in management of common pool resources, water (Steins & Edwards 1998); to cite an example of Mekong River, Nile River, Jordan River, Colorado River, Ganga River and so on across the world.

### **3.4.1 State Stakeholders**

#### **(a) The Role of Bhutan Government**

To comprehend various state actors and stakeholders, understanding of government structure and other contemporary development taking place in the country is very important. In (2008) Bhutan was under centralized authority; however,

incremental decentralization was initiated a long time ago. With the introduction of Dzongkhag Tshogdue (1981) and Gewog Tshogde (1991) by the Fourth King Jigme Singye Wangchuck with an intention to decentralize power to the people for greater participation in developmental activities which suits the best for the people and community alike. Furthermore, the full autonomy was given to the people during the transition to democracy in the year 2008. However, many political analysts argued such move is crucial but not meaningful decentralization, rather a “centralized decentralization or decentralized centralization” (Kvalsund, 2009); in fact, is neither deniable nor disputable in the present context of the country in the height of transition.

In addition, the second parliamentary election of Bhutan was held on July 13th 2013. The campaign promises and candidates of 47 electoral constituencies debated chiefly on “people empowerment” (*BBS*, June 13th to July 12th, 2013). The general view is that after almost four decades of decentralization policy implementation since 1980, little progress has been observed in people’s participants indicating somewhere something has gone wrong. There are two plausible explanations regarding little progress. Firstly, the assumption is that people are not willing to participate as they feel whatever government decides is for the best interest of the people and the country. Secondly, the government at various levels is reluctant to share its power with people fearing undesirable dual results - possibly a chaotic situation, no winner but all losers.

Whatsoever the case be apparently more form of decentralization and grassroots level participation has been observed with democratization of country since 2008. Thereafter people are picking up the democratic culture which enables them to speak out openly without vacillation. For example, the recent second parliamentary public debate and the people questioning the candidates for the general election telecast in the national media, Bhutan broadcasting service is unprecedented (13th June to 13th July, 2013). In doing so, the main dilemma is, how far bureaucratic elites are willing to move away from the traditional system and how effectively people could utilize such unanticipated opportunities.

All development activities in the country are placed under the umbrella of GNHC, however, hydropower developments are directly looked after by the Department of Hydropower and Power System under the Ministry of the Economic Affairs as discussed in Chapter II. For the specific project, Mangdechhu project authority is established to look after the execution of the work as shown in the figure 3.3. It is not clear on what basis the actors are chosen as it more or less indicates the group of technical family; while it is not always necessary. Instead, more diverse actors and stakeholders from the state should be included to represent a larger interest of the people. Otherwise, certain stake holder with more financial and political power could sabotage. In other words, other stakeholders could become rubber stamp, a common phenomenon observed elsewhere. There are also other development cooperation partners, Austrian Coordination Office for Development

Cooperation ACO (established in Bhutan in 1994), Japan International Cooperation Agency JICA (established in Bhutan in 1964), Netherlands Development Organization SNV (established in Bhutan in 1988), Swiss Agency for Development and cooperation SDC and Helvetas (established in Bhutan in (1983); however, only the role of Indian government is discussed in this context.

### **(b) The Role of Indian Government**

The role of Indian government can be presented through two perspectives from political viewpoint and economic point of view. Politically, the “friendly relationship” as referred by both the countries dates back to the era of British rule of India. After India’ independence from British rule in 1947, the friendship between the two countries continued and became even stronger. The relation became stronger, when China annexed Tibet in 1959 and the subsequent Indo-China War in 1962, which instinctively drove Bhutan government to an alliance with its southern neighbor for both physical security and economic prosperity. For India, Bhutan is the strategic perfect buffer zone against China’s aggression.

Considering the geo-political reasons, India became Bhutan’s more reliable and friendlier neighbor than the unpredictable China. With the start of Bhutan’s first five year plan development, Indian government not only helped in financing the whole program but also gave full technical and human resource supports. Until



today, India remains the largest country helping Bhutan in various developmental activities. For instance, the Indian government has committed Rupee 55 billion for the 11<sup>th</sup> five year plan of Bhutan (July 1st 2013 – June 30th 2018) as stated in Press Release of August 31st 2013. A few years back, India and Bhutan entered into a new field of development cooperation, such as hydropower development. During the visit of the present King Jigme Kheser Namgyal Wangchuck to India in 2006, the MoU was signed between India and Bhutan under the 60 year umbrella agreement, whereby the Government of India agreed to buy minimum of 5,000 MW, surplus electricity from Bhutan. Under this frame work, the Empower Joint Group (EJG) was established to strategize the construction of various hydropower projects in Bhutan.

Although, Mangdechhu Hydroelectric project was decided by EJG, theoretically the chairperson of EJG is from Bhutan, and the ultimate decision making power lies with India. After all, “financial key” is in the hands of Gol as stated earlier in this chapter. I am not confined to criticism; however, the management structure of MHPA presented in figure 3.1 below is undeniable. A fair conclusion can be drawn where the focus of decision making be further pursued. For some critics and policy makers in Bhutan, this analogy may sound preposterous. However, the second parliamentary election result of Bhutan in July 2013 is detrimental to not only in the development project but also in country’s political affairs as India is playing an increasing “mixed” role (*The Global Times*, 2013).

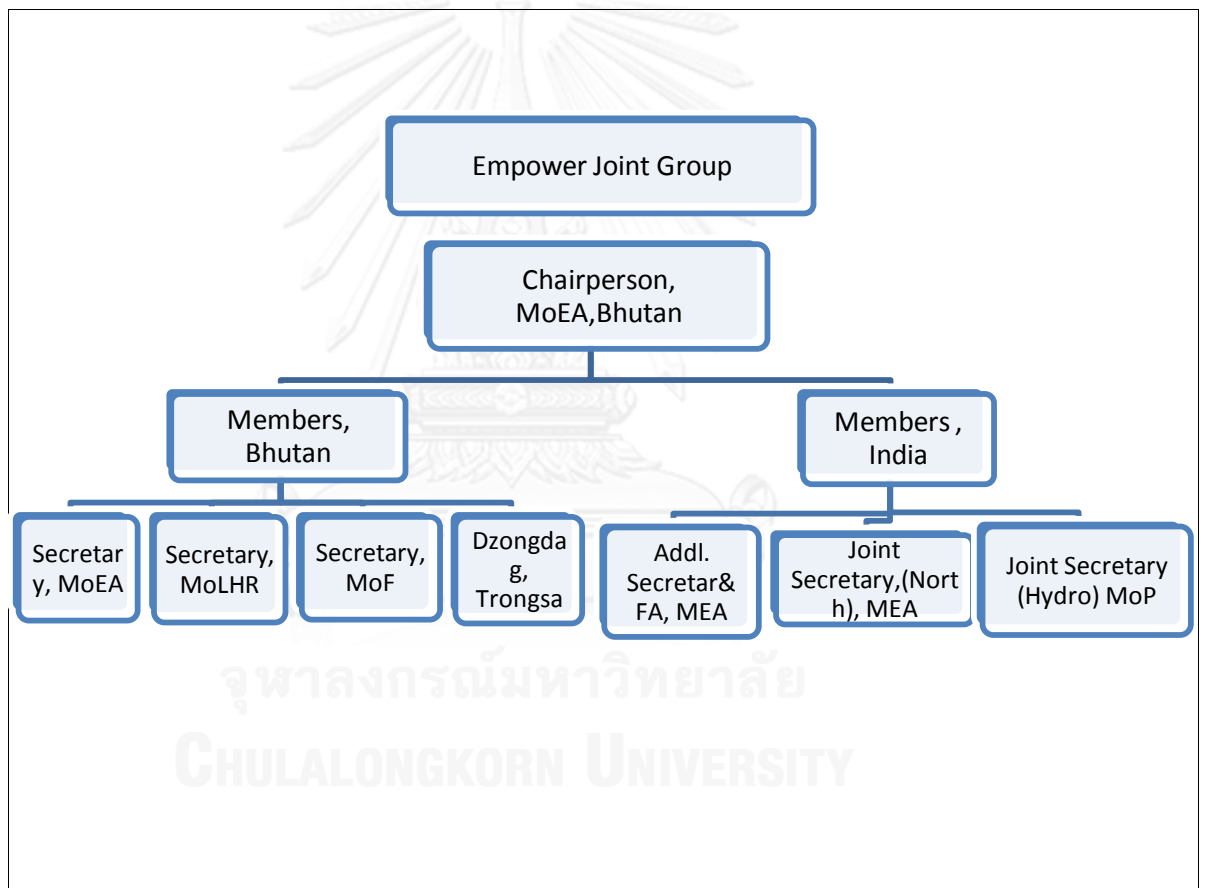
The People Democratic Party (PDP), the world smallest opposition party (two members) in the first parliament (2008-2013) stormed general election by winning 32 seats out of 47 constituencies. Many local political analysts, pundits, and the mainstream media in India and Bhutan, social media critique to Indian influence. It is evident that the sudden withdrawal of subsidies on LPG, kerosene, power tariff and excise duty refund during the election campaign on 30<sup>th</sup> June, 2013, barely 13 days away for the general round election. All these events created artificial economic blockage and a huge psychological pressure among the citizens. Ironically, the entire subsidy was reinstated right after the election. To recall on the events, *The Global Times* writes:

*“Due to the Indian influence on Bhutan's elections, the wish of depending on democracy to maintain the sovereignty of Bhutan's royal family and its political elites has become a failure. India's interference in Bhutan's election is a tragedy for Thimphu. Bhutan is still firmly under Indian control” (4<sup>th</sup> August 2013).*

To a large extent, GoI was and will be a major player in decision making of Bhutan's development programs, whether in tangible or intangible form. However, literally, RGoB will have to act according to the decisions made by GoI, “unequal economic and political power” (Feldman, 2007). The scenario is predictable and preventable; the possible alternative way out is to “fully decentralize” the power of decision making. In essence, it is important to encourage inclusive stakeholder

participations to counter balance the imbalance of power in decision making. Such move is convergent to the Policy of GNH, people centered development approach or in other ways the middle path, neither convergence to capitalism nor divergence from socialism.

Figure 3.4 Empower Joint Group of Mangdechhu Hydroelectric Project



### 3.4.2 Non-State Stakeholders

#### (a) The Role of Private Sectors

The roles of private sector and individuals are not very proactive as they are in many parts of the world. This is perhaps due to the political culture and traditional setting. Particularly, in the hydropower development sector, there is not much private sectors' involvement. Furthermore, the hydropower development policy 2011 further discourages private sector or individual's initiations. The policy states *"private individual, cannot identify a site for building a hydropower plant and, even if it has been identified, the government will take over and provide the opportunity to those individuals, who can give the highest royalty to the government"* (The Hydropower Policy, 2011). Such policy instrument discourages private sectors or individual's interest in actively participating in hydropower development. In the recent meeting conducted on 25<sup>th</sup> July at Thimphu, Bhutan on Hydro Vision Conclave 2013, the Bhutan Chamber of Commerce and Industry president emphasized:

*"We don't have to start big. They can be small projects – 35 MW and 40, 50 and 100 MW can be given to the private sector. It can be done on the FDI model, the smaller the project; it can be done by local contractor with experts from outside"* (Quoted in Kuensel, 25<sup>th</sup> July 2013)

Regarding the Mangdechhu Hydroelectric project as revealed in the figure 3.1 & 3.4, there seems to be no private sector involvement in the decision making process. Nonetheless, there are a few private contractors taking up auxiliary work either from the project authority or sub-contracted by Indian companies which is not encouraging the development platform in a small country. This trend not only confined to Bhutan but across the globe, especially in developing countries; for example, hydropower constructions in Lao DPR and Myanmar. Indeed, it is unavoidable in the globalized world where Multi-National Company (MNC) and Transnational Company (TNC) literally rule the world; Darwin's "survival of fittest" theory could be well associated here to justify.

In other words, the demand for private participation is growing; however, the policies from the government's policies need to change. Today, the government cannot be the same as before. They cannot be obstructive, regulating and controlling. It is a high time to change; however, an incremental change would be more beneficial in this particular context. However, how far government would embrace the change is a subject worth mentioning.

### (b)The Role of Civil Society and NGOs

The role of civil society is increasingly popular in people's lives in the every part of the world. In Bhutan, the concept of civil society is quite new. There are a few NGOs in Bhutan and they are slowly taking roots in Bhutan. *The Civil Society Organization Act, 2007* has given extra mileage to this subject. Even though there are not many NGOs and CSOs, the existing ones; for example, The Royal Society for Protection of Nature (RSPN), are also either established by the government or working under the aegis of the government (in terms of monetary and human resource).

Therefore, the presence of various NGOs and CSOs in Bhutan is insignificant, though some of their works are significant and have great impact on the general public. For example, RSPN's educational and advocacy program on conservation of environments in various schools in the country is very popular. Still, the potential has not been trapped from both sides. From the NGOs side as well as from people's side, this is perhaps due to political and cultural reasons as their survival depends on financial support from the government, where Bhutanese citizen are not in capable of donating money to many NGOS and CSOs.

The Royal Society for Protection of Nature (RSPN) was established in 1987. It is the first and only NGO working in Bhutan. Focusing on one pillar of GNH, i.e. conservation of country's environment, they have been trying to reach out to the

public through education, research and sustainable livelihood opportunities projects and conservation of endangered species. In order to achieve its mission objective, RSPN actively works with other civil society, government agencies, and relevant organizations on conservation of environment, emerging climate change, water and solid waste management. Recently, RSPN has carried out a research on bio-diversity in the MHP areas, which soon will be published. Alongside the RSPN, there are INGOs such as World Wildlife Fund WWF (established in Bhutan in 1977), which is closely working with RGoB, with its focus on capacity building of Bhutanese people on nature conservation. There is not so much of offense position as visible in other countries.

### **(c) The Role of Community**

The role of community is indeed very important and, without community's meaningful participation, any developmental project becomes illegitimate and may lead to many unintended consequences such as resistance, protest and even rebellion leading to (arm) conflicts (Poff et al, 2003; Percival et al, 1998). Although Bhutan government has introduced DT and GT to encourage communities to take active roles in developmental activities, in reality, on the ground, not much has been achieved in terms of community roles in development in general development and hydropower development in particular.

Zooming into the roles of communities in the MHP, in reality, communities should have more roles to play; however, apparently their significance has not been well acknowledged. The reasons are already discussed in earlier chapters and in this chapter. However, to highlight some of the reasons; firstly, the policies and certain sections of laws are disqualified (this project is a national interest project and executed directly from the center government); secondly, the people in the community are incapable of challenging government (knowledge production) as other people challenged in the case of Pak Mun Dam (Awakul and Ogulana,2002).

As expressed by the people living in the communities (field interview) – they would like to have more spontaneous and greater roles as they have much to lose (land, water, forest and fresh air to some extent). Similarly, Bisht (2011) cautions both Indian and Bhutanese government to give more importance to the people and the affected communities. Although there are more communities involving in decision making process (community forest and other activities), in mega hydropower developmental activities, the most important stakeholder, community, are not part of it as it is observed in MHP.



### 3.5 Conclusion

Exploring the issues and short comings from various aspects, there are certainly disagreements between environment conservation and economic development policies (as discussed in Chapter I and Chapter II). A divergence from GNH policy is inevitable, but not necessary. The Mangdechhu Hydroelectric project manifests the grave situation of divergence rather than convergence. Most laws and policies (mentioned at the beginning of Chapter III) have created favorable condition to the government, such as conditions to provoke excessive involvement of government in the development of hydropower.

Bhutan's political system has been changing gradually and if the laws or policies are unable to cope with or inconsistent with the pace of political changes (democratization process from 2008) there is a possible risk that the country might fall into a whirlpool of confusion and chaos. Therefore, it would be an opportune moment to include wide and diverse stakeholders; particularly local and Bhutanese people, in all levels of project's decision making. By doing so, the sustainability of the project is ensured and social equity is not compromised, which is the final goal that the Bhutan is aspiring for harmony in their community roles.

## CHAPTER IV

### IMPACTS OF PROJECT TO THE COMMUNITY

This chapter brings out the discussion on impact of Mangdechhu Hydroelectric Power project (MHP) on the Dzongkhag and to the communities from three perspectives: socio-cultural, economic and environmental impacts. These impacts shall be reviewed by employing water governance's key principals of "decision making, participation, accountability, equality and legitimacy." Furthermore, this chapter discusses various mitigations mechanism pursued by the project to minimize the impact of the project to the community of the area.

#### 4.1 Introduction

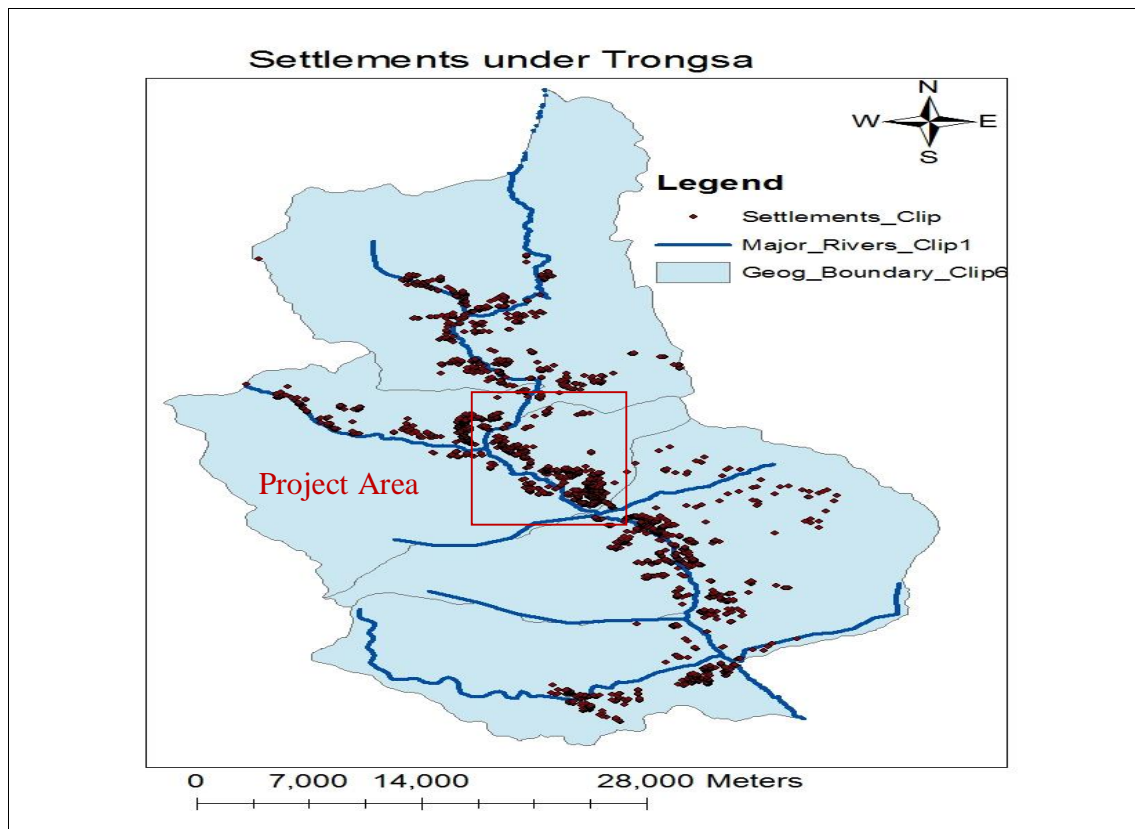
Conventionally, hydropower development is considered as clean and renewable energy sources. Moreover it is a mainstay of modernity and economic prosperity of a nation like Bhutan. However there are lots of social, economic and environment impacts taking place on the local communities due to hydropower development. For instance, the Three Gorge Dam in China and Pak Mum Dam in Thailand; the ongoing Punatshangchhu Hydroelectric Project I at Wangduephodrang in Bhutan (Kuensel, 2013d) to name few. In the DPR 2008, EIA 2011, EMP 2011, MHP

is referred to as environmental friendly run-off river scheme and will have minimum impacts. Yet, these documents loosely mention - the impacts and management plans, particularly the socio-cultural, environment and economy of local communities. In other words, it does not provide clear picture of social, cultural and environmental impact and the mitigation strategy thereof.

All these mentioned documents are prepared by various Indian public and private consultancy firms such as NHPCL, WAPCOS limited and University of North Bengal, India. In addition, all the major works of the project are executed by Indian companies as discussed in chapter III. Such arrangement causes of concern to general public (particularly for the local community) – raising questions of how inclusive and comprehensive are the study being done? As far as the concern of the physical observation on the site, we can see plethora of impacts, either short term or long term in extensive manner. Some impacts are already visible and perceived by the community, which will be discussed and analyzed as under.

จุฬาลงกรณ์มหาวิทยาลัย  
CHULALONGKORN UNIVERSITY

Figure 4.1 Map showing Settlement under Trongsa Dzongkhag



#### 4.2 Social and Cultural Impact

Bhutan is known for its unique as well as rich culture and tradition – both in tangible and intangible forms. Tangible culture includes those in physical form or structures like *Dzong*, monasteries, traditional houses and indigenous crafts, etc. Whereas, intangible culture - physically cannot be touched like songs, traditional dances, music, folk tales, etc. These unique tradition and culture originated from Dzongs and bigger monasteries. Social cohesion and national unity largely depend on this tradition and culture. In this context, Trongsa is culturally an important place in

Bhutan, besides the Trongsa Dzong being one of the iconic structures in Bhutan. Losing this structure would be of great loss for the nation and to the community. As shown in the figure 4.1, the human settlement, and figure 4.3 shows the dam construction is right under the nose of the Dzong. There is also an ongoing debate between Dzongkhag administration and project authority on the “cracks” on the Dzong as shown in figure 4.2. The causes of cracks are repeatedly questioned at the local level, which led to investigation for the probe (Kuensel, 2013a).

The investigation report submitted by Jaiprakah Associates Limited was carried out by expert from the Rock Blasting and Excavation Engineering Department, National Institute of Rock Mechanic (NIRM) under the Ministry of Mines, India. The reports have concluded that the “blasting are within the DGM standard” and have no impact on the structures from the blasting (Gopinath, et al., 2013). However, the same report recommended “seven point recommendations” for the company to adhere to minimize the likely impact to the Dzong in the future from the blasting activity.

Likewise the earlier test conducted using glass on the wall of the Dzong showed that the glass was broken due to vibration from the blasting in the dam construction site according to December 20th 2012 & March 2nd 2013 as reported by *BBS*. In contrast, the NIRM test showed there were no impacts form the blasting. Such conflicting reports send signal for transparent and comprehensive independent study. Meanwhile Dzongkhag administration has already rejected the NIRM report

(Kuensel, 2013a). Unfortunately, local people are not fully aware of such development and indeed such issues are not widely discussed. There are several factors; however it is can be attributed to the lack of media coverage<sup>7</sup> and no serious attempts by NGOs and CSOs to confront such challenges. Nevertheless, blasting monitoring group has been set up to monitor the blasting with the representatives from both Dzongkhag administration and the MPA. However, this team lacks technical capacity. The team consists of environment officers and engineers from both the organizations. Furthermore, this task is an additional responsibility apart from their normal duty assigned by their respective agencies and entities. Therefore, we can argue the professionalism and accuracy of the report – not to mention the legitimacy.

Meanwhile, the officials from the project has rejected the claims but cannot be ruled out completely. The Joint Managing Director of MHPA comments:

*“I don’t think the cracks on the various structures: Dzong, Taa Dzong and Raven Crown Resort was caused by the blasting. However, we are aware of the situation and doing our best to use safest methods and appropriate technology as we can” (Interviewed on 8<sup>th</sup> June, 2013)*

---

<sup>7</sup> Bhutan Broadcasting Service (BBS) is a government owned TV broadcaster in the country

The Chief Personnel and Administrative Officer of MHPA, Trongsa shared similar viewpoint with the JMD on the cracks developed on the Dzong. He mentioned that

*“ the cracks formed on the walls of various structures due to blasting from the dam site is not so true. The investigation report submitted by Jaiprakah Associates limited in January confirmed that there is no impact. However, we are fully cooperating with dzongkahg administration to further reduce the impact if there could have been from the blasting” (Interviewed on 11<sup>th</sup> June, 2013)*

Figure 4.2 Various Cracks on the Wall of the Dzong



Source: BBS, 2<sup>nd</sup> March, 2012

The head of geology division of MHPA shared his personal view that the cracks are not caused by the blasting from the dam site. The blasting used for this project is controlled blasting and it will have no impact whatsoever. On the contrary, Aum<sup>8</sup> Dema, shopkeeper from Trongsa town said that the vibration of blasting from the dam site can be felt in her house and there are cracks in her

---

<sup>8</sup> Usually for mother, but here I refer to married women



house too. Echoing Aum Dema's concern, an official from Dzongkhag Administration (don't want to name) raised his concern:

*“Whenever there is blasting at the site, we can feel the vibration in our office and I am afraid that this will have a major impact on the old structure. Unlike modern structure this massive Dzong is built on the top of rocky cliff without any foundation to support and it is also very old Dzong. Without proper mechanism in place, we are heading towards unwanted tragedy”*  
(Interviewed on 4<sup>th</sup> June, 2013)

Meanwhile the Trongsa BBS reporter, Surja Man Thapa said that from the media side, they are trying their best to inform the nation about the reality. He further commented

*“There are no counts but on various occasions, whenever there is any issue and activities, we did cover the news. We do advocate people whenever there is something that seemed to be hampering the public interest... everywhere there are contradictions. Whenever such mega projects come up in a place, public on the one hand and project on the other hand complain each other, but [me] as a journalist it's to create awareness without bias”*  
(interviewed on 13<sup>th</sup> June 2013).

Unlike other project around the world, for example the Three Gorge Dam in China, the Sardar Sarovar Dam in India and Pak Mum Dam in Thailand. MHP project

doesn't have large number of people displaced but proportion of people being affected cannot be compromised. It is more serious than being displaced together; because of this situation what I call "Semi-Dead "causes more damage to the society or leaving scars in the mind. The table 4.1 represents that number of people being affected by the project in various villages, thereby causing social disintegration in village.

Figure 4.3 View of Dzong from Dam Construction Site



Source: Photo taken by author on 22/6/2013

The early symptoms of social disintegrations are visible from the reflection of Aum Pema, age 30, from Samcholing; she was rather shy but her expression was quite genuine, and this is what she said:

*“As far as I am concern, there is lot of social and cultural impact on the society. There is social disintegration, divorce, behavioral change. As of now there have been two divorce cases from my village. I am bit worried as the project moves on and how much change will happen to the community and the people...” (Interviewed on 9<sup>th</sup> July 2013)*

People from the community are worried about the negative impact than the positive as they experience all sort of new inconveniences due to project activities.

Table 4.1: Details of Affected Villages and Families by the Project

Gewog	Village	No. of family members(affected)	Total population
Drakteng	Sischen	07	3612
	Bubja	07	
	Kuengarabten	35	
	Kuenga	06	
	Samcholing	124	
	Khamey	11	

	Sub total	268	
Langthel	Yurmu	11	3,860
	Langthel	11	
	Bumthang	14	
	Endocholing	52	
	Yugrungcholing	21	
	Sub total	109	
Nubi	Chunjupang	01	
	Sub total	01	
Bumthang Dzongkhag ( Chumay and Chokhar )	Chumay & Chamkhar	07	
<b>Total</b>		<b>386</b>	<b>14,712</b>

Source, MHPA (2013) Corrected EIA (2011)

As reflected from the community perspective, Aum Zangmo from *Khamey* village has a mixed reaction towards project. She is very much concerned about the social

changes that are taking place in her community as of now. In one of our conversations, she laments:

*“With so many new people pouring into our community, I am worried about our age old culture being overwhelmed by new cultural traits. More importantly, I am worried about new diseases spreading which might have bad impact on our native population and other social disintegrations”*  
(Interviewed on 8<sup>th</sup> June, 2013)

App<sup>9</sup> Dorji, from Kungarabten village has expressed his share of concern on socio-culture issues:

*“...Social disintegration is visible, divorced cases and young girls getting married to strangers. I am bit worried about deterioration of our culture due to influx of so many strange people; resulting in to more crimes, more diseases. Not ruling out that one day, change is inevitable, but, sudden behavioral influence to the younger generation by different culture and social process is my biggest concern as of now”* (Interviewed on 8<sup>th</sup> June, 2013).

Considering the importance of cultural integrity, the Dzongkhag administration has conducted various advocacy programs and there are also future plans and programs to promote awareness in the communities to minimize the social and

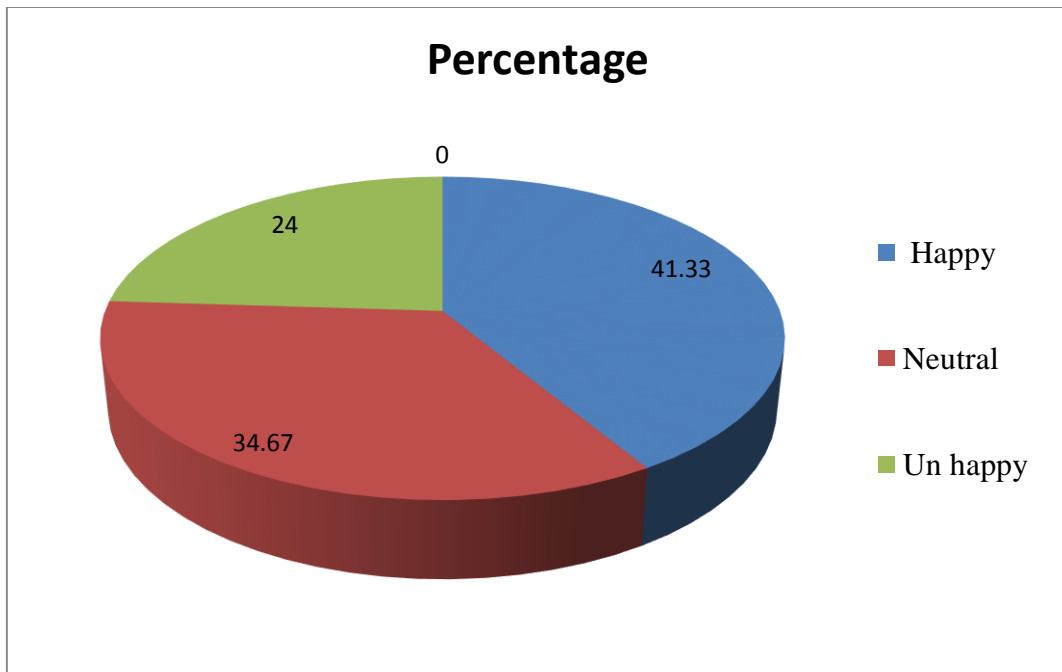
---

<sup>9</sup> Usually refer to father and here I used for married man

cultural disintegration (Dzongkhg Forest Office, 2013). From observation, we can say that the efforts from government are very important, but always instructing what to do from the top will have little impact on the ground. Rather, government should facilitate and encourage people to come up with plans and programs according to people's choice and their needs – empowerment.

The house hold survey conducted in year 2012 indicates that 41.33% happy, 34.67% neutral and 24% unhappy from among total affected people (Tobgay, 2012). Within a year, the mood of people has budged dramatically and more are unhappy today. Due to communication gap and misinformation, communities feel that they are not directly benefited from the project. They view the project from negative perspectives as shared by Thinley. Today the 41.67% of people, who were neutral in the year 2012, could have switched to 'unhappy category' as evident from the field interviews.

Figure 4.4 Affected People' View on the Project



Source: Tobgay (2012)

### 4.3 Economic Impact

Economic impact can be understood from two angles - long term and short term. For the long term, it is deemed to bring huge revenue. The revenue generation from this project is estimated at around Rupee 317.673 million yearly once it is commissioned (DGPC, 2013). However, the real net income from the project to the community is not clear because, huge chunk of profit has to be paid to Gol as loan repayment at the rate of 10 % per annum. For short term or immediate benefit, it is

supposed to increase local economy activities. In other words, trickle down effects - by creating employment opportunities, business opportunities to the local people and creating condition whereby farmers can sell their farm products. As a result, the living standard of local community should improve - this is what any development activities are supposed to produce. However it is said that there can be completely reverse trend or otherwise make local community bear the brunt of development.

For the community and people, it was happy moment with the promise of economic prosperity. Nidup from Samcholing recalls that every time their hopes were rekindle with repeated promises made by the various levels of authorities whenever they had to sacrifice their land to the project. Although today he does not regret but skeptical of the promises – where most promises are not fulfilled by the authorities. During the participatory focus group discussion, Nidup pointed out that

*“... I am not against the building of project but I am not happy with the way they took my land and compensation they give us. Sometimes I wonder why we were not informed at the very early stage, so that we could choose better choices. But for us, we are left with no choice (Interviewed on 12<sup>th</sup> June 2013).*

Another participant named *Tshering* who displayed his distress was rather pessimistic about the project benefiting the community and added that



*“Our initial excitement for the project has faded explicitly. We are not able to reap the economic benefit as informed us the authority. Instead, we cannot farm our field, because our irrigation channel has been destroyed. In addition, we were not able to farm our kitchen garden due to dust and other pollution” (Interviewed on 12<sup>th</sup> June 2013).*

According to Dzongkhag office, on 17<sup>th</sup> April 2013, Dzongkhag forestry, agriculture and health sector made presentation to the administration on the impact from the project to the community. The agriculture sector highlighted various impacts from the project to the community. First, construction of powerhouse colony at *Dangdung* under *Langthel geog* has damaged 600 meters of irrigation channel affecting 40 households and 150 acres of farmland. Second, the approach road to Adit III has disrupted 300 meters of irrigation channel of Changery village, affecting 30 household and 50 acres of farmland. Third, the approach road to surge shaft has damaged Lachu irrigation at two sites affecting 80 household and 70 acres of farmland. Finally, the *Phokchen* to *Samcholing Khamey* irrigation channels is damage and disrupted by heavy traffic and heavy vehicles affecting many households (Trongsa Dzongkhag Agriculture Office, 2013).

Due to numerous damages and disruption of irrigation channel, farmers are not able to farm on their land - making local community life difficult. Considering the matter, the crop compensation scheme has been launched for the affected people.

So far 27 households out of 200 households from the two Geogs have been applied for. Till now, compensation has not been paid to the people while the presentation report mentioned about the problem of *Thram* or landownership and which is still in the process of verification (Dzongkhag Agriculture Office, 2013). In the Meanwhile, it has been adding more number to unemployment which is already in the community, thereby disrupting the local economy and normal social function.

In this context, the table 4.2 demonstrates that there are 267 people unemployed from 386 affected family members by the project. It was learnt from the community that about 15 affected people are employed by the project authorities and a few people by the companies. However, the chief P&A officer of MHPA dismissed all the claims made by the affected people on economic insecurity and not employing the communities in the project. Nevertheless he admitted that project has to comply with its own service rules and regulations which makes it difficult to employ all the affected people. He further explained about the complexities – the mismatch in supply of labor in community and demand for work available in the project. Even so, MHPA is trying best to adjust everyone within the frame work.

Table 4.2 Occupational Profile of the Project Affected People

Female	Gender		Total	Percentage
	Male	Female		
Cultivation	20	16	36	9.33
Trade /Business	3	5	8	2.07
Private services	6	0	6	1.55
Government services	20	3	23	5.96
Household chores	0	9	9	2.33
Student	21	14	35	9.07
Unemployed	119	148	267	69.17
Others/monk	2	1	3	0.78
<b>Total</b>	<b>191</b>	<b>195</b>	<b>386</b>	<b>100</b>

Source: MHPA (2013) Corrected EIA (2011)

One of the affected villagers (Thinley) who was rather disappointed with the authorities and he ran his frustration on me:

*“... This project is a nuisance for my family. The only benefit I have is the dust and noise. Forget about the job they have promised to us, which I am still awaiting. The matter of fact is here we cannot grow vegetable in my garden. My fodder trees are covered by dust and even my cow refuses to eat. Frequently, drinking water pipes are broken, let alone the irrigation canal being destroyed by the heavy speeding vehicles. So what is the benefit do I have?” (Interviewed on 9<sup>th</sup> June 2013)*

In congruent to the viewpoint of local people, the forestry sector presentation (sector presentation on 17<sup>th</sup> April 2013) indicates that there is more negative impacts than the positive impacts. The affected households in two Geogs of Drakteng and Langthel depend on forest for financial income and daily social function. For instance, community collects edible fern *Nakey* (dplazim), *Damru* (elatostena) and mushroom from the forest. Besides firewood, timber for house construction and prayer flag, and other socio cultural purposes, etc. (Dzongkhag Forest Office, 2013). If it is calculated in monetary term, it is estimated at Nu. 1,379 million in a year. The forest product like timber amounts to Nu. 113.34 million, firewood Nu. 17.4 million and prayer flag estimated to Nu. 0.19 million. The edible fern estimated to Nu. 5.7 million and mushroom collected accounted for Nu. 21.72 million (Dzongkhag Forest Office, 2013; Tobgay, 2012).

According to Dzongkhag Land Record office's record of 2013 recorded the 632 hectares of community forest (CF) belonged to 187 households from

Samchoeling was affected. It took four years for the community to get approval for the community forest certificate from the government. Furthermore, the Dzongkhag forest officers said that the CF has been gaining popularity throughout the country and in Trongsa Dzongkhag also, CF is quite popular. Such incidence should not discourage people in managing CF in other villages. The compensation for loss of CF was Nu. 99,008 million was still (as of June 2013) not been paid to the community.

Despite enormous economic opportunities presented by the project in the DPR and promised by the authorities, communities are not practically benefited. There are good policies outlined in the documents, but translating these policies into reality is a major problem. As Feldman term it as “paper goal” and it will be difficult because “...in the face of unequal political power” (Feldman, 2003:97).

#### 4.4 Impact on Environment

Bhutan is not only known by its unique culture and tradition but also for its pristine environment and rare species of flora and fauna. Bhutan is considered as “eastern jewel” and some of areas fall under the biological global “hot spot” where “endemic bird”, rare reptile, mammals, insects, etc are found (Stattersfield, et al., 1998). Trongsa Dzongkhag as mentioned in this study, to a great extent, falls under protected area and various biological corridors (see figure 1.3, Chapter I). It would be

very early to say, minimum environment impact as mentioned in EIA (2011). The sheer size and magnitude of project itself is the evidence of environmental impact, besides what Donald Rumsfeld termed it as “known unknowns, unknown unknowns” impacts.

Lack of data is a constraint. So far there are not many studies done on the biodiversity and environmental impacts in regard to hydropower and related activities. Mangdechhu Hydroelectric project is no exception. In addition, this area houses various endangered flora and fauna. More importantly, Mangdechhu flows through Manas Wildlife Sanctuary under Zhemgang Dzongkhag listed as UNESCO heritage. According to DPR and EIA documents, it has recorded few species as shown in table 4.3 below. In fact, the detailed study is necessary to ascertain all types of flora and fauna in the area. Indeed, there is immense loss of habitat where unknown damage done to the surrounding ecology.

Table 4.3 Number of Flora and Fauna likely to be impacted by the Project

Name	Number	Area	Remarks
Mammal	18		It also includes endangered species and schedule I, species as per
Birds	92		
Reptiles	8		

amphibians	6	Project areas, mostly in Dam construction area	Nature Conservation Act  1995, Bhutan
Butterflies	49		20 endemic species
Fish	30		
Tree/Plant/ Shrubs	174		
Herbs	212		
Wild medicinal plant	18		
Medicinal plant	105		

Source: MHPA (2013) Corrected EIA (2011)

People in this community not only depend on agriculture but also on nature for its supplementary diet as well as income. The crops in farmland and plants in forest are being pollinated by butterflies, birds and insects. As mentioned in the table 4.3 above, it is likely to displace the habitat of 625 species of birds, butterflies, mammals and plants, thereby creating chain reactions altering the local ecology.

Destroying natural habitat will result in disturbances in the natural food chain (Feldman, 2003). The other aspects like sudden invasion of foreign species of animals and plants, thus inducing immediate impact on the surrounding environment and likely to have long term impact.

Figure 4.5 Impact of Project to the Villages



Source: Photos taken by author on 22/6/2013

Although this may sound little speculative and fancy, there are lots of explanation and reasons to believe. From the figure 4.5 above, one can understand that the settlement along the river bank and any disturbance to the river would certainly produce visible impact. For instance, the recent appearance of giant African land snail or GALS in Gyalposhing, Monggar was very peculiar and unexpected (Kuensel, 2103). Officials from various organizations are still pursuing the study. However, it is predicted that such cause is due to Kurichuu Hydel Project. The reservoir dam is located approximately 10 km from the affected areas.



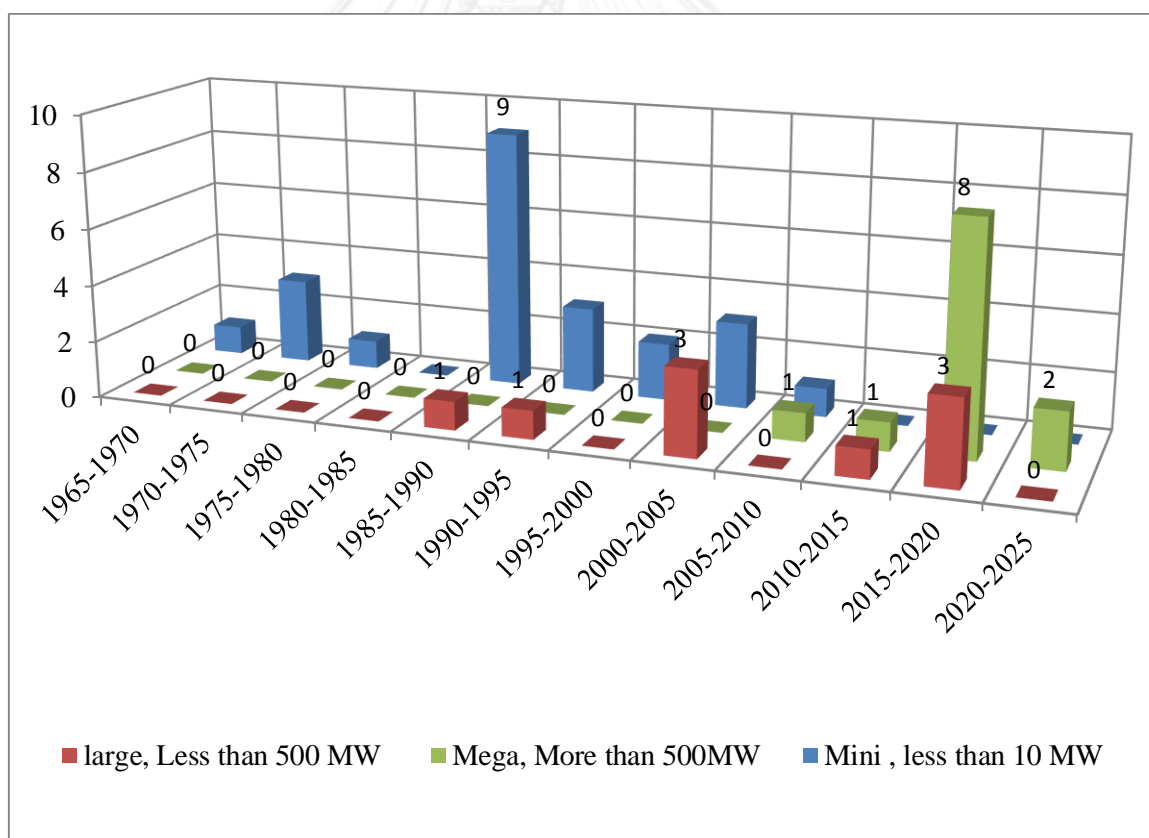
Although there are some mitigation works being carried out, the comprehensive and inclusive plans are still lacking. And most of the local people are not aware of EMP. Later, one participant present in the focus group discussion said:

*“... I am not against the building of project but I am not happy with the way they took my land and compensation they give us. Sometime I wonder why we are not informed at the very early stage, in the final stage we are informed with little or no choices. I am still worried about the possible negative impact from the project” (Interviewed on 12<sup>th</sup> June 2013).*

As Bhutan ventures deeper into hydropower building activities, more and more unexpected incidences are bound to encounter. If we elaborately examine the figure 4.5, in the coming years there will be many mega hydropower project being built spreading across the country (see table 2.1 in chapter II). While MHP has not resulted in large number of people being displaced completely but has impacted significantly (see table 4.1) which I refer as “Semi-Dead” situation in the above chapters. While considering all the emerging positive and negative impacts (socio-cultural, environment and economy) from the projects on the communities and to the country, there is an urgent need for diverse long time mitigation national policy frameworks.

As observed in the MHP those mitigation works are being carried as per guide line mentioned in EMP. EMP itself has lots of limitation and has failed to cover broad aspects - as impacts are cumulative and consequences are not time and area specific. Therefore, it is vital to revisit policies and plans regarding hydropower and envision lasting mitigation policies as hydropower has become a vital for economic Bhutan's development.

Figure 4.6 Summary of Hydropower Project in Bhutan



Source: NSB, 2012

#### 4.5 Mitigation Work

Since this project is executed in the vicinity of protected area, the MHPA has initiated several mitigation works especially in reviving environmental destruction caused by the project construction work. MHPA has been closely working with National Biodiversity Center of Bhutan to conserve rare plant species. To protect and revitalize the areas with mud dumping and from the excavation work, grass plantation and tree plantation have been carried out in collaboration with the Divisional Forest Office, Zhemgang and tree plantation in the barren areas to replace the trees that have been cut down in the construction area.

Every year, June 2<sup>nd</sup> is celebrated as social forestry day in Bhutan. Government organizations, schools and even private sector entities celebrate this day by planting trees. However on 5<sup>th</sup> June 2013, coinciding with world environment day, MHPA, Dzongkhag Administration , Divisional Forest Officials and people from the Gewog have planted trees and grass in the power house area. Last year, similar activities were carried out in the other areas on 2<sup>nd</sup> June.

Besides above mentioned programs, there are also immediate mitigation programs like water sprinkling, covering the trucks loads carrying materials in and out of the construction sites to solve dust pollution and prevent accident to biker and small cars. Such activities are carried out to demonstrate that project management is serious about the environment and to mitigate as per the EIA requirements as well as

directives of the Dzongkhag administration. This demonstrates that the project is committed to mitigate negative impact from its initial phase of execution as a focus on its corporate social responsibility. Even though with all mitigation plans and works being carried out, - the authorities has so far failed to meaningfully engage affected and local communities. Therefore, the role of water governance is very important and necessary in Hydropower Development for Bhutan.

Figure 4.7 Mitigation Work carried out in various Project Affected Areas



Source: Photos taken by Dzongkhag forest officer on 5/6/2013

## CHAPTER V

### CONCLUSION AND RECOMMENDATIONS

The Mangdechhu Hydroelectric power project authority is working towards socially equitable and ecologically sustainable development. However looking through the prism of water governance, there are many shortcomings which need to be incorporated to meet the goal. This study found the lack of broad based stakeholders involvement in the decision making process. More importantly, local communities are not part of decision making; only involve on basis participation. Even in some cases, for most part local communities and individuals were informed but ‘no choice’ as observed. This trajectory is divergent to the GNH policy as well as to sustainable development. Therefore, to have a successful convergence to GNH policy or successful water governance, a holistic amalgamated top-down and bottom-up mechanism which is indeed suitable for the Mangdechu Hydroelectric project construction.

This chapter highlights the hydropower development and economic development policy in Bhutan, and followed by the synopsis on the impact of MHP to the communities. Moreover, a quick recap done as to how water governance is better than water government considering the ongoing changes in terms of internal political system and regional economic and political changes. Lastly, this chapter

brings to the conclusion to entire thesis by suggesting seven points recommendations for the better governance of common pool resources and ambitious hydropower exploitation in Bhutan.

### 5.1 Hydropower Development and Economic Policy

By and large, Mangdechhu hydroelectric power project is the “second phase” hydropower development needs special attention (Bisht, 2011). Bhutan’s “hydro-rupee” is heading towards similar vicious cycle of “petro-dollar” in the Middle East. Many wars and conflicts have raged this century about oil, and in the next century, the wars will be waged over water (Chellaney, 2012). Bhutan’s strategic location with abundant fresh water will be the cause of concern. Still its northern border with Tibetan region of China remains disputed, from where most water originates (see figure 1.1 of chapter I) and the electricity generated from this projects are supposed to be sold to India. Therefore, a critical policy evaluation should be considered to find strategic remedies to the embryonic problem.

Mangdechhu Hydroelectric Project, the second phase hydropower development has some contrasting features. The financial modalities has changed dramatically (see figure 4.2 of chapter IV), while the decision making, management system, tariff on sale of electricity and more importantly the companies/ contractors building projects have remained unchanged. There are several schools of thought

providing different justifications, yet, serious re-evaluation of existing laws and policies must be taken up to resolve the puzzle of hydropower development.

The (new) laws and policies need essential revision to catch up the pace of change that Bhutan is undergoing. Generally, most laws and policies are in favour of state/government or, in other words, incline towards centralization. The decentralization policy was initiated in 1980s with the establishment of Dzongkhag Tshogdu in year 1981 and Gewog Tshogde in 1991. More recent democratization of country from absolute monarchy in year 2008 is another incremental move towards full decentralization. There is a skeletal framework in existence with active promotional awareness campaign in decentralization of decision making process. However, the participations in it clearly reveal weakness in real decision making and implementation, where one can witness more of centralized decentralization more or less acts as stumbling block.

Hydropower development in Bhutan particularly mega project is given a special treatment where these projects are dealt separately under the banner of national project. For instance, all other normal development plans and activities being executed by the government. Even if the final decision lies in the hand of center government, there is a sense of bottom-up decision making process in practice, where people/communities are given an opportunity to raise their voice in GT and DT, which finally submit through GNHC for endorsement from the government.

Regarding hydropower development, government has so far taken sole authority to execute project, where it should be established, how the project should be built and who should built the project. Many Bhutanese people may criticize and disagree with this argument, but this is the reality with respect to hydropower development in Bhutan, and Mangdechhu Hydroelectric project is no exception. There are two theories behind such arrangement; first, to squeeze resistance from the communities by highlighting such project as national interest for achieving national goal of self-reliance by the year 2020, also replicated in most of the official documents. One example is the '*Bhutan 2020: A Vision of Peace and Prosperity*' released in the year 2000. Second, geo-political interest of the country is, another radical explanation would be, simply to create condition wherein some "favorable" stakeholders and actors could participate.

On the contrary, considering the political change within the country and in the region, it would be better for the government to quickly adapt to global system rather than camouflaging within the old system which is not practicable. Today, it is the right time for the government to come out from the cocoon of government system of governing common pool resources and quickly fit into the global system of governance - not referring to "exactly copy and paste ideology" a common mistake made by other country or a failed system. Bhutan is known for uniqueness and should also go in for unique governing system of common pool resources, particularly water – "endogenous water governance".



While uniqueness doesn't mean remaining different from the global system because global system has been tested and verified. An endogenous system with all the positive elements from the global system amalgamated into it would be ideal for Bhutan. To put it in better context, successful governance system call for both bottom-up input and top down initiates (Fowler et al, 2010). As reflected in several kegs speeches of the successive kings of Bhutan to the people. Bhutan's development policy should be people oriented and anything which is outside its parameter should be given least priority. The GNH philosophy was a byproduct of importance attached to the people; today it has become alternative development paradigm for the world to pursue. On one hand, GNH has become an alternative development paradigm, for which many countries are shifting towards the new paradigm. On the other hands, Bhutan's move to achieve self-reliance by the year 2020 is deviating from the policy of GNH and sustainable development, an obvious divergence from the principle.

## 5.2 Impact of Mangdechhu Hydroelectric Power project

Analyzing the positive and negative impacts, the hydropower constructions for sustainable development is still debatable. Sustainability will require representation and autonomy of decisions by communities, balance between the three imperatives: economic, socio-culture and environment. MHP's sole aim is to

sell 90% of electricity to India to attain self-reliance, implying that other two imperatives - socio-cultural and environment act as an auxiliary to the economic aspect. But policy maker should not overlook that the other neighboring countries like Nepal and Myanmar are also investing heavily in hydropower to be sold to India – price will depend on market force which is uncertain. As a consequences, from the economic point of view, multiplication of debts (Nu.79 billion and while Nu. 45.5 billion is in hydropower as of December 2013) into millions will result in massive implications on citizen.

Thus far under the guise of clean and green, renewal energy, hydropower is gaining its popularity in Bhutan. Lack of NGOs and CSOs working in similar field to counter claim is necessary though not received well. The other complex issue is how well the policy of GNH and development of mega hydropower project can be harmonized. In the face of many challenges like GLOF, earth quakes and loss of biodiversity, human displacement (see detail in chapter I&IV), the question raise is whether Bhutan needs so many dams. The question becomes more alarming due to lack of empirical studies done on the viability of this mega projects. The real impact would not be determined now, because MPH has been in its 2<sup>nd</sup> year of its construction phase and there is lack of data to draw a significant conclusion.

Lack of data to analyze the impact doesn't mean there are no impacts; physical evidence on the ground is verifiable. Inherently, Bhutanese people normally accept whatever government plans to do. On the other hand, government usually

portrays national interest over the local interest (Mehta, 2013). Therefore, it is expected people adhere to greater unity of the country over minor problem supposedly - which is paradoxical to GNH policy. Evidence can be drawn from collapse of the Banqiao and Shimantian Dams in Henan Province in 1975 caused death toll somewhere between 86,000 (official number) and 230,000 in China (Shapiro, 2001: 63).

Considering all the pro and cons of the impact, more rational decision should be taken by the government. Most densely populated areas are in the central and southern part of Bhutan and the entire planned mega project including MPH fall in the prominent part of the country. If any of hydropower dam (MPH) collapse, it would be catastrophic for Bhutan in terms of environment and social cost and may not recover from such impacts. Indeed, it may sound radical justification, but we cannot ignore the reality.

Human intervention with nature through the large dam construction has also resulted in the “irrevocable destruction of the environment”, which raises the question about “the merits of large dams” (Goldsmith & Hildyard, 1986; McCully, 2001; Scudder, 2005). The World Commission on Dams survey reached the conclusion that those large dams “under-performed” with respect to the achievement of intended benefits and delivery of services. Therefore, large dams have triggered increasing debates on “whether large dams are environmentally

destructive or regenerative” (Wood, 2007, p 25). MPH is no exception and need more study.

While the other imbedded questions include the need for long term energy and water plan in the context of climate change and access to finance. In view of the geophysical factors, it is in Bhutan's best option to harness hydropower. Hydropower project construction can be pursued as a middle way for achieving sustainable development (McCully, 1996), but the pace at which country is developing hydropower is indeed not sustainable. Such size and magnitude of developmental project is beyond Bhutanese capacity: financially, technologically, and managerially, etc. Thus, it is inviting unnecessary discontentment among the society in general and locality in particular. Having said that, this is visible in the periphery of ongoing MHP, severely threatening the social wellbeing of local people and driving in the state of ‘Semi-Dead’ situation.

According to Yergin (2006) the deal of buying and selling fairly depends on the political situations in both countries. There is a danger of ‘Scraping Deals’ due to unavoidable political circumstances. The recent hegemonic stand exhibited by India like withdrawal of various subsidies to Bhutan is precursor to dangling fate of hydropower deal. Such a repeated hegemonic stand would be disastrous repercussions for a country like Bhutan falling in the ‘Death Trap’ with millions of

loan to repay and a situation where invisible hand from outside will run visible state of Bhutan.

To sum up, I am rather confident that hydropower project construction unquestionably the way to sustainable development. It would be by sufficiently addressing the three imperatives: socio-cultural, economic and environment. Indeed, balancing these imperatives is the biggest challenge to achieve sustainable development although there are many other externalities to be dealt with. However, in case of Bhutan, gambling with 10 mega projects in the same year, with ‘Himalayan Time Bomb’ cannot be considered in any circle or language as a sustainable development but a disaster in the making. Therefore, to avoid such situations, water governance could be a way forward – a broad and multiple stakeholders, primarily the community should be included in the decision making process, lest it may trigger grassroots opposition (Chellaney, 2012).

### 5.3 Water Governance the Way Forward

Bhutan is fortunate enough to have abundant water resources. Water is most important natural resources which not only has economic value but also has intrinsic value and lest not to say religious and cultural values attached to these resources. To change the natural course of rivers, broad consensus among the stakeholders:

communities and the government, and water governance is the way forward as to resolve these intricate problem than the conventional water government system.

Water governance can be understood as the interaction of political, social, economic and management system (Bakker, 2006). In Bhutan, water governance is a new paradigm; however, early sign of government inclining towards water governance is visible. The water Act of Bhutan 2011 considered as controversial, however chapter 6 mentions about River Basin Committee; chapter 8 details on Prevention and Control of Water Pollution; chapter 11 projects Water User Association; and chapter 16 mentions on Offences and Penalties. However, main problem is the vertical function of current system; for instance, the rural drinking water is under the Ministry of Health and Ministry of Work and Human Settlement with the municipality to look after urban water supply. Water for irrigation purposes is under the Ministry of Agriculture and Forest and for hydropower purpose; the Ministry of Economic Affairs looks after it (figure 2.2 in Chapter II). There is also lack of coordination amongst the ministries – lack of synchronization. The Water Shed Management Division, under the Ministry of Agriculture and Forest, Thimphu has completed identification of various catchment areas in the 10<sup>th</sup> five plans. For the up-coming 11<sup>th</sup> five plan, they have proposed for water shed management committee, subcommittee throughout the country, but have no plan to initiate river basin organization. Recently in June, 2013, the environment commission has initiated identification of water source in the whole country to streamline water resources. It is a clear indication of sector competition

over ownership of common pool resources, pushing community out of scene - forgoing the age-old customary practices, thus bringing closer to imminent communal conflict.

This research proposes that ‘good water governance’ emphasizing importance to community’s stake holding in the project(s) which will be the key to achieve equitable and sustainable development in the long run.

### 5.3.1 Decision Making

In today world, a good decision is vital for achieving a better result. A good decision depends on how, who and where it is made and also the “process and conditions” in which decisions are made. Decision making process can be both “top-down and bottom-up.” However, bottom up decision making process is preferred from the people prospective. While many states or governments still may prefer top-down approaches - for faster decision to implement the plan and programs.

The MHP categorically falls under the “top-down” decision making category. As discussed in earlier chapters, decentralized decision making mechanism is also already in the country - DT and GT introduced by the 4<sup>th</sup> king of Bhutan in the year 1981 and 1991 respectively. This bodies/ committees are still not adequately empowered in one hand and incapable of deciding on hydropower projects which

usually referred as ‘National Interest’ to a great extent, on the other hand. To amplify the significance, the MoUs was signed by the Foreign Minister of Bhutan and Indian Minister of Power in presence of Prime Minister of India and King of Bhutan in January 2005 in New Delhi, India. In the following year, during the visit of 5<sup>th</sup> King of Bhutan to India, another MoU was signed in the field of hydropower development (see detail in chapter III). Following the MoUs, the EJG was set up to strategize hydropower development in Bhutan. As shown in figure 3.4 in chapter III, we can only say that the decisions are made in hierarchical top-down fashion. Subtracting all the higher level decision makings – even at the every ground level, the decisions making still remains linear and hierarchical in nature. For instance, affected people are not able to make independent decision and bargain their claim of compensation for the loss of property. Nusser (2003) however stress on affected people and general public. In his view “dam planning implies adequate information, transparency and intense debate by the affected people and the general public” (Nusser, 2003). It is obvious that in top-down methods, there is little or no debate with affected people and the general public.

Mehta (2013) asserts, unlike in India, in Bhutan, government has decided the compensation is not to be paid at market price. He further argues that “as of today there is not sufficient NGOs voice responding to the government” plan and action. There are only “few [environmental] NGOs in the country and the government support them” (Mehta, 2013). In addition to Mehta’s argument, it was learnt from



the field study that the decision made so far by MPH is ‘top-down’ hierarchical in nature due to various reasons discussed above.

### 5.3.2 Participations

In [water] governance, participation from various stake holders is very important and it is the key element in order to reach a good decision. Good decision for instance, can be argued from two perspectives: project/government and the community in this context. Feldman argues that “in recent years, scholars have argued that local communities, drawing on local knowledge, are in best position to know exactly what their most critical economic, social and environment concerns are and also address them effectively” (Feldman, 2003: 98).

While the Director General of Department of Hydropower added that for MHP, people’s participation has been taken care of:

*“Regarding people’s participation, unlike other projects: Chhukha, Kurichu, Tala Dagachhu and Punatshnagchu I, for Mangduechhu, formal consultation meeting with the people were carried out” (interviewed on 19<sup>th</sup> June 2013 )*

However, it is sad to note that general public and affected communities' participants were minimal and timing of their participation is still debatable. By restating the comments of Nidup (from chapter IV) he said that

*“ ... I am not against the building of project, but I am not happy with the way they took my land and the compensation they gave to us. Sometimes, I wonder why we were not informed at the early stage; so that we can choose a better choice. But for us, it was left with no choice” (interviewed on 12<sup>th</sup> June 2013)*

Mehta shares similar concern and argues that “public consultation and meeting under the EIA process are carried out by the project proponents and are generally restricted to the project proponent meeting select the individuals in the affected areas” (Mehta, 2013). The 1<sup>st</sup> session of 2<sup>nd</sup> National Council had put forth recommendation for hydropower development as “ the recommendation outlined the need for consulting all the stakeholders while DPR for mega hydropower projects are prepared, ensure that public share do not ultimately land up with a handful of influential people; in order to devolve decision making power to the Geog...” (NC, 2013) From the field study, it is quite obvious that the level and degree of participations from various stakeholders is very low.

### 5.3.3 Accountability

Accountability in [water] governance is more than necessary. Without proper accountability, such common pool resource would be exploited, under the banner of national interest – actually become “elite capture” wherein “weaker section of community will deprive of” (Roger & Hall, 2003). Such development of ‘Semi Dead’ condition does draw more social problems: unemployment, migration, drugs abuse and vandalism. Therefore all the players should be accountable for their action as well as accountable to the existing norms, rules and laws.

In case of MHP the accountability cannot be explicitly drawn. As detailed in chapter IV about the locus of decision making; the communities are still in dilemma because there no direct accountability being fixed. For that matter, people are unable to resolve some small problems like disturbance in drinking water, demolition of irrigation channels and risk created on the high way road (*Trongsa-zhemgang-Gelephu*) by the project. As per the record of the field work, there is clear sense of lack of accountability, the blame game has been going on among various agencies and the MPH since no NGOs and CSOs are involved to ensure transparency and accountability. Besides in Bhutan, the laws do not permit any form of protest – however, people can lodge lawful complain against any party (in this context MHP) or even access to highest authority, king for that matter. Again, this project is deemed as “national interest”, and initiated by the government to benefit the entire country.

Anyone or a group trying to questions accountability branded as acting against the national interest/majority interest whereby coaxed into a situation “where hunter becomes hunted”.

More importantly, the accountability of compensations, resettlement and mechanism to address post - project construction are still not specified. For instance, still government is following resettlement guide lines of *National Resettlement committee 1997* and compensation rate according to *National Land Act of Bhutan, 2007*. According to the Act, the cash compensation is divided into urban land and rural land, where rural land gets less cash and the land acquire by the MHP fall under rural category. The other category is land for land compensation. However it is very hard and long process for the affected people. Firstly, affected people must find land substitute from same locality. Secondly, affected people have option to look within the same Geog, if land is not available within same locality. Thirdly, people seek land option from other Geogs within the same Dzongkhag, in case the second option is not available. In addition, other condition must be fulfilled to get land substitutes. On contrary, during acquisition there was not much problem for the project in view of the nature of decision making process.

The lack of accountability in the MPH is reflected among many stake holders (government organization, NGOs and affect communities). The Executive Director of RSPN said:

*“there is a series problem in policy and implementation, we should adhere to the principle; for instance the law clearly spells out that development activities in the protected areas/places is prohibited for all (government and private), but in reality it is not... all the procedures are being carried out for the formalities sake” (interviewed on 17<sup>th</sup> June 2013)*

Similar view shared by the Director General of Department of Culture is noted below:

*“Since we are not informed or requested by any side, we have not thought of any mitigation steps. However we will make sure that projects authority is aware of such important structure (Trongsa Dzong and Taa Dzong) is there where the dam construction is going on. Currently, the department of culture lacks legislative power to object any developmental activities in the vicinity of culturally important sites...now we are drafting various acts: Archive Act, Heritage Act and Intangible Cultural Heritage Act and hoping to introduce in the 3<sup>rd</sup> session of 2<sup>nd</sup> Parliament. With all these acts, we are confident that we can take all the necessary steps and try to bring minimum impact on the unique culture and tradition” (interviewed on 14<sup>th</sup> June 2013).*

#### 5.3.4 Equality

Considering the importance of decision making, participation and accountability, one cannot ignore “equality” as less important. Roger (2004) explains that equality between and among various interest groups and stake holders should be monitored right from policy development to plan implementation. Otherwise, some sections of stakeholders remain mere spectators and become a kind of ritualistic idea – wherein leading to one sided decision that result in favoring elite group or advantage stakeholders only. Thus, it is worthwhile to ensure marginal minority (affected communities: often indigenous people) interest in the project.

By recalling earlier discussion, we are aware that inequality exists in the project. Starting from project conception to preparation of DPR, EIA and EMP to post project construction – affected community or community deemed to be affected are unequally represented. On the one hand, government and project authority argue that they represent general public interest or greater interest. On the other hands, without proper and wider public consultations, they risk the aggregate interest of general over local affected communities. Therefore, they are directly or indirectly ignoring the local communities’ interest. In addition, there is no law or policy guideline linked to address the problems of equal representation in decision making process (start to end of project), when should public and the affected people be consulted and how many times. Consequently, these scenarios serve as leverage to

position government/project authority to manipulate and maneuver decision favorable to produce a desired result.

This idea is revealed by the Chief Engineer of Department of Hydropower and Power System, who was very much involved in MPH from the Ministry of Economic Affairs.

His reflection on RIS as below:

*“Regarding the reservoir induced seismic earthquake (RIS) impact to the Dzong; firstly there are no incidences or studies that have proven occurrence of reservoir induced earth quake. In our case, it is not reservoir plant but run-of-the-river scheme that has few hours of poundage capacity meaning the operation of power plant will have no impact on the Dzong. Therefore this question of RIS is not relevant for the Mangdechhu Hydropower Project”*  
*(Interviewed on 19/6/2013).*

### 5.3.5 Legitimacy

Following the Sternberger (1968) explanation of legitimacy as “right to govern” and “recognition to be governed”; gauging from his explanation, MHP’s legitimacy is questionable. As discussed earlier chapters, the “top-down” nature of governance portrays MHP as legitimate. In addition, there is lack of “strong and active NGOs to challenge legitimacy of state” (Cooper, A. et al, 2008). According Cooper, A.

et al, neither state nor non state is legitimate, although “non state actors often challenge the legitimacy of state (and corporate) power” (Cooper, et al., 2008:256).

In case of MHP, as shown in figure 3.2 and 3.4 in chapter III, confirms state (Bhutan government) and (India government) dominates in every aspect of project: decision making to implementation, later even plays bigger role. No resistance from other stakeholders: affected communities and NGOs should be understood in either way. The other possible reasons could be due to past political culture – although democracy has been in place for more than five years. The chief engineer in department of hydropower system justifies the position of government decision for building hydropower project in general and MHP in particular:

*“...our decision to build hydropower projects is to take advantages of conducive condition i.e. India has huge energy market and Bhutan has enormous potential to generate hydroelectric coupled with special bilateral relationship between India-Bhutan and presence of political stability in Bhutan, development of hydropower is natural choice for Bhutan. ” ”*  
(interviewed on 19<sup>th</sup> June 2013)

Metha argues “it is evident that Bhutan is a nascent democracy. People are neither accustomed to nor confident enough to government plans [and policies]” Metha (2013). Therefore, legitimacy [MHP] remains highly contested topic and take the matter to higher levels is not possible due to political reasons.



## 5.4 Policy and Academic Recommendations

### 5.4.1 Policy Recommendation

Bhutan's economic development is guided by the overarching policy of Gross National Happiness. More importantly, country's aspiration to achieve economic self reliance by the year 2020 has push developmental activities to the limit, especially in hydropower sector. With numerous mega hydropower projects being build in the country trapping common pool resources, the governance has become an issue. From the case study of Mangdechhu Hydroelectric Power at Trongsa portrays lack of water governance instead water government frame work is followed. One system fits all may not work; however, water governance is a better option for sustainable development and human happiness.

**The Royal Government of Bhutan's** policy makers has to seriously re-evaluate the policies with regards to hydropower development and create a space where community will be fairly represented in all the stages of project construction.

**The Royal Government of Bhutan's** should re-emphasis on more study (DPR, EIA and EMP) on social and environment impact by Bhutanese experts, so that more local people and knowledge could be incorporated with minimum language barrier.

**The Royal Government of Bhutan's** could re-evaluate national interest verses local interest. A genuine decentralization, despite size and nature of development

activities should be initiated as national interest may not necessarily serve the local interest.

**The Government of India** should re-evaluate its policy of hydropower development and particularly decision making process in Hydropower development project in Bhutan according the financial aids modalities (especially for the upcoming projects)

**The Government of India** should review its human resource engagement with the projects and more Bhutanese should be given opportunity to run the project. Such move will not only help long term national human resource capacity building but also reduce the overall cost of the project which is increasing as the project goes on.

**The Project Authority and Dzongkhag Administration** should disseminate more realistic and accurate information to the community about the positive and negative impact from the project to the communities - as to make a better choice of compensation for the land and materials people has to sacrifice for the project development.

**The Indian Construction Companies** should not be more cautious and respect the local norms and national laws (no competitions from other countries and from local firm) as well as engage in more spontaneous corporate social responsible in the locality to gain local communities trust and confidence.

#### 5.4.2 Recommendation for Further Research

The work presented here has profound implication for future studies of water governance in hydropower projects and may one day help to solve the problem of socially un-just and ecologically un-sustainable hydropower development. There are many areas of future research, however; I would like to recommend three for further research based on my study.

Firstly, considering the scale and magnitude of developmental activities (Hydropower projects) initiated by the government and the policy of GNH seems contradictory. Moreover, there is clear indication of government's pursuance of 'National Interest' over local interest, despite disapproval from the local people (unnoticed) which is even more divergence to GNH policy. Therefore, the research needs to focus on *how to include and empower local people (grassroots participation) in hydropower construction to increase local happiness* rather than eyeing for *gross national happiness*. The word "gross" is sometimes misleading- and wide open for miss- interpretations.

Secondly, how comprehensive is DPR, EIA and EMP of hydropower projects being prepared. Can only "scientific knowledge" is acceptable for the justification of building hydropower project discounting "local knowledge" that has been there for many generations.

Thirdly, how can "endogenous water governance" enable in achieving socially equitable and ecologically sustainable hydropower project- based on local concept of sharing common pool resource water.

## REFERENCES

- Adams, J. (2003). Anti-globalization: The Global Fight for Local Autonomy, *New Political Science*, 25(1), 19-42
- Adams, W. M., Aveling, R., Brockington, D., Dickson, B., Elliott, J., Hutton, J., & Wolmer, W. (2004). Biodiversity Conservation and the Eradication of Poverty, *Science*, 306(5699), 1146-1149
- Amornsakchai, S., Annez, P., Vongvisessomjai, S., Choowaew, S., Thailand Development Research Institute (TDRI), Kunurat, P., Nippanon, J., Schouten, R., Sripapatprasite, P., Vaddhanaphuti, C., Vidthayanon, C., Wirojanagud, W., Watana, E. (2000). Pak Mun Dam, Mekong River Basin, Thailand. A WCD Case Study prepared as an input to the *World Commission on Dams*, Cape Town.
- Andersen, A. (1998). The land tenure system in Norway and local democracy in relation to land Issues, Paper presented to the highland and lowland forum; 1998, Inverness, March 20-22, 1998
- Arrow, K., Bolin, B., Costanza, R., Dasgupta, P., Folke, C., Holling, C. S., & Pimentel, D. (1995). Economic Growth, Carrying Capacity and the Environment, *Ecological Economics*, 15(2), 91-95.
- Asian Development Bank. (2004). Interim Review of ADB's Water Policy

Implementation, Retrieved from  
[http://www.adb.org/Water/Policy/pdf/Review\\_Water\\_Policy.pdf](http://www.adb.org/Water/Policy/pdf/Review_Water_Policy.pdf) (Accessed on  
 1<sup>st</sup> May 2013)

Asian Development Bank. (2010). Labor and Grassroots Civic Interest in Regional  
 Institutions, *Regional Economic Paper and Briefs*, Retrieved from  
[http://www.adb.org/publications/labor-and-grassroots-civic-interests-regional-  
 institutions](http://www.adb.org/publications/labor-and-grassroots-civic-interests-regional-institutions) (Accessed on 1<sup>st</sup> May 2013)

Awakul, P., & Ogunlana, S. O. (2002). The effect of attitudinal differences on interface  
 conflict on large construction projects: the case of the Pak Mun Dam  
 project. *Environmental Impact Assessment Review*, 22(4), 311-335.

Bakker. (2006). Privatizing Water Governance Framework and the World Urban Water  
 Crisis, Cornell University Press, Sage House, New York.

Banducci, S. A., Donovan, T., & Karp, J. A. (2004). Minority Representation,  
 Empowerment, and Participation. *Journal of Politics*, 66(2), 534-556.

Barros, N., Cole, J. J., Tranvik, L. J., Prairie, Y. T., Bastviken, D., Huszar, V. L., &

Roland, F. (2011). Carbon Emission from Hydroelectric Reservoirs Linked to  
 Reservoir Age and Latitude. *Nature Geoscience*, 4(9), 593-596.

*Bhutan Board Casting Service*.(2012). MHP's Major Work to Begin, *BBS*, 19<sup>th</sup>

May, Retrieved from <http://www.bbs.bt/news/?p=12903> (Accessed on 1<sup>st</sup>  
 August 2013)

*Bhutan Board Casting Service*.(2013a). Blasting did not cause Structural

Damages to Dzongs, Study Finds Out, 2<sup>nd</sup> March, Retrieved from <http://www.bbs.bt/news/?p=24199> (Accessed on 1<sup>st</sup> August 2013)

*Bhutan Board Casting Service.*(2013b). NC to Put Up Recommendation to Hydropower Projects, *BBS* 27<sup>th</sup> September, Retrieved from <http://www.bbs.bt/news/?p=31978> (Accessed on 1<sup>st</sup> August 2013)

*Bhutan Board Casting Service.* (2013c). Chief Advisor Inaugurates River Diversion Ceremony at MHPA, *BBS*, 23<sup>rd</sup> July, Retrieved from <http://www.bbs.bt/news/?p=28639> (Accessed on 1<sup>st</sup> August 2013)

Bisht, M. (2011). India-Bhutan Power Corporation: Between Policy Overtures and Local Debates, IDSA, Issue *Brief*, Retrieve from [http://www.idsa.in/issuebrief/IndiaBhutanPowerCooperation\\_mbisht\\_071011](http://www.idsa.in/issuebrief/IndiaBhutanPowerCooperation_mbisht_071011) (Accessed on 1<sup>st</sup> August 2013)

Biswas, A. K. (1982). Impacts of Hydroelectric Development on the Environment, *Energy Policy*, 10 (4), 349-354.

Biswas, A. K., & Tortajada, C. (2001). Development and Large Dams: A Global Perspective, *International Journal of Water Resources Development*, 17(1), 9-21.

Biwas, A. K. (2011) Cooperation or Conflict in Transboundary Water Management: Case Study of South Asia, *Hydro Science Journal*, 56(4), 662–670.

Book, D. (2010). The politics of Happiness: What Government Can Learn from the

New Research on Well-Being (chapter 2& 3, pp 32-62), Princeton University Press, New Jersey, United Kingdom.

Bryant, Raymond. (1992). Political Ecology: An Emerging Research Agenda in Third – World Studies, *Political Geography*, (11)1: 12-36

Cooper, A.F., Hocking, B., & Maley, W. (2008). *Global Governance and Diplomacy World Apart*, Basingstoke, New York.

Chanudet, V., Descloux, S., Harby, A., Sundt, H., Hansen, B. H., Brakstad, O., & Guerin, F. (2011). Gross CO<sub>2</sub> and CH<sub>4</sub> Emissions from the Nam Ngum and Nam Leuk Sub-Tropical Reservoirs in Lao PDR, *Science of the Total Environment* 409 (24): 5382-5391

Chellaney, B. (2012). From Arms Racing to ‘Dam Racing’ in Asia: How to Contain the Geopolitical Risk of the Dam-Building Competition, *Transatlantic Academy*, Washington, DC

Franks, T., & Cleaver, F. (2007). Water Governance and Poverty a Framework for Analysis, *Progress in Development Studies*, 7(4), 291-306.

Cleaver, F., Franks, T., Boesten, J. and Kiire, A. (2005). *Water Governance and Poverty: What Works for the Poor?* Report to the Department for International Development.

Dalby, S. (2009). *Security and Environmental Change*. Polity Press, Cambridge, UK.

Drukpa, D., Velasco, A. A., & Doser, D. I. (2006). *Seismicity in the Kingdom of Bhutan*

(1937– 2003): Evidence for Crustal Transcurrent Deformation. *Journal of Geophysical Research: Solid Earth* 111 (B6), 1978–2012.

Edwards, V. M., & Steins, N. A. (1998). Developing an Analytical Framework for Multiple-Use Commons. *Journal of Theoretical Politics*, 10(3), 347-383.

Eguzki, U.(2011).The Alternative Theories of Sustainable Development. *Boletín de la Asociación de Geógrafos Españoles*, 55, 399-405.

Eisenstadt, S.N. (1966). *Modernization: Protest and Change*. Prentice Hall, New Jersey, United State.

Far Eastern Economic Review. (1998). Bhutan: *Far Eastern Economic Review, Asia 1998 Yearbook*, pp 82 -84.

Feldman, D.L. (2007). *Water for Sustainable Development*, Baltimore, *Johns Hopkins University Press*, United State.

Fishman, R.M. (2010). Gross National Happiness – A Real Alternative or a Romantic wish? Impressions from the Fourth International Conference on Gross National Happiness in Bhutan. *The Journal of Sustainable Development*, 3 (1) 179-186.

Fowler, R., Johnstone-Burt, A., Pennell, N., & Watt. I. (2010). *Bottom Up and Country Led: A New Framework for Climate Change Action*, Available from [http://www.booz.com/media/file/Bottom\\_Up\\_Country\\_Led.pdf](http://www.booz.com/media/file/Bottom_Up_Country_Led.pdf) (Accessed on 1<sup>st</sup> May 2013)

Foran, T. (2006). *Rivers of Contention: Pak Mun Dam, Electricity Planning, and State –*



Society Relations in Thailand, 1932–2004. PhD Thesis, Division of Geography, Department of Geosciences, University of Sydney, Australia, Accessed on 1<sup>st</sup> May 2013. Available from <http://hdl.handle.net/2123/1984>

*Global Times* (2013). New Delhi sees Bhutan as little more than Potential

Protectorate, *Global Times*, 4th August, Retrieved from <http://www.globaltimes.cn/content/801348.shtml#.Um3SGflmDzo> (Accessed on 10<sup>th</sup> August)

**Global Water Partnership. (2000). Integrated Water Resources Management.**

*Technical Advisory Committee Background Paper. (4).*

Goldsmith, E & Hildyard, N. (1984). The social and environment impact of large dam.

Vol.1 Case Studies, *Wade Bridge Ecological Centre*, Corn Hill.

Gopalakrishnan, C., Biswas, A. K. & Tortajada, C. (eds) (2004). Water Resources

Management: Structure, Evolution and Performance of Water Institutions, *Springer-Verlag*, NewYork.

Gopinath ,G., Balachander,R., Theresraj, A.i., Vamshidhar ,K., & Venkatesh, H.S.(2013).

Ground Vibration Study to Assess the Impact of Blasting at Dam Complex of Mangdechhu Hydroelectric Project on surface Structure, Jaiprakash Associates, and Bhutan

Goudie, A. S. (2009). *The Human Impact on the Natural Environment: Past, Present, and Future*: Wiley.

Gupta, J., A. Akhmouch, W. Cosgrove, Z. Hurwitz, J. Maestu, and O. Ünver. (2013).

Policy Makers' Reflections on Water Governance Issues, *Ecology and Society* 18(1): 35.

Haas, P. M. (eds). (1992). Knowledge, Power and International Policy Coordination, *University of South Carolina Press*.

Hardin, G. (1968). The Tragedy of the Commons, *Science*, 162, 1243-8.

Hoekstra, A.Y. (2006). The Global Dimensions of Water Governance, Nine Reasons for Global Arrangements to Cope with Local Water Problems, Research Report Series No. 20. UNESCO-IHE Institute for Water Education, Delft, the Netherlands  
[http://doc.utwente.nl/58371/1/Report\\_20.pdf](http://doc.utwente.nl/58371/1/Report_20.pdf)

Hodge, H.N. (1992). The Pressure to Modernize and Globalize the Future of Progress, *Green Book*, Dartington, Devon, UK.

International Energy Agency. (2011). Clean Energy Progress Report, Washington, DC: US Department of Energy, Energy Information Administration.

Thinley, J. Y. (2005). What Does Gross National Happiness Mean? Second International Conferences on Gross National Happiness: Rethinking Development Local Pathways to Well-being, Nova Scotia, Canada, St. Francis Xavier University.

Kashyap, A. (2004). Water Governance: Learning by Developing Adaptive Capacity to Incorporate Climate Variability and Change. *Water Science and Technology*, 49 (7): 1416.

- Komori, J., Koike, T., Yamanokuchi, T. & TShering, P. (2012). Glacier Lake Outburst in the Bhutan Himalayas, *1Graduate School of Environmental Studies, Nagoya University, Furo-cho, Chikusa-ku, Nagoya 464-8601, Japan.*
- Konca, K. (2005). *Governing Water: Contentious Transnational Politics and Global Institution Building*, MIT Press, Boston.
- Kuensel. (2012). Are Dam-site Blasts Cracking the Dzongs? *Kuensel*, 22<sup>nd</sup> December. Retrieved from [http://www.kuenselonline.com/are-dam-site-blasts-cracking-the-dzongs/#.Um1NR\\_lmDzo](http://www.kuenselonline.com/are-dam-site-blasts-cracking-the-dzongs/#.Um1NR_lmDzo) (Accessed on 1<sup>st</sup> May 2013,)
- Kuensel. (2013a). Dzongkhag Rejects Jaypee Report, *Kuensel*, 9<sup>th</sup> March, Retrieved from <http://www.kuenselonline.com/dzongkhag-rejects-jaypee-report/#.Um1L3vImDzo> (Accessed on 1<sup>st</sup> May 2013,)
- Kuensel. (2013b). Bhutanese Business Seeks Bigger Role in Hydropower Development, *Kuensel*, 25<sup>th</sup> July. Retrieved from <http://www.kuenselonline.com/solar-not-hydro-energy-is-the-future/#.Um1QBPlmDzo> (Accessed on 1<sup>st</sup> June, 2013)
- Kuensel.(2013c). 11<sup>th</sup> Plan Project Faces a Fiscal Deficit of Nu. 15.5 Billion, 19<sup>th</sup> August. Retrieved from <http://www.kuenselonline.com/11th-plan-projected-to-face-a-fiscal-deficit-of-nu15-5b/#.Um1PMvImDzo> (Accessed on 20<sup>th</sup> August 2013)
- Kuensel.(2013d). Inconsistent Decision Cost Delay, *Kuensel*, 15<sup>th</sup> October, Retrieved from [http://www.kuenselonline.com/inconsistent-decision-cost-dearly/#.Um1Js\\_lmDzo](http://www.kuenselonline.com/inconsistent-decision-cost-dearly/#.Um1Js_lmDzo) (Accessed on 1<sup>st</sup> June, 2013,)
- Kvalsund, R. (2009). Centralized Decentralization or Decentralized Centralization? A

- review of Newer Norwegian Research on Schools and Their Communities, *International Journal of Educational Research*, 48(2): 89-99 .
- Lopez, R. (1994). The Environment as a Factor of Production: The Effects of Economic Growth And Trade Liberalization, *Journal of Environmental Economics and management*, 27 (2), 163-184
- Matthews, N. (2012). Water Grabbing in the Mekong Basin–An Analysis of the Winners and Losers of Thailand’s Hydropower Development in Lao PDR, *Water Alternatives*, 5 (2), 392-411
- Nash, M., Munford, R., & O’ Donoghue, K. (2005). Social Work Theories in an Action, London, *Jessica Kingsley* (pp 272).
- Mclully, P. (1996) Silenced Rivers: The Ecology and Politics of Large Dams, *Zed Books*, London, New Jersey.
- Mehta, S. (2013). Bhutan’s Picture of GNH blurs, Retrieved from [www.internationalrivers.org/blog](http://www.internationalrivers.org/blog) (Accessed on 3<sup>rd</sup> July 2013)
- Merrey, D. J.et al. (2005). Integrating “Livelihoods” into Integrated Water Resources Management: Taking the Integration Paradigm to its Logical Next Step for Developing Countries. *Regional Environmental Change*, 5 (4), 197-204.
- MHP. (2013). Available from home page, <http://www.mhpa.gov.bt/>
- MoEA. (2012). Bhutanese Economy and Future Direction, Retrieved From <http://www.moea.gov.bt/> (Accessed on 3<sup>rd</sup> July 2013)
- Mollinga, P. P. (2008). The Water Resources Policy Process in India: Centralisation,

Polarisation and New Demands on Governance. In Ballabh,V.(ed), *Governance of Water: Institutional Alternatives and Political Economy*, New Delhi, Sage: 339-370.

Moriarty, P., Butterworth, J., & Batchelor, C. (2004). Integrated Water Resources Management and The Domestic Water and Sanitation Sub-Sector. *IRC Thematic Overview Paper, IRC International Water and Sanitation Centre, Delft, the Netherlands.*

National Environment commission of Bhutan. (2012). Bhutan: In the Pursuit of Sustainable Development, *National Report for the United Nation Conference on Sustainable Development*, Thimphu, Bhutan.

NHPC. (2008). Mangdechhu Hydroelectric Project, Detail Project Report, Volume 0. Executive Summary.

NHPC. (2012). Chamkharchhu-I, Hydroelectric Project, Detail Project Report. Volume 0, Executive Summary

Nusser, M. (2003). Political Ecology of Large Dams: A Critical Review. *Petermanns Geographische Mitteilungen*, 147(1), 20-27.

Ni, J. and Barazangi, M. (1983). High-Frequency Seismic Wave Propagation Beneath the Indian Shield, Himalayan Arc, Tibetan Plateau and Surrounding Regions: High Uppermost Mantle Velocities and Efficient  $S_n$  Propagation beneath Tibet. *Geophysical Journal of the Royal Astronomical Society*, 72: 665–689.

Payel, D. & Lebakeng, T.J. (2006). Relevance of Indigenous Knowledge for Sustainable

Socio-economic Developments in South Africa- is Globalization a Threat?  
*Africa insight* 36 (1) 40-25.

Peimani, H. (2011). The Challenge of Energy Security in the 21st Century: Trends of  
 Significance. *Institute of South East Asia*.

Percival, V., & Homer-Dixon, T. (1998). Environmental Scarcity and Violent Conflict:  
 The Case of South Africa. *Journal of Peace Research*, 35(3), 279-298.

Pieterse, J. N. (1998). My Paradigm or Yours? Alternative Development,  
 Post-Development, Reflexive Development, *Development and Change*, 29(2),  
 343-373.

Poff, N. L., Allan, J. D., Palmer, M. A., Hart, D. D., Richter, B. D., Arthington, A. H.,  
 Stanford, J. A. (2003). River Flows and Water Wars: Emerging Science for  
 Environmental Decision Making. *Frontiers in Ecology and the Environment*,  
 1(6), 298-306.

Planning Commission Secretariat.(1999). Bhutan 2020: A Vision for Peace, Prosperity,  
 Happiness, Thimphu: Royal Government of Bhutan.

Rijsberman, F.R. (2008). Water for food: Corruption in irrigation systems. In Zinnbauer,  
 D. and Dobson, R. (eds), Global corruption report: Corruption in the water  
 sector, pp. 67-77. Cambridge, UK: *Cambridge University Press*.

Rogers, P. (2002). Water Governance in Latin America and the Caribbean, Inter-  
 American Development Bank, Accessed on 1<sup>st</sup> May 2013, Available from  
<http://atl.org.mx/files/Water%20governance%20in%20LA>

- Rogers, P. & Hall, A. W. (2003). *Effective Water Governance* (Vol. 7), Stockholm: *Global Water Partnership*.
- Roberts, T. R. (2001). On the River of No Returns: Thailand's Pak Mun Dam and its Fish Ladder, *Natural History Bulletin of the Siam Society*, 49(2), 189-230.
- Saha, S. (2010). Economic Globalization in India: The Role of Old and New Traditions in the Development of Socioeconomic Values for Positive Globalization, *The International Journal of Interdisciplinary Social Science*, 5 (2).
- Saleth, M. and Dinar, A. (2005). Water Institutional Reforms: Theory and Practice. *Water Policy*, 7 (2005): 1-19.
- Schurr, S.A.(2011).Energy policy, Book Review, Energy, Economic Growth, and the Environment, *Earth Scan*, Washington, DC.
- Shapiro, J. (2001). Mao's War against Nature: Politics and the Environment in Revolutionary China. New York: *Cambridge University Press*.
- Sousa Junior, W. C. and Reid, J. (2010). Uncertainties in Amazon Hydropower Development: Risk Scenarios and Environmental Issues around the Belo Monte Dam. *Water Alternatives*, 3 (2): 249-268.
- Steins, N,A. and Edwards, V.M. (1998). Synthesis: Platforms for Collective Actions in Multiple -Use Common-Pool Resources, *Agriculture and Human Values*, 16: 309-315
- Stiglitz, J.E. (2002). Globalism's Discontents. In: Lechner and Boli (2004). *The Globalization Reader*, *Blackwell, Oxford*, pp 200-207

- Stattersfield, A., Crosby, M.J., Long, A.J., and Wege, D.C. (1998). Endemic Bird Area of the World: Priorities for Biodiversity Conservation, Cambridge, *Bird Life International*.
- Swain, A. (2011). Challenges for Water Sharing in the Nile Basin: Changing Geo-Politics and Changing Climate. [Article]. *Hydrological Sciences Journal/Journal des Sciences Hydrologiques*, 56(4), 687-702. doi: 10.1080/02626667.2011.577037.
- The Telegraph* (2012). Bhutan Asked for Dam Impact Report- Mangdechhu Shadow Over Manas, *The Telegraph*, 19<sup>th</sup> June, Retrieved from [http://www.telegraphindia.com/1120619/jsp/northeast/story\\_15622107.jsp#.UmX5DPlmDzo](http://www.telegraphindia.com/1120619/jsp/northeast/story_15622107.jsp#.UmX5DPlmDzo) (Accessed on 3<sup>rd</sup> July 2013.)
- Thinley, J.Y., (2009). The First Report of the Hon'ble Prime Minister to the Third Session of the First Parliament on the State of the Nation (including legislative Plans), Royal Government of Bhutan: Thimphu.
- Tobgay, S. (2012). The Impact of Hydroelectric Project on the Forest Dependent Community: A Case Study of Mangdechhu Hydropower Project (720mw), Bhutan, Final Report, TERI University, New Delhi.
- Times of Assam*. (2011). Dangerous Dams in Bhutan- No one is Concerned, *Times of Assam*, 21<sup>st</sup> March, Retrieved from <http://www.timesofassam.com/exclusive/dangerous-dams-in-bhutan-no-one-isconcerned/> (Accessed on 3<sup>rd</sup> July 2013)
- UNDP. (2007a). Water Governance Facility, Retrieved from



<http://www.watgovernance.org/> (Accessed on 3<sup>rd</sup> July 2013,)

UNDP.(2007b). Effective Water Governance: The Key to Sustainable Water Management and Poverty Eradication, Retrieved from <http://www.undp.org/water/> (Accessed on 3<sup>rd</sup> July 2013,)

University of North Bengal.(2011). Environmental Impact Assessment, Mangdechhu Hydroelectric Project, Trongsa, Bhutan, University of North Bengal, India.

Watson, N.; Deeming, H. and Treffny, R. (2009). Beyond Bureaucracy? Assessing Institutional Change in the Governance of Water in England, *Water Alternatives*, 2 (3): 448-460.

WCD.(2000). Dams and Development: A New Framework for Decision-Making, *Earth scan*, London.

Wood, J. R. (2007). The Politics of Water Resource Development in India: The Narmada Dams Controversy. New Delhi: *Sage Publications*.

World Bank.(2012). Country Profile Bhutan, Retrieve from <http://data.worldbank.org/country/bhutan> (Accessed on 3<sup>rd</sup> July 2013)

Xu, D. and Q. Feng (1994) Dangerous Glacier Lakes and Their Outburst Features in the Tibetan Himalaya, *Bulletin of Glacier Research*, 12: 1-8.

Yamada, T. and C.K. Sharma (1993). Glacier Lakes and Outburst Floods in the Nepal Himalaya., *International Association of Hydrological Sciences*, 218: 319-330.

Yergin, D. (2006). Ensuring Energy Security. *Foreign Affairs*, 69-8

## APPENDIX

1. The Constitution of Bhutan (2008)

**The article 1:** The right over mineral resources .rivers, lakes and forests shall vest in the state and are properties of the state, which will be regulated by law

**Article 5:** 2(b) prevent pollution and ecological degradation

2(c) secures ecologically balances sustainable development while promoting justifiable economic and social development.

2(d) ensure a safe and healthy environment

**Article 9:** the state shall strive to promote those conditions that will enable the pursuit of Gross National Happiness.

2. Land Act of Bhutan (2007)

## Chapter 7

**Section 69:** Any mineral resources found in any registered land shall belong to the State and shall be governed by the prevailing Mines and Minerals Management Act or any other law that shall govern their use and management.

**Section 70:** In the event the mineral resources are extracted and the process of extraction lessens or deteriorates the land utility, the Government shall

acquire the land and  
provide compensation as provided in this Act.

**Section 71:** Granting of Kidu (gift) and rehabilitation land shall be the royal prerogative of the Druk Gyalpo (king of Bhutan)

**Section 155:** The location of substitute land to be allotted in rural areas shall be in the order of preference of same village, Gewog, and Dzongkhag.

**Section 156:** No choice for substitute land, The landowner shall have no choice over the location of substitute land provided by the Government

### 3. The National Environment Protection Act, 2007

#### Chapter 7

**Section 86:** Citizens are entitled to participate in decision-making processes concerning the environment, when the Government deems appropriate to hold public consultations, including:

- a) Contributing views during the process of drawing up policies, plans and project formulation and implementation;
- b) Consulting the public during environmental impact assessment process before the issuance of environmental clearance. Provided that the larger interest of the community/country shall prevail over individual interest; and
- c) Commenting on draft legislation or regulations under preparation to implement this Act.

**Section 87:** The public concerned shall be informed in a timely and effective manner, either by public notice or individually as appropriate, on any environmental decision-making procedure, when all options are open and effective public participation can take place

#### 4. Water Act of Bhutan 2011

##### Chapter 2

**Section 5(a)** Water resources are the property of the state. The rights over water resources, including the bed and bank of water resources shall vest in the state.

**Section 6:** A National Integrated Water Resource Management plan shall be formulated for Coordinated development, management, conservation and efficient usage of water resources.

##### Chapter 3,

**Section 15(j).** Civil society organization and media for assisting in prevention of water pollution and sustainable use of water resources through education, public awareness and promoting public private partnership

## Sample questioner use in the field work (June 2013)

### I Research questions (general)

1. What (is) are the role of (organization name/ interviewee) in decision making process in Mangduechhu hydropower project (pre- project/ current and post project construction)
2. Whether the Mangduechhu hydropower project socially equitable and ecologically sustainable? Organization/ interviewee point of view?
3. What is your (organization name/ interviewee) views on decision making process, accountability, transparency, legitimacy and people's participation in MHP?
4. Is your/ you (organization/ interviewee) actively involved in the Hydropower project(s), particularly MHP?
5. How often your /you (organization/ interviewee) help to empower people in general and particular for this project?

### II Research question (specific)

1. Is the public/communities adequately informed about the project's consequences (positive and negative) on their life?

2. What are the mitigation steps taken you/your (organization/ interviewee) for the immediate and long term impact (blasting from the dam site/quarries) on local community?
3. What are the response mechanism / complain mechanism to solve the likely disruption caused by the project to the local communities?
4. Are you aware of the project plans and how did you come to know? What is your view on the project management and its work execution?
5. Do we really need so many hydropower projects including MHP in Bhutan, why and why not?

REFERENCES



จุฬาลงกรณ์มหาวิทยาลัย  
**CHULALONGKORN UNIVERSITY**

## VITA

Mr. Sangay Tashi was born in 1980. He grew up in small remote village named Murbi, in Eastern Bhutan. Most of his primary school study was also in Eastern Bhutan. He was sent to the Western part of the country to acquire his high school education in the field of commerce at Drukgyal Higher Secondary School, which he completed in 2001.

He then moved back to Eastern Bhutan to complete his graduate at Sherubtse College, Kanglung, Trashigang, Bhutan affiliated to University of Delhi, India. He completed his BA. (honours) in Dzongkha ( Language and Buddhist Studies ) in 2004 from Sherubtse College.

After graduation, he joined civil service under the Ministry of Home and Cultural Affairs and until now, he has served in two Dzongkhag [District] for eight years as a District Cultural Officer. From 2005- 2010, he served in Zhemgang Dzongkhang, which is in the central part of Bhutan. Besides serving as Cultural officer, he was also a focal officer of National Language Promotion and secretary to Choethun Tshogpa [District Religious Committee].Currently; he serves in Samdrupjongkhar Dzongkhag as a District Cultural Officer. He was granted by Thai International Development Cooperation Agency (TICA) scholarship to study at MAIDS program Chulalongkorn University, Bangkok, Thailand.

Mr. Tashi is interested in various fields of development, especially a hydropower project construction and its impacts. He also is now looking through the prism of water governance; and finding how different actors and stakeholders can shape the fate of common pool resources such as water, nature and environment in the neighboring countries in South Asia and South East Asia.

\*\*\*

จุฬาลงกรณ์มหาวิทยาลัย  
CHULALONGKORN UNIVERSITY





จุฬาลงกรณ์มหาวิทยาลัย  
**CHULALONGKORN UNIVERSITY**