

THE KOSI RIVER PROJECT: ISSUES AND IMPLICATIONS

Dissertation submitted to Jawaharlal Nehru University in partial fulfilment of the requirements for award of the degree of

MASTER OF PHILOSOPHY

RABINDRA KUMAR



**SOUTH ASIAN STUDIES DIVISION
CENTRE FOR SOUTH, CENTRAL, SOUTH EAST ASIAN
AND SOUTHWEST PACIFIC STUDIES,
SCHOOL OF INTERNATIONAL STUDIES
JAWAHARLAL NEHRU UNIVERSITY
NEW DELHI-110067**

INDIA

2011



Date: 25. 07. 2011

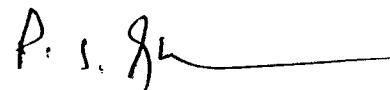
DECLARATION

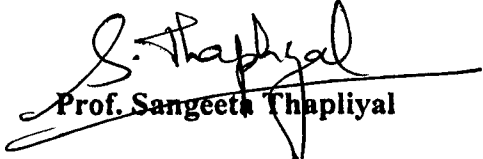
I declare that the dissertation entitled "THE KOSI RIVER PROJECT: ISSUES AND IMPLICATIONS" submitted by me for the award of the degree of Master of Philosophy of Jawaharlal Nehru University is my own work. The dissertation has not been submitted for any other degree of this University or any other university.


Rabindra Kumar

CERTIFICATE

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


Prof. Partha S. Ghosh
(CHAIRPERSON)


Prof. Sangeeta Thapliyal
(SUPERVISOR)

*To my
Mother and
Babu Ji*

Acknowledgement

First of all, I owe my sincere and deep sense of gratitude to Professor Sangeeta Thapliyal, my mentor and supervisor for having suggested me the topic which I found quite interesting. Her contribution in building up the whole idea of the topic, keen interest in my work and constant guidance, encouragement and painstaking correction of my manuscript, put up the dissertation in this shape undeniable. She has not only given me invaluable suggestion and guidance, she has also listened to all my curiosity with patience and care. The experience of one year research under her is one of the finest moments in my student career. I am greatly indebted to her.

My sincere thanks to Dr. Rajesh Kharat sir and Dr. Ram Chandra sir for their continuous motivation and encouragement to give my best in whatever I do.

I am much indebted to Saba for her valuable advices and encouragement during my writing.

Special note of thanks goes to Rajeev sir and Mukesh sir. The work would not have assumed this shape without their support and crucial insight furthermore for investing their precious time to read the chapters and giving their critical comments.

I would like to thank the cooperative library staff of Jawaharlal Nehru University, IDSA and Teen Murti for their kind and polite help in providing the materials.

I am also thankful to Indira mam, Uddhav sir, Keshav sir and other seniors of Nepal, with whom I discussed the water problems confronting their country.

I would also like to thank my friends and seniors like, Iram di, Priyadharshani, Santosh sir, Pramod sir, Sandeep, Chandramony, Laxami, , Anup, Pankaj, Dinesh, Atul, Vimal, Rajkumar, Ambashankar, Kumar Gaurav, Ashish, Ramsingar, Yash, Siba... all other friends of mine kept encouraging me to complete the work.

Last, but not the least, my heartfelt thanks and deepest love and gratitude to my parents who have been a pillar of strength for me through all ups and downs of my life, and whose constant encouragement and guidance have helped me this far. I also take this opportunity to thank very specially Betu, Jiya, Bhai and mamu for their valuable moral support and encouragement.

Needless to say that all the errors in the dissertation are mine.

Rabindra Kumar
Rabindra Kumar

CONTENTS

<i>Acknowledgement</i>	i
<i>Abbreviations</i>	iii
Chapter 1. <i>Introduction</i>	1-17
Chapter 2. <i>Policies of India and Nepal on River Water Sharing</i>	18-40
Chapter 3. <i>Harnessing the Kosi River: Agreement and After</i>	41-61
Chapter 4. <i>Kosi's Impact on other River Projects: Nepal's Policy and India's Response</i>	62-87
Chapter 5. <i>Conclusion</i>	88-95
<i>Bibliography</i>	96-110

ABBREVIATIONS

BC	Baral Commission
BCM	Billion Cubic Metres
CFC	Compensation Fixation Committee
CPN (UML)	Communist Party of Nepal -United Marxist Leninist
CWINC	Central Water Irrigation and Navigation Commission
DPR	Detailed Project Report
GDP	Gross Domestic Product
HMG	His Majesty Government
IDB	International Drainage Basin
IDMB	Integrated Development of Mahakali Basin
ILC	International Law Commission
IWRM	Integrated Water Resources Management
IWRS	International Water Resource System
KCC	Kosi Coordination Committee
KRP	Kosi River Project
MW	Mega Watt
NCIWRD	National Commission on Integrated Water Resources Development
NWP	National Water Policy
PPP	Pancheshwar Power Project
RBA	River Board Act
SAARC	South Asian Association for Regional Cooperation
UN	United Nation

USA	United States of America
WB	World Bank
WCD	World Commission on Dam
WRR	Water Resource Regulation

Chapter 1
Introduction

Water is an essential component for the existence of human life. It is unique resource, appearing in different forms and shaping all physical and biological processes. In the twenty first century, Water, a universal need, has become, as perhaps, never before, in the history, a universal problem. With the dawn of industrialization, and the success of scientific method to accelerate economic development, coupled with the problems of rapid expansion of population and its growing demand for food, the situation has undergone a radical change.¹

The issues on water in South Asia ranges from demand and supply to the settlement on riparian rights and pricing of power to water usage.² Even though the region is water rich but there is no reliable plan to use, control and manage this water. Actually water discourse in South Asia has revolved around a whole series of opposing pairs of propositions. For instance, large projects vs small projects, surface water irrigation; irrigated agriculture vs dry land or rainfed farming; large storages vs local conservation, water harvesting and integrated micro watershed development; large hydroelectric projects vs low head generation and mini and micro hydel projects; the creating of additional water resource potential versus the environment.³ Thus, the discourse ranges from state to people, civil society and market forces and there are areas of divergence and convergence between them.⁴ Due to India's central position in the region, these countries share boundaries and common rivers with India leading to issues of river water sharing such as riparian rights.

Rivers have been important source of water from the early human age which mankind utilized for multipurpose uses. Rivers are naturally organized into basin and while flowing, it ignores the man-made political boundaries. The Trans-boundary water i.e. water courses or water bodies part of which are situated in different nations,

¹ *Management of International Water Resources: International and Legal Aspects* (1975), U.N. Document ST/ESA/5, E. 75.ii.A.2:/5.

²Thapliyal, Sangeeta (2006), "Water Security or Security of Water: Understanding Statistic Approach in South Asia" *Security and Society*, 2(2): 113.

³ Verghese,B.G. et al. (1994), *Converting Water into Wealth: Regional Cooperation in Harnessing the Eastern Himalayan Rivers*, New Delhi: Konark Publishers: 144.

⁴Thapliyal, Sangeeta(2006), "Water Security or Security of Water: Understanding Statistic Approach in South Asia" *Security and Society*, 2(2): 113.

have become source of conflict in different part of world. After the Second World War, water sharing problems between the countries had occurred due to the emergence of new independent states. The newly independent states carried extra burden of colonial legacies, unresolved boundary disputes, extreme sensitivity over autonomy issues, unstable political regimes etc. So the conflicts over trans-boundary water have many dimensions like- upstream downstream conflict, sovereignty of nations, territorial integrity, water scarcity and environmental security. The states have tendencies towards maximum appropriation of benefits and lesser sharing with other riparians. Such tendencies can be seen over water resource in South Asia also.

Water is natural resource. It does not follow the man made political boundaries. When it flows from one sovereign international boundary to another, it creates complicated questions in international law. Trans-boundary water resource management is a multidimensional concept which is based on the principles of equal participation, consensus building, long term sustainability and the complimentary of the resource utilization. Thus, it is based on sound and scientific principles, which has many dimensions like political, technical, institutional, legal, policy and planning, monitoring and evaluation.

There are the theory of limited territorial sovereignty; the principle of equitable and reasonable utilization; an obligation not to cause significant harm; the principles of cooperation, information exchange, notification and consultation; and the peaceful settlement of disputes. These principles form the basis of the 1966 Helsinki Rules on the Uses of the Waters of International Rivers (here in after Helsinki Rules) and the 1997 UN Convention on Non- Navigational Uses of International Watercourses.⁵

South Asian countries were under the colonial rule or influenced by them. So after independence, these countries are more possessive about their sovereignty. According to Swain, sovereignty is an age-old term and states, particularly those that

⁵ Rahaman, M.M. (2009), "Principles of Trans-boundary Water Resources Management and Ganges Treaties: An Analysis", *water resource development*, 25(1): 159.

are relatively new are highly possessive about it ⁶. To have sovereignty over something implies to have absolute right over it and no way shared with neighbouring countries. State tries to control and use the natural resources located within or flowing through its territory. Trans-boundary water resources have been the greatest victim of the nations of sovereignty and territorial integrity. The nation compels state to appropriate more and water before it crosses the boundary and share less and less with other basin states, automatically involving conflicts. The conflicts are rooted in the desire of countries not to give away their future i.e. not to relinquish their sovereignty over the most precious development resource water. So, the national sovereignty is the most important geopolitical consideration at the international level and merely all the nation states jealously guard their sovereign powers to manage activities within their own borders.⁷

The rationale for trans-boundary water conflicts are structures on rivers such as dam or barrages that interfere with natural flows and a wide divergence of perceptions between upper and lower riparian. In case of riparian rights in international trans-boundary water conflict, these vary from condition to condition. Like, if upper riparian is a stronger and more powerful then the anxiety of lower riparian become more acute. On the other hand if the lower riparian is more powerful, then it imposes its will on the relatively weaker upper riparian.⁸

The river naturally flows in its own course. It does not have considerations about state boundaries that have been created by human beings. While flowing in its natural course, a river may pass through one political unit to another or from one country to another. All the Nepalese rivers flow through India so there is some conflict between both the countries on basis of water usages. For example, Kosi River, Gandak River, karnali River and Mahakali River.

⁶ Swain, Ashok (1996), "Sharing International River: A Regional Approach", in Gleditsch Nils and Peter (eds.) *Conflict and the Environment*, London: Kluwer Academic Publishers: 134.

⁷ Biswas, Asit k. (1999), "Register of International Rivers: A Personal Reflection", *Water Resource Development*, 5(4): 374.

⁸ Iyer, Ramaswamy (2008), "Transboundary Water Conflicts: A Review", in Joy, K.J. Gujja et al. (2008), *Water Conflicts in India: A Million Revolt in the Making*, London, New Delhi: Rutledge: 369.

Water Resources in Nepal

Water, being one of the key resources of Nepal, has the potential to work as a catalyst for the all-round development of the country. The nature of the terrain of the rivers and streams flowing through Nepal into India suits for generation of hydroelectric power. In fact, a number of sites for large projects have been identified. A long standing estimate of the theoretical potential for the generation of hydroelectric power in Nepal is 83000 mega watts (mw) with the practical or realizable figure put at 48000mw. However, Nepal requires only a small portion of that power signalling huge exporting capacity, primarily to India.⁹ Bhim Subba argues that without water from the many rivers that flow down through Nepal, into the mighty Ganga, which traverses the densely-populated agriculture plain of north India, would only be a fraction of its formidable size. The numerous tributaries that drain the Nepal Himalaya supply more than 40% of the total flow of the Ganga. More significantly, 71% of the river's flow during the critical dry season comes from her Nepali tributaries. With the kingdom's river contributing as much as they do to the lifeline of the Indian heart land, Nepal is sure to play a key role in the future water policy of India. Blaming India, he says that, in future cooperative efforts too, India's emphasis would be on actual water (for irrigation and flood control in India) rather than hydropower, is likely to continue.¹⁰

Geographically, Nepal is an upper riparian of India. It is a landlocked and predominantly mountainous country; it experiences the monsoon. The average annual precipitation is about 1500mm (80 per cent of which occurs during the monsoon season). The spatial and temporal nature of rainfall, result in large variation in surface water flows which, in turn, create surpluses at certain time and places, primarily

⁹Iyer, Ramaswamy R.(2008), "National and Regional Water Concerns: Setting the Scene", in Dutta, Kuntala and Lahiri (eds.) *Water First Issues and Challenges for Nations and Communities in South Asia*, New Delhi: Sage Publication: 12-13

¹⁰Subba, Bhim (2003), "Water, Nepal and India", in Dixit Kanakmani and Shastri Ramchandran (eds.) *State of Nepal*, Lalitpur: Himal Books: 236.

during the four monsoon months and shortages at others.¹¹ There are almost 6000 rivers in Nepal and the total length of water courses is about 45000 kms. Karnali, Sapta Gandaki, Sapta Kosi and Mahakali constitute the main river systems of Nepal and they account for around 80% of the total run off of over 220 billion cubic meters. Despite such enormous water resource Nepal has not been able to fully utilize its water potential due to various factors such as the ratio of low and high flow, seismicity, geology, and infrastructure and economic and sediment load¹².

In terms of per capita availability, average annual per capita availability of renewable water for the present Nepalese population comes to about 9400m³, which is above the global average of about 6600m³. Since only 20 per cent of water will be available for eight months of any year, the per capita availability drops to 1800m³. This means that Nepal's population will also remain close to the water stress level during this critical period.

Drainage System of Nepal

Nepal is a mountainous country that lies on the lap of Himalayas. There are many snow fed rivers, which increases in volume in summer when the snow melts. Nepalese rivers, on the basis of their origin, are classified into three grades: the first grade rivers are Sapta Kosi, Narayani, Karnali and Mahakali which have snow as their source and glaciers in the Himalayan regions of Nepal and Tibet. The second Grade Rivers are Kankai, Kamala Baghmati, West Rapti, and Babai. They are originating from the midland of Mahabharat Range in Nepal. The third grade rivers such as Ratuwa, Chisang, Lohandra, Balan, Lalbakaiya, Sirsia, Rohini, Tinau, Banganga, Mohana, Syali etc originating from the southern slopes of Siwalik/Churia and Mahabharat ranges. The average annual run off from all these rivers is estimated to be about 200 billion m³. All the rivers pass through a boulder stage before descending

¹¹Onta, Iswar Raj (2004), "Status of Integrated Water Resources Management in Nepal: An Overview", in Asit K. Biswas (eds.) *Integrated Water Resource Management in South Asia and South-East Asia*, New York: Oxford University Press: 150.

¹²Sharma, C.K. (1978), *Natural Resources of Nepal*, Kathmandu: Navana Printing works: 199.

into the Terai plains and cross the Nepal-India border in alluvial stages¹³. Thus, the three main big rivers, the Kosi, in the eastern part, the Gandak, in the central part and the Karnali, in the western part- after breaking through the mountain barriers like the Tibetan plateau rim, the main chain of Himalaya, the Mahabharata range, the Churean range, and turning to the east and the west, then drain almost all of Nepal, ultimately make their way to India and join the Ganga. These rivers have the permanent source of snow and glacier. The vast flow of water through a widely spread network of narrow river channels present great possibilities for hydro-electric development such as those of Kosi, Trisuli and Gandak Hydel Projects. These rivers, if properly exploited, can lead to the generation of good amount of hydro-electricity. The volume of water flowing in the second Grade Rivers, like the Baghmati, Kamala, Rapti and their tributaries originating from the spring of the Mahabharata range varies according to season, though, having a permanent source. The river originating in the Churean range from the temporary sources are third grade. These are Sirsia, Bangari, Tilwa, Hardinath, and Ban Ganga etc. who gets water mostly from the monsoon rains only.

Water is one of the most important resources of Nepal which can be used for the all-round development and economic growth of the country, thereby reducing the overarching problems of poverty that the nation is facing at present. The major river systems of Nepal viz. Karnali, Sapta Gandaki, Sapta Kosi and Mahakali account for around 80% of the total run off of over 220 billion cubic metres. These major rivers are greatly assisted by the tributaries of Sapta Gandaki, Kali Gandaki, carving one of the deepest gorge in the world between the Himalayan peaks of Dhaulagiri and Annapurna, with both at more than 8000 metres above the mean sea level. These rivers are difficult to harness for substantial uses unless mammoth project are designed for multipurpose uses, which, in turn, requires huge investments.¹⁴

¹³Dhungal, N. Dwarika and Santa B. Pun (2009), *The Nepal-India Water Relationship: Challenges*, Kathmandu: Springer: 270.

¹⁴ Onta, Iswar Raj(2004), "Status of Integrated Water Resources Management in Nepal: An Overview", in Asit K. Biswas (eds.) *Integrated Water Resource Management in South Asia and South-East Asia*, New York: Oxford University Press: 148-49.

The Kosi River

Kosi River, also called Sapta Kosi, with its seven Himalayan tributaries is a trans-boundary river flowing through Nepal and India. Some of the rivers of Kosi system, such as the Arun, the Sun Kosi and the Bhote Kosi originate in the Tibet Autonomous Region of China. It is one of the largest tributaries of Ganga. Along with its tributaries, the river drains 29400 square kilometer (km²) in China (mainly the upper Arun Basin north of the Mount Everest region), 30700 km² in Nepal (the eastern part of the country) and 9200 km² in India. The river basin is surrounded by the ridge which separates it from the Yarlung Zangbo River in the north, the Gandaki in the west, the Mahananda in the east and the Ganga in the south. The river is joined by the major tributaries in the Mahabharat range approximately 38 km north of the Indo-Nepal border. Flowing into more than twelve districts with shifting course due to flooding Kamla, Baghmata and Budhi Gandak are major tributaries of Kosi in India. Over the last 250 years the Kosi River has shifted its course over 120 kms from east to west. Its unstable nature has been attributed to the heavy silt it carries during the monsoon season.

Kosi is a large river flowing through Nepal into the Indo-Gangetic plain which had historically inundated extensive area in the two countries. The Sone carries the highest flood discharge of Bihar's rivers (40,000 comics) because of its large catchments, followed by the Gandak and Kosi. But, Kosi is the most destructive, on account of its extremely high silt content, like the Huang-Ho, a river of almost equal size in term of flow. The Kosi is aggrading not only because it is confined within embankment but on account of its steep gradient which falls from 0.76 metres to 0.08 per mile (1.6 kilometres) 60 kilometres from its confluence with the Ganga. In last few years since the Kosi was jacketed, the berm within the embankments has risen, resulting in higher flood levels with the same discharge. The rise in the berm level has also rendered many old drainage sluices ineffective. The deepest bed of the river's main flow channel however remains at the same level as before.¹⁵

¹⁵ Verghese, B.G. (1999), *Water of Hope: From Vision to Reality in Himalaya-Ganga Development Cooperation*, New Delhi: Oxford & IBH Publishing Co: 129.

Soil erosion from watersheds deteriorates the productivity of land and minimizes the storage capacity of reservoirs downstream. Detachment of particles of soil, surface sediments and rocks is associated with erosion process like sheets, rill and gully erosion, and mass wasting under the influence of water, gravity, wind and ice. Further erosion is the transportation of material in the suspension and dissolved forms, by stream and glaciers and can be divided into upland and low land phases. A major portion of the sediments enter into the downstream reservoirs, gets deposited and reduce their storage capacity. This phenomenon adversely affects their useful life, hydro power generation, and water supply for irrigation. Change in sediment yields reflect change in basin conditions, including climate, soil erosion rates, vegetation, topography and land use. Excessive erosion from the basin is considered harmful as it leads to the loss of fertile soil cover, poor water retention, reduction in natural vegetation, and further reduction in potential of lands. The rate of soil erosion in the region is proportional to steepness, drainage density and the slop lengths. Severity of the problem is apparent from degradation of soil surfaces, continued decline in productivity of lands, sedimentation of rivers and reservoirs, recurring intense floods. Sapta Kosi, drainage about 9 per cent of Ganga basin, contributed about 40 percent of entire sediment load of the Ganga. Annual sediment yield of Kosi river in Chatra (Nepal) is $3130 \text{ t km}^{-2} \text{ yr}^{-1}$ (tone kilometre squire per year)¹⁶.

Indo-Nepal Water Relation

Water relation between India and Nepal began from the colonial times. Since the time of the Britishers, both the countries have engaged in cooperation in water resources at the official level. In this context, reference is made to a letter of 1874, written by the British-India government to government of Nepal during the time of Prime Minister and Maharaja Jang Bahadur Rana in relation to the three Sagars (ponds) straddling the Nepal India border in Kapilvastu district. This is most probably the first official correspondence between the two countries on water resources.....since

¹⁶Bandyopadhyay j. (1992), "The Himalaya: Prospects for and Constraints on Sustainable Development", in Stone P. (eds.), *The State of World Mountain*, London, UK, Zed Books: 113.

then, the two countries have signed a number of treaties, beginning in 1920, when the Sarda Barrage Treaty was signed for harnessing the water of the Mahakali River¹⁷.

Since independence, India has given priority to water relation with Nepal. The key architect of India's foreign policy, first Prime Minister of India, Jawaharlal Nehru was concerned with maintaining a friendly water relationship with Nepal. He first took the initiative for the Kosi River, on 1954, to harness its water beneficially by both the countries and prevent the devastating floods.

Actually, the episodic disaster of floods in cycles has rendered national concern over floods in India. In 1954, the flood was centred in large parts of Bihar's river of sorrow. The wayward Kosi was put on the agenda of the then Central Water, Irrigation and Navigation Commission as a result of the devastation it brought with it. It had swung 112 kilometres west in an arc from Purnea to Saharsa destroying huge agriculture tracts.¹⁸ Although the British rule in the sub-continent saw proposed collaboration between the two sites, India and Nepal were first able to work out the Kosi project agreement only in April 1954. Under this agreement, India was to bear the total estimated cost of the project- approximately Rs. 450 million. Of the approximate total of 1.5 million acres to be irrigated by the project, only 29000 acres lay in Nepalese territory. India was to pay compensation for land to be acquired in Nepal for the project as decided upon by the Nepalese government and it was to supply (at the price) up to 50 per cent of the hydroelectric power generated under the project to Nepal.¹⁹

The Kosi project became politically controversial in Nepal, soon after it began in 1954. Nepal saw the Kosi agreement as her surrender of territorial rights to India over the project site for an indefinite length of time without adequate compensation and benefit in return. It was also seen as an impairment of Nepal's sovereignty.

¹⁷Dwarika Nath Dhungel and Santa B. Pune, (2009), *The Nepal India water relationship: challenges*, Kathmandu: Springer: 2.

¹⁸Verghese, B.G. (1999), *Water of Hope: From Vision to Reality in Himalaya-Ganga Development Cooperation*, New Delhi: Oxford & IBH Publishing Co: 129.

¹⁹Government of India, (1955), *Kosi and Public Co-operation*, Ministry of Information and Broadcasting, New Delhi. Quoted by, Untawale, Mukund G. (1974), "The Political Dynamics of Functional Collaboration: Indo-Nepalese River Projects", *Asian Survey*, 14(8): 717.

However, the Nepalese Prime Minister, M.P. Koirala, emphatically defended the Kosi agreement and said that “If one is determine to misunderstand a very plain situation, nobody ever can help him realise the fact. India could have very well put the barrage a couple of miles below the present site, if it had no consideration for Nepal. The sovereignty and territorial rights of Nepal have not been impaired by the Kosi Agreement”.²⁰ But his arguments failed to satisfy the domestic critics. The agreement continued to be highly politicized during the remainder of the 1950s, and the Nepalese decision-makers seemed to be under considerable domestic pressure in their dealings with their Indian counterparts. Nevertheless, the two sides were able to set up a Kosi Coordination Committee to provide continuing mutual consultation and cooperation on the project²¹.

During the early 1960s, the implementation of the Kosi project was affected by varying degree of politicization in Nepal, as well as by technical problems. While the cost of the project kept escalating, the Kosi project administration came under increasing public criticism in Nepal. The criticisms were related to compensation for land and rehabilitation of people affected by the Kosi project, discrimination in relation to Nepalese workers and contractor as well as to the granting of project-related advertisement among the Nepalese newspapers, complaints against faulty work, and the need for increased irrigational benefits for Nepal.²² Eminent Nepalese writer, Dwarika Nath Dhungel said that historically, Nepal gained more from colonial India than from Independent India, the British were more fair and transparent than independent India. India has wilfully undermined the concerns of Nepal in both the Kosi and Gandak agreements. India has a long term strategy in relation to its water resources policy with Nepal and is moving with the strategy of getting hold of all the rivers of Nepal and to pick up projects as and when it feels the necessity.²³

²⁰ Press interview of M.P. Koirala held in Kathmandu on 3 June 1954, in A.S. Bhasin(1970), *Documents on Nepal's Relations with India and China*, New Delhi: 148, Quoted by Sangeeta, Thapliyal (1997), “Mahakali Accord: an Integrated Approach to Develop Water Resources”, M.D. Dharam Dasmani (eds.) *Nepal in Transition*, Varanasi: Shalimar Publishing House:128.

²¹Untawale, Mukund G. (1974), “The Political Dynamics of Functional Collaboration: Indo-Nepalese River Projects”, *Asian Survey*, 14(8): 717.

²²Ibid-719

²³Dhungal, N. Dwarika and Santa B. Pun (2009), *The Nepal-India Water Relationship: Challenges*, Kathmandu: Springer: 2-3.

Actually, the importance of water disputes consists in the fact that water is an indispensable means of economic growth and social welfare. It is all the more true in the case of those nations which have achieved independence recently and are anxious to modernise their agriculture and step up industrial production²⁴.

Due to these controversies, the Kosi agreement was revised on 19th December 1966. The main features of the new agreement is that, it has a provision for Nepal to acquire land required for the construction of the project and lease it to India after payment of compensation for a period of 199 years from the date of the agreement at an annual nominal rate. It has provisions for India to use stone, timber, gravel and ballast obtained from Nepalese territory for the construction and future maintenance of the barrage and other connected works upon payment of royalties to Nepal. It has also provision for India to construct a barrage, head-works and other appurtenant works about three miles upstream of Hanuman Nagar town on the Kosi River with afflux and flood banks, and canals and protective works on land lying within the territories of Nepal for the purpose of flood control, irrigation, generation of hydro-electric power and prevention of erosion of Nepal areas on the right side of the river, upstream of the barrage. It has provision for India to compensate at a reasonable rate, as decided by the coordination committee, for land submerged due to the construction of barrage. Still some compensation related issues remain unsettled²⁵. Local political parties had also politicized the issue by supporting the affected people and raising nationalistic anti-India slogans.

Thus, there are hardly any rivers left, the water of which the two countries have not reached an understanding. Yet, the relationship between the two countries in this sector is still unsatisfactory to the people of both the countries. After Nehru, all Indian prime ministers have revived India's water relation with Nepal and some other water related agreements like Gandaki Karnali Mahakali etc. were come on the signing table. But there were some mistrust and domestic politics which prevent the

²⁴Bains, J.S. (1962), *Indo-Pakistan Water Dispute: India's International Dispute*, Bombay: 29.

²⁵ Untawale, Mukund G. (1974), "The Political Dynamics of Functional Collaboration: Indo-Nepalese River Projects", *Asian Survey*, 14(8): 720.

building confidence between India and Nepal on reliable and beneficially water harnessing.

Actually the national water management is the domain of economics, law and governance. It requires transitional linkages, political commitment, mutual accommodation of priorities, concern for each others genuine needs, and issue based dilution of sovereignty rights to jointly develop and manage the resources. As it is also a domain of international relations and diplomacy, it poses much greater challenges. With the immense increase in the use of water, contest between and among different political units for maximizing their respective share of water from such natural sources as rivers is a phenomenon of great economic and political significance in the study of both domestic and international politics. Whereas Ramaswami Iyer analyzes the idea of Indian water management and River basin planning and says that India has no broader concept of river basin planning. India's water basin planning is derived from hydrology and is essentially an engineer's language. A truly integrated planning for basin would involve interdisciplinary planning for the basin, combining land-use and water-use, harmonizing diverse water uses on the demand side and integrating all development- from local rainwater harvesting and micro watershed development to mega projects (and surface water and ground water) – on supply side, while at the same time fully internalizing environmental, ecological, human and social concerns, and fully associating the people concerned (stakeholders) at all stages. That kind of basin planning has not really been seriously attempted in India. Thus, India's basin planning is neither a hydrological concept nor an ecological one. It may also be the reason for no harmonious agreement with their neighbours²⁶.

Due to conflict between India and Nepal on the issue of Kosi river project, it affected the other river projects signed between both the countries. After Kosi River project, Gandak project was signed. But the negotiation leading to the Gandak agreement revived the earlier criticism in Nepal against the Kosi agreement. Several demonstrations were staged in Nepal against this agreement. As in the case of Kosi, earlier, the criticism related to perceived inequality of benefits flowing from the

²⁶Iyer, Ramaswamy R. (2004), *Water Perspective, Issues, Concerns*, New Delhi: Sage Publication: 71-72.

project for Nepal, and the compromise of Nepal's sovereignty and territorial integrity, particularly due to what was seen as the relinquishment of control over the project to India.²⁷ On behalf of these demonstrations King Mahendra dismissed Koirala's government on December 1960. Thus, from 1959 to 1990 there were no other agreements signed between both of the countries. The mistrust and suspicion led to the inclusion of a provision in Nepal's constitution making parliamentary ratification by a two third majority necessary for any treaty or agreement relating to natural resources and likely to "affect the country in a pervasively grave manner or on a long-term basis; in the case of treaties of an ordinary nature ratification by a simple majority was laid down."

Actually, India-Nepal relations began to take a new turn towards the mid-1950s. The emphasis on special ties in India-Nepal relations continued as long as King Tribhuvan was in power in Nepal. In 1955, when his son King Mahendra took the reins of power, he began to give a new direction to Nepal's foreign policy. Anti-Indianism began to grow in Nepal and it became a basis of Nepal's assertive nationalism. Actually, when we evaluate a particular tendency of a country in any specific time period, we must be careful about causes and circumstances behind it. It was a time, when the wind of democracy was blowing and India was fully supporting it. In Nepal, King did not want to transfer the political power to democratically elected Government whereas; India supported enthusiastically those who believed in democracy in Nepal. It was a direct threat to king's plan. On the other hand, there were some demonstrations occurring against India by the rehabilitees of another Kosi barrage site. Demonstration were organised to increase the compensation. Some domestic political parties (left wings) were supporting it, which resulted in a positive condition for the king. The card of 'territorial sovereignty threat' was played against India. It became successful with the support of the left. At that time, Prime Minister G.P. Koirala signed the Gandak Agreement. Similar kind of demonstrations were held. It was supported by political parties. Even though, Koirala defended the issue yet, he was unable to stop the criticism and people were on the road, in the name of sovereignty of the nation. Koirala was dismissed and Panchayat rule imposed on the country. Thus, king's mission was completed for the next 30 years. Demonstrations

²⁷Untawale, Mukund G. (1974), "The Political Dynamics of Functional Collaboration: Indo-Nepalese River Projects", *Asian Survey*, 14(8): 718-19.

were held when other agreements or treaties were signed such as Karnali Treaty, Tanakpaur agreement and Pancheshwar multipurpose project.

B.C. Upreti, analyses the issue and said that, anti-Indian feeling had started taking roots in Nepal for various reasons. Nepal's heavy dependence on India in political, security and economic matters and the resultant Indian presence in that country aroused suspicion about India's intentions. The overbearing attitude of some Indian officials and their excessive involvement was viewed as India's hegemony. All the political parties and group in the kingdom had realised the importance of the Indian influence and tried to seek its support to capture power and retain it. But the increasing frustration felt by the political parties and leaders over their inability to form an effective government resulted in their anger against India. They used the anti-Indian bogey as a stick to beat the government of the day. The Nepalese government tried to remove the misgivings about India's role in Nepal and anti-Indian activities in the country. But when the political situation changed and an assertive monarch came to power, the anti-Indian sentiments were used as a source of assertive Nepalese nationalism. It was conceived that Nepal's Independent personality was overshadowed by India. Hence, the quest for a national identity became the hallmarks of Nepal's foreign policy²⁸. This can be seen in the perspective of former water minister of Nepal Dipak Gyawali. He says that "water is Nepal's biggest and most under-exploited resource, but he questions such beliefs by going beyond the usual practice of government and aid agencies to see water resource development as primarily a construction enterprise"²⁹.

The relationship in water resources between India and Nepal, it exists at both grassroots and official level. The people of India and Nepal have been connected by tradition, culture, etc. and have interacted with each other for centuries. It can be very safely said that India and Nepal could give a new shape and direction to their economies if they could enter into meaningful cooperation in the utilization of Nepal's vast river water potential. It can also be said that both the countries have

²⁸Upreti, B.C. (2003), "India Nepal Relations: Dynamics, Issues and Problems", *South Asian Survey*, 10(2): 262.

²⁹Gyawali, Deepak (2001), *Water in Nepal*, Kathmandu: Himal Books: 105.

failed in this regard. Despite initial headway and later agreements and understanding on many river water development projects, it had not been possible to implement them. India cannot be excused for this, since its wrong perception and delays in taking concrete decisions have impeded cooperation. Nepal on the other hand politicised the water issue and made it an important bilateral issue between the two countries. Nepal's fear appears to be that it will not be able to earn equitable benefits through bilateral cooperation with India. Therefore, at times Nepal has pleaded for multilateral cooperation. As a result no progress has been made in the case of Karnali Mahakali and Pancheswar projects. The implementation of Mahakali treaty is yet to happen³⁰.

Both the states have many common rivers in the Ganges basin. Harnessing the water of these rivers is of vital importance to the economic welfare of both the countries. But as in other parts of the world, political units of these countries try to maximise their advantages from these rivers for themselves. Hence, this area has seen non-cooperation. Even though we cannot categorise the water relation between India and Nepal as an international dispute like the Indus water treaty (between India and Pakistan) and the Farakka (between India and Bangladesh) but water relation between India and Nepal are also not without strains. Because of mistrust and domestic politics, many joint project remains stalled and some open the new window for cooperation.

It is a fact that the issue of Kosi River has not been settled over five decades and has been a major bone of contention between the two countries. The resolution of the Kosi River issue would not only improve the bilateral relations between the countries but also open the possibilities for many other projects. This study will try to explore the importance of the Kosi River Project agreement and also the reasons for its failure. It will focus on the implications of Kosi river project on the other agreements. The study will test the following hypothesis

- 1- The failure of the Kosi River project, which was the first to have been signed between the countries, has adversely affected the other river projects with India.

³⁰ Upreti, B.C. (2003), India Nepal Relations: Dynamics, Issues and Problems, *South Asian Survey*, 10(2): 264.

2- Nepal's domestic politics has an adverse impact on river water cooperation with India.

Thus, the present study would concentrate on the Kosi River project which is the first project that was set up between India and Nepal as early as 1954. Yet, the issue of water sharing has not been resolved even after five decades. There has not been much progress in harnessing the water of River Kosi. Hence, the present study would lay emphasis on the experience of the two countries on Kosi project and its impact on other river water sharing projects. It will also concentrate on the Nepalese domestic politics on water sharing that lead to the controversy between the two countries. The study tries to put these mistrust and lack of confidence between the countries political conditions. The study will try to contribute to an overall understanding of the problems by looking closely into the root causes and thereby providing solutions for them.

The present study is divided into five chapters. The first chapter is introductory in nature. This chapter dealt with an overview of the total river water resources in Nepal and those rivers which pass through Nepal to India. It also dealt with the water resource management in Nepal, the availability and potential of Nepal's river water with some critical aspects.

The second chapter deals with the related policies which focuses on the international laws for river water sharing. It would also provide a glance at India and Nepal's water sharing. This contains the analysis of these policies in the south Asian context. This chapter will deal with the policies adopted by both the countries on river water sharing. It will also discuss international laws related to sharing of river water between upper and lower riparian. It will also deal with the trans-boundary water conflict between the nations like the issues of sovereignty, political, technical, institutional and legal, policy and planning etc.

The third chapter attempts to analyse India Nepal water relation from 1954. The chapter will briefly discuss the problems of water sharing between India and Nepal in the context of bilateral cooperation. It will highlight the emergence of Kosi

river conflict and its main causes. The chapter will deal with how Kosi River is major river basin of Nepal which also causes floods in Bihar. It will also discuss the formation of Kosi Dam and the treaties signed between India and Nepal. And why these treaties were controversial and what are the possible solutions to overcoming these problems.

The fourth chapter focuses on the impact of Kosi River, on other river projects signed between India and Nepal. This chapter will deal with the projects identified by India and Nepal for power, irrigation and flood control. It will deal with the treaties and agreements signed between the two countries. It will deal with the Kosi's impact on the other river projects and the domestic politics within Nepal. It will analyze why Nepal mistrusts India in the case of river water sharing and the possible steps that can be taken by India on confidence building with the people of Nepal and the Nepalese Government. Here, the important theme of discussion is to analyse the Nepal's policy on water sharing and India's response on the issue.

The conclusion gives the summary of the study. It concludes the outcomes of India Nepal water relation. It will contain the critical assessment of water policies of both the countries. It provides a critical analysis regarding the India Nepal water relation on behalf of Kosi issue and testifies the hypothesis. It will also try to answer the research questions. It will also draw conceptual insights on water sharing and resolution of water conflicts.

The proposed study will utilize the primary and the secondary sources and their interpretation making the research questions amply clear. It would be analytical in nature defining the approaches forwarded so far on the related topic. Variables would be refined and all the efforts for their explanatory sustenance will be made. The study would look at the problems and the prospects related to the Kosi river water sharing and would critically analyse its impact on the overall water sharing between India and Nepal. The primary data would include documents of the government agencies, press release, joint statements and organizational reports. The secondary source of data will include books, articles, news reports, and various academic papers. The study will also use information and data collected from various seminars, water ministry, symposium, and think tank analysis of worldwide organizations, interviews and internet sources and documents from relevant websites.

Chapter 2
***Policies of India and Nepal on River Water
Sharing***

Water is a unique resource in the world. It is basic need for survival of life. In 21st century, we have seen a growing concern over water. Such as, growing demands of rising population, expanding industries and rapid urbanization, the environmental agenda including the questions associated with climate change and water sharing disputes between the countries are related to finding strategies for the sustainable management of water. In South Asia, water is always a metaphor of social, economic and political relationship¹.

South Asia is amongst the naturally water-rich regions of the world, where water is the most important natural resource for the nations- not only because the region contains only about three per cent of the world's land and 21 per cent of its population- but because of the extremely fraught nature of the use, control and the management of water.²

Water is one of the key resources of Nepal which has the potential to be the catalyst for the all-round development and economic growth of the country. A large number of rivers and streams flow through Nepal into India, and the nature of the terrain is suitable for generation of hydroelectric power. In fact, a number of sites for large projects have been identified. A long standing estimate of the theoretical 'potential' for the generation of hydroelectric power in the Nepali Himalayas is 83000MW with the practical or realizable figure put at 48000MW. Only a small part of that power can be used in Nepal; the rest would have to be exported, primarily to India³. India can also use the water that flows from Nepal for irrigation. Together with the possibilities of minimizing the damage caused by the floods coming down those rivers from time to time there are possibilities for India to harness the water for large projects such as building dams and reservoirs in Nepal. In fact, India and Nepal have harnessed river waters for hydro power and irrigation purposes such as Kosi in 1954 and Gandaki in 1959.

¹Strang, V. (2004), *The Meaning of Water*, Oxford: Berg, Oxford: 21.

²Dutt, Kuntala and Lahiri (2008), *Water First Issues and Challenges for Nations and Communities in South Asia*, New Delhi: Sage Publication:xxii.

³Iyer, Ramaswamy R. (2008), "National and Regional Water Concerns: Setting the Scene", in Dutt, Kuntala and Lahiri, (eds.) *Water First Issues and Challenges for Nations and Communities in South Asia*, New Delhi: Sage Publication: 12-13.

Trans-boundary River Water Sharing

River is natural gift. While flowing, it ignores man made political boundary. The rivers are naturally organised in to basin. Due to growing demand of water, river water has emerged as key resource for drinking purpose, house hold, industrial, economic as well as all around development. Rivers, since ages, have been important source of freshwater which mankind utilized for multipurpose uses. The Trans-boundary water i.e. water courses or water bodies part of which are situated in different nations⁴, have become source of conflict in different part of world. The geographical perspective of analysis of trans-boundary water resources needs understanding of some issues in the intertwined relationship of regional politics and international relationship. These issues due to which conflicts occurs over trans-boundary water have many dimensions like,

- 1-Upstream downstream conflict
- 2-Sovereignty of nations
- 3- Territorial integrity
- 4- Water scarcity
- 5- Environmental security
- 6- Power position in the regional politics.

River water play an active role in alluvial plain and delta formation ground water level recharging micro climate feature, storage of surface run off and sustaining wet land habitats. Further they are linked to coastal and river rime ecosystem and influence their ecology. River water is significant resource of mankind. Man has been utilizing these water courses like drinking. House hold uses, irrigating fields' navigations etc.⁵

The river water, which is a part of hydrological cycle, is mobile and they are naturally organized into river basin. The river flow its own rule of evolution and

⁴ Tiwary, Rakesh (2006), "Conflict over International Waters", *Economic and Political Weekly*, 41(17):1684.

⁵ Aron, T Wolf, (1995), *Hydropolitics along the Jordan River*, Tokyo: The United Nation University Press: 12.

flowage and while flowing ignores man made political boundaries. It does not have considerations about state boundaries that have been created by human beings. While flowing in its natural course, a river may pass through one political unit to another or from one country to another.⁶ Due to upper riparian, all the Nepalese rivers flow through India. So there are issues related to water sharing between both the countries on basis of water usages. According to Ramaswamy Iyer, there are two reasons for such conflict emerges;

1- Structures on rivers such as dam or barrages that interfere with natural flows,

2- A wide divergence of perceptions between upper and lower riparian.⁷

Generally in the case of water sharing, states have tendencies towards maximum appropriation of benefits and lesser sharing with other riparian. In South Asia most of the countries are newly independent. They are carrying extra burden of colonial legacies like, unresolved boundary disputes, extreme sensitivity over autonomy issues, unstable political regimes etc. So the size of demand, growing resource consciousness and the pressure of economic growth, compels nations to attach strategic significance to water resource.

In case of riparian rights in international trans-boundary water conflict, these vary from condition to condition. Like, if upper riparian is a stronger and more powerful then the anxiety of lower riparian become more acute. On the other hand if the lower riparian is more powerful, then it imposes its will on the relatively weaker upper riparian.⁸ So Indo-Nepal water conflict is mainly due to political complexity not territorial.

Actually, physical and political geography of the basin states play a substantial role in defining the relative bargaining power of the riparian states. Usually the uppermost riparian states in the basin potentially have the greatest bargaining power as they can substantially alter the quantity and quality of water flowing down the

⁶Swain, Ashok (1996), "Sharing International River: A Regional Approach" in Gleditsch Nils and Peter (eds.) *Conflict and the Environment*, London: Kluwer Academic Publishers: 403.

⁷Iyer, Ramaswamy (2008), "Transboundary Water Conflicts: A Review", in K.J. Joy, Gujja et al. (eds.), *Water Conflicts in India: A Million Revolt in the Making*, London, New Delhi: Rutledge: 369.

⁸ Ibid: 370.

river. This situation may allow the upper stream riparian to dictate term to the lower riparian in any negotiations over the shared water, the uniqueness of the physical geography may alter the situation. If the upstream country falls in high gradient zone, storage and diversion possibilities are limited. Because of gravity, water flows from a higher level to lower level regardless of countries political desire to do it. Otherwise in many cases lower contour country can use the resource even if higher contour country wished to deny access to it.⁹

Thus, upper riparian are advantageously positioned in term of sites of reservoirs, hydro-electricity projects based on steep gradients etc. But they usually lack accessibility large flat cultivable land, large market for energy produced etc. Middle riparian states have vast cultivable land but lack storage capacities. They are also troubled by river meandering flooding etc. The countries placed at delta usually suffer from reduced flows due to upstream diversions, seasoned floods siltation, salinity intrusion etc. for example Nepal, India and Bangladesh in context of Nepal's river basin.

The negotiation strength of riparian states is also determined by the power position of the state. Usually the riparian states are differentially placed in terms of economic growth, technological development and military strength. Usually in each basin at least one country is already a dominant regional power. These states places great strategic and economic value on the trans-boundary water resources, they shares with their neighbours. the regional powers have the power to veto or delay any multilateral water accord in their respective basin, when the downstream countries are relatively less powerful than water controlling upstream countries, conflict may less likely. But social and economic insecurity can lead to greater political instability.¹⁰

Regional cooperation in water resources would be possible if riparian countries take due responsibilities for efficient sector management within their respective countries. This would include appropriate pricing policies, conservation,

⁹Jagdish c. Pokharel (1996), *Environmental Resources Negotiation Between Unequal Powers*, New Delhi: Vikash Publishing House pvt. Ltd: 21.

¹⁰Sandra Postel, (1997), "Changing the Course of Transboundary Water Management", *Natural Resource Forum*, 21(2): 87.



demand management, mitigation of conveyance losses. If each country takes responsibility for reducing scarcity of resources for its own population, cooperation between riparian countries is possible.

The national water management is the domain of economics, law and governance. It requires transitional linkages, political commitment, mutual accommodation of priorities, concern for each other's genuine needs, and issue-based dilution of sovereignty rights to jointly develop and manage the resources. As it is also a domain of international relations and diplomacy, it poses much greater challenges. Thus it is based on sound and scientific principles, which has many dimensions like political, technical, institutional, legal, policy and planning, monitoring and evaluation.

The issue of sustainable management and development of international rivers and lakes have not been an easy subject to deal with at major international fora. While there are many reasons for this uneasiness, probably the two most important reasons for this are the issue of

1-National sovereignty

2- The absence of agreement on the management of the vast majority of international freshwater bodies.¹¹

To strengthen their reasons, Asit K. Biswas argues that the first reason, national sovereignty, is a most important political consideration at the country level and nearly all nation-states jealously guard their sovereign powers to manage activities within their own borders. Thus, not surprisingly, the overall discussions on the management of international rivers and lakes have often been not smooth because of national sovereignty questions. The second reason is perceived national self-interests of the countries concerned on countless international rivers and lakes on which operational treaties do not exist at present. The word 'operational' in this context is worth noting since some treaties, such as the one on the Lower Mekong, may be a step in the right direction but are of very limited use since they do not address the complex but important issue of water allocation between the riparian

¹¹Asit, K. Biswas (1999), "Register of International Rivers: A Personal Reflection", *Water Resource Development*, 15(4): 383.

countries in any form. Thus, many countries which are currently negotiating treaties on international rivers with their co-basin counterparts often feel that they would prefer to resolve the problems on the basis of bilateral or multilateral negotiations, rather than through an international legal regime.¹²

Thus the trans-boundary water resource management requires regional approach to solve the diversion yet mutually compatible issue of augmentations, energy productions and transmission, enhancing storage capacities, flood management inland navigation development. There are some common concerns like dam safety, environmental hazard, sedimentations; poor water quality, deforestations resettlement and rehabilitations etc should be required to share by riparian countries.

Theories of Trans-boundary River Water Sharing

International law and convention on Trans-boundary water resource begin to be formulated substantially after the First World War. They serve as managing trans-boundary water resources as well as reducing conflict between the riparian states. But important thing is that these laws have some specific characteristics of each international river basin which vary in term of hydrological, institutional, and legal aspects. In 1958, the United Nations published the first comprehensive collection of information on shared international rivers of the world. This early assessment identified 166 major trans-boundary river basins. In 1978, the United Nation publishes an updated assessment identifying 214 such basins. For over 20 years this assessment guided policy and analysis¹³.

In 1966, the Helsinki Rule was formulated for the use of water of International River. Helsinki rule was very famous and widely discussed between the expertise for international negotiation and collaboration in river basin development. It holds the concept of a drainage basin as an economic and geographical spatial unit within which water resource are treated as the common property of all basin states. Furthermore, they rest on the principle that each basin state is entitled within its territory to a

¹²Ibid: 384.

¹³ Peter, H . Gleick (2000), *The World Water: 2000-2001*, Washington D.C.: Island Press: 27.

reasonable and equitable share of the beneficial use of the water of an international drainage basin. among a relevant feature in a consideration of the measure of an equitable share 'the rules' list the geography, hydrology and climate of the basin in each concerned state, past and existing water uses, social need of each basin state, coast of development and very importantly, the degree to which the needs of the basin state may be satisfied without causing substantial injury to another state in the basin.¹⁴

Thus, Helsinki rules have been widely appreciated as guideline in many places. Like,

- 1- Prohibition of appreciable harm by the way of deprivation of water rights, pollution on other means.
- 2- The right of each basin along or international water way to a reasonable and equitable share its utilization of its water way.

However, Helsinki rule were criticized by many ways on the basis for negotiation, like,

- 1- Full application of Helsinki rule can detract unduly from the autonomy of the states.
- 2- Drainage basin is not always the appropriate spatial unit.
- 3- Fixing of the priority of use may change overtime. In past navigation was the most important of the rivers, but with the increased population and technological change large scale appropriation of water for irrigation become more and more important.
- 4- Moreover priority change over space like in tropical and sub tropical countries irrigation comes into forefront as against temperate regions where generation of hydropower is more important use of water.
- 5- Rule ware formulated by professional organization, which did not represent nation states.
- 6- Radical departure from the traditional channel based international law.

Thus trans-boundary water refers to a water course or a water body, parts of which are situated in different states. The watercourse or water body is conceptualized

¹⁴Moigne,L.G. et al. (1997), *A Guide for Formulation of Water Resource Strategy*, the World Bank technical paper, no.263, Washington D.C. ; The World Bank : 86.

as system of surface or ground water constitute by virtue of their physical relationship a unitary whole and normally flowing into a common terminus.¹⁵

The trans-boundary water conflict and management have dealt with some major problems, like territorial sovereignty, fixing the quantity of water, allocation between conflicting states and regulation or implementation of the decision. For solving these problems, some principle and mechanism has been evolved which has been helpful for solving more or less such problems.

Principle of unrestricted territorial sovereignty, which is known by the name of '**Harmon Doctrine**', the US Attorney General, Harmon enunciated in 1896 says that every nation has absolute sovereignty of the waters flowing in its own territory. The Attorney General based his argument on the principle of the territorial jurisdictions of the sovereign state to justify the action of the United State in reducing the flow of the river Rio-Grande which was ordinarily used by the people of Mexico. This doctrine found favour with upper riparian states while the lower riparians considered it totally unjust. The doctrine was expressly reserved in the American-Mexican Treaty of 1906 and it continued to receive lip service by the USA until 1939. But it was expressly disclaimed as the principle of municipal law in 1922 by the US Supreme Court.¹⁶ This doctrine has been also rejected by Smith as 'Essentially Anarchic... permitting every state to inflict irreparable injury upon its neighbours without being amenable to any control save the threat of war.'¹⁷

The Principle of absolute riparian rights was derived from the English common law principle of riparian rights. This principle is that every riparian proprietor is entitled to the water of the stream in its natural flow without sensible alteration in its character or quality. Pushed to its logical conclusion this principle would enable a state at the mouth of a big river to insist that no state higher up shall

¹⁵ *The United Nations*, (1994), Report of the International Law Commission on the Work of the Forty Sixth Session, General Assembly Records, New York: 197.

¹⁶ State Department Memorandum, Legal Aspect of the Use of System of International waters, Quoted by Ramaswamy, (Oct-Dec 1978), Law Relating to Equitable Apportionment of the Waters of Inter-State Rivers in India, *Journal of the Indian Law Institute*, 20(4): 338.

¹⁷ Smith, H.A. (1931), *The Economic Uses of International Rivers*, London: 144-45.

make any substantially diminution in the water which come down the river. There may be assert area in the upper states needing irrigation and there may be vast quantities of water running vast to the sea past the lower state, nevertheless on the application of this common law principle a lower state can insist that the water shall flow down the river without sensible diminution, even if this means that the upper desert areas shall for ever remain desert.¹⁸

The General Principle of International Law Commission (ILC) 1994 analyses the first basic rule of law the principle of equitable utilization obliges riparian state to utilize an international water course in an equitable and reasonable manner. This rule stresses the equal and correlative rights of the riparian states and ecosystem approach with respect to the use of shared water courses.¹⁹ In other word every riparian states is entitled to enjoy within its territory, a reasonable and equitable share of the use and benefits of an international water course Thus every riparians state is entitled to a fair share of the waters of an inter-state river. What is a fair share must depend on the circumstances of each case, but the river is for the common benefits of the whole community through whose territories it flows even though those territories may be divided by political frontiers. This concept obviously envisages the distribution of the waters of international rivers on the principle of maximum of detriment to each²⁰. But this entitlement is limited by the duty not to deprive others riparian states of their benefits from the international water course.

The second basic rule of international water course law is the obligation of riparian states to use an international water course in such way as not to cause significant harm to other states. The no harm rule sets limitations to the sovereign freedom of states to exploit their water course. But the extent of their limitations on states sovereignty will depend on the way in which the no harm rule is

¹⁸State Department Memorandum, Legal Aspect of the Use of System of International Waters, Quoted by Ramaswmy, (oct-Dec 1978), Law Relating to Equitable Apportionment of the Waters of Inter- State Rivers in India, Journal of the Indian Law Institute, 20(4): 506.

¹⁹Altila Tangi(1997), 'Codifying the Minimum Standards of the Law of International Water Courses: Remark on Part One and Half', *Natural Resource Forum*, 21(2): 112-113.

²⁰Gulhati, Niranjn D. (1973), *Indian Water Treaty: An Exercise in International Mediation*, Bombay: 78.

framed. The problem lies in ascertaining the threshold above which the harmful consequences of use of an international watercourse become legally relevant to the application of the rule.

Thus transboundary water resource management is a multidimensional concept which is based on the principles of equal participation, consensus building, long term sustainability and the complimentary of the resource utilization.

Changing Concept

Due to scientific progress and technological innovations, concept in water resource management has changed. It has shifted from the 'international drainage basin concept' to the 'international water resource system concept'. This shift allows the optimum utilization of all water resources.²¹ Thus, water resource management is multi-sectoral and multi-disciplinary in nature. Here strategies are formulated as a set of median to long term action programme to support the achievement of development goals and to important water related policies. The development goals may be irrigation, hydroelectricity generation, navigation, drinking water facilities etc. while the water related policies might include government decision about water right and sharing eco system presentation micro and medium large project mix²².

Water Politics and Diplomacy in South Asia

In the case of South Asian countries all of them have colonial legacy, due to which these states are very possessive as well as sensitive for their sovereignty. To have sovereignty over something implies to have absolute right over it and no way shared with neighbouring countries. State tries to control and use the natural resource located within or flowing through its territory. Trans-boundary water resource has been the greatest victim of the nation's sovereignty and territorial integrity. The

²¹Asit, K. Biswas (1999), "Register of International Rivers: A Personal Reflection", *Water Resource Development*, 15(4): 384.

²²Moigne, L.G. et al. (1997), *A Guide to Formulation of Water Resource Strategy*, World Bank technical paper No.263, The World Bank Washington, D.C.:1997: 5.

notions compel states to appropriate more and water before it cross the boundary and share less and less with other basin states, automatically involving conflicts.²³ The conflicts are rooted in the desire of countries not to give away their future. I.e. not relinquish their sovereignty over the most precious development resource water.

Sovereignty as a notion also influenced nation's policy where a country has natural reluctance to enter into international agreement. Any agreement to some extent limits the nation's flexibility and reduces its sovereignty. The concern for sovereignty may be strengthened by a country's own nationalism, bad historical relations with basin states, by unreliable and unstable riparian neighbours and by the importance that the nations attaches to erosion of the national sovereignty. So in the South Asian countries the national sovereignty is the most important geopolitical consideration at the country level and merely all the nation states jealously guard their sovereign powers to manage activities within their own borders.²⁴

An international river is almost always a source of international dispute relating to the distribution and use of its water. The hydrology of a river does not change when an international frontier runs across or along it, only the politics changes. The need for developing the water resource vary among basin countries due to factors such as population size, level of economic development, culture practices, foreign policy objectives and availability of alternative water resources. These create vastly different priorities for the use of the resources. Such conflicting demands distort the perspective of basin as a hydrological unity. The inability of the basin countries to work in cooperation lead to wasteful projects for the use of water and also to environmental degradations.

Indian centric position in South Asia and dominance has been overawing in view of its huge size, relative strength, economic and technological capacity, stable political system and the geocentric it, within the region, while the riparian relations are riddled with sensitivities and complexities. Thus the relative location of riparian

²³Tiwary, Rakesh(2006), "Conflict over International Waters", *Economic and Political Weekly*,41(17): 1685.

²⁴Asit, K. Biswas (1999), "Register of International Rivers: A Personal Reflection", *Water Resource Development*, 15(4): 383.

state, regional powers hierarchy economic and technological capacity, cast the shadow over resource negotiations leading to creation of winner and losers. In South Asia water resource development show complimentary and inter dependence in the region but lack of good will, legacy of mistrust suspicion and perceptual difference have adversely affected the joint water resource development.

India-Nepal belong to developing third world countries categories, as for as socio-economic parameters are concerned. Also they are prone to common natural and manmade hazards. For example, flood drought, water pollution, and environmental degradation and sedimentations. River water which is most potent resource between India and Nepal become source of discord, non cooperation and dispute among them. In other word due to growing resource consciousness and notions of territorial integrity, the rivers become the major factors of hydropolitics between them. B.G. verghese says “the issue is essentially political, not technical or engineering”. He further says that both sides have erred.²⁵

Thus India-Nepal water cooperation remained standstill for long after Kosi and Gandak river agreement were signed in 1954 and 1959 respectively. Nepal complained against lesser benefits, inadequate compensation and encroachment over its territorial integrity. Attempts to resolve the disputes and harness the trans-boundary water resources, till now aimed towards site specific and issues limited tradeoffs with the tools of bilateral/ multilateral negotiations. Thus Indo-Nepal river basin represent good example of vast potential and poor realization as far as trans-boundary water resource management and cooperation is concerned. But it was the time of 1996, when Mahakali Treaty was signed. This treaty is based on equal participation and sharing of benefits which appear the new hopes of opportunity for riparian states.

Indian Water Policy

India is the country of monsoonal climate where water availability varies from place to place. Average annual rainfall in the country is about 1170 mile meters. In

²⁵ Verghese, B.G. (1982), “River Waters: Doubts Hamper Agreement”, *World Focus*, 3(3): 19.

volumetric terms, the total precipitation works out to be about 4000 billion cubic meters, after accounting for the losses due to evaporation, the average annual water availability for the country has been estimated at 1869 billion cubic meters, however, in view of hydrological characteristics and topographical constraints, the utilizable water has been worked out to be only of the order of 1123 billion cubic meters which comprises 690 billion cubic meters of surface water and 433 billion cubic meters of replenishable groundwater.²⁶

Increasing population, industrial growth, and urbanization, the demand for water for various sectors is increasing over the years and it has been estimated that as per the existing practice of water use by the year 2050, the overall demand for water resources will be around 1447 billion cubic meters which will be much larger than the water availability of 1123 billion cubic meters. However, with adoption of improved efficiency and better management practices, the overall demand of water can be considerably brought down. The National Commission on Integrated Water Resources Development has projected that the overall demand could be about 1180 billion cubic meters by the year 2050.²⁷

In the Indian constitution water is a state subject as well as centre subject. It is mentioned in article 262, Entry 17 in the state list and Entry 56 in the Union list. So there is a debate that 'is the water belonging to state subject'? Or it is central (Union) subject. According to Entry 17 in state list, Water, that is to say, water supplies, irrigation and canals, drainage and embankments, water storage and water power subject to the provisions of Entry 56 of list I. Whereas according to Union list, Entry 56 runs as, Regulation and development of inter-state rivers and valleys to the extent to which such regulation and development under the control of the Union is declared by Parliament by law to be expedient in the public interest. Thus Article 262 clearly says that "Parliament may by law provide for the adjudication of any dispute or

²⁶ Address and Presentation by U. N. Panjiar, Secretary, Ministry of Water Resources, summary recorded of discussion at the consultation meeting with policy makers for review of National Water Policy held on 28.7.2010: 13.

<http://www.mowr.gov.in/writereaddata/linkimage/NWPsummary8975558236.pdf>.

²⁷Ibid: 13

complaint with respect to the use, distribution or control of the waters of, or in, any inter-state river or river valley.

2-Notwithstanding anything in this constitution, parliament may by law provide that neither the Supreme Court nor any other court shall exercise jurisdiction in respect of any such dispute or complaint as is referred to in clause (I)".²⁸

Ramaswamy Iyer says that the legislative competence of the State Government under Entry 17 of the State List remains unfettered only because parliament has not made much use of the power, vested in it by Entry 56 of the Union List. It is therefore, not quite right to say simply that water is a state subject; it is potentially as much a Central subject as a State subject, particularly as most of the country's important rivers are inter-State.²⁹

The River Board Act 1956, passed by parliament under Entry 56 of the Union List, provides only for the establishment of advisory boards, but no boards even of an advisory kind have been set up under the Act; indeed the Act has remained virtually inoperative. The Inter-State Water dispute Act 1956, enacted under Article 262 of the constitution, has also run into difficulties in recent years.³⁰ First time in 1987, a National Water Policy was formulated which had some authoritative right and seems like organization. In 2002 National Water policy review was come which is reorganized in 2010.

As we know the issues related to water are very complex, on the one hand water resource is undoubtedly an important vehicle for development, but on the other hand is also a social need. It is needed to strike a proper balance between the two. In new National Water Policy, it is considered that each issue like drinking water, management of inter-state river waters and related disputes, erosion, and floods, water quality, depleting ground water, water use efficiency, maintenance of irrigation projects and other related issues may be taken up.

²⁸ Iyer, Ramaswamy (2004), *Water Perspectives, Issues, Concerns*, New Delhi: Sage publications: 22.

²⁹ Ibid: 22.

³⁰ Iyer, Ramaswamy (2004), *Water Perspectives, Issues, Concerns*, New Delhi: Sage publications: 23.

According to the new **National water policy** (A discussion meeting was held on 28th July 2010 in New Delhi),

- Water should be treated as a national resource, like oil.
- Water should be treated as an infrastructural requirement, like electricity is for industry.
- Some States suffer due to scarcity of water whereas some others suffer due to flood. In some States rainwater goes waste to the sea. Steps should be taken to make use of surplus flood water which goes waste.
- Emphasis on demand management and planning
- Integration of command area development with water resources projects
- Establishment of independent water regulatory authority by State Governments
- Review of the interstate water Dispute Act and the River Board Act to make them more effective
- Establishment of a National Water Management Authority including the States.³¹

As per the policy, water is a precious national resource, for optimal benefits the management of water resources has to be made on the basis of hydrological unit by adopting an integrated multidisciplinary and participatory approach. First priority has been assigned to drinking water followed by irrigation, hydropower, ecology, agro-industries, and non-agro industries and then other uses in that order. The National Water Policy emphasizes on groundwater development with reference to the recharge possibilities and consideration of social equity. Simultaneously, due emphasis has been laid on traditional water conservation practices and rainwater harvesting including rooftop rainwater harvesting. The policy highlights the need of physical and financial sustainability of facilities created for water resource utilization. The policy also encourages private sector participation with the objective of resource mobilization and introducing of innovative ideas. The establishment of well

³¹ Address and Presentation by U. N. Panjiar, Secretary, Ministry of Water Resources, summary recorded of discussion at the consultation meeting with policy makers for review of National Water Policy held on 28.7.2010: 15
<http://www.mowr.gov.in/writereaddata/linkimage/NWPsummary8975558236.pdf>.

developed information system for water related data has also been highlighted in the National Water Policy.³²

In south Asian region, rivers form backbone of the agrarian system as well as they are rich in terms of hydroelectric power potential. The economy in this region being subsistence type is largely dependent on the natural water resources. The concept of exploiting water resources carries within it, the idea of transforming nature for the human benefits. As on one hand it has strong positive attributes of sustaining the economy, it also needs to be confronted on account of floods which are common in this region. Hence political decision making on sharing of river water resource not only have international significance of establishing bilateral relations between the concerned nations, it has also implications of establishing an environmental balance through rational policy measure.

Nepal's Water Policy

Nepal has second largest water potential in the world. After the first '*Janandolan*'(1990) Nepal had 'Constitutional Monarchy'. A new constitution came in practice under which there were water related provisions for within the country as well as intra country. Constitutionally, it was first time in which Nepalese policy maker emphasis on the water and introduce new article in which a provision in Nepal's constitution making parliamentary ratification by a two third majority necessary for any treaty or agreement relating to natural resources and likely to affect the country in a pervasively grave manner or on a long-term basis; in the case of treaties of an ordinary nature ratification by a simple majority was laid down. On the other hand for inter country, there were some act like, Water Resource Act 1992, Electricity Act 1992, Industrial Enterprises Act 1992, Water Resource Regulation 1993, Environment Protection Act 1996, Drinking Water Regulation 1998, and Local Self Governance 1999 came in existence.

³² Address and Presentation by U. N. Panjiar, Secretary, Ministry of Water Resources, summary recorded of discussion at the consultation meeting with policy makers for review of National Water Policy held on 28.7.2010: 12.

<http://www.mowr.gov.in/writereaddata/linkimage/NWPsummary8975558236.pdf>.

Water Resource Act 1992 was called Umbrella Act to governing water resource management in Nepal. It pointed out the order of priority of water use. According to this law state is the owner of water in Nepal. It has provisions for the formation of water user associations and establishes a system of licensing and shows concern about water pollution. But the policy makers worked on strategy formulation on water. It was long time from 1995 to 2002 in which the document duly approved by the Nepalese government in January 2002. This document has main objective and principle of Nepal's water policy which helps to understanding the main feature of Nepal's with in state policy as well as intra policy.

For the development of water sector strategy Nepal developed and adopted a set of objectives and policy principles that provided the framework for strategy formulation. These **objectives** are,

- 1-Reduce incidence of poverty, unemployment and underemployment;
- 2-Increase agriculture production and productivity, ensuring food security of the nation;
- 3-Generate hydropower to satisfy national energy requirements and to allow for export of surplus energy;
- 4-Facilitate water transport, particularly connection to a support;

Similarly, the following policy principles were adopted to develop the water strategy

- 1-Development and management of water resources to be undertaken in a holistic and systematic manner, relaying on integrated water resources management (IWRM);
- 2-Water utilization to be sustainable to ensure conservation of the resource and protection of the environment.
- 3-Delivery of water service to be decentralized in a manner that involves autonomous and accountable agencies (e.g., public, private, community and user based agencies);
- 4-Economic efficiency and social equity to guide water resources development and management;
- 5-Participation of and consultation with all stakeholders to constitute the basis of water sector development;
- 6-Sharing of water resource benefits among the riparian countries to be on an equitable basis for mutual benefits;

- 7-Institutional and legal frameworks for coordination and transparency to be an essential future of water sector management; and
- 8-Wider adoption of the best existing technologies and practices, and rapid innovation and adoption of both institutional arrangements and new technologies, to be ensured.³³

It is clear that Nepal thinks water as wealth for nation. But important aspect of these policy principles come out and Nepal accepts that harnessing of water in beneficial manner only with the help of riparian country that is India, that is why Nepal says that 'Sharing of water resource benefits among the riparian countries to be on an equitable basis for mutual benefits.

Nepal's water resources strategy has defined the **strategic output**, like,

- 1-Effective measures to manage and mitigate water-induced disasters are functional;
- 2-Sustainable management of watershed and aquatic ecosystems achieved;
- 3-Adequate supply of and access to potable water and sanitation and hygienic awareness provided;
- 4-Appropriate and efficient irrigation available to support optimal, sustainable use of irrigable land;
- 5-Cost-effective hydropower developed in a sustainable manner;
- 6-Economic use of water by industries and water bodies by tourism, fisheries and navigation optimized;
- 7-Enhanced water related information systems are functional;
- 8-Appropriate legal frameworks are functional;
- 9-Regional cooperation for substantial mutual benefits achieved; and
- 10-Appropriate institutional mechanism for water sector management is functional.³⁴

³³Onta, Iswar Raj(2004), "Status of Integrated Water Resources Management in Nepal: An Overview", in Asit K. Biswas(eds.) *Integrated Water Resource Management in South Asia and South-East Asia*, New York: Oxford University Prss: 152.

³⁴Ibid: 154

Right to Use Water for Hydropower in Nepal.

The Constitution of the Kingdom of Nepal, under Article 12, guarantees the freedom to practice any business or profession, which would therefore include hydropower. This right is upheld by Hydropower Policy 2001 and the Electricity Act 1992 subject to obtaining a licence. The Water Resource Act 1992 provides that the use of water for hydropower shall have priority over the use of water for cottage industries, navigation and recreation but not over the use of water for drinking and domestic use, irrigation or agriculture.

Hydropower Development Policy 2001

Hydropower development policy elaborates the objective of promotion of hydropower development, extension of standard electricity service throughout the country and export abroad. This policy also provides for the sharing of benefit in the local level and promotes involvement of community/cooperative organization, local bodies and private sector in the production, distribution and transmission of electricity. Among others, it also provides functional policy related to the environmental flow, investment, rural electrification and benefit sharing (Royalty sharing), transfer of project, electricity purchase, license, institutional reform etc. The main legislation governing hydropower in Nepal is the Electricity Act 1992 which has provisions to govern the use of water for hydropower production, establishes a system of licensing, sets out the powers, functions and duties of a licence holder. It provides certain financial incentives for licence holders and sets out the powers of the government.³⁵

The Right to Compensation

The Constitution of the Kingdom of Nepal 1990 guarantees right to be compensated for property acquisition. *Article 17 (3)* provides that:

³⁵Water Laws in Nepal (2005), *Laws Relating to Drinking Water, Sanitation, Irrigation, Hydropower and Water Pollution*, Water Aid Nepal: 52.

1-The basis of compensation and procedure for awarding compensation for any property requisitioned, acquired or encumbered by the State in the public interest, shall be as prescribed by law.

2-Compensation is also provided for in the Water Resource Act 1992, the Water Resource Regulation 1993 and the Drinking Water Regulation 1998, and also by the Electricity Act 1992 and Electricity Regulation 1993.

3-*Section 10(3)* of the Water Resource Act 1992 provides that HMG shall pay compensation as prescribed for land, buildings, and equipment or structures relating to utilization of water resources acquired by HMG. The amount of compensation shall be determined on the basis of market price (after deducting wear, tear and depreciation).

4-Similarly, *Rule 34* of the Water Resource Regulation 1993 provides that:

- i. The amount of compensation to be given to an aggrieved person due to prohibition or acquisition shall be determined by the Compensation Fixation Committee.
- ii. Compensation shall be given to the concerned person immediately, except if additional prohibition on the use of the house and land is to be made.³⁶

Indo-Nepal's Water Policies Towards Each Other

Nepal is upper riparian country of India. All the rivers which are flowing through Nepal, merging Ganga in India. So, to harness these rivers and prevent its devastating nature like floods, India and Nepal have signed some agreements for mutual benefits. But they are disputed. For example, Kosi River Project in 1954.

Actually, river water disputes fall into an area, does not easily land itself to solution. Each river dispute is more or less a type by itself. So it is difficult to treat them on by uniform standard. Due to the geographic, socio-economic and political factors each river water dispute presents a different set of problems. So, any laws of international water sharing cannot take all these varying factors into account.

³⁶ Ibid: 64-65.

All the international laws on water sharing have dealt for some special cases. Even though they have dealt some common issues which are found in every river basin, so they are accepted more or less as required by the countries. For example- Helsinki Rule which is based on equitable sharing. It, of course, received broad acceptance by countries as a model of international rivers. But it has its own particular features, so problems of equitable sharing still remain a difficult one.

As for concern India's water policy towards riparian countries, always believe on direct agreement between the riparians. It is generally agreed that the best solution is to be found in direct agreement among the disputing nations. Direct agreement between the countries take away much of the bitterness and resentment associated with the dispute. It also gives them a confidence to handle their own affairs by themselves. Thus, legal considerations are not much more help full for solving the disputes between the nations. The problem of this nature is to be judge more smoothly on political, social and economic consideration than on legal ones.

Thus, as for concern about India's water policy towards Nepal, it is based on equitable apportionment of resources sharing and directs agreement between them. According to U.N. Panjiar, water secretary of India on water policy "We have to adopt a comprehensive approach for planning the development and management of water resources and the objective of comprehensive and integrated planning for development and management of water resources can be achieved only when all sections of the society join hands".³⁷ Even though, India does not follow as it is with Nepal. From the Kosi agreement to Mahakali treaty it is changed by situational condition of Nepal's domestic policy. Opposition left parties in Nepal have long tradition to criticized India in at any rate. Like issues of insufficient benefits of Nepal on water sharing, politics on rehabilitate people, issue of restricted sovereignty, issue of irrigating area and other issues like those. India has been adopting policy like satisfactory in nature for Nepal from beginning. For example in kosi river project, the total cost had paid by India according to provision of agreement but it was not satisfied by the Nepal's oppositional parties. Even though in Mahakali Agreement

³⁷ Address and Presentation by U. N. Panjiar, Secretary, Ministry of Water Resources, summary recorded of discussion at the consultation meeting with policy makers for review of National Water Policy held on 28.7.2010: 10.

<http://www.mowr.gov.in/writereaddata/linkimage/NWPsummary8975558236.pdf>.

which was the best agreement with India according to Nepalese government, was not satisfied the Nepalese critique.

Nepal still follows the out dated doctrine like 'Absolute Territorial Sovereignty' and 'Absolute Riparian Right'. It can be indirectly seen in article 126, introduced in Nepalese constitution on 1990. Actually, Nepal's oppositions have long history to use the sovereignty as a tool against India whenever they reached in any water resource agreement. Nepal always blamed, and suspect to India to encroachment of her sovereignty on uses of water resources. In the Kosi and Gandaki issues, Nepal opposition loud cry out and tears that it is the encroachment of Nepali territorial sovereignty by India and in Tanakpur case, they blamed to 'sell out' to India. Actually in the Kosi and Gandak issue, it was a matter of mainly cost and benefits, technological and site allocation. Nepal's left wing parties have their recordable culture to oppose India in anyhow and create a domestic mob so called mass. They got emotional and physical support those who suffered from barrage site locations. Some civil society and intellectuals also gave their support of this issue. The opposition parties politicised the issue on domestic level and start their bargaining demand for their cheap political means. They always blamed to unequal benefit. Even though, one of the major objective of Nepalese Government on water sharing is (sharing of water resource benefits among the riparian countries to be on an equitable basis for mutual benefits) same as India. Clearly, it can be concluded that Nepal has not strong desire on harnessing the river water with India. India too has not made any concrete policy on water sharing with special reference to Nepal. That is why, India and Nepal has not long term policy to remove the existing problems such as flood and environmental degradation and utilization of water on economic benefits. Hence the conventional area of tension on water sharing needs political rethinking in context of challenges of tomorrow. Even though, one positive step was taken in the form of Mahakali Treaty on 1996. It was a new window of hope, from which, new fresh air was enter in form of new vision, may it convert in another peaceful, cooperative and mutual benefit considerable treaty.

Conclusion

In the case of India and Nepal, we have seen that both the nation have their own internal as well as external water policy which is reliable for inter and intra - nation conflict and cooperation. Nepal has some provision of international trans-boundary river water sharing in her water policy like article 126 in their constitution, which is indirectly motivated by domestic policy, and more attaches to old concept of 'Absolute Territorial sovereignty'. Whereas, India believes on 'Equitable Apportionment' on water sharing and direct negotiation between the riparians. Even though, sharing of water resource benefits among the riparian countries to be on an equitable basis for mutual benefits, is major objective of Nepal's national water policy, but it is need to come in practice without colouration of domestic politics. Whereas, India must consider properly all the disputable points on water sharing with Nepal and solve out them. It is also required to formulation of a new reliable water policy towards Nepal which is generally acceptable by both them. Thus in Indo-Nepal water cooperation, there are many challenges which lie at the political, institutional, archival, financial and legal level. They can be overcome by good will, commitment and long term planning. Thus, Water resources development can become potent tool for ending human misery and improving the quality of life of the people between both of them efficiency managed the shared Trans-boundary water resource can become the nucleus of the development and peace in the region rather of conflict and insecurity.

Chapter 3
*Harnessing the Kosi River: Agreement and
After*

Nepal lies on the lap of Himalaya. All the rivers flowing through Nepal submerges in Ganga River in India. The Ganges basin of India comprising of Uttarakhand, Uttar Pradesh, north Bihar and part of West Bengal has almost all rivers not only originating in Nepal but also having considerable catchment areas lying in Nepal. So water resource is the most important natural resource and form the base of sustainable economic development and prosperity of Nepal. The development of this resource can be harnessed for the benefit of people primarily to meet the steadily growing demands of agriculture and industrial growth, domestic water supply and energy.

Nepal possesses a rich resource endowment in term of water which, in fact, holds the key to the country's progress. Located between the Tibetan plateau and the Gangetic plain, Nepal's unique physical setting along the southern Himalayan slopes has contributed to this natural wealth. Almost the entire area of Nepal lies within the Ganges basin, which is about 13 percent of the total area of the basin.¹ Thus, surface water is the greatest potential renewable resource associated with the economic development of Nepal. It is estimated that some 225 billion m³ (cubic metre) of surface water flows through Nepalese territory annually, which amounts to about 118,200 m³/km². This is about four times the world average.² On the other hand, in terms of per capita availability, average annual per capita availability of renewable water for the present Nepalese population comes to about 9400m³, which is above the global average of about 6600m³.

Nepal is third world poor country where 23 million people depend heavily on agriculture and tourism for their livelihood; approximately 90% of the population relies on subsistence agriculture³. So Nepal is not capable to harness the water beneficially because of lack of capital and technically weak. Large scale water

¹Sajjadur Rasheed, K.B. (1995), "Nepal's Water Resources: The Potential for Exploitation in the Upper Ganges Catchment", in Chapman, G.P, and M. Thompson (eds.) *Water and the Quest for Sustainable Development in the Ganges Valley*, London: Mansell: 90.

²Bhattarai, Damodar(2009), "Multi-Purpose Project" in Dhungel, Dwarika Nath and Pun Santa B.(eds.) *The Nepal-India Water Relationship: Challenges*, Kathmandu,Nepal: Springer: 69.

³Swain, Ashok and Fiona Rotberg (2007), *Natural Resources Security In South Asia: Nepal's Water*, Institute for Security and Development Policy, Stolkhome, Sweden: 7.

resource development projects require huge capital investment and sophisticated technologies. Even though Nepalese government gives the first priority to water development in their development plan but that share is not sufficient. Therefore Nepal has to seek to external assistance for this purpose and in this case domestic politics comes in front.

Trans-boundary Water Resource Management

Trans-boundary water resource management poses slightly different problem as compared to national water resource allocation. International water basins are usually of larger size than the national basins and they are less homogeneous in term of socio-economic and cultural conditions. Secondly, there is a significant degree of variability among laws regulations national policies and priorities⁴, popular consensus technical emphasis and scientific capabilities. Different states have concept of sovereignty over water as well consideration of water security consequently upstream and downstream conflicts can occur easily. The water resource management require international cooperation in order to best manage the water resource and prevent and solved conflicts. However national and international water resource management are often interlinked. The collective impact of mismanagement of the resource by riparian country has cascading effect downstream. The downstream countries may be disadvantageous by the consequence of poor management of choice upstream.

India and Nepal are two close neighbours that have unique relations, unparalleled in many respects. This uniqueness, shaped by geographical, political strategic, socio-cultural and economic factors, has encouraged the two countries to come closer to each other and build a beneficial bilateral relationship. But at the same time, these factors have given rise to irritants and caused constraints in the relations between the two countries. As a result of these complexities, the two have often been viewed as uneasy neighbours. The interaction between the people of the two countries has been so widespread and deep-rooted that it has added an informal

⁴Tiwary, Rakesh (2006), "Conflict over International Waters", *Economic and Political Weekly*, 41 (17): 1684.

dimension to their relations. It is for this reason that it is difficult to understand India-Nepal relation by focussing only on formal diplomatic channels⁵.

The objective of international collaboration is often perceived to be resolution of upstream downstream conflict. But the primary objective is to develop the resource of river basin for the mutual benefit of its several riparian states. Thus the management of trans-boundary water resource has many dimensions, political, technical institutional, policy and planning, operational, monitoring, evaluation and legal etc.

As for concern on river water sharing in South Asia, Verghese, tries to resolve the issue with two broad themes. First, integrated development of the manifold resource in each of the five countries encompassed in the basin- Bangladesh, Bhutan, India, Nepal and the Tibet region of the China to generate wealth and employment and reverse the environmental degradation of decades and century, and secondly, the need for regional cooperation in ensuring optimized solutions⁶. In Nepal's case, Verghese's opinion is that when the ecological degradation has resulted in a decline in agricultural productivity in the populous mid-Himalayan region and has compelled migration to the Terai which has been extensively cleared and settled in the past two to three decades, in this situation, with increasing pressure on the land, Nepal sees its water resources and hydro-electric potential in particular, as a saving grace.

Nepalese River System

Nepal, a small country land locked between China and India, boasts of diverse topological regions and approximately 6,000 rivers and rivulets flowing through it⁷. Its drainage system can be categorised in the form of major, smaller and sub-smaller

⁵ Upreti, B.C. (2003), "India Nepal Relations: Dynamics, Issues and Problems", *South Asian Survey*, 10(2): 257.

⁶ Verghese, B.G. (1999), *Water of Hope: From Vision to Reality in Himalaya-Ganga Development Cooperation*, New Delhi: Oxford & IBH Publishing Co: v.

⁷ Swain, Ashok and Fiona Rotberg(2007), *Natural Resources Security In South Asia: Nepal's Water*, Institute for Security and Development Policy, Stolkhome, Sweden: 7.

basin. It consists of four major river basins, seven smaller basins and several smaller sub basins. The first major group of the rivers viz. the Sapta Kosi, the Karnakli, the Mahakali and the Gandaki are the snow fed rivers. They have their permanent sources of flow due to snow and glaciers, in dry seasons and rain in wet seasons. The second group of rivers called smaller basin viz. the Baghmati, the West Rapti, the Mechi, the Kankai, the Kamala and the Babai originates in the middle mountains, which are mostly rain fed and have low dry season. Rivers in third categories originate in Churia, southern face of the Mahabharat, or in the Terai. These rivers have small catchment areas. Tilawe, Sirsia Hardinath, Sunsari and banganga are some of the rivers in this group. Thus, it is clear that Nepal has a lot of possibilities to harness these rivers for the purpose of hydroelectricity as well as agriculture, industrial and domestic uses.

In Nepal, the first official study by the department of Electricity assessed Nepal's hydel potential to be 83,000MW. It described this resource as Nepal's "greatest asset" since "power means progress". A decade later, King Birendra said that water resource was the "magic key" to and a "catalyst" for all round development⁸. Even though Somnath Poudel presents historical view on water resources development in Nepal and said that for almost half a century, Nepal's economic development efforts have centred on its water resources. The available potential figures have been providing a distorted image to the wider population as well as planners. The bountiful water resources available within the country are turning out to be more of a curse than a blessing. Despite the gift of fertile land, warm climate, abundant water and a vast hydropower potential, a quality of life is still very poor, with high incidence of poverty, unemployment, and a degrading ecosystem. All the prevailing challenges call for a new approach to water sector development⁹.

Nepal's water resource development prospects are not limited to its own development, but can also greatly contribute to the promotion of regional economic development. the potential of Nepal's water resource unfolds great possibilities for

⁸Verghese, B.G. (1999), *Water of Hope: From Vision to Reality in Himalaya-Ganga Development Cooperation*, New Delhi: Oxford & IBH Publishing Co: 337.

⁹Poudel, Somnath(2009), "Water Resource Utilization: Irrigation", in Dhungel, Dwarika Nath and Pun Santa B.(eds.) *The Nepal-India Water Relationship: Challenges*, Kathmandu,Nepal: Springer: 99.

bilateral and regional cooperation, particularly through the harnessing of the cascading Himalayan waters for increased regulated flow for irrigation purpose in the lean season, flood mitigation in the wet season, generation of hydropower and facilitation of navigation¹⁰.

India Nepal Water Relation

Generally, India and Nepal have relatively good bilateral relations. However, both the countries have had many rounds of occasional stressed negotiations relating to hydroelectricity generation, irrigation water, and flood control. Several early agreements about shared projects have been controversial in Nepal such as; the water sharing of the major rivers originating in Nepal and flowing into India has strained the relationship between the two countries. Nepalese feel that they have not been treated equally under the various water-resource development agreements with India, including Sarada, Kosi and Gandak. Negotiations regarding projects on the shared river systems have been dominated by controversies due to a lack of mutual trust¹¹. While both the countries are aware about the potential and necessity of hydro-power, there is a lack of effort, cooperation and political will to transform these benefits into reality.

The Kosi River Project

The biggest river of the Nepal is the Kosi, which drain the eastern third of the country. The kosi's headwaters come from Tibet and its major tributaries are Arun, Sunkosi, and Tamur. Following the three tributaries confluence at the Tribeni, the kosi (now known as saptakosi) cuts through the Siwaliks, emerges into the plain near Chatra and continues its flow towards the Ganges¹². Below the Chatra gorge, where

¹⁰Bhattarai, Damodar(2009), "Multi-Purpose Project", in Dhungel, Dwarika Nath and Pun Santa B.(eds.) *The Nepal-India Water Relationship: Challenges*, Kathmandu,Nepal: Springer: 69.

¹¹Swain, Ashok and Fiona Rotberg(2007), *Natural Resources Security In South Asia: Nepal's Water*, Institute for Security and Development Policy, Stolkhome, Sweden: 8.

¹²Sajjadur Rasheed, K.B.(1995), "Nepal's Water Resources: The Potential for Exploitation in the Upper Ganges Catchment", in Chapman, G.P, and M. Thompson (eds.) *Water and the Quest for Sustainable Development in the Ganges Valley*, London: Mansell: 93.

Kosi enters the plain, there is a sudden break of slope having no sufficient space for the river to pass gradually through stages of grading and maturity resulting flooding.

Kosi is the third biggest of the Himalayan Rivers, next only to the Indus and the Brahmaputra. After entering the alluvial plains, the river wends its way southward through a number of interlacing channels to join the Ganga at Kursela. What makes the Kosi a problem river is the enormous, quantity of detritus it brings down from its catchment basin - on an average, over 81,000 acre feet every year. When the river enters the flat plains, the current slows down and the heavy load of sand and silt gets deposited in the river-bed blocking the flow in the channels. The river is thus forced to abandon its old channels and to cut new ones. While forming new channels, over the years, the river had shown a marked tendency to swing to the west, traversing some 70 miles in the course of 125 years¹³.

Actually, during the monsoon (June-September), cloudbursts, landslides and flash floods are common in the Himalayas. As water flows down from the mountains to the plains, the rivers cut banks and also shift laterally. Before entering the plains, most of the rivers either have high gradients to enable them to transport their bed loads or flow through narrow gorges without any possibility of bed load retention. But when they reach the plains, they spread out and their gradients decrease abruptly. This results in an abrupt decrease in their capacity to transport bed load, which results in a rise in their bed level and thus a change of course and flooding of new areas. Various other factors such as high flow rates of smaller rivers, bed load deposition and glacier lake outburst contribute to the inundation of large area of land¹⁴.

National concern over floods in India has been spasmodic following the episodic disasters that seem to come in cycles. One of the earliest after independence was in 1954 and centred in large part on Bihar's river of sorrow. The wayward Kosi which had swung 112 kilometres west in an arc from Purnea to Saharsa over 130 years, destroying huge agriculture tracts, was put on the agenda of the then Central

¹³Appu, P.S. (1973), "Unequal Benefits from Kosi Development: Cost of Bypassed Institutional Reform", *Economic and Political Weekly*, 8(24): 1076.

¹⁴Dhungel, Dwarika Nath and Pun Santa B.(2009), *The Nepal-India Water Relationship: Challenges*, Kathmandu,Nepal: Springer: 270-71.

Water, Irrigation and Navigation Commission. Although, during the British rule in the sub continent collaboration between the two sites had been proposed, India and Nepal were first able to work out the Kosi project agreement only in April 1954. Under this agreement, India was to bear the total estimated cost of the project- approximately Rs. 450 million. Of the approximate total of 1.5 million acres to be irrigated by the project, only 29000 lay in Nepalese territory. India was to pay compensation for land to be acquired in Nepal for the project- as decided upon by the Nepalese government and it was to supply (at the price) up to 50 per cent of the hydro elected power generated under the project to Nepal¹⁵.

The Kosi Project comprises levies on both sides of the active, channels, a barrage across the river, canal systems, and a hydel station. As flood control was the most pressing need, construction of the embankments was taken up first. The work started in January 1955 and was completed in about four years. The river has been confined within embankments over a length of about 75 miles, the distance between the two embankments varying from 3 to 10 miles. The embankments are estimated to have afforded protection from annual inundation to about 6.5 lakh acres of land in Nepal and North Bihar. The barrage was completed by 1963, and the Eastern Canal was opened for irrigation in a small way in 1964. Work has been completed on the Eastern and Rajpur Canal systems designed to provide irrigation to a gross cropped area of 17.85 lakh acres annually. Work has just started on the Western Canal system. The total investment in the project, at the end of March 1972, stood at Rs 97.53 crores¹⁶.

Actually, the Kosi project became politically controversial in Nepal immediately after the signing of the 1954 agreement. Nepal complained against lesser benefits, inadequate compensation and encroachment over its territorial integrity. Certain aspects of the 1954 Agreement created friction between India and Nepal, the most important of which was the issue of compensation. India was responsible for providing compensation for the land acquired in Nepal as well as all damages done in

¹⁵Untawale, Mukund G. (1974), "The Political Dynamics of Functional Collaboration: Indo-Nepalese River Projects", *Asian Survey*, 14(8): 717.

¹⁶Appu, P.S. (1973), "Unequal Benefits from Kosi Development: Cost of Bypassed Institutional Reform", *Economic and Political Weekly*, 8 (24): 1076.

the course of the construction of the barrage. It was also responsible for the design, construction and operation of the project. Nepal contended that the agreement was skewed in terms of the benefits that accrued to the two countries. In terms of irrigation, for instance, only 29,000 acres in Nepal benefited whereas the barrage had the capacity to irrigate 1.5 million acres. Some groups in Nepal also expressed their displeasure at the submergence of territory and the resultant displacement of people, none of whom received any compensation. India's control and management of the barrage was also considered as an infringement on Nepal's territorial sovereignty¹⁷. It is also blamed that India wanted to have the barrage located as near to its border as possible was possibly to maintain her control over the operation of the barrage¹⁸.

The main Nepalese criticisms of the Kosi agreement related to what was seen as Nepal's surrender of territorial rights to India over the project site for an indefinite length of time and without adequate compensations and benefits in return, and the perceived impairment of Nepal's sovereignty. The Nepalese Prime Minister, M. P. Koirala, emphatically defended the Kosi agreement. However, his arguments failed to satisfy the domestic critics. The agreement continued to be highly politicized during the remainder of the 1950s, and the Nepalese decision-makers seemed to be under considerable domestic pressure in their dealings with their Indian counterparts¹⁹. Nevertheless, the two sides were able to set up a 'Kosi Coordination Committee' to provide continuing mutual consultation and cooperation on the project resulted The Kosi agreements, were amended in 1966 to take care of Nepalese concerns, but the sense of grievance was not wholly removed. The bitterness generated by these experiences coloured all subsequent dealings between India and Nepal. Suspicion and mistrust grew and became a massive impediment to good relations between the two countries. It became de rigueur for all Nepalese commentators to blame India for

¹⁷ Medha, Bisht (2008), *Revisiting the Kosi Agreement: Lessons for Indo-Nepal Water Diplomacy*, IDSA Comment, [Online: web]

<http://www.idsa.in/idsastrategiccomments/revisitingtheKosiagreement-Medha%20Bisht-220908>.

¹⁸Thapa, Bhekh B. and Bharat B.Pradhan (1995), *Water Resources Development, Nepalese Perspective*, Kathmandu: Konark Publishers: 31.

¹⁹Untawale, Mukund G. (1974), "The Political Dynamics of Functional Collaboration: Indo-Nepalese River Projects", *Asian Survey*, 14(8): 717.

playing 'big brother' in relation to Nepal. That India 'cheated' Nepal on Kosi and Gandak and was bound to do so, on other matters became established Nepalese belief.

Phases of Kosi Development Project

The development of the Kosi project took place in three phases. The first phase was the period of the 1950s, when the Kosi Agreement was signed. In the 1960s, the agreement was amended and new clauses were added. And the third phase was the 1980s when India came up with the idea of an alternative to the Kosi Barrage²⁰.

The second phase of the project began with Prime Minister Lal Bahadur Shastri's visit to Nepal in 1965. The Kosi agreement was amended the next year and certain wrongs were rectified. One significant addition to the new agreement was the definition of the lease period. While the earlier agreement did not specify the time line for the Indian presence, the 1966 version stated that Nepal would lease the land for the barrage to India for a period of 199 years. Even this later proved unsatisfactory to Nepal. It was contended that since the overall lifespan of the barrage would not be more than 50 years, the period of 199 years was too long. Power generated was to be shared between the two countries, and the rates were to be on a concessional basis and decided by mutual agreement.²¹

Thus, there are two principal points of contention between India and Nepal: the issue of water rights and the question of the management, control and operation of the barrage. Nepal being an upper riparian and India a lower riparian state, it is important that the two countries seek to arrive at a common framework of perspectives on this subject. They need to arrive at a shared understanding on upstream and downstream rights. The principle of equitable utilisation emphasises on sharing of downstream benefits. At the same time, information sharing and co-

²⁰Bisht, Medha (2008), *Revisiting the Kosi Agreement: Lessons for Indo-Nepal Water Diplomacy*, IDSA Comment[Online web] <http://www.idsa.in/idsastrategiccomments/revisitingtheKosiagreement-Medha%20Bisht-220908>.

²¹ Idbi.

operation on water issues is also an important element. With respect to the second point of contention, joint mechanisms need to be evolved for water management and control. An inclusive approach would forge trust and make both countries accountable for any failure. For India, surrendering water rights could be a problem mainly because it is a lower riparian state and granting total control to Nepal could create domestic anxiety in India. But it must realise that mutual trust and co-operation have to be the foundation for sustainable water relations²².

Geographical proximity and asymmetry have made India and Nepal to be closer to each other. There were various problems in water sharing such as lack of goodwill, inadequate compensation for rehabilitating people, territorial sovereignty, domestic politics and failure of officers for proper implementation of agreement provisions, legacy of mistrust, suspicion to each other etc. But for long time, India and Nepal has engaged in both conflict and cooperation on water sharing. Thus, there have been ups and downs in water relations with India and Nepal at different periods.

India Nepal Water Cooperation

Although, positive relation on the matter of water resource between India and Nepal is more essential but, it is not happen due to extreme sensitivities and divergent interests and approaches of the political parties. India-Nepal bilateral relations have been heavily influenced by politics, marked by emphasis on historical wrongs failure in understanding each other sensitivities and interest, aggressive posture, negative approach, inward looking dynamics of the faction of the political actors in both countries. To appreciate the ramification of the problems with water resources between two countries, it is imperative to acknowledge the political underpinnings of their bilateral relations. On the other hand Ramaswamy Iyer analyses the Indo-Nepal relations is that water-sharing has not been a major issue. There has been no conflict over water. What is involved in the Indo-Nepal context is essentially a question of co-operation in deriving benefits from the water resources by way of hydro-power,

²²Bisht, Medha, (2008), *Revisiting the Kosi Agreement: Lessons for Indo-Nepal Water Diplomacy*, IDSA comment.[Online web]

<http://www.idsa.in/idsastrategiccomments/revisitingtheKosiagreement-Medha%20Bisht-220908>.

irrigation, flood management and perhaps navigation. However, the very attempts at co-operation can give rise to conflicts and have done so. Two early projects, far from promoting good relations between the two countries, caused serious strains in that relationship.²³

The Kosi and Gandak agreements were not regarded as exercises in 'regional co-operation': that term came into use much later. These were essentially projects conceived by India to meet its requirements or solve its problems, with some benefits to Nepal included. That was the way the projects were designed with Nepal's agreement, but they were subsequently criticised in Nepal for conferring substantially more benefits on India than on Nepal, though this was inevitable given the relative magnitudes of cultivable areas in the two countries. The projects also suffered from poor design. Inefficient implementation and bad maintenance: even what was promised was not delivered either in Nepal or in India.

India Nepal water cooperation was started from 1920. But it was 1954 when an official treaty was signed on Kosi River in independent India. Embankments were to be constructed to hold the Kosi to a fixed course. Work on these started in 1955 amidst controversy that any barrage which might be built would silt very soon. Nevertheless, the barrage was taken up in 1959 and the canals were opened for irrigation in 1964 by when flood protection over an area of 210,000 hectares had already created a sense of security and triggered a process of asset-formation. The river stood anchored and its westward migration arrested. Embankments also afforded protection from moderate flooding to over 51000 hectares of Nepal, which further benefited from reduced erosion, an all-weather east-west Bridge over the barrage, some irrigation, and power generation from a small canal-hydel station. Yet, there was a feeling among Nepalese, that remains to this day (and with regard to the Gandak barrage too,) that had the Kosi barrage been located further upstream and the canals differently aligned, the benefits to Nepal from irrigation and flood and erosion control would have been greater²⁴.

²³ Iyer, Ramaswamy R. (1999) "Conflict-Resolution: Three River Treaties", *Economic and Political Weekly*, 34 (24): 1510.

²⁴ Verghese, B.G. (1999), *Water of Hope: From Vision to Reality in Himalaya-Ganga Development Cooperation*, New Delhi: Oxford & IBH Publishing Co: 130.

Several multi-purpose projects (Karnali, Pancheswar, Saptakosi, and so on) have been under discussion between Nepal and India for over three decades, but little progress has been made on any of them, for four main reasons-

1-the long history of mistrust and suspicion characterizing India-Nepal relations makes it very difficult for talk about such projects to move forward. There is a degree of ambivalence in Nepal about entering into close and binding economic arrangements with India.

2-while undoubtedly desirous for exploiting the natural endowment to the country's advantages, the authorities in Nepal have perhaps not been wholly without doubt about the wisdom of embarking on such gigantic investments, quite apart from the formidable task of raising the resources.

3-over the years, environmental concerns (and concerns about the displacement of people) have gathered strength internationally and the climate of opinion has become increasingly unfavourable to such projects anywhere, and particularly so in the seismically active Himalayan region.

4-there is a degree of dissent even within Nepal from the view that the route to prosperity lies in large-scale centralized generation of hydroelectric power for export²⁵.

Since almost all the rivers of Nepal eventually flow in to India, exploitation of water resources of Nepal is the most important aspect of economic relations between India and Nepal. Here cooperation between these two countries is vital, without which the development of water resource and certain other measures like flood control, required for both the countries would be well responsible. While both the countries have cooperated to facilitate certain projects, the area of disagreement between the two is not small, in so far as certain other issues and projects concerned to countries are concerned. But after prolonged discussions and change in political atmosphere during 1990's, the major treaty named the Mahakali treaty (1996) between India and Nepal was signed. This treaty is based on equal participation and sharing of benefits which opens a new window of opportunity for both the country.

²⁵Iyer, Ramswamy R.(2008), "National and Regional Water Concerns: Setting the Scene", in Wasson, Robert J. and Kuntala Lahiri-Dutt, (eds.) *Water First Issues and Challenges for Nations and Communities in South Asia*, New Delhi: SAGE Publications: 14.

Co-operation in water power development between India and Nepal had actually started in 1920 with an agreement to construct a barrage on the Mahakali River along with a hydropower plant within Indian Territory. The agreement provided for mutual exchange of land between the two countries in order to have the project located completely within India. Nepal, under the agreement, was to receive about 28.3 cumecs (1000 cusecs) of water annually, but, since the barrage was under Indian control, Nepal never received more than 12 cumecs (400 cusecs). It serves as an example of the dangers of failure in regional efforts at water resource development when mutual trust and transparency of action are lacking. The kosi river basin, which has nearly one-fourth of the country's total power potential, received early attention from both Nepal and India²⁶.

Mistrust on Water Sharing

IDS Taskforce Report (2010) also stated the mistrust of Nepal to India on water sharing. It stated that the Nepal's deep seated mistrust and grievance towards India on water cooperation are historically rooted in the Kosi and Gandak treaties of the 1950's. In retrospect both the treaties lacked vision. The project also suffered from the poor design, inefficient implementation and bad maintenance. It is also stated that the failure on the water cooperation front are perceived as India's incapacity to forge solid relation with its neighbours.

Actually, Nepal is short of technology and finances to set up dams, India has equally failed to extend meaningful support. Historical water treaties like the Kosi and the Gandak that failed in their purpose have acted as impediment to future cooperation. There is a strong perception in Nepal that India by according far greater priority to its national interest has often overlooked Nepal's interest and that the benefits have been one-sided rather than the mutual. The unstable political situation in Nepal has also contributed to the slow progress on water issues. Even though, it may be noted that 60% of Nepal's existing hydel capacity has been built up with Indian

²⁶Sajjadur Rasheed, K.B.(1995), "Nepal's Water Resources: The Potential for Exploitation in the Upper Ganges Catchment", in Chapman, G.P, and M. Thompson (eds.), *Water and the Quest for Sustainable Development in the Ganges Valley*, London: Mansell.pp-97.

help. Sale of electricity to India ultimately could form the main export earning revenue for the mountain kingdom. that there is a close interdependence between India and Nepal, is evident from the fact that when the royal government approached the world bank for the Karnali Project, the bank shrewdly sought an assurance that India would by the expected 3,600 megawatts of electricity that can be stepped up by an additional 1000 megawatts²⁷. Actually Nepal has the potential of producing 40,000 MW of economically viable hydropower but only manages to produce 600 MW. Ironically, the country experiences 14 hour power cut a week. Moreover its fluctuating political relation with India has deterred water resources development²⁸.

Political Factor

The domestic political compulsion in Nepal also plays a significant role in affecting India Nepal relations. The Nepalese ruling elite always looks towards India for the sustenance of their rules. India's indifferent attitude has lead to anti-Indian attitudes in Nepalese governments of the day. For the opposition political groups, anti-Indianism is the most viable instrument for political mobilization²⁹.

In the context of continuing complaints in Nepal of alleged violation of the kosi agreement by India, the Kosi project coordination committee sought to resolve these issues, including the question of location of the powerhouse. Although the Nepalese government had first given permission to India to build the so-called western Kosi canal in 1961, apparently it had subsequently withheld approval of the construction of this canal through Nepalese territory. Delay in the acquisition of land had led to postponement in the construction scheduled of the Gandak dam on

²⁷Sunanda K. Dutta Ray, "Relation With Nepal: Making the Best Use of Water", Statesman, 7 april 1982.

²⁸ IDSA(2010), *India-Nepal water cooperation*, New Delhi: IDSA: 58.[Onlineweb]

<http://www.indiaenvironmental.org.in/files/book-Water Security-for-India-external.html>.

²⁹ Upreti, B.C.(2003), "India Nepal Relations: Dynamics, Issues and Problems", *South Asian Survey* 10(2): 60.

Nepalese territory. The flood of 1963 had also led to erosion of land in the project areas, and new complaints regarding the responsibility for flood damage³⁰.

Trans-boundary water resource management is often characterized by national interest and other intractable problems. To achieve progress leadership and political commitment are essential. In the national basin the government of the country may have both power and facilities to deal with social administrative and economic problem and can pass especial legislation to meet a gives situation but in trans-boundary water resource management projects, situation is different. the government, on whom it is incumbent to further their countries interest or at least guard, themselves become the claimants and disputants, should they fail to agree, there is no supreme authority automatically available and mutually acceptable to which they can refer. More ever the disputes some of which may be quite minor become political issues and often assume exaggerated significance.

Way Ahead

India is a lower riparian vis-à-vis Nepal. But given Nepal's water surplus, India does not fear beings either denied water or being flooded. Nature has endowed Nepal with bountiful water resources. The problem, many would argue, is of plenty and related mismanagement. Given Nepal's limited capacity and political instability much of the water resources have not been harnessed to their potential³¹.

Water is the one area where large scale Indian private and public sector involvement is possible. The two countries have a tacit understanding in this regard. However not enough effort has been made toward implementing the agreements. Over the years, water issue have been politicised to the loss of Nepal as well as India. Nevertheless, there are vast opportunities for economic cooperation between the two

³⁰Untawale, Mukund G. (1974), "The Political Dynamics of Functional Collaboration: Indo-Nepalese River Projects", *Asian Survey*, 14(8): 719.

³¹IDS A(2010), *India-Nepal water cooperation*, New Delhi: IDSA: 58.[Online web]
<http://www.indiaenvironmental.org.in/files/book-Water Security-for-India-external.html>.

countries³². Thus together with the possibilities of minimizing the damage caused by the floods coming down those rivers from time to time, there are possibilities for India to harness the water for large projects such as building dams and reservoirs in Nepal. In fact, India and Nepal have harnessed river waters for hydro power and irrigation purposes such as Kosi in 1954. This process needs to be channelized more systematically for mutual benefits. The major factors that can make river basin organization a success are,

- 1- Political and financial commitment on the part of member states.
- 2- Clear definition of what the member states require of the river board organizations.
- 3- Defined procedure for interaction between the river board organizations and the actual agencies.
- 4- The organization, incentive structure and staff for the river board organizations that are compatible with its responsibilities and its legal status.
- 5- Focus objectives that concentration on projects that form the common benefits to participating status.

Suggestion

At the same time, one also needs to bear in mind three other aspects. First is the nature of multi-purpose dams. Though the Sapt Kosi High Dam has been considered a feasible solution, detailed studies, especially the report published by the World Commission on Dams, has argued that single purpose dams are more efficient for flood control. The role played by dams in flood management is very different from the role they are called upon to play for irrigation purposes and power generation. For purposes of flood control, reservoirs should have adequate space for adjusting the water flow. But for irrigation and power generation purposes, the reservoir capacity needs to be full.

³²Upreti, B.C.(2003), "India Nepal Relations: Dynamics, Issues and Problems", *South Asian Survey* 10(2): 259.

Another point is related to applying a multi-stakeholder approach, which involves expert analyses from the social and environmental dimensions. A multi-stakeholder approach can prove extremely effective in water management issues as it could help in minimising risks that could adversely affect the lives of common people in the long term. Public consultation, where people are considered as positive stakeholders and a cost-risk assessment should be made to anticipate the trade-off between losses and benefits that would be incurred by the project in future. Multi-stakeholders here would be the private sector, the state government, representatives of civil society and experts on dams who take into account the ecological and social aspects.

The last point is that water cooperation can be an effective antidote to the irritants in India-Nepal relations. Nepal at present has a power potential of 84,000 MW, which can be exploited for the benefit of both countries. While Nepal needs the Indian market for exporting hydro-power; India needs Nepal's resources to satiate its agricultural needs and minimise its power deficit. Problem solving approaches that can result in win-win outcomes should therefore be the primary aim.

Suggestion for Futuristic Aspects on Water Sharing

1- Local initiatives for conservation and changing of cropping patterns can transform water scarce areas into water surplus zones. There are several examples of community leaders coming together to shift cropping patterns from high water intensity crops, such as rice and sugar cane, to less water intensive and better paying cash crops. Check dams, rain water harvesting, community ponds are some of the examples of small and low cost local initiatives. Local communities can also promote security between countries by creating friendly relations and information exchange at the local level in border areas. In light of tremendous damage suffered by the people of India and Nepal following the flooding of the Kosi river, the importance of information exchange and confidence building by communities in the border villages is particularly relevant³³.

³³*International Workshop Report Benefits of Cooperation in the Himalayan River Basin Countries* Singapore, 2-3 December, 2010 [Online web]
<http://www.strategicforesight.com/Singapore%20suggestions.pdf>.

2- Educational exchanges between universities in the India and Nepal can go a long way to clear misunderstanding and enable students to build a regional rather than nationalistic perspective on water and environmental issues. This will be helpful to avoid the short means domestic politics.

3- As water security covers a number of interconnected areas, such as hydrology, geology, geography, social sciences, security it is necessary to bring together different disciplines to be able to make accurate and realistic projections for the future of water courses. Joint research projects between scientists from India, Bangladesh, China and Nepal are required. Joint mountaineering expeditions to glaciers that are the common source of rivers need to be undertaken with a sense of urgency. So far, they have been planned, but not undertaken. Remote sensing, flood control, flow modelling are some of the areas where interdisciplinary research is required. It is necessary to reduce scientific uncertainties with satellite based studies.

4-Cooperation in hydroelectricity is a promising area. It is necessary to set up a working group from experts from 4 countries to examine this area further to look at economic viability, market realities, transmission cost, and a realistic cost benefit analysis.

5-India and China, the two large countries, in the Himalayan region have not signed and are not expected to sign the UN Convention on Water Courses of 1997. There have been further developments in the international water law since then. In the absence of these two countries being signatories to the 1997 Convention, there is effectively no international water law in the Himalayan River countries. It is therefore necessary to explore a regional protocol or agreement which is specifically catered to the needs of the riparian countries of the Himalayan Rivers. As the governments are not expected to enter into any negotiations for a regional protocol, social scientists and legal experts from the concerned countries can form an independent task force to prepare the framework of such a Regional Convention. They should begin this effort by seeking consensus on principles of cooperation, and particularly the principle of fairness as accepted by all.

6-The SFG report '*The Himalayan Challenge*' has proposed the Himalayan River Commission. It is a long term vision. In the short term, it is necessary for independent

experts to come together to prepare groundwork for such a body. It is particularly necessary for them to consider how to establish a dispute resolution mechanism.

7-In order to enhance regional security and cooperation, it is essential to have political ownership. Members of legislative bodies, office bearers of political parties, former ministers who continue to participate in political processes are a link between people and the state. They can encourage the state apparatus for certain policies on the one hand and mobilise the public opinion on the other. It is necessary to have better understanding between political representatives and leaders of the four countries in the form of a forum, which is especially dedicated to the water challenge. It can be in the form of an inter-parliamentary forum on water resources or a broader platform that brings politicians together to discuss the water issue and collaborative solutions in order to enhance overall security of the region³⁴. Even though when Prachanda (Maoist party) was in pm office he had showed some positive sign on water cooperation with India but within Maoist party some leaders have different opinion, like the opposition of Kanali river project³⁵.

Difficulties in Cooperation on Water Resources

It is pointed out that if the Kosi river is silting up fast, India alone is to blame for it, because it is she (Kosi) who decided where the project should be located, and possibly because of the faulty technology of 20 years ago. It is said that Nepal suffered the maximum submergence on account of the Kosi dam while the irrigation benefit to Bihar was 100 percent higher. Power generation was entirely in India, with only a small feedback to the kingdom.

1-Lack of clear-cut strategy for cooperation. Differences in understanding between the two sides persist on the release of irrigation water for the Chandani Dodhra area in the Mahakali treaty.

2-The unsatisfactory implementation of commitments.

³⁴*International Workshop Report Benefits of Cooperation in the Himalayan River Basin Countries* Singapore, 2-3 December, 2010.[Online web] <http://www.strategicforesight.com/Singapore%20suggestions.pdf>.

³⁵IDS(2010), *India-Nepal water cooperation*, New Delhi: 60.[Online web]

<http://www.indiaenvironmental.org.in/files/book-Water Security-for-India-external.html>.

3-There are allegations that India has never consulted Nepal while building the diversion Structure.

4-Non-Cooperation by Nepal for development medium-sized rivers

5-There is a divergence between the two countries on the common methodology of coast sharing of the project in proportion to the benefits.

6- In the Karnali Chisapani Project both the countries failed to reach an agreement on the sharing of coast for different components of the projects and how to apportion the benefits of energy, irrigation and flood control

7- The Pancheswar Multipurpose project has been delayed due to differences between the two countries on coast sharing and prior use of water.

8-In such an environment, embarking on building embankments that 'jacket' rivers to control floods is a wrong approach with an inappropriate technology. It leads to drainage congestion and water logging with severe adverse impacts on the land and its people. Attempting to control floods with earthen embankments along the length of the rivers is bad water science, which fails to address how rain falling outside of the embanked area is to be drained³⁶.

Thus, there are two observations need to be stated as concluding remarks on the discussion so far held. First, the whole problem of the distribution and the delivery has been treated by the policy-makers and its executors as a problem of technical imperfections in the distribution and delivery systems. There-fore, the strategy which has been suggested is heavily weighted in favour of technical solutions underscoring the importance of other factors, particularly the institutional ones Second, the problem of distribution and delivery of water at the chak level is not just a problem of underutilisation of available water but is also linked to the question of equitable distribution of water among the various socio-economic groupings of the farmers. This brings us the problem of the unholy alliance among officials, politicians, and local elites, which is the biggest stumbling block in way of equitable distribution of

³⁶Gyawali, Deepak (2001), "Missing Leg: South Asia's Hobbled Water Technology Choices", *Economic and Political Weekly*, 36(39): 3743.

scarce resources including water. And it is not easy to break this alliance in the existing socio-political framework³⁷.

Conclusion

To Nepal and Bhutan, given their relatively limited cultivable land areas, their water endowment largely represents a source of hydroelectric power, whether for use within the two countries or for earning revenues through export to Nepal. The rivers also hold promise of an escape from its land-locked condition through a navigable outlet to the sea. To India, the water resources represent possibilities of hydro-electric power. Navigation and irrigation, but also the danger of floods³⁸.

The Nepal of 2008 is different. This 'new' Nepal has witnessed internal political changes and a representative power-sharing arrangement. India should be ready to renegotiate with an open mind. The Nepali prime minister had made it clear that the state of damage, which has claimed around 50,000 lives, is unprecedented and that it should be the prime duty of India as per the agreement to repair the damage. Though no statement has come out from the Indian side, scepticism remains over any potential effective water management cooperation agreements between the two countries. At present there remains a looming suspicion over any potential effective water management cooperation agreement. For India cooperation with Nepal is the only solution, due to the limited alternatives available at home. The shadow of mistrust and suspicion could be a costly affair for both countries in the long run. The havoc caused by the Kosi deluge is a grim reminder of the fact that a cordial relationship with Nepal is necessary and that the focus should be on complementary interests rather than confrontational issues³⁹.

³⁷Pant, Niranjana (1981), "Utilisation of Canal Water Below Outlet in Kosi Irrigation Project: Administrative and Community-Level Solutions", *Economic and political weekly*, 16(39): 87.

³⁸Iyer, Ramaswamy R. (1999) "Conflict-Resolution: Three River Treaties", *Economic and Political Weekly*, 34(24): 1510.

³⁹Bisht, Medha, (2008), *Revisiting the Kosi Agreement: Lessons for Indo-Nepal Water Diplomacy*, IDSA Comment.[Online web]
<http://www.idsa.in/idsastrategiccomments/revisitingtheKosiagreement-Medha%20Bisht-220908>.

Chapter 4
***Kosi's Impact on other River Projects:
Nepal's Policy and India's
Response***

India-Nepal relations have been formed and shaped by their geographical contiguity and socio-cultural identities which has influenced their historical past. The historical linkages emanating from the racial, religious and linguistic affinities were possible because of the 1,750 km. long open border which made communication easier and possible. The crossing of the border by the people has not only influenced each other's history, culture and tradition but also had an impact on the political, economic and strategic relations between the two countries.¹

As for concern on water resources, Nepal has large water potential. Its vast water resources have been appropriately termed by experts as nature's bounteous gift to the country. In fact, the perennial nature of Nepali rivers and the steep gradient of the country's topography provide ideal conditions for the development of some of the world's largest hydroelectric projects in Nepal. Current estimates are that Nepal has a theoretical potential of 83,000 mega watt (MW) of hydropower, out of which 42,000 MW is economically feasible. However, the present situation is that Nepal has developed only approximately 600 MW of hydropower. Therefore, more than 98% of feasible generation has not been realized yet.²

Actually Nepal is upper riparian of India. It is under developed country, whereas India is large economic and developing country. Due to developing in nature, India emerges as some of largest economy in the world with approximately 9 per cent growth rate of Gross Domestic Product (GDP). India ranks sixth in the world in total energy consumption and needs to accelerate the development of the sector to meet its growth aspirations. Higher growth trajectories of India's development hinges on accelerated development of energy resources.³ Here, Nepal's overall development depends on the optimum utilization of its water resources, through which India can also be benefited. Harnessing water resources of Nepal can benefit both countries in many ways. India can also help Nepal to develop the projects in terms of technology

¹Thapliyal, Sangeeta, "Changing Trends in India-Nepal Relations", IDSA. [Online web] <http://www.idsa.india.org/an-dec-5.html>.

²*Nepal India Cooperation on Hydropower* (2006), Independent Power Producers Association Nepal Confederation Industry: 1.

³Ibid: 2

and finance, and in turn India can be benefited by importing energy from the Nepali hydro projects. The advent of power trading on a real-time basis will help energy security in the two countries, provide better quality and more reliable power to India, and improve the balance of payments situation for Nepal.⁴

So, emphasis was given on developing economic relations between the two countries with areas identified for joint cooperation. The Joint Communiqué signed on the occasion declared that the countries would cooperate on "industrial and human resource development, for harnessing of waters of the common rivers for the benefit of the two peoples and for the protection and management of the environment".⁵

Indo-Nepal Water Relation

Indo-Nepal water relation was started from colonial India. It was 1910s when British India approached Nepal to harness the Mahakali River. In 1920, the Sarada Treaty was signed. It provided for the construction of a barrage at Banbassa and a power station at Khatima in connection with the Sarada Canal Project aimed at the development of irrigation in what is now called Uttar Pradesh.⁶ After independence of India, the first treaty signed between India and Nepal was Kosi River Project in 1954. Kosi provokes disaster in Nepal as well as in India during monsoon seasons. So it is called the sorrow of Bihar due to destructive in its nature. The main aim of this agreement was to control flood, irrigation and hydropower generation. The third treaty was Gandak signed between both the Governments in 1959. But both the treaties became politically controversial early as signed. They were reviewed 1966 and 1964 respectively. Nepal though, about these treaties that she was "cheated" by India. Thus for long time, there is no another agreement signed between India and Nepal. It was era of 1991, when political change occurs in Nepal and a new form of government was come named 'constitutional monarchy'. Both the Government agreed

⁴Ibid: 1.

⁵Thapliyal, Sangeeta, "Changing Trends in India-Nepal Relations", IDSA. [Online web] <http://www.idsa.india.org/an-dec-5.html>.

⁶Gyawali, Dipak and Ajaya Dixit (2001), "How not to do a South Asian Treaty", in *Himal* <http://www.himalmag.com/apr2001/essay1.html>, quoted by Alline Ballate in *Hydropolitics in Small Mountainous States*: HEI Publication.

for Tanakpur understanding, but it was also become controversial. So from journey of Sarada to Pancheshwar, it was Mahakali treaty in 1996 called Integrated Development of Mahakali Basin come under agreement and opens a new window for another beneficial agreement.

The Kosi Controversy

The Kosi River is the third biggest river in Ganga Brahmaputra basin. It is the largely silt-loaded river of Nepal. During the monsoon period, it regularly provokes disasters in Nepal but especially in the Indian state of Bihar where it is called the 'river of sorrow'. Due to her devastated character, India and Nepal government mostly concern about it to flood control, irrigation and hydropower generation. For these purposes, India had built a barrage and a pair of embankments in a special site located 8 miles upstream of Hanuman Nagar town inside Nepal under the provision of Kosi Agreement. Two canals were planned to drain water from either side of the barrage thereby transferring it for irrigation to the Indian Territory as well as Nepal southern agrarian land.

Actually, after the signing treaty, Kosi project became immediately controversial. 'The main Nepalese criticisms of the Kosi agreement related to what was seen as Nepal's surrender of territorial rights to India over the project site for an indefinite length of time and without adequate compensation, and the perceived impairment of Nepal's sovereignty.'⁷ The issue was coloured by political parties to gain their cheap political means in domestic level. The issue was continuously fired during 1960. Mukund Untawale mentioned it and said that during the early 1960s, the implementation of the Kosi and Gandak projects was affected by varying degrees of politicization of each in Nepal, as well as by technical problems. While the costs of the project kept escalating, the Kosi project administration came under increasing public criticism in Nepal. The criticisms related to compensation for land and rehabilitation of people affected by the Kosi project, discrimination in relation to Nepalese workers and contractors as well as to the granting of project-related

⁷Untawale, Mukund G. (1974), "The Political Dynamics of Functional Collaboration: Indo-Nepalese River Projects", *Asian Survey*, 14(8): 717.

'advertisements among the Nepalese newspapers, complaints against faulty work, and of the need for increased irrigational benefits for Nepal.⁸

Actually, it was time of 1960 when King Mahendra took all the power of the state and dismissed the democratic elected government of B.P. Koirala. India Prime Minister Jawaharlal Nehru condemned strongly this act of the King and said that it is the 'set back of democracy' in Nepal. At the same time Kosi issue was in under criticism in Nepal. So to counter the India, Kosi issue was politicized and presented as hegemonic act of India. At that time, relationship between India and Nepal became increasingly difficult.

The Kosi river system has been used to illustrate the controversy about upstream land-use and flooding in the Himalaya. Perceived changes in the vegetation cover of the Kosi basin in Nepal have been blamed for increases in flood damage downstream in India. The brief records of stream flow and rainfall from stations in the Kosi basin have been examined to determine if there is any basis for claims of increasing annual volume and flood magnitude. The available evidence suggests that large floods in the Kosi River and its tributaries have not become more frequent since 1964. Improved knowledge of the hydrology of the Kosi basin should reduce the potential for conflict between India and Nepal, focus flood-control efforts on the lowlands where flood proofing and warning strategies are effective, and improve the basis for bilateral co-operation in developing the region's water resources.⁹

Kosi's Impact on the Other River Project

Gandak Irrigation and Power Project

Gandak is the one of the largest and snow fed river of Nepal. It flow western part of the Kosi. To beneficial harness the water of Gandak and control the flood, a treaty, Gandak irrigation and power project was signed between India and Nepal in 4

⁸Untawale, Mukund G. (1974), "The Political Dynamics of Functional Collaboration: Indo-Nepalese River Projects", *Asian Survey*, 14(8): 719.

⁹Kattelman, Richard (1991), "Hydrologic Regime of the Soft Kosi Basin, Nepal", in *Hydrology for the Water Management of Large River Basins*, IAHS Publication: 146.

December 1959. It was a time when Kosi issue was politically coloured. Its impact can be seen on Gandak as well, when the domestic reaction of the Gandak Agreement in Nepal was again roughly equally divided between its supporters and critics. Somewhat typical of the Nepalese politics was the fact that two former Prime Ministers of Nepal, who had been favourable to the Gandak project when in office, now opposed the agreement vehemently. Tanka Prasad Acharya castigated the B.P. Koirala government for “surrender of a part of the country for good to a foreign power.” Dr. K.I. Singh’s blistering attack on the Nehru’s government accused it of following a policy since 1950 “of gobbling up Nepal, through its puppet Koirala governments from time to time. Even with in the B.P. Koirala cabinet, there were said to be three different opinions on the Gandak project agreement. Several public demonstrations were staged in Nepal against the agreement, and some of these resulted in arrests. As in the case of Kosi earlier, the criticisms related to perceived inequality of benefits flowing from the project for Nepal, and the compromise of Nepal’s “sovereignty and territorial integrity”- particularly due to what was seen as the relinquishment of control over the project to India.¹⁰

The negotiations leading to the Gandak agreement revived the earlier criticism in Nepal against the Kosi agreement. The newspaper commentaries were split about evenly in opposing and supporting the proposed Gandak project. Informed by the experience of the Kosi agreement, the Gandak project agreement of 4 December 1959 provided for India’s bearing of the total cost estimated at Rs. 505 million, a barrage of Bhainsalotan- about half of the length of which was to be in each nation’s territory, irrigation of about 3700000 acres of land in the two countries, and generation of 20,000 kws. of power from two power houses – each with a capacity of 10,000 kws., one of the Indian side and the other on the Nepalese territory. India would spend about Rs. 23 million for irrigation facilities in Nepal. Nepal would receive water free of cost for irrigating about 144,000 acres, and be assured of water supply for an additional 200,000 acres in the future. India would spend about Rs. 45.1 million for power generation, of which Rs. million was to be expended for Nepal’s benefit. Nepal would also receive the powerhouse on its side as a gift.¹¹

¹⁰ Untawale, Mukund G. (1974), “The Political Dynamics of Functional Collaboration: Indo-Nepalese River Projects”, *Asian Survey*, 14(8): 718-19.

¹¹ *Ibid* -718

Mutual distrust and suspicion regarding the sharing of “mutual benefits” between India and Nepal have delayed the joint effort to develop and utilise the hydro-power potential. The Kosi agreement (1954) was opposed in Nepal on the ground that major benefits went to India. The opposition contended that Nepal received a minute share in the irrigation facilities, and the settlement of silt due to water storage facilities, would damage the agriculture land. The critics alleged that the territory ceded to India was against Nepal’s sovereignty and the compensation paid to the farmers was unjust and unfair.¹²

Subsequently, similar grievances were voiced in Nepal with regard to the Gandak project as well. The Nepalese government formed a ten-member Kosi Project Inquiry Committee of its own, which submitted a report that was, however, not made public. In the context of continuing complaints in Nepal of alleged violation of the Kosi Agreement by India, the Kosi Project Coordination Committee sought to resolve these issues, including the question of location of the powerhouse. Although the Nepalese government had first given permission to India to build the so-called Western Kosi Canal in 1961, apparently it had subsequently withheld approval of the construction of this canal through Nepalese territory. Delays in the acquisition of land had led to postponement in the construction schedule of the Gandak dam on Nepalese territory. The floods of 1963 had also led to erosion of land in the project areas, and new complaints regarding the responsibility for flood damage.¹³

Thus, the two treaties concerning the Kosi River and the Gandak River were signed respectively in 1954 and 1959 but their implementation was delayed for a long time. These treaties were subject, indeed, to high criticism within Nepal and the domestic pressure was such that successive Nepali governments (Nepal was then experiencing a particularly unstable political life with many short-term governments) had to renegotiate the treaties. India accepted to amend them in 1964 and 1966 (and again slightly in 1971 and 1978) after months and even years of talks. Despite

¹²Rose, Leo E (1971), *Nepal Strategy for Survival*, Berkeley: 199-200, quoted by Thapliyal, Sangeeta (1997), “Mahakali Accord: An Integrated Approach to Develop Water Resources”, Dharam Dasmani, M.D. (eds.) *Nepal in Transition*, Varansi: Shalimar Publishing House: p-128.

¹³ Untawale, Mukund G. (1974), “The Political Dynamics of Functional Collaboration: Indo-Nepalese River Projects”, *Asian Survey*, 14(8): 719.

significant modifications in the provisions of both treaties, Nepalese opinion remained that Nepal policy makers were Indian puppets selling off the water resources of the country to India. To have a better understanding of the current water resource relation between India and Nepal, it is important to look carefully at the provisions and amendments of the Kosi and Gandak Treaties whose regime profoundly shaped the current water relations between the two countries.¹⁴

Revising the Kosi Agreement

1-In the 1966 agreement, the sovereign rights of Nepal over the territory of the project were restored. The territory was no longer surrendered for an indefinite length of time but was leased to India for a period of 199 years.

2-After that, the constructions would become Nepal's property in exchange for agreed compensations.

3-The rest of the renegotiation concerned mainly the Western Canal. Nepal kept opposing the construction of such a canal through its territory, unless India accepts Nepal's demand. Nepal asked for a realignment of the canal in order to increase the irrigated acreage in Nepal (from 30,000 to 70,000 acres in the Saptari district).

4- Nepal also asked for royalty on power generated and utilized in India as well as 50% of the power (10,000kW).

5-Nepal required also that India construct transmission lines to mutually-agreed points on the India-Nepal border. As a consequence of these successive renegotiations (The 1966 amendments of the treaty were followed by further renegotiations that were not subject to formal codification in a treaty), the barrage and the Eastern Main Canal were completed in 1962 and the construction of the Western Main Canal would not start before 1972. It eventually became operational in 1982. Opinions are divided on the assessment of the degree of 'fairness' of the Kosi Treaty.¹⁵

¹⁴Baillat, Aline (2004), "Hydropolitics in Small Mountainous States Two Cases of Cross-Asymmetries: The Kingdom of Lesotho and the Republic of South Africa and The Kingdom of Nepal and the Republic of India", *working paper*, Geneva HEI publication: 26.[Online web]
<http://graduateinstitute.ch/webdev/site/international-law/.../Baillat.pdf>.

¹⁵ Ibid: 27.

The agreement reached on the Gandak project (1959) received criticism from those opposed to B.P. Koirala's Government and gave the shape of an anti-Indian tirade. Nevertheless, the criticism against India had some truth. Lack of coordination between the foreign ministry, finance ministry and technical agencies; labour related problems such as strikes, agitation for better wages, working conditions; and corruption led to delay in the execution of the project and increased the cost of construction.¹⁶

Thus, it is the clearly occasional blunders and stupidities by India lent a degree of credibility to such accusations. No Nepalese politician was willing to take the risk of signing or supporting any kind of treaty or agreement with India; and the ruling political party at any given time was liable to be severely criticised by other parties in the event of its reaching an understanding with India on any matter. Against that background, none of the projects - Karnali, Pancheshwar, Saptakosi which had been under discussion between the two countries could make any real headway. The mistrust and suspicion led (quite understandably) to the inclusion of a provision in Nepal's new constitution making parliamentary ratification by a two-thirds majority necessary for any treaty or agreement relating to natural resources and likely to "affect the country in a pervasively grave manner or on a long-term basis"; in the case of treaties of 'an ordinary nature' ratification by a simple majority was laid down.¹⁷

On the other hand, Elhance mentioned that Kosi and Gandak projects as a positive undertaking for Nepal, especially if one considers the fact that Nepal 'was and remains unable to construct large water projects on its own.' Nepal indeed receives 'some water for irrigation, protection against floods, an estimated 10 MW of electricity, and a valuable bridge that linked the eastern and western regions of

¹⁶ Muni, S.D. (1992), *India and Nepal: A Changing Relationship*, New Delhi: 148, Quoted by Thapliyal, Sangeeta (1997), "Mahakali Accord: An Integrated Approach to Develop Water Resources", in Dharam Dasmani, M.D. (eds.) *Nepal in Transition*, Varansi: Shalimar Publishing House: 129.

¹⁷ Iyer, Ramaswamy R. (1999) "Conflict-Resolution: Three River Treaties", *Economic and Political Weekly*, 34(24): 1512.

Nepal.’ It is a difficult exercise to try to assess the costs and benefits linked to such projects.¹⁸

The concept of water sharing with neighbouring country has some calculations by political parties of the country, to deal with another country relation. Sangeeta thapliyal explained it as the agreement reached on water resource with a neighbouring country can have political utility for the ruling and opposition parties. If the ruling party is particularly inclined towards a country, be it for ideology, common interest or support for survival, then it can adopt a soft approach in bargaining for benefits. The government can gain ample political utility by blaming for ill-intentioned neighbour on failing to reach bilateral agreements. By decrying an agreement as compromising a nation’s sovereignty, the opposition leaders have a two-pronged strategy- first; undermine the validity of the government; second, gain public sympathy through narrowly defined nationalism. Sometimes the opposition can take a stand on the dictates of another country and create obstructions on the policies and programmes of ruling party. These trends can have strong impact on the future agreement on economic cooperation or joint ventures that a country can take with the help of another.¹⁹

Bubnesh kumar Pradhan opines is that, whereas India thinks it has helped Nepal in harnessing her water resources, Nepal feels that it got a raw deal in all the agreements and the treaties signed between the two countries on the development of water resources. He gives the example of Chatara canal drawn from the Kosi river in the in the eastern part of the country and the silt problem there, the Gandak irrigation waters, the west Rapti case and the manusamara case.²⁰

¹⁸ Elhance Arun, 2000, “Hydropolitics :Grounds for Despair, Reasons for Hope”, *International Negotiation*, (1)5 : 181.

¹⁹Thapliyal, Sangeeta (1997), “Mahakali Accord: An Integrated Approach to Develop Water Resources”, Dharam Dasmani, M.D. (eds.) *Nepal in Transition*, Varansi: Shalimar Publishing House: 129.

²⁰Dhungal, N. Dwarika and Santa B. Pun (2009), *The Nepal-India Water Relationship: Challenges*, Kathmandu: Springer: 7.

The Karnali Project

After Kosi and Gandak controversies, Nepal consulted international community to develop their water resources. In this way, she tried to gain autonomy from India by relying more on foreign aid. As a result many hydroelectric stations were offered as gifts to Nepal from competing donors, Like Russia (offered the 2.4 megawatt Panauti hydroelectric plant), China (offered the 10 megawatt Sun Kosi hydroelectric plant) and other International aid agencies. In this way, the Karnali project proposed to India by Nepal to move away from the Kosi-Gandak water relations and to start a more 'equal' relationship. The main idea behind it was that Nepal would produce a lot of hydroelectricity on its territory and sell it to India. India was also wanted to have greater responsibility in the project. India desired to continue on a Gandak or Kosi model. Thus, the feasibility study of 10,800 MW Karnali Chisapani Project was carried out by Nepal in 1984 with the financial support from World Bank and technical supervision was jointly done by Nepal and India.

The major issues of concerns to develop this project are:

- 1- Sharing of cost on different component of the project
- 2-Conflict on benefit calculation of energy, irrigation, flood control etc (hydropower development).²¹

Thus it was an attempt to develop independent water resources, but main policy of Nepal was concern to get maximum benefits.

Tanakpur Controversy and the Domestic Politics

The significant change in the political relationship between India and Nepal was the frankness in negotiations and discussions which was virtually absent during the monarchy which looked towards democratic India with suspicion. However, the change of the political system from monarchy to multi-party democracy in Nepal did not bring forth changes in its political culture. For instance, the erstwhile monarchy and the Panchayat regime had used anti-India slogans to counter any opposition at home and stabilise their power by heightening the passions of the people. After the

²¹*Independent Power Producers Association Nepal Confederation of Indian Industry* (2006), "Nepal India Hydropower Cooperation Development-2006", SARI/E Small Grants Program: 33.

change of the political system, those not in power used similar tactics to criticise the government in power. The Nepali Congress is considered to be pro-India and the Opposition utilised this label to criticise the government and involved India's name to give authenticity to their charges. The perfect case was of Tanakpur. The Opposition considered Tanakpur as a sell out to India. They claimed that India had constructed the 577 metres of the bund in the Nepali territory without the government's approval. Koirala blamed the Opposition for instigating anti-India feeling in Nepal straining the upward movement in their relations. He said, "We have not compromised our sovereignty with India."²²

The main suspicion of Nepalese people was, on the term use 'Understanding' on the case of Tanakpur agreement. The opposition parties were giving political colour of this issue. They framed it as a secret treaty and sell out to India. So on the behalf of it, Prime Minister Koirala gave a public speech about his India visit at Kathmandu City in the interest of transparency, and to counter allegations of any 'secret treaty'. He promised to make public the agreements via the official Nepal Gazette, which was subsequently done on end of December, 1991.

The issue was continuously politicised by the opposition, mainly left parties. They started a street agitation against the Koirala's government. They were fighting the issue by two ways. One was legal and another was by disrupting the parliamentary winter session. Advocate Bal Krishna Neupane filed a writ at Supreme Court challenging this 'understanding'. He was appealing to the court to have it declared a treaty requiring parliamentary ratification by a two-thirds majority as per Article 126(2) of Constitution of Nepal. On the other hand, when the winter session of the parliament was started, the communist opposition gheraoed the rostrum of the lower house. They were demanding to the government to put all the documents on the table before the house relating to the Tanakpur 'Treaty'. Whereas, the government defending the issue and said that it was only an 'understanding' and everything relating to it had already been published in the Nepal Gazette.

²²Thapliyal, Sangeeta, "Changing Trends in India-Nepal Relations", IDSA. [Online web]
<http://www.idsa.india.org/an-dec-5.html>.

At the end, the government and opposition reached a negotiation. They formed an all-party special committee of the parliament to try and find a consensus on the issue. The all-party special committee of the parliament held extensive meetings and invited external specialists as well as government experts to the hearings. It was, however, unable to reach a consensus as sharp divisions remained regarding the actions of the government and the interpretations of the constitutional provision. Instead of a single document, there were three different reports presented by the committee to the lower house of parliament on September 7, 1992. In a memorandum submitted to the chairman of the upper house dated September 9, 1992, eight communist factions (including the UML, Unity Centre, United and Masal) state that the Tanakpur 'understanding' signed by Prime Minister Koirala was a treaty which could only be implemented after ratification by a two-thirds majority in parliament.²³

The degree of politicization of this issue can be understood to see the behaviour of Nepali Congress supreme leader Ganesh Man Singh. He refused to attend the meeting and fired what is popularly known as a 'letter bomb' to the chairman of the Nepali Congress. In his epistle of March 8, 1992, the Congress supremo declared: "Passing the Tanakpur Treaty by a simple majority of the lower house of parliament would be the equivalent of signing a death warrant. My conscience prevents me from putting my signature to it. Please do not compel me to go against my conscience."²⁴

On the other hand, on December 15, 1992 the Supreme Court of Nepal decided that the Tanakpur agreement was indeed a treaty. It is not an 'understanding'. So it would have to be presented to the parliament for ratification as per Article 126 of the Constitution of Nepal. But higher court denied the demand of petitioner which was to require parliamentary ratification by a two-thirds majority as per Clause (2) of Article 126. Court left it upon the parliament to decide whether the ratification should be by a simple majority or, if the matter was deemed to be "pervasive, serious and long-term", to be ratified by a two-thirds majority.

²³Gyawali, Deepak and Ajay Dixit (1999), "Mahakali Impasse and Indo-Nepal Water Conflict", *Economic and Political Weekly*, 34(9): 555-56.

²⁴Gyawali, Deepak and Ajay Dixit (1999), "Mahakali Impasse and Indo-Nepal Water Conflict", *Economic and Political Weekly*, 34(9): 556.

Clearly, it is a matter of domestic politics of Nepal and impact of kosi river project which create mistrust for long time. Suspicion and mistrust created the base for people agitation against India as well as Nepali congress.

On the behalf of the Supreme Court decision, the government constituted a committee, chaired by Lok Raj Baral (Baral Commission) to evaluate the impact of the agreement. The committee fixed six criteria to define whether this river development initiative and the agreement associated with it constituted "all encompassing, serious and long-term" issues. They were: (a) If a single treaty were done to regarding use of several different river basins of Nepal, the treaty should be considered "all encompassing, serious and long-term"; (b) If a treaty is made for an entire river basin, then the treaty should be considered "all encompassing, serious and long-term"; (c) Run-of-river hydroelectric projects (with no water storage) will be excluded from this definition; (d) This definition would apply to storage projects of capacity greater than 1000 MW and capacity factor less than 0.3; (e) This definition would also apply to projects whose costs would be large compared to economic indicators such as annual GDP, and where sovereign loans are involved which would have to be paid back not just by the current generation making the decision but by future generations or which would be difficult to pay given the state of the economy; and (f) The definition would apply to projects with large reservoirs where resettlement is difficult to handle within Nepal's finance, land availability, etc. Based on these criteria, the compensation that Nepal received for allowing India to use 577 m of Nepali land to complete the 120 MW run-of-river, the renegotiations that occurred during the visit to Kathmandu of Indian Prime Minister Narasimha Rao that delinked Tanakpur from future developments upstream at Pancheshwar, as well as other benefits that would accrue to Nepal from the barrage such as transport, irrigation as well as diplomatic goodwill, the Baral Commission concluded that the Tanakpur Agreement was of a simple nature and not an "all encompassing, serious and long-term" one.²⁵

²⁵Gyawali,Deepak and Ajay Dixit(1999), "Mahakali Impasse and Indo-Nepal Water Conflict", *Economic and Political Weekly*, 34(9): 556.

Thus, taking the discussion further on cooperation in harnessing of water resources, both the sides agreed on a time-frame for investigations, preparation of project reports... On the Tanakpur Barrage, it was accepted that the area remains under the sovereign control of Nepal. However, the barrage project does not make any consumptive use of water. India agreed to supply 150 cusecs of water to irrigate 4,000 to 5,000 hectares of land and would supply 20 million units of power, free of cost to Nepal. It was also agreed to either renovate or replace the missing boundary pillars at Tanakpur Barrage by May 1993.²⁶

This exactly shows that Nepal domestic politics was mainly concern about their land sovereignty and their water rights. It is the pressure of domestic politics which enforces the pm to give their explanation in the parliament as well as in front of public. The case was filed in Supreme Court of Nepal; shows seriously concern the people about water concerns.

Ramaswamy Iyer concluded the issue very clearly and said that it was the old history of misunderstanding by the Tanakpur episode. In itself it was a very minor matter of a small piece of land - 2.9 hectares - being used by India for building the eastern afflux bund for the protection of Nepalese territory from possible backwater effects from the Tanakpur barrage (which itself was wholly in Indian territory and did not involve the consumptive use of water). The initial unwisdom on the part of India in not keeping Nepal informed in advance about this project was subsequently sought to be remedied by reaffirming Nepalese sovereignty over the territory mentioned above, and agreeing to provide some free electricity and water to Nepal, the quantum of which was revised upwards twice in inter-governmental understandings. However, Tanakpur came to loom large in the Nepalese consciousness and was used as an issue for bringing down the Koirala government. It was in fact more of an issue in domestic politics than an Indo-Nepal controversy, though it had the potential of souring Indo-Nepal relations. The supreme court of Nepal, in response to a petition, ruled that the Memorandum of Understanding between the two prime ministers on Tanakpur was indeed in the nature of a treaty or agreement, but left it to the executive government

²⁶Thapliyal, Sangeeta, Changing Trends in India-Nepal Relations, IDSA .[Online web]
<http://www.idsa.india.org/an-dec-5.html>.

and parliament to decide whether ratification by a simple or two-thirds majority was needed. Quite wisely, this was not put to the test; instead the Tanakpur controversy was subsumed in a larger issue.²⁷

Sangeeta Thapliyal sees the Tanakpur Issue (and impact on it of Kosi project) in such a way that the Tanakpur issue brought into prominence the fears and apprehensions of Nepal of not being given "mutual benefit" on earlier agreements on the Kosi and Gandak. Since the matter was of national importance, they expected it to be discussed at home before taking it for bilateral discussion with India. Also recognising the sensitivity of the issue which could be related to the sovereignty of the country, the Tanakpur agreement was politicised by the political parties in Nepal for their own political gains. However, its impact on India-Nepal relations cannot be ignored. The politicisation of any project slows down the progress in the development of the project as happened in the Tanakpur Barrage where the work had come to a standstill. Much time was consumed in taking the matter to the Supreme Court of Nepal and the Parliament. However, Nepal did learn a lesson of taking a consensual approach before taking the issue on water resource or any matter of national importance with India as was done in the Mahakali Agreement in 1995.²⁸

Pancheshwor Multipurpose Project

Pancheshwor Multipurpose project is part of the Mahakali Integrated Development Treaty (1996) which includes Sarada Barrage (Sarada Agreement 1920) and Tanakpur Barrage as well. But this project was also disputed and politically colored by the domestic political parties in Nepal. The reporting on Pancheswar in some of the newspapers, which are backed by opposition political parties, had little to do with water resources. Instead, they read like campaigns aimed at creating a climate for political vendetta. The slogans "what oil is to Middle East, water is for Nepal" or "water is Nepal's strategic resource" have done more harm than good. It has made trans-boundary water resource an issue of domestic politics. The intense politicization

²⁷Iyer, Ramaswmy R. (1999) "Conflict-Resolution: Three River Treaties", *Economic and Political Weekly*, 34(24): 1510.

²⁸ Thapliyal, Sangeeta, Changing Trends in India-Nepal Relations, IDSA .[Online web]
<http://www.idsa.india.org/an-dec-5.html>.

of the Pancheshwar, refluxing to what the opposition in Nepal refers to as “sell-out” has masked the basic issues in water resource development. Unfortunately, the opponents of the project in Nepal are being glorified as nationalists by a section of reporters. This definitely affects moral and commitment of negotiators from our smaller neighbor as they have to interact with extreme cautiousness and apprehension. Even after striking best possible trade off, they may be labeled as negotiators who sold out national interest.²⁹ But at the end The Detailed Project Report (DPR) of the Pancheshwar project was agreed to be prepared within six months of the agreement made but it has not yet been prepared in almost 10 years time. The major points of differences stands of two countries are on the following:

- Cost share by power component, and Cost share by Irrigation and flood control Component
- Re regulating site selection
- Prior use of water³⁰

Integrated Development of Mahakali Basin (Mahakali Treaty)

Mahakali is fourth largest river flowing from Nepal in to Ganga. It made the boundary between India and Nepal. After long time of mistrust and conflict over water resource, India and Nepal had agreed to sign a treaty which was equalled beneficial and acceptable to both the countries. It was Nepalese Prime Minister Sher Bahadur Deuba who took first initiative during his visit to India from February 11 to 18, 1996. It was a land mark in bringing forth cooperation in harnessing of water resources. A treaty was concluded on the Integrated Development of Mahakali Basin which is inclusive of the construction of the 2000 mw Pancheshwar power project over a period of eight years.³¹

²⁹ Tiwary, Rakesh. Indo-Nepal Water Resource Negotiation. [Online web]

<http://www.zimbio.com/Bhutan/articles/600/Indo+Nepal+Water+Resource+Negotiation>.

³⁰ *Independent Power Producers' Association Nepal Confederation of Indian Industry* (2006), “Nepal india hydropower cooperation development-2006”, SARI/E Small Grants Program: 33.

³¹ Thapliyal, Sangeeta (1997), “Mahakali Accord: An Integrated Approach to Develop Water Resources”, Dharam Dasmani, M.D. (eds.) *Nepal in Transition*, Varansi: Shalimar Publishing House: 123.

Thus, the 'Treaty Between His Majesty's Government of Nepal and the Government of India Concerning the Integrated Development of the Mahakali River Including the Sarada Barrage, Tanakpur Barrage and Pancheshwar Project' (hereafter referred to as the Mahakali Treaty) was signed on 12th February 2006. As its name suggests, the treaty concerned the operation and augmentation of two existing facilities, the Sarada (1928) and Tanakpur (1989) barrages, and the future construction of a large multipurpose dam, the Pancheshwar project. Following the Koshi, Gandak and Chandra infrastructure agreements, the Mahakali Treaty was the first, and so far only, agreement between the two nations for the joint development of dams spanning their border.³²

On February 17, 1996 in Bombay, during a continuation of the Nepal's Prime Minister's India visit, the Nepali secretary of the ministry of water resources and the Indian secretary of the ministry of power signed an umbrella 'agreement between His Majesty's government of Nepal and the government of India concerning the electric power trade'. This agreement allows any governmental, semi-governmental or private enterprise in Nepal or India to buy and sell power to each other determining, in the process, their terms and conditions. Meanwhile, public debate began to heat up prior to the parliamentary ratification of this treaty. This debate was very strong within the left and right parties. There was, however, practically no debate or discussions within the centrist Nepali Congress that had, since coming to power in 1991, jettisoned the principles of 'democratic socialism' in favour of economic liberalism. Two weeks after the treaty was initialled on April 10, 1996, because of public pressure, the 26th Central Committee Meeting of the UML formed a working group to study the treaty and its implications, even though its Janakpur meeting welcomed the signing of the treaty. Meanwhile, on August 20, 1996, water resources minister Pashupati Sumsher Jung Bahadur Rana tabled the Mahakali Treaty to parliamentary discussion and ratification.³³ Actually Nepal had learnt certain lessons from the earlier agreement on Tanakpur Barrage. Not to repeat the furore at home, the government had taken a national consensus with all the parties on the subject. Thus, at the time of ratification

³²Hearn, Glen (2007), *The Mahakali River Treaty: Applying a New Lens to Past Efforts for Future Success*, British Columbia Canada: 143.

³³Gyawali, Deepak and Ajay Dixit (1999), "Mahakali Impasse and Indo-Nepal Water Conflict", *Economic and Political Weekly*, 34(9): 558.

in the Parliament, the Opposition had no moral right to reject it. More so because it was the CPN (UML) which had initially proposed the Mahakali Treaty during Prime Minister Adhikari's visit to India in April 1995.³⁴

The Mahakali Treaty is equitable in terms of power generation at Pancheshwar (Article 3); contains modest consideration for in-stream flows (Article 1); takes into account seasonal variability (Articles 1, 2, and 3); provides for a joint river commission with strong recommendation powers 'guided by the principles of equity, mutual benefit and no harm to either Party' (Article 9); has an eloquent dispute resolution mechanism (Article 11); and is accommodating with respect to local users and their water needs (Article 7). It is somewhat flexible in that either party is able to provoke a review of allocations at 10-year intervals, and it supposed to be in effect for 75 years upon ratification (Article 12).³⁵

Thus, there has been an element of "mutual benefit" and "non-reciprocity" in India's relations with Nepal as envisaged in the Mahakali Treaty. India and Nepal relations hitherto defined in terms of geo-politics had to accord primacy to economic cooperation in the light of the changing global economic environment. The main thrust of the economic cooperation has been on four areas: trade and transit relations, sharing of water resources, Indian aided projects and joint ventures. In fact, the countries have moved ahead from bilateralism and are looking towards multilateralism. In December 1996, Nepal submitted an approach paper on sub-regional cooperation within the South Asian Association for Regional Cooperation (SAARC) parameters which suggests creation of growth polygons between Nepal, Bhutan, Bangladesh and India in the fields of transit, multimodal transport, irrigation, energy, environment, tourism, trade and investment.³⁶

Sangeeta Thapliyal writes that the major achievement of the Deuba government was in taking a consensus approach in signing the Treaty on Integrated

³⁴Thapliyal, "Sangeeta, Changing Trends in India-Nepal Relations", IDSA.[Online web] <http://www.idsa.india.org/an-dec-5.html>.

³⁵Hearn, Glen (2007) *The Mahakali River Treaty: Applying a New Lens to Past Efforts for Future Success*, British Columbia Canada: 144.

³⁶Thapliyal, Sangeeta, "Changing Trends in India-Nepal Relations", IDSA. [Online web] <http://www.idsa.india.org/an-dec-5.html>.

Development of the Mahakali Basin in February 1997 in New Delhi. The treaty envisages construction of the 2,000 MW Pancheshwar power project within eight years. Both governments agreed to work out an umbrella for the sale of power to each other and encourage Indian investment in the hydro-power sector in Nepal as a part of an action plan to further strengthen bilateral economic cooperation. The treaty had put to rest the controversy which had been raised after the signing of the Tanakpur agreement. Nepal's share of water was increased from 150 cusecs and 20 million units of power to 300 cusecs of water in the dry season and 1,000 cusecs of water in the monsoons besides 70 million units of power. Another agreement was signed on the construction of 22 bridges on the Kohalpur-Mahakali sector of the east-west highway.³⁷ Whereas, Gyawali and Dixit mention that the agreements through political pressure, diplomatic manoeuvring and legal point scoring from a strong and large neighbour may bring forth agreements in the short term but, as Mahakali has shown, nothing will move forward in the long term. Even if it did, the social and political costs may make the victory too expensive. Since India is to be the major beneficiary of reservoirs in Nepal, it will have to go the extra length in providing creative leadership that is not just legally but morally unassailable.³⁸

Further, Deepak Gyawali mentioned the treaty as that which should never have happened-the ratification of an unequal and incomplete Mahakali treaty by parties and leaders sitting in Nepal's sovereign parliament- have happened. A treaty is now in effect wherein Nepal's water rights have been specified but not India's, where a joint detailed project report (DPR) was not prepared beforehand, where the ownership status of the head and tail reaches of the Mahakali remains contested and in which nothing is clear either about the price at which generated electricity will be bought and sold or the principles by which such a price is to be fixed. What is to be done next?³⁹

Clearly, it is a extremism and disappointed assessment of treaty by Nepalese intellectuals who leads the civil society of Nepal. These views show only the nature of

³⁷Ibid.

³⁸Gyawali, Deepak and Ajay Dixit (1999), "Mahakali Impasse and Indo-Nepal Water Conflict", *Economic and Political Weekly*, 34(9): 559.

³⁹Gyawali, Deepak (2001), *Water in Nepal*, Kathmandu: Himal Books: 53.

opposing culture and mistrust against neighbouring nation. Partly it is the impact of Kosi and Gandak treaty.

A day later, on February 13, 1996, the Communist Party of Nepal (Maoist) led by Pushpa Kamal Dahal (Comrade Prachanda) and the United Peoples' Front led by Baburam Bhattarai declared the Maoist 'peoples' war', an insurgency which has taken more lives than most past revolutions in Nepal. Among their many demands was, and is, the abrogation of the unequal treaty on the Mahakali.⁴⁰

Aline Baillat mentioned the impact of the Kosi project on other river treaties. He said that-The Pancheshwar project is monitored by the Mahakali Treaty signed in 1996. The Treaty includes also the agreements of two other dams already constructed by India: the Sarada barrage and the Tanakpur barrage, both on the Mahakali River. Of the three other Nepalese main rivers, only the Karnali is not yet regulated by any agreement or treaty. The Kosi and the Gandak River Treaty have been subject to major controversies. They were signed respectively in 1954 and 1959 and are still today in force but they have created a bad precedent for water relations with India. Many Nepalese feel cheated by these two treaties and even more so by the controversial Tanakpur Agreement of 1990 that has now been modified by the Mahakali Treaty.⁴¹

Rakesh Tiwary also accepts and said that despite huge potentialities and commonalities of objectives, water resource development has faced many setbacks due to political and economic factors that acted against the interests of the two countries. Nepal's complaint about getting unfair deal or being cheated in earlier treaties like, The Kosi Treaty (1954) and the Gandak Treaty (1959), cast its shadow over future collaborations. Nepal water resource experts complained about unilateral initiatives of India, nominal and delayed compensations, disregard for Nepal's interest

⁴⁰Gyawali,Deepak and Ajay Dixit (1999), "Mahakali Impasse and Indo-Nepal Water Conflict", *Economic and Political Weekly*, 34(9): 558.

⁴¹Baillat, Aline (2004), "Hydropolitics in Small Mountainous States Two Cases of Cross-Asymmetries: The Kingdom of Lesotho and the Republic of South Africa and The Kingdom of Nepal and the Republic of India", *working paper*, Geneva HEI publication: 19. [Online web]
<http://graduateinstitute.ch/webdev/site/international-law/.../Baillal.pdf>.

and unequal benefits. These projects created ill feeling and mistrust between two nations leading to a big gap in joint water resource development initiatives.⁴²

The Kosi issue has still importance and hot in Nepali politics because the management of the Kosi topped the agenda during Nepal premier Prachanda visit in after math of the massive floods, the 6000 megawatt, Pancheshwar multipurpose project on Mahakali River near Utrakhand Nepal border is likely to be the first to get off the block. The project was the result of a decision by both countries to “rejuvenate” their engagement on the water resources front. While expediting preparation for a detailed project report (DPR) of the sapta Kosi high dam on Kosi will be high on the agenda of the secretary level talks between the two countries in Kathmandu in Monday. The Indian side is hoping a more tangible movement in taking forward the Pancheshwar project signed over a decade ago.⁴³

During the 1950s, there were no major initiatives on the Mahakali, but major flood control embankment building and irrigation projects were undertaken in north Bihar and Uttar Pradesh plains by the Indian government. To further these initiatives for the north Ganga plains, India entered into two major river treaties with Nepal in this period: the Kosi agreement on April 25, 1954 (revised subsequently on December 19, 1966) and the Gandak agreement on December 4, 1959 (amended on April 30, 1964). These treaties, and the projects they gave birth to, have had their own less than salubrious impact on Nepali polity and popular perceptions of Indo- Nepal water relations.⁴⁴

Glen Hearn describes that, the drafters of the Mahakali Treaty put forward some innovative areas for cooperation; the overt purpose of which was to maximise

⁴²Tiwary, Rakesh. Indo Nepal Water Resource Negotiation.[Online web]

<http://www.zimbio.com/Bhutan/articles/600/Indo+Nepal+Water+Resource+Negotiation>.

⁴³ Ravish Tiwari (sept29, 2008), Indo Nepal Meet: Power Project, Kosi Top on Agenda Today.[Online web]

<http://www.indianexpress.com/news/indonepal-meet-power-project-kosi-top-on-agenda-today/367030/0>.

⁴⁴Gyawali,Deepak and Ajay Dixit(1999), “Mahakali Impasse and Indo-Nepal Water Conflict”, *Economic and Political Weekly*, 34(9): 553.

benefits for both parties. Why then has so little materialised or been initiated? In response, it must be determined whether the 'water' relationship between the two nations differs from the 'general' or 'overall' relationship between them. Should they mirror each other, it can be assumed that external factors have played a large role in determining hydro-politics. Should they not mirror each other, it can be assumed that there are factors specific to the hydro-politics that are reflected in the 'water' relationship alone.⁴⁵

Nepal's policy

1-Bargaining Policy of Nepal

Nepal has history of bargaining the benefits from every water project. It started from kosi river project to mahakali. It is clearly based on domestic politics. For example, in Tanakpur and Pancheshwar case communist demand to know from the government where the 4,000 acres of land swapped with British India in 1920 is located. The communists stated very clearly that it was wrong to link the Pancheshwar Project with Tanakpur. Pancheshwar high dam, they wrote, is a separate project requiring a separate treaty with parliamentary ratification, and there is no need for Nepal to compromise her future **bargaining position** at this stage.⁴⁶

In October 1992, India's Prime Minister Narasimha Rao visited Nepal during which the Tanakpur 'understanding' was renegotiated. The quantum of electricity that Nepal was to receive from the project 'free of cost' was raised from 10 to 20 million units. Future upstream water developments such as Pancheshwar Multipurpose Projects were delinked from the agreement on Tanakpur with the provision that both countries were free to negotiate on upstream projects independent of whatsoever is agreed to at Tanakpur.⁴⁷

⁴⁵Hearns, Glen (2007), *The Mahakali River Treaty: Applying a New Lens to Past Efforts for Future Success*, British Columbia Canada:p-146.

⁴⁶Gyawali,Deepak and Ajay Dixit(1999), "Mahakali Impasse and Indo-Nepal Water Conflict", *Economic and Political Weekly*, 34(9): 555-56.

⁴⁷Ibid-556.

Constitutional Provision

After long time misunderstanding and domestic politics over water issue, Nepali Parliament had decided to made special provision for water issue of Nepal on 1990. Actually, the issue of Tanakpur, which had been wrapped within bureaucratic secrecy, began to unfold slowly in the public arena. Because the interim government's primary agenda was to frame the new constitution and hold elections, the matter of Tanakpur's left afflux bund was not pursued with any alacrity, but it continued to have its effect on Nepal's body politic. The new constitution of Nepal, which was being drafted in the meanwhile, was promulgated on November 9, 1990. It included a constitutional provision in Article 126 that required any resource sharing agreement to be ratified by a two thirds majority in parliament if it was of "pervasive, serious and long-term nature".⁴⁸

Issue of Sovereignty

Issue of sovereignty is the back bone of Nepal's domestic politics. Every party especially communist use this issue against the Government as well as India. There are many examples such 'common river' issue, 'Understanding' issue and 'sell out to India' etc.

In the case of "Common River" about Tanakpur understanding the Nepalese Prime Minister G.P. Koirala defends the concept of Common River and said that Nepal would like to utilise and have joint cooperation in the rivers which flowed from Nepal to India for the economic development of the country. He said that instead of getting embroiled in the terms used in an agreement, one should "keep the spirit above all so that all these natural resources also will be for the benefit of India and towards regional cooperation".⁴⁹ During the Prime Minister Koirala's visit to India on October 19-20, 1992, agreements were reached on the time-frame for investigation and preparation of project reports,...discussions were held on the Tanakpur Barrage

⁴⁸ Gyawali, Deepak and Ajay Dixit (1999), "Mahakali Impasse and Indo-Nepal Water Conflict", *Economic and Political Weekly*, 34(9): 554-55.

⁴⁹ National Herald, July 11, 1990, quoted by Thapliyal, Sangeeta (1997), "Mahakali Accord: an Integrated Approach to Develop Water Resources", Dharam Dasmani, M.D. (eds.) *Nepal in Transition*, Varansi: Shalimar Publishing House: 130.

and both countries agreed to installed the missing pillars on the India-Nepal border in the barrage area. The left opposition did not support the agreement on the Tanakpur Barrage and contended it to be a sell out of the dignity and prestige of Nepal as a compromise to Indian security interest.⁵⁰ And thus at the end domestic compulsions pressurised Koirala to resign. Mid-term elections were held in November 1994. Koirala lost the election. It is enough to understand the degree of Nepal's sovereignty issue on domestic politics.

In Nepal, Kosi and Gandaki issue were much emphasised, results there is development of mistrust culture against India on water issue. Every case related to water discussed between government become hottest issues of domestic politics. For example, in the case of Mahakali treaty, At home Deuba received an unexpected reaction from the left parties towards the treaty which had otherwise received public support. The CPN (UML), which was initially satisfied with the treaty, along with other left parties expressed dissatisfaction over it. It blamed Deuba for tampering with the treaty which was initiated in Nepal and for signing a new version in New Delhi. Defending the treaty, Deuba called the allegation "baseless and fictitious and is an excellent attempt to mislead people." Despite the furore and criticism, the parties ratified it in the Parliament on September 11, 1996, with certain modifications.⁵¹

India's Response to Nepal

India's water policy towards Nepal is based on equal benefits and to satisfy Nepal's policy maker as well as domestic political parties. After independence, India was conscious about her security. She thought that prosperous and peaceful Nepal good for India as well as South Asia region. But the political journey of India and Nepal relation has been full by ups and down. India paid special attention with her neighbours from Gujral's period. By giving special wattages to Nepal, Gujral's visit to

⁵⁰Thapliyal, Sangeeta (1997), "Mahakali Accord: an Integrated Approach to Develop Water Resources", Dharam Dasmani, M.D. (eds.) *Nepal in Transition*, Varansi: Shalimar Publishing House: 130.

⁵¹Thapliyal, Sangeeta. Changing Trends in India-Nepal Relations, IDSA .[Online web] <http://www.idsa.india.org/an-dec-5.html>.

Nepal in June 1997, a power agreement was signed to encourage private and semi-government investment in Nepal. After the Mahakali Agreement this was a significant development because the countries could meet any shortage in power from Pancheshwar. Also, both the countries had freedom to enter into an agreement with a third party to generate resources for exploiting power. India is aware that the excess power can be utilised by its power deficient areas.⁵²

Thus, India showed keen interest to accelerate the pace of economic development in Nepal which was necessary to consolidate the democratic aspirations of the people who had expected overnight change in their status quo. Lack of employment opportunities could create frustration and disappointment amongst the people who expected miracles from their representatives.⁵³

The issue of water is very sensitive and can be linked not only with the sovereignty and independence of Nepal but also with the security of India. There is always fear about the security of the megaproject from an attack by a third country or though subversive elements which can damage the reservoir and in turn lead to floods in the plains of north of India and disruption of power. Nepal does not possess the required infrastructure to provide security to such projects and would not allow India to do so on Nepalese soil contending it to be an affront to the Nepalese sovereignty.⁵⁴

Conclusion

Mutual distrust and suspicion regarding the sharing of “mutual benefits” between India and Nepal have delayed the joint effort to develop and utilize the hydropower potential.⁵⁵ The Nepalese believe that India is draining Nepal’s watershed for its own benefit. Nepalese also blame that Indian water resource bureaucracy has shown business as usual approach combined with arrogance of power and a secretive attitude. The influence of geopolitics in Indo Nepal water resource development has

⁵²ibid

⁵³ibid

⁵⁴Thapliyal, Sangeeta (1997), “Mahakali Accord: an Integrated Approach to Develop Water Resources”, Dharam Dasmani, M.D. (eds.) *Nepal in Transition*, Varansi: Shalimar Publishing House: p-130.

⁵⁵Ibdi-128

been disproportionate and troublesome. Nepalese have long viewed India as a hegemonic power that arm-twists neighbours for unfair agreements. While Nepal showed disenchantment over joint water resource projects, irritant also arose in bilateral relation due to Nepal's balancing act with China and turbulence in domestic politics of the kingdom. India, in turn, blames Nepal as suffering from small country syndrome, imagining non-existent conspiracies and ignoring India's contribution in different sector of economy of Nepal. Further, fragile and unstable political uncertainties in Nepal also played a role in fuelling anti-Indian sentiments.⁵⁶

The efforts between the two countries have suffered due to twin factors. Firstly, policy makers of India for long failed to understand apprehensions of the smaller neighbor. Nepal, a small kingdom, sandwiched between two giant nations has its own world view. India took Nepal for granted on many occasions. Secondly, Nepal overemphasized sovereignty issues and nursed the grudge and mistrust for long. The history of negotiations regarding water projects on Indo Nepal trans-boundary waters got dominated by controversies primarily due to perceptual difference and the blame game instead of technical difficulties.⁵⁷ Thus, Nepal has not been able to develop its water potential. The narrow political interest, petty party politics and lack of mutual trust between the countries are some of the causes.⁵⁸

⁵⁶Tiwary, Rakesh. Indo-Nepal Water Resource Negotiation.[Online web]

<http://www.zimbio.com/Bhutan/articles/600/Indo+Nepal+Water+Resource+Negotiation>.

⁵⁷ibid

⁵⁸Thapliyal, Sangeeta (1997), "Mahakali Accord: An Integrated Approach to Develop Water Resources", Dharam Dasmani, M.D. (eds.) *Nepal in Transition*, Varansi: Shalimar Publishing House: p-127-28.

Chapter 5
Conclusion

Water is a unique natural gift. It is a basic necessity for survival of life. It is present on earth in many forms, like snow in glaciers, saline water in ocean, running water in rivers. However, it covers two thirds parts of the earth in the form of ocean and most of it is not usable for human life. Due to development of human civilization, the demand of water increased for domestic, industrial and agriculture needs simultaneously. Hence, water resources have become increasingly limited. River is one of the most important sources for fulfilment of all these purposes.

The river water is a part of hydrological cycle. It is naturally organised into river basin. The river flow does not have considerations about states boundaries that have been created by human beings. The distribution anomaly of river basin superimposes political boundaries of nations. While flowing in its natural course, river may pass through one political unit to another or one country to another. That is why, the trans-boundary i.e. water course or water bodies part of which are situated in different nations, have become source of dispute due to rise in the demand of fresh water for rising population, increasing resource consciousness, diversification and intensification of use and cross border impacts of ecological degradation.

The major reasons of trans-boundary water resource conflict are-

- 1- Upstream and downstream rights- It is most common factor of dispute. The conflict is determined due to nature and degree of dependence of every riparian nation on the shared water resources. The relative bargaining power of the riparian state is also one of the major causes of conflict.
- 2- Sovereignty and territorial integrity are also important obstacles towards harnessing the common river water resources among the nations. New states are highly concerned about their sovereignty due to colonial legacy. They want absolute right over resources which are flowing through their territories. They have tendency to maximize their benefits and minimum sharing with co-riparian. So it is major cause of conflict. The concept of the doctrine of absolute state sovereignty and territorial integrity (Harmon Doctrine) has become out-dated for hydrological reality and water utilization.

Other factors related to the conflict over trans-boundary water resources management are political, technical, institutional, policy and planning, sound and comprehensive data collection, operational and evaluation, monitoring, cost and benefit sharing etc.

There are no universal criteria available for solving every water dispute in the world. Helsinki rule has, of course, received broad acceptance by international community as a model of international rivers, but it has its own particular features. They are not applicable as such in every state and every position. India and Nepal are no exception to it.

Historically, India and Nepal are linked culturally, socially, economically and politically to each other. Geographically Nepal is upper riparian of India. All the rivers flowing through Nepal merge in Ganga River in India. Whole catchment area of Nepal comes under Ganga basin. Nepal is criss-crossed by innumerable rivers, estimated at some 6000 in number. Most of them are emanating from the Himalayas. To convert this abundance to a useful natural resource, Nepal must be able to harness the river for benefit, which it is not able to do due to lack of resources.

India and Nepal have their different water policy for sharing river water to riparian country. India believes on the equitable apportionment that is more or less related to Helsinki rule. The direct agreement among the disputed nations is one of the best solutions for resolving conflicts. It takes away much of the bitterness and acrimony associated with the dispute. The legal considerations are not always reliable on practical grounds. The problems of the different basins have different natures which are to be judged more on political, social, historical and economical terms, rather than in legal terms.

Nepal's water policy, however, is still based on the doctrine of 'absolute sovereignty' and 'territorial integrity'. The provision of article 126 in the Nepal's constitution, which was introduced in 1990, is indirectly based on these two principles. Nepal always blamed, and suspected India of encroachment of her sovereignty on uses of water resources. In the Kosi and Gandaki issues, Nepal's opposition loudly cried out that it is the encroachment of Nepali territorial sovereignty by India and in Tanakpur

case, they blamed of 'sell out' to India. Whereas, in the Kosi and Gandak issue, it was a matter of mainly cost and benefits, technological and site allocation.

Kosi River is the third largest river in the Ganga- Brahmaputra basin. It is called as Sapta Kosi with its seven Himalayan tributaries in which the Sun Kosi, Arun and Bhote Kosi originate from Tibet, autonomous region of China. The river is joined by the major tributaries in the Mahabharat range approximately 38 km north of the India- Nepal border at Chatra. The basin of the Kosi is spread over India and Nepal. It is this region, which is marked by geo-physical and climatic unity. The basin is characterized by very high population size, rapid population growth, endemic poverty, stagnant and subsistent agriculture and poor industrial development. It is affected by several natural disasters like floods, droughts, river bank erosion, sedimentation, water pollution and environmental degradation.

Kosi River is the most destructive in nature on account of its extremely high silt content. It has frequently changed its course as well. Over the last 250 years the Kosi River has shifted its course over 112 kms from east to west or from Purnea to Saharsa in Bihar state of India. It is called the sorrow of Bihar. The Kosi is aggrading because of its steep gradient which falls from 0.76 metres to 0.08 per mile (1.6 kilometres), 60 kilometres from its confluence with the Ganga. The episodic disaster of floods in cycles has rendered national concern over flood in India. It was the year 1954, in which the flood was centred in large part of Bihar state of India. It was time when Kosi agenda was put under consideration of Central Water, Irrigation and Navigation Commission as a result of the devastation it brought with it. Thus India and Nepal were first able to work out the kosi Project Agreement only in April 1954. The main provision was flood controls, irrigation and hydropower generation. Under this agreement, India was to bear the total estimated cost of the project- approximately Rs. 450 million. Of the approximate total of 1.5 million acres to be irrigated by the project, only 29000 acres lay in Nepal for the project as decided upon by the Nepalese Government and it was to supply (at the price) up to 50 per cent of hydroelectric power generated under the project to Nepal.

The role of political parties has also been instrumental in shaping Nepal's attitude towards the issues of water sharing between the two countries. Nepal's left wing parties have their recordable culture to oppose India in anyway and create a domestic

mob, the so called masses. They got emotional and physical support from those who suffered from barrage site locations. Some civil society members and intellectuals also gave their support to this issue. The opposition parties politicised the issue on domestic level and started their bargaining demand for cheap political gains. King Mahendra turned the agitation in his own favour and dismissed the democratically elected Government and imposed the Panchayat Rule. However, the matter could have been solved on the table through discussion and there was no need for politicization of the issue. Clearly it was the domestic political issue which had adverse impact on the other river projects and signing of treaties between the two countries. In fact, Nepal lacks political desire to take help and assistance from India as well. The lack lustre attitude of Nepal has been quite evident from the very beginning itself when the two countries signed the Kosi Agreement.

The Kosi project became politically controversial in Nepal, soon after signing in 1954. The main Nepalese criticisms were:

- 1- Surrender of territorial rights to India over the project site for an indefinite length of time and without compensation and benefit in return.
- 2-It was also seen as an impairment of Nepal's sovereignty.
- 3-Inadequate compensation of land and rehabilitation of the people from the barrage site.
- 4-Discrimination in relation to the Nepalese workers and contractors.
- 5-Discrimination on granting project relating advertisement among the Nepalese news paper.
- 6- Complaint against using cheap material and faulty work on barrage and
- 7 -Need for increased irrigational benefits for Nepal.

Due to these controversies, the agreement was revised in 1966. Some new provisions were added like the site of barrage will be located in inner part of Nepal; the land provided for construction of barrage will be leased for 199 years with payment at an annual nominal rate. It has also provision for India to compensate at the reasonable rate as decided by the coordination committee, for land submerged due to the

construction of the barrage. Although, most of it was settled, some compensation related demands are still unsettled.

The Kosi River Project was signed under King Tribhuvan's regime in 1954. It was the decade of 1950s, when the Rana regime was thrown out by Nepali people and King Tribhuvan became the head of the state. New wave of democracy was also rising in Nepal which was paving the way towards decentralization of power in Nepal.

In 1955, King Mahendra, succeeded King Tribhuvan. King Mahendra was not a great supporter of democracy in Nepal. In 1959, the general elections were held and the Nepali Congress came in power. G. P. Koirala became the first elected prime minister of Nepal. In his regime, Gandak agreement was signed. Kosi agreement which was signed in 1954 was disputed basically on the cost of inadequate compensation to the rehabilitates and less payment of Nepali land used for site. Initially, it was absolutely the fault of the Indian officers who didn't understand the sensitivity of the issue. On the other side, it was the need of King Mahendra to politicise this issue to check the blowing wind of democracy coming with the Indian support. After Gandak treaty was signed, the same allegations were raised, and Koirala was presented as pro-Indian in Nepal. On the other side, Kosi and Gandak issues were seen (actively presented) as threat to Nepal's territorial sovereignty. In this situation, the king supported those who were politically and ideologically against Koirala. He had got mass support in the name of sovereignty threat from India. Thus, the King dismissed the democratic elected Government in 1960 and imposed Panchayat Rule. It was a matter of domestic politics which was utilised for political gains.

The Gandak agreement was revised in 1964, but it did not succeed in preventing the political critics. The mistrust and suspicion led to the inclusion of a provision in Nepal's constitution (1990) making parliamentary ratification by a two third majority necessary for any treaty or agreement relating to natural resources and likely to "affect the country in a pervasively grave manner or on long-term basis; in the case of treaties of an ordinary nature ratification by a simple majority was laid down". Even though, Kosi and Gandaki agreements were revised in 1966 and 1964 respectively. But still it was disputed on the matter of cost and benefits. From 1960 to

1990, the water resources were opened for all those countries that provided the technical assistance and financial support to survey and harnessing. It was 1990, when popular movement called first *Janandolan* was raised and Nepal witnessed the transformation of power from monarchy to constitutional monarchy. In 1990, interim Prime Minister K. P. Bhattarai was targeted when he signed Karnali treaty. Karnali project was proposed to India by Nepal to move away from the Kosi-Gandak water relations and to start a more 'equal' relationship. The main idea behind it was that Nepal would produce a lot of hydroelectricity on its territory and sell it to India. But, again the Nepalese political parties failed to cooperate and the man who was being targeted this time was interim Prime Minister, K. P. Bhattarai.

Same condition was repeated in Tanakpur (1992) when G.P. Koirala resigned from the PM's post. Mid-term elections were held in 1994 and he lost the elections. During the 1990s, Tanakpur, Pancheshwar and Mahakali treaty were signed. It was the Mahakali treaty, which opened new window for mutual beneficial cooperation between India and Nepal after long historical mistrust and suspicion of Nepal.

It was 1990s, when there was a strong political movement against the monarchy. It was called first *Janandolan* in Nepal's history. King Birendra accepted the demand of popular upsurge and the country transformed from monarchy to constitutional monarchy. This change also helped in melting the snow, which was frozen from long time in the field of hydropower development and a new hope came in the form of Karnali Agreement. The next case was Tanakpur Agreement, at that time Nepali congress was in power. Again the issue of sovereignty and cost benefits became prominent and the Koirala Government fell down. In this case, the most popular slogan raised by opposition was 'sell out' to India and "we have not compromised our sovereignty with India". But the fresh air entered through new hope of window, when Integrated Development of Mahakali Basin (Mahakali Treaty) came under signing table. New window opened to harness the water for mutual benefits, when Mahakali treaty was signed. It was the political victory of S.B. Deuba and it was the sign of mature political acumen on the part of the political parties in Nepal. It was February 12, 1996, when the treaty between his majesty's Government of Nepal and the Government of India, concerning the Integrated Development of the Mahakali

River including the Sarada Barrage, Tanakpur Barrage and Pancheshwar Project was signed.

Clearly, it was the mistrust and suspicion coming from the Kosi period and the nature of domestic politics which was responsible for the politics behind water sharing. Actually, the culture of opposing India was nurtured in the time of Panchayat rule. Sangeeta Thapliyal analyses it very clearly that the significant change in the political relationship between India and Nepal was the frankness in negotiations and discussions which was virtually absent during the monarchy which looked towards democratic India with suspicion. However, the change of the political system from monarchy to multi-party democracy in Nepal did not bring forth changes in its political culture. For instance, the erstwhile monarchy and the Panchayat regime had used anti-India slogans to counter any opposition at home and stabilise their power by heightening the passions of the people. After the change of the political system, those not in power used similar tactics to criticise the government in power. The Nepali Congress is considered to be pro-India and the Opposition utilised this label to criticise the government and involved India's name to give authenticity to their charges. The perfect case was of Tanakpur. The Opposition considered Tanakpur as a sell out to India. They claimed that India had constructed the 577 metres of the bund in the Nepali territory without the government's approval. Koirala blamed the Opposition for instigating anti-India feeling in Nepal straining the upward movement in their relations. He said, "We have not compromised our sovereignty with India."¹

New types of technical fault came under consideration and became debatable issue amongst the Nepalese political thinkers. Dipak Gyawali strongly raised questions on embankment policy of India. Actually, by embanking the river, we have got success in preventing the changing course of nature of the river but due to high siltation, sedimentation bed of river slightly goes up. As a result some floods occur in the southern part of Nepal. This gives new nuances for blaming India again. Even though, the embankment policy was not considered earlier as a cause of conflict. Another problem is water logging in barrage sites. Kosi came under debate in 2008,

¹ Thapliyal, Sangeeta, Changing Trends in India-Nepal Relations, IDSA . [Online web]
<http://www.idsa.india.org/an-dec-5.html>.

when barrage breached in Kushaha, leading to huge devastation in Nepal as well as India. But it was a technical fault which can be improved by using good material and using best form of technology. Improved knowledge of hydrology of the Kosi basin should reduce the potential for conflict between India and Nepal, focus flood-control efforts on the lowlands where flood proofing and warning strategies are effective, and improve the basis for bilateral co-operation in developing the region's water resources.² The long tradition of mistrust and suspicion must be overcome by the political parties of Nepal which have used anti-Indian slogans for political advantage. They must differentiate between the domestic and international issues, and show political maturity in the international forum. The Indian Government must do respect the sensitivity of rehabilitation of the people and reasonable compensation on land etc. Nepal and its concerns are such as Nepal's requirement of water for irrigation, power, whereas India needs hydropower and flood control. Countries have to be sensitive to each other's requirements. There should be a joint committee to monitor the site properly and the fund which is allotted to affected people should reach the needy people.

Water is the key resource for all-round development of Nepal. But due to lack of financial and technical capacity it has been unable to harness the river water. India also requires large amount of energy to accelerate its economic development. Hence, if both the countries cooperate with each other in harnessing the river water and identifying the new sites of projects, it will lead to growth of development for both the countries.

²Kattelmann, Richard (1991), "Hydrologic Regime of the Saft Kosi Basin, Nepal", *Hydrology for the Water Management of Large River Basins*, IAHS Publ: 146.

Bibliography

Bibliography

Books and Articles

Abbas, A.T. (1984), *The Ganga Water Dispute*, Dhaka: University Press.

Abbas, B.M. (1982), *The Ganges Water Dispute*, Dhaka: University Press.

Ahmad Q.K. et al. (eds.) (2001), *Ganges-Brahmaputra-Meghna Region: A Framework for Sustainable Development*, Dhaka: The University Press.

Appu, P.S. (1973), "Unequal Benefits from Kosi Development: Cost of Bypassed Institutional Reform", *Economic and Political Weekly*, 8(24): 1076-1081.

Aron, T Wolf (1995), *Hydropolitics along the Jordan River*, Tokyo: The United Nation University Press.

Arriens, Wouter Linklaen et al. (1996), *Towards effective water policy in the Asian and Pacific region: Proceeding of the regional consultation workshop*, Manila: 3 vols, Asian Development Bank.

Aswain, Ashok (2004), *Managing Water Conflict*, London: Routledge.

Bains, J.S. (1962), *Indo-Pakistan water dispute: India's international dispute*, Bombay: Asia Publishing House.

Bandyopadhyay J. (1992), "The Himalaya: Prospects for and Constraints on Sustainable Development", in Stone P. (eds.) *The State of World Mountain*, London: Zed Books.

Baral, Lok Raj (1977), *Oppositional Politics in Nepal*, New Delhi: Abhinav Publications.

Baral, Lok Raj (1988), "Nepal in 1987-Politics without Power", *Asian Survey*, 28(2): 172-179.

Baral, Lok Raj (1992), "India-Nepal Relations-Continuity and Change", *Asian Survey*, 32(9): 815-829.

Beach, H.L. et al. (eds.) (2000), *Trans-boundary freshwater dispute resolution*, New York: United Nations University Press.

Bhattachan, Krishna (1994), "Nepal in 1993-Business as usual", *Asian Survey*, 34(2): 175-180.

Biswas A.K, and Uitto JI (eds.) (2001), *Sustainable Development of the Ganges-Brahmaputra-Meghna Basin*, Tokyo: United Nations University Press.

Biswas A.K, et al. (eds.) (2004), *Water as a Focus for Regional Development*, Delhi: Oxford University Press.

Biswas A.K. (1992), "Indus Water Treaty: the Negotiating Process", *Water International*, 17(4): 201-209.

Biswas, A. K. (1993), "Management of International Waters: Problems and Perspective", *Water Resources Development*, 9(2): 167-188.

Biswas, Asit K. (1999), "Register of International Rivers: A Personal Reflection," *Water Resource Development*, 5(4): 373-389.

Blaikie, P. et al. (eds.) (1994), *At risk natural hazards, people's vulnerability and disasters*, London: Routledge.

Blatter, J and H Ingram (eds.) (2001), *Reflection of water: new approaches to trans-boundary conflicts and cooperation*, Massachusetts/ London: The MIT Press.

Bottral, A. (1992), "Fits and misfits over time and space: technologies and institutions of water development for South Asian agriculture", *Contemporary South Asia*, 1(2): 227-247.

Brichieri-Colombi, Stephen and Robert W. Bradnock (2003), "Geopolitics, Water and Development in South Asia: Cooperative Development in the Ganges-Brahmaputra", *The Geographical Journal*, 169(1): 43-64.

Bruns, Bryan Randolph and Ruth S. Meinzen-Dick (2000), (eds.), *Negotiating Water Rights*, New Delhi: Vistaar Publications.

Chapman, G.P, and M. Thompson (1995), (eds.), *Water and the Quest for Sustainable Development in the Ganges Valley*, London: Mansell.

Checchio, Elizabeth and Colby Bonnie (1993), *Indian Water Right: Negotiating the Future*. Tucson: University of Arizona.

Claudia, W. Sadoff and David Grey (2005), "Cooperation on International Rivers: A Continuum for Securing and Sharing Benefits", *Water International*, 30(4): 420-427.

Crow, B and Singh N (2000), "Impediments and innovation in international rivers: the waters of South Asia", *World Development*, 28 (1): 907-925.

Crow, B et al. (1995), *Sharing the Ganges: the politics and technology of river development*, New Delhi: Sage.

Crow, B et al. (1992), *Sharing the Ganges: the politics and technology of river development*, Bangladesh: The University Press Limited.

CROW, Ben (1995), *Sharing the Ganges: The Problems and Technology of River Development*, Dhaka: University Press.

Crow, Ben and Alan Lindquist (1990), *Development of the Rivers Ganges and Brahmaputra: The Difficulty of Negotiating a New Line*, The Open University.

Dhungal, N. Dwarika and Santa B. Pun (2009), *The Nepal-India Water Relationship: Challenges*, Kathmandu: Springer.

Dixit, A, A Tumbahangfe and S Bisangkhe (2005), *Proposed five high dam projects: an analysis of benefits and social costs*, Kathmandu: Nepal Water Conservation Foundation and Action Aid Nepal.

Dixit, A et al. (eds.) (2004), *Nepal: ground realities for Himalayan water management, disputes over the Ganga*, Kathmandu: Panos Institute South Asia.

Dixit, A. and D. Gyawali (1997), "Environmental and energy dimensions of cooperative security in South Asia: a perspective from Nepal", in D.D. Khanna (eds.) *Sustainable Development*, New Delhi: Macmillan India Limited.

Dixit, A. and D. Gyawali (2003), "A cultural theory: perspective on environment and security in Nepal", in Najam A. Lanham (eds.) *Environment, Development and Human Security*, New York: University Press of America.

Dixit, Ajay (1994), "Water projects in Nepal: Lessons from displacement and rehabilitation", *Water Nepal*, 4(1): 74- 85.

Dixit, Ajay (1997) "Indo-Nepal water resources development: cursing the past or moving forward", in Ray J K (eds.) *India-Nepal Cooperation Broadening Measures*, Calcutta: K P Bagchi and Company.

Dixit, Ajay (2008), "A Preventable Breach", *Himal*, 16(4): 78-79.

Dixit, Kanak Mani(2008), "The Kosi Breach", *Himal*, 16(4): 76-78

Dunsmore, J. R. (1988), *Mountain Environmental Management in the Arun River Basin of Nepal. Occasional Paper no. 9*, Kathmandu: International Centre for Integrated Mountain Development.

Elhance Arun, 2000, "Hydropolitics: Grounds for Despair, Reasons for Hope", *International Negotiation*, 5(2): 201-222

Faure, Guy Olivier and Jeffrey Z. Rubin (eds.) (1993), *Culture and Negotiation: The Resolution of Water Dispute*, California: Sage Publication.

Fisher, Roger and Brown Scott (eds.) (1988), *Getting Together: Building Relationships as We Negotiate*, New York: Penguin Books.

Garver, John W. (1991), "China-India Rivalry in Nepal – The Clash over Chinese Arms Sales", *Asian Survey*, 31(10): 956-975.

Ghose, Devleena and Heather Goodall, et al. (eds.) (2009), *Water Sovereignty and Borders in Asia and Oceania*, London and New York: Routledge.

Gilmartin, D. (1995), *Models of the hydraulic environment: colonial irrigation, state power and community in the Indus basin, nature and culture imperialism: Essays on the environmental history of South Asia*, New Delhi: Oxford University Press.

Gilmour, D. A. et al. (1987), "The effects of forestation on soil hydraulic properties in the Middle Hills of Nepal: a preliminary assessment", *Mountain Research and Development*, 7 (3): 239-249.

Gulhati, Niranjn D. (1973), *Indian Water Treaty: An Exercise in International Mediation*, Bombay.

Gyawali, D and A Dixit (2000), "Mahakali impasse: a futile paradigm's bequested travails", in D. Kumar (eds.) *Domestic Conflict and Crisis of Governability in Nepal*, Kathmandu: CNAS, Tribhuvan University.

Gyawali, D and O Schwank (1994), "Interstate sharing of water rights: an Alps-Himalaya comparison", *Water Nepal*, 4(1): 228-236.

Gyawali, D. (1998), "Patna, Delhi and environmental activism: institutional forces behind water conflict in Bihar", *Water Nepal*, 6(1): 67-115.

Gyawali, D. (2001), *Rivers, technology and society: learning the lessons of water management in Nepal*, London: Zed Books.

Gyawali, D. (1993), "Tanakpur on the thames", *Himal*, July-August. Kathmandu: Himal Association: 15-16.

Gyawali, D. (2004), "Democracy II: what should the new model look like?", *Nepalese Times*, 7: 12-18.

Gyawali, Deepak (2001), *Water in Nepal*, Kathmandu: Himal Books.

Gyawali, Dipak (2000), Nepal- India Water resource Relations, in Zartman and Rubin (eds), *Power and Negotiation*, Michigan: University press.

Gyawali, Dipak (2002), "Yam between Bhot and Muglan: Nepal's search for security in development", in K.M.Dixit and S Ramchandran (eds.) *State of Nepal*, Lalitpur: Himal Books.

Gyawali, Dipak and Ajay Dixit(1999), "Mahakali Impasse and Indo-Nepal Water Conflict", *Economic and Political Weekly*, 34(9): 553-564.

Gyawali,Deepak and Ajay Dixit(1999), "Mahakali Impasse and Indo-Nepal Water Conflict", *Economic and Political Weekly*, 34(9): 553-564.

Hagen, T. (1998), *Nepal: the Kingdom in the Himalaya*, Lalitpur, Nepal: Himal Books

Hamilton, L. S. (1987), "What are the impacts of Himalayan deforestation on the Ganges-Brahmaputra lowlands and delta? Assumptions and facts", *Mountain Research and Development*, 7 (3): 256-263.

Huda A S (2001), "Constraints and Opportunities for Cooperation towards Development of Independent Power Producers' Association Nepal Confederation of Indian Industry (2006), Nepal India hydropower cooperation development-2006, SARI/E Small Grants Program.

Independent Power Producers' Association Nepal Confederation of Indian Industry (2006), Nepal India hydropower cooperation development-2006, SARI/E Small Grants Program.

Islam, Faisal (2002), "Managing Common Waters in the Ganges- Brahmaputra – Meghna Region", *SAIS Review*, XXII (2):309-327.

Ives, J. D. & Messerli, B. (1989), *The Himalayan Dilemma: Reconciling Development and Conservation*, London: Routledge

Iyer, Ramaswamy R. (2008), "Transboundary Water Conflicts: A Review", in K.J. Joy, Gujja Biksham and Suhas Paranjape et al. (eds.) *Water Conflicts in India: A Million Revolt in the Making*, London, New Delhi: Rutledge.

Iyer, Ramaswamy R. (2007), *Towards Water Wisdom: Limits, justice, harmony*, New Delhi: Sage Publications.

Iyer, Ramaswamy R. (eds.) (2009), *Water and the Laws of India*, New Delhi: Sage Publications.

Iyer, Ramaswamy R. (1999) "Conflict-Resolution: Three River Treaties", *Economic and Political Weekly*, 34(24): 1509-1518.

Pokharel, Jagdish C. (1996), *Environmental Resources Negotiation between Unequal Powers*, New Delhi: Vikash Publishing House.

Joy, K.J. Gujja et al. (eds.) (2008), *Water Conflicts in India: A Million Revolt in the Making*, London, New Delhi: Rutledge.

Just, A. et al. (1994), *Problems and Prospects in the Political Economy of Trans-boundary Water Issues*, University of Maryland.

Karmacharya, J. L. (1982), *Hydrological Studies of Nepal*, Water and Energy Commission, HMG, Kathmandu.

Kattelmann, R. C. (1990), "Hydrology and development of the Arun River, Nepal", *Hydrology of Mountainous Regions*, 1, IAHS Pub. 193: 777-784.

Kattelmann, Richard (1991), "Hydrologic Regime of the Saft Kosi Basin, Nepal", *Hydrology for the Water Management of Large River Basins*, IAHS Publicaton.

Kumar, D. (2004), "Parliament and public policy making: a case study of the Mahakali Treaty", in L.R. Baral (eds.) *Nepal: Political Parties and Parliament*, Delhi: Adroit Publishers.

Kumar, Dhruva (1990), "Managing Nepal's India Policy?", *Asian Survey*, 30(7):697-710.

Le Marquand, D. (1977), *International River: The Politics of Cooperation*, British Columbia: University of British Columbia & Waterloo Research Centre.

Lief Ohlsson (1995), *Hydropolitics: Conflict over Water as a Development Constraint*, Dhaka: University Press.

Lohani, P. C. (1996), "Mahakali Treaty: a vision for the 21st century", in Hari Bansha Jha (eds.) *Mahakali Treaty: Implications for Nepal's Development*, Lalitpur: Alpha Offset Press.

Lowi, M. (1993), *Water and Power*, Cambridge: Cambridge University Press.

McCool, Daniel (1993), "Indian Water Settlements: The Prerequisites of Successful Negotiation", *Policy Study Journal*, 21(2): 227-42.

Mehta, A. (2000), *Power play*, New Delhi: Orient Longman.

Meinzen-Dick, Ruth S. and Mendoza Meyra (1996), "Alternative water allocation mechanisms: Indian and International experiences", *Economic and Political Weekly*, 31(13): 25-30.

Meyers, C.J. and A.D. Tarlok (1979), *Water Resource Management: A Case Book in Law and Public Policy*, New York: The Foundation Press.

Mihale, Eugene Bramer (2003), *Foreign Aid and Politics in Nepal*, Lalitpur Nepal: Himal Books.

Mihaly, E.B. (1965), "Foreign Aid and Politics in Nepal", *Royal Institute of International Affairs*, Oxford: University Press.

Mishra, Dinesh Kumar (2008), "Finger in the Dike", *Himal*, 16 (4): 44-46.

Moigne, L.G. and A. Subramaniam et al. (eds.) (1997), "A guide for formulation of water resource strategy", *the world bank technical paper no.263*, Washington D.C: the world bank.

Myers, N. (1986), "Environmental repercussions of deforestation in the Himalayas", *Journal of World Forest Management*, 2:63-72.

Nautiyal, Annpurna (1997), "Water Resource Management and Cooperation between India and Nepal: Problems and Prospects", M.D. Dharam Dasmani (eds.) *Nepal in Transition*, Varansi: Shalimar Publishing House.

Nepal India Cooperation on Hydropower (2006), Independent Power Producers Association Nepal Confederation Industry.

OECD (1989), *Water Resource Management: Integrated Policies*, Paris: OECD.

Outwater, A. (1996), *Water a natural history*, US: Basic Books.

Pal, S. K. & Bagchi, K. (1975), "Recurrence of floods in Brahmaputra and Kosi basins: a study in climatic geomorphology", *Geographical Review of India*, 37: 242-248.

Pant, Niranjana (1981), "Utilisation of Canal Water below Outlet in Kosi Irrigation Project: Administrative and Community-Level Solutions", *Economic and political weekly*, 16(39): 78-88.

Peter, H. Gleick (2000), *The world water: 2000-2001*, Washington D.C. Island Press.

Postel S. (1999), *Pillars of Sand*, New York: W W Norton and Co Press: 46-57

Priscoli, J. D. (1993), "Public involvement: conflict management and dispute resolution in water resources and environmental decision-making", *Water Nepal*, 5(1):43-58.

Pun, S. B. (2004), *Overview: conflicts over the Ganga? Disputes over the Ganga*, Kathmandu: Panos Institute South Asia.

Rahaman, M.M. (2009). "Principles of Transboundary Water Resources Management and Ganges Treaties: An Analysis", *water resource development*, 25(1):159-173.

Rao and Prasad (1994), "Water Resources Development of the Indo-Nepal Region", *Water Resources Development*, 10(2):157- 173

Rao, K.L. (1979), *India's Water Wealth*, New Delhi: Orient Longman.

Rose, Leo E (1971), *Nepal: A Strategy for Survival*, Berkeley University: California Press.

Rose, Leo E and Margaret W Fisher (1970), *The politics of Nepal*, Ithaca and London: Cornell University Press.

- Saha, Suranjit K. and Christopher J Barrow (eds.) (1981), *River Basin Planning: Theory and Practice*, New York: John Wiley & Sons.
- Salman, M.A. and Kishor Upreti (eds.) (2002), *Conflict and Cooperation on South Asia's International River: A Legal Perspective*, London: Kluwer Low International.
- Salomon, J. J. (1997), "The uncertain quest: Science, development and the south", *Water Nepal*, 5(1): 5-20.
- Postel, Sandra, (1997), "Changing the Course of Trans-boundary Water Management", *Natural Resource Forum*, 21(2): 85-90.
- Seddon, David (1987), *Nepal- A State of Poverty*, New Delhi: Vikash Publishing.
- Sharma, Chandra K. (1983), *Water and Energy Resources of The Himalayan Block*, Calcutta: Navana Printing works.
- Singh, C. (1985), *Law from Anarchy to Utopia* New Delhi: Oxford University Press.
- Singh, C. (eds.) (1992), *Water Law in India*, New Delhi: Indian Water Law Institute.
- Stiglitz J. E. (2003), *The roaring nineties: why we are paying the price for the greediest decade in history?*, London: Penguin Books.
- Strang, V. (2004), *The Meaning of Water*, Oxford: Berg, Oxford.
- Subba, Bhim (2003), "Water, Nepal and India", Kanakmani Dixit and Shastri Ramchandran (eds.) *State of Nepal*, Lalitpur: Himal Books.
- Subedi, P. Surya (2005), *Dynamics of Foreign Policy and Law: A Study of Indo-Nepal Relations*, New Delhi: Oxford University Press.
- Subedi, Surya(1994), "India-Nepal Security Relations and the 1950 Treaty – Time for New Perspectives", *Asian Survey*, 34(3): 273-284.

- Swain, A. (1998), "Reconciling disputes and treaties: water development and management in Ganga basin", *Water Nepal*, 6(1): 43-65.
- Swain, Ashok (1996), "Sharing International River: A Regional Approach" in Gleditsch nils and Peter (eds.) *Conflict and the Environment*, London: Kluver Academic Publishers.
- Thapa, Bhekh B. and Bharat B. Pradhan, (eds.) (1995), *Water Resources Development, Nepalese Perspective*, Kathmandu: Konark Publishers.
- Thapa, D and B Sijapati (eds.) (2003), *A kingdom under siege: Nepal's Maoist insurgency-1996 to 2003*, Kathmandu: The Printhouse.
- Thapa, P. J. (1997), "Water-led development in Nepal: myths, limitations and rational concerns", *Water Nepal*, 5(1): 35-57.
- Thapliyal, Sangeeta (1997), "Mahakali Accord: an Integrated Approach to Develop Water Resources", M.D. Dharam Dasmani (eds.) *Nepal in Transition*, Varanasi: Shalimar Publishing House.
- The United Nations (1994), "Report of the International Law Commission on the Work of the Fourty Sixth Session", *General Assembly Records*, New York.
- Thompson, M. (1994), "Huge dams and tiny incomes", *Water Nepal*, 4(1): 191-195.
- Tiwary, Rakesh (2006), "Conflict over International Waters", *Economic and political weekly*, 41(17): 1684-1692.
- Siddiqi, Toufiq A. and Shirin Tahir Kheli (eds.) (2004), *Water Conflict in South Asia*, Hawaii: Global Environment and Energy.
- Trimble, S. W. et al. (1987), "Reforestation and the reduction of water yield on the southern Piedmont since circa 1940", *Water Resources Research*, 23(3):425-437.

U.N. document, (1975), "Management of International Water Resources: International and Legal Aspects", ST/ESA/5, sales no. E. 75.ii.A.2, New York.

Untawale, Mukund G. (1974), "The Political Dynamics of Functional Collaboration: Indo-Nepalese River Projects", *Asian Survey*, 14(8): 716-732.

Upadhyaya, S. K. (2003), *Maoists' strikes on hydropower plants: any policy lessons?* Kathmandu: WINROCK International.

Upreti, B.C. (2003), "India Nepal relations: dynamics, issues and problems", *South Asian Survey*, 10(2): 257.

Uprety, Kishor and Salman M.A Salman (1999), "Hydro- Politics in South Asia: A comparative Analysis of the Mahakali and the Ganges Treaties", *Natural Resources Journal*, 39 (2): Spring.

Vergheese, B.G. (1999), *Water of Hope: From Vision to Reality in Himalaya-Ganga Development Cooperation*, New Delhi: Oxford & IBH Publishing Co.

Vergheese, B.G. and Ramaswmy R. Iyer (1994), *Harnessing the Eastern Himalayan Rivers*, New Delhi: Konark Publishers.

Vergheese, B.G. et al. (eds.) (1994), *Converting Water into Wealth: Regional Cooperation in Harnessing the Eastern Himalayan Rivers*, New Delhi: Konark Publishers.

Wasson, Robert J. and Kuntala Lahiri-Dutt (eds.) (2008), *Water First Issues and Challenges for Nations and Communities in South Asia*, New Delhi: SAGE Publications.

Whitcombe, E. (1983), "Irrigation and railways", in D. Kumar (eds.) *The Cambridge economic history of India*, Cambridge: CUP.

Internet Sources

Baillat, Aline (2004), "Hydropolitics in Small Mountainous States Two Cases of Cross-Asymmetries: The Kingdom of Lesotho and the Republic of South Africa and The Kingdom of Nepal and the Republic of India", *working paper*, Geneva HEI publication, [Online: web]

<http://graduateinstitute.ch/webdev/site/international-law/.../Baillat.pdf>.

Bisht, Medha (2008), "Revisiting the Kosi Agreement: Lessons for Indo-Nepal Water Diplomacy", *IDSa Comment*, [Online:web]

<http://www.idsa.in/idsastrategiccomments/revisitingtheKosiagreement-Medha%20Bisht-220908>.

Gyawali, Dipak and Ajaya Dixit (2001), How not to do a South Asian Treaty, *Himal*, [Online: web]

<http://www.himalmag.com/apr2001/essay1.html>

Howsam, Peter and Richard Carter (eds.) (1996), *Water Policy: Allocation and Management in Practice*, London: E&FN SPON, [Online: web]

<http://www.idsa.india.org/an-dec-5.html>

Ministry of Water Resources, Address and Presentation by U. N. Panjiar, Secretary, summary recorded of discussion at the consultation meeting with policy makers for review of national water policy, held on 28.7.2010, [Online: web]

<Http://www.mowr.gov.in/writereaddata/linkimage/NWPsummary8975558236.pdf>

Tiwary, Rakesh, "Indo-Nepal water resource negotiation", [Online: web]

<http://www.zimbio.com/Bhutan/articles/600/Indo+Nepal+Water+Resource+Negotiation>.

Tiwari, Ravish (2008), "Indo-Nepal meet: Power Project, Kosi top on agenda today", [Online: web]

<http://www.indianexpress.com/news/indonepal-meet-power-project-kosi-top-on/367030/>

Water laws in Nepal (2005), “laws relating to drinking water, sanitation, irrigation, hydropower and water pollution”, *Water Aid Nepal*, [Online: web]
http://www.wateraid.org/documents/plugin_documents/water_laws_in_nepal_english__february_2005.pdf

News Paper

Sunanda K. Dutta ray, “relation with Nepal: making the best use of water”, *Statesman*, 7 april 1982.