SPOTLIGHT
ON REGIONAL AFFAIRS

Vol xxxiv No. 9 September 2015

YARLUNG TSANGPO-BRAHMAPUTRA RIVER IN CHINA-INDIA RELATIONS: A CASE OF ASYMMETRIC INTERDEPENDENCE

LIU PENG

INSTITUTE OF REGIONAL STUDIES ISLAMABAD

CONTENTS

YARLUNG TSANGPO-BRAHMAPUTRA RIVER IN CHINA-INDIA RELATIONS: A CASE OF ASYMMETRIC INTERDEPENDENCE*

LIU PENG**

Introduction

After the Cold War, importance of traditional security issues in international studies is declining in comparison with non-traditional or human security issues.[1] Trans-border rivers issue has become an important area of non-traditional security research. A trans-border river is a river flowing through or shared between two or more countries. In academic studies and policy statements many synonyms are simultaneously used for trans-border rivers, including: shared river, international river, international watercourse, and cross-border river.[2] The main focus of this paper is the rivers flowing between China and India. Both governments use the term "trans-border rivers" in the official documents; therefore, this paper uses the same nomenclature for consistency.

* Author thanks Prof. Ashok Gurung, Associate Prof. Tansen Sen, and all participants who took part in the third Emerging Scholars Symposium on India-China Studies in Kunming, China, in December 2013, for their comments and suggestions.

** Dr. Liu Peng holds a PhD degree in International Relations and works as Lecturer at the Research Institute of Indian Ocean Economies, Yunnan University of Finance and Economics, China.

Trans-border rivers between China and India mainly consist of three systems: the Yarlung Tsangpo-Brahmaputra River, upstream rivers of the River Indus,[3] and upstream rivers of the Ganges River. According to statistics from the Department of Water Resources of Tibet, China, there are 16 trans-border rivers between China and India.[4] Among the three river systems mentioned above, the Yarlung Tsangpo-Brahmaputra River is the largest in terms of basin area and stream flow. The Brahmaputra River is also India's largest river in terms of stream flow and hydropower generation capacity. Therefore, the Yarlung Tsangpo-Brahmaputra River is the most significant in current trans-border rivers between China and India. With its origin in Tibet, China, the upstream segment of the Yarlung Tsangpo-Brahmaputra River is called the Maquan River. After passing through Saga County in Tibet, it is renamed as Yarlung Tsangpo. Across the border in Indian territory, the river is called the Brahmaputra River. After convergence with the River Ganges in Bangladesh it finally flows into the Bay of Bengal with confluence of the Meghna River. Total length of the mainstream of the Yarlung Tsangpo is 1905 kilometres, and the length of the Brahmaputra River is about 740 kilometres.

This paper takes a national interest-based realist approach to the analysis of the Yarlung Tsangpo-Brahmaputra River. After examining the gaps in the existing analyses on the subject, this paper outlines the national interests of both countries with respect to the Yarlung Tsangpo-Brahmaputra River. On the basis of the differences in interests as well as vulnerabilities of the two countries, this paper puts forward three proposals on trans-border rivers negotiation.

Gaps in existing body of knowledge on the subject

Various studies have been authored by Chinese scholars on Sino-Indian trans-border rivers, which can be generally divided into three categories:

The first category focuses on the study of the relationship between the trans-border rivers and Sino-Indian relations. These studies try to find out how trans-border rivers affect Sino-Indian relations mainly from the point of view of international relations, and analyse the impact of trans-border rivers upon patterns of cooperation and conflict in the Sino-Indian relations from the perspective of foreign policy.[5] These works also put forward dispute settlement proposals for trans-border rivers from the perspectives of game theory, public goods, etc.

The second category focuses on the development and utilization of water resources of trans-border rivers. Research of this kind tries to find out reasonable ways of utilizing the trans-border rivers in Tibet. Some of them also try to justify the necessity of developing river resources in Tibet area. Works like "Management and Coordination of Use of Water Resources in International Rivers" by He Daming, and "Economic Strategy of Tibet's Water Resources Development" by Han Junyu can be included in this category.[6] In addition, Li Ling's famous fiction work "Tibet's Water Rescue China"[7] advocated Grand West Line of Water Diversion Project, which also had a great influence at home and abroad.[8] Some scholars have also studied the ecological and environmental problems that arise from the use of trans-border rivers from the perspective of ecology and sustainable development such as "Ecological Hydraulic Engineering of Brahmaputra Hydropower Development" by Wu Peipeng.[9]

China and its trans-border rivers issues with neighbouring countries also attracted many scholars to explore the issue from the perspective of international law in recent years. Those works can be classified into the third category of scholarship on the subject. These studies involve research on basic principles and applicability of the international rivers law with respect to trans-border rivers. Most of the scholars in this category focus on the study of how to use the international law to protect China's rights of usage of the international river. The papers in this category mainly include: "Basis of International Law for Solving

the Problem of International River Water Allocation" by Yang Shu, and "International Rivers Conflict in International Law" by Jin Jing.[10]

This research paper can be categorized in the first type, that is, trans-border rivers and Sino-Indian relations, and tries to address some of the inadequacies in the existing body of research on the subject. There are three basic inadequacies in current research when we talk about the trans-border rivers and Sino-Indian relations:

1. Overestimation of the possibility of trans-border rivers issues causing inter-state conflicts;
2. Neglect of differences in interests between upper and lower riparian states; and
3. Lack of focus on internal differences within the states concerning trans-border river issues.

Let us take a look at these inadequacies in the existing body of knowledge in a little greater detail:

Potential of trans-border river issues to cause inter-state conflict

A lot of studies on trans-border river issues point out that this issue has become one of the major sources for triggering international conflicts in order to emphasize its importance. Former Vice President of World Bank Ismail Serageldin's prophecy "Many of the wars this century were about oil, but those of the next century will be over water" is widely cited in many papers to prove possibilities of conflict caused by water resources.[11] However, statistics show that the probability of trans-border river disputes leading to conflicts is very low, and most of the disputes arising out of trans-border river issues are resolved in peaceful ways. According to a research report released in 2003 by the United Nations Educational, Scientific and Cultural Organization's (UNESCO) World Water Assessment Project (WWAP), there were 1,831 events related to trans-

border rivers globally from 1948 to 1999, among them 1,228 events were cooperation events accounting for 67.1 per cent, and 507 were events of conflict accounting for 27.7 per cent of the total. Only 37 events of the total 507 events of conflict involved violence out of which 32 occurred in the Middle East. Thus violent conflicts have accounted for only 2% of the total events related to trans-border river issues and have remained concentrated primarily in one region of the world.[12] With the help of this statistical data, therefore, we can argue that incidence of violent conflicts caused by trans-border river issues is very low.

Understanding differences of interest between upper and lower riparian states

Most of the studies concerning trans-border river issues will inevitably study the relationship between the upper and lower riparian states. Such studies — based on the hope of avoiding conflict and promoting cooperation and joint utilization — propose suggestions such as river basin centralized management, and development of international law to promote cooperation between the upper and lower riparian states. Cooperation without common interests between countries or without some give and take is generally difficult to achieve under current international regimes though. Hence, we need to understand the national interests of upper and lower riparian states before contemplating models for cooperation.

Generally speaking, national interests of the upper and lower riparian states concerning trans-border rivers are different because of differences of natural and geographical conditions, which is especially the case with respect to China and India. In the case of Yarlung Tsangpo-Brahmaputra River, China is the upper riparian and India the lower riparian. The two countries are totally different along the drainage basin in terms of natural and social conditions (see Table 1). In China, the river flows through Tibet, which is a mountainous high altitude area with fragile ecosystem and low population density. Agricultural and industrial

development is relatively backward because of harsh natural environment in the area, which is also the reason for difficulties in utilization of the river resources. The main recourse for utilizing the river resources in Tibet is power generation as the river is located in the mountains and river drop is relatively steep, while irrigation and water diversion for industrial and agricultural use is relatively low.

Table 1

Comparison of geographical and social conditions between Yarlung Tsangpo and Brahmaputra Rivers

River	Length (km)	Drainage Area(km^2)	Average Annual Runoff (100 million m^3)	River Drop (m)	Energy Reserve (10 Thousand KW)	Population (10 Thousand)	Population Density (person/ km^2)	Arable Land (km^2)
Yarlung Tsangpo River	1,905	345,083	1,654	8,435	11,350	237	6.9	1,225
Brahmaputra River	740	125,312	2,000	—	3,000	3,184	254.1	33,521

Source: World Rivers Database <http://www.chinawater.net.cn/riverdata> and Sun Jing, Gu Shaofeng, Li Aifeng: "Information Extraction and Analysis of the Himalayan International Rivers", *South-to-North Water Diversion and Water Science & Technology*, Vol.9, No.3, (June 2011): 33-38.

On the other hand, when the Yarlung Tsangpo River enters India and becomes the Brahmaputra River, its condition completely changes in terms of natural and social environment. The basin of the Brahmaputra River consists of plains and river valleys with lower altitude and huge population density, actually 37 times larger than population density in the upstream region in China (see Table 1). Industrial and agricultural production in the Brahmaputra basin in India is relatively well developed due to the favourable natural environment. The area is easy to utilize the river water and also has a long history of river utilization. The main methods of development and utilization of the Brahmaputra River are agricultural irrigation, provision of drinking water for population, water diversion, industrial production, and shipping. With economic development and increase of population in the Chinese upper Yarlung Tsangpo region as well as technological

progress, the necessity for development of water resources will increase inevitably. It will be deemed by India as erosion of its rights in the river utilization since India started using the river earlier than China and has heavy dependence on the river. Thus any increase of water utilization in upstream in China will be regarded by downstream India as a threat to its rights of river usage. Therefore, it is fair to say that the development of river utilization will inevitably lead to conflicts of interest between upper and lower riparian states.

Internal differences within states

A common mistake on the part of scholars studying trans-border rivers between China and India is ignoring the diversity of views and existing proposals concerning the issue within the two states. Observers on the Indian side accuse China of bringing about a water crisis in India by establishing power stations and river diversion projects along the Yarlung Tsangpo River. Such accusations of cutting off India's "water tap" are based on the proposals of some semi-officials and scholars in China.[13] However, significant disagreements exist within the Chinese government circles as well as academia on how to develop and even whether to develop the Yarlung Tsangpo River resources. The "Grand West Line of Water Diversion Project," which is cited by Indian observers to accuse China, has been a controversial topic in China since it was proposed.[14] Many officials and scholars hold strong opinions against the feasibility and necessity of the project, which is the reason for its non-inclusion in any official planning.[15]

On the other hand, Chinese scholars also hold a negative view on the Indian official "National River-Linking Project" (NRLP),[16] which, they believe, would reduce future Chinese utilization of Brahmaputra water resources and give India advantage in negotiations. The fact that it has faced many objections in India and has made little progress since its launch has usually gone unnoticed by the Chinese scholars. Although the Supreme Court of India issued a verdict in

2002 asking the Indian government to complete the project by 2016 in public interest, it does not look likely to be completed before 2016 according to the current progress, as most of it is still in the feasibility stage.[17]

National interests of China and India concerning trans-border rivers

National interests are pursuit of the main benefits of the nation-state; these are the needs of its citizens and various interest groups.[18] Because of the complexity of national interests, nation-states usually classify them based on their importance as follows: vital interests, extremely important interests, important interests, and less important or secondary interests.[19]

At the heart of the trans-border issues in Sino-Indian relations are the national interests of both the countries. If both countries have common or similar interests on the same issue, possibility to cooperate in the field for the two countries is relatively high but it does not necessarily lead to cooperation between them.[20] The respective national interests of China and India on the issue of trans-border rivers are the basis for studying their relations in the context of the Yarlung Tsangpo-Brahmaputra River.

China's national interests concerning Yarlung Tsangpo-Brahmaputra River

We need to know how China defines its core interests in order to study China's national interest in connection with the Yarlung Tsangpo-Brahmaputra River. The White Paper, *China's Peaceful Development* issued in 2011 by Chinese government explains China's core interests for the first time in the following words, “China's core interests include: national sovereignty, national security, territorial integrity, national unity, Chinese political system established by the constitution, social stability, and the basic safeguards of sustainable economic and social development.”[21] These core interests can be applied to the case of Yarlung Tsangpo- Brahmaputra River as follows:

First, any management of the trans-border river systems will have to be beneficial to or bring no harm to China's national sovereignty and territorial integrity. The Yarlung Tsangpo-Brahmaputra River is not only a trans-border river but also inextricably interwoven with territorial disputes between China and India, which makes it particularly complicated. In the Yarlung Tsangpo-Brahmaputra River basin, there is more than 90,000 square kilometres area that is disputed between China and India. South Tibet (called Arunachal Pradesh in India) is under Indian control. From the perspective of China's core interests, any form of utilization of the Yarlung Tsangpo-Brahmaputra River must neither endanger Chinese sovereignty of South Tibet nor exacerbate the difficulty of China's reclamation of the area. Therefore, any utilization of the Yarlung Tsangpo-Brahmaputra River, which might strengthen the actual occupation and control of South Tibet by India, should give rise to China's opposition.

Second, development and utilization of hydropower along the Yarlung Tsangpo-Brahmaputra River is in line with China's core national interests. According to the Twelfth Five-Year Plan (2010-2015) of China Energy Development, the average annual growth of the China's installed power capacity is approximately 9 per cent from 2010 to 2015. Thermal power accounts for 68 percent of China's power supply (see Table 2). As coal resource is non-renewable and brings enormous pollution, reducing reliance on thermal power is a necessary requirement for the development of China's power industry. The share of thermal power in electricity supply structure will reduce from 68.04% of 2010 to 64.43% in 2015 (see Table 2). To meet the demand for electricity in China's development, China's growth of power generation will rely mainly on hydropower and other environment-friendly sources.

Table 2

China's plan of installed capacity of electricity during the Twelfth Five-Year Plan

Item	Unit	2010		2015		Annual Growth Rate □%□
		Amount	Percentage	Amount	Percentage	
Installed Capacity of Electricity	100 million KW	9.7	100.00	14.9	100.00	9.0
Including□Coal Power	100 million KW	6.6	68.04	9.6	64.43	7.8
Hydropower	100 million KW	2.2	22.68	2.9	19.46	5.7
Nuclear Power	100 million KW	1,082	1.12	4,000	2.68	29.9
Gas Power	10 thousand KW	2,642	2.72	5,600	3.76	16.2
Wind Power	10 thousand KW	3,100	3.20	10,000	6.71	26.4
Solar Power	10 thousand KW	86	0.09	2,100	1.41	89.5

Source: *The Twelfth Five-Year Plan of China Energy Development* (Document No: No.2, 2013), see <http://www.gov.cn/zwgk/2013-01/23/content_2318554.htm>.

According to the National Hydropower Census in 2003 the hydropower reserve of the Yarlung Tsangpo is 11,389 million KW. It is the second largest in China, only lower than that of the Yangtze River. The hydropower reserve of the Yarlung Tsangpo River accounts for 56.56 per cent of total hydropower reserve of Tibet. The Yarlung Tsangpo River is also endowed with technological development capacity of 56.45 million KW.[22] A 2.155 million KW installed capacity in Yarlung Tsangpo River has already been developed, which accounts for only 3.8 per cent of its technological development capacity. The Yarlung Tsangpo River is lowest in terms of the river hydropower utilization rate and is largest in terms of hydropower development potential in all major rivers in China. With the technological progress in hydropower generation and exhaustion of hydropower potential in other major rivers in China, the Yarlung Tsangpo River will become the only river in the country containing huge untapped hydropower resources, and will become China's only source for increasing hydropower supply. China's Twelfth Five-Year Plan (2010-2015) envisaged construction of three hydropower stations over the mainstream of the Yarlung Tsangpo River. The first hydropower station, called the Zangmu Station, has been finished in

November 2014 and the remaining two are still in the stage of study. More hydropower projects will most probably be launched in the basin in future.

Third, promotion of Tibet's regional development by utilizing resources of the Yarlung Tsangpo River is also in line with core national interests of China, as it is a relatively less developed part of the country. Tibet's GDP accounted only for 0.14 per cent of the total GDP of China in 2014, and GDP per capita in Tibet is only 63 per cent of the national average. Disposable income of urban residents per capita in Tibet is 76 per cent of the national average, while the net income of the farmers per capita in Tibet is 70 per cent of the national average (see Table 3). Seventeen per cent of the population of Tibet did not have access to electricity by the end of 2010.[23] Economic development and improvement of the local people's living standards is not only the demand of the people of Tibet but also essential for safeguarding national unity and stability. Given Tibet's energy endowments and geographical features, hydropower will be the pillar industry to meet the power supply demands in Tibet and to promote Tibet's economic development in the near future. Tibet will "develop renewable energy resources while hydropower is the main component of renewable energy to solve the problem of power shortage" and Tibet will "actively develop hydropower stations, try to be one of the energy bases for sending electricity from the west to the east region of China and forge hydropower industry to become one of the pillar industries in Tibet" during the Twelfth Five-Year Plan from 2010 to 2015.[24]

Table 3

Comparison of economic indicators of Tibet with the national average of China in 2014

Region	GDP (100 Million Yuan)	GDP per capita □Ten thousand Yuan□	Disposable Income of Urban Residents per capita (Yuan)	Net Income of the Farmers per capita (Yuan)
China	636,138.7.	4.66	28,843	10,488

Tibet	920.83	2.93	22,016	7,359

Source: Statistical Database of Development & Research Center of Central Government of China.

Fourth, environmental degradation is a big problem in the Yarlung Tsangpo basin. Environmental protection is essential to ensuring sustainable development and sustainable use of the river, which is also one of China's national interests. Economic and social benefits and ecological costs of the river utilization will be measured carefully and will be one of the core factors for China's decision on river utilization.

Fifth, water diversion from Yarlung Tsangpo River — if necessary and feasible — is also in the national interest of China. China suffers from severe freshwater scarcity. Per capita freshwater consumption in China is only a quarter of the world average. China's freshwater is also extremely uneven in spatial and temporal distribution. Although a variety of water diversion proposals have been suggested by non-government persons and agencies, Beijing still does not have any official plan of water diversion from the Yarlung Tsangpo River. The under-construction South-to-North Water Diversion project in China aims at transferring water mainly from the Yangtze River to the Yellow River and the Haihe River basin. Currently, China is undertaking the South-to-North Water Diversion Project to solve the problem of freshwater scarcity in the northern part of the country, especially in the Bohai region. If the freshwater scarcity is further aggravated and water diversion from Tibet is feasible in terms of technology and finance, water diversion from Tibet could be an option for solving freshwater scarcity in China. Qinghai-Tibet Plateau is an area with the most abundant freshwater and very few inhabitants.

India's national interests concerning Yarlung Tsangpo-Brahmaputra River

Former Indian Defence Minister Shekhar Dutt pointed out in 2007 that "India's primary strategic objective is the improvement of the socio-economic conditions and opportunities within a secular democratic framework for its one billion people; to defend the country's borders as defined by law and enshrined in the constitution; and protecting the lives and properties of its citizens against terrorism and insurgencies."[25] Starting from this definition, we can deduce India's national interests concerning the Yarlung Tsangpo-Brahmaputra River as follows:

First, ensuring safety of drinking water and flood control in the basin areas could be considered a core interest of India with respect to the Yarlung Tsangpo-Brahmaputra River. Generally India is a water-scarce country. The per capita freshwater availability in India was 1,603 cubic meters in 2009, one-fifth of the world average. If the Brahmaputra River water is excluded, the per capita freshwater availability would drop to 1,101 cubic meters as per the 2009 figures.[26] The Brahmaputra River is the largest river in India in terms of water runoff; its annual runoff is 585.6 billion cubic meters accounting for nearly one-third of India's total water runoff. There are 31.84 million people living along Brahmaputra basin in India, and the primary use of the river is to provide drinking water for the people living in the basin area while at the same time the Indian government is also concerned about avoiding the threat of flooding for them in the rainy season.

Second, India can also use the river to protect its presumed "territorial integrity." The Brahmaputra River flows through China's South Tibet region (called "Arunachal Pradesh" in India), which is currently under Indian occupation. India naturally expects that any utilization of the river should not weaken its actual control of South Tibet. Therefore, water allocation negotiations over the Yarlung Tsangpo-Brahmaputra River between China and India are

interwoven with territorial claims, which cannot be solved separately. This is one of the main reasons for the little progress on trans-border river negotiations recently.

Third, the Brahmaputra River is the main source of water supply for irrigation and industrial production in these areas. The river runoff can provide not only the water supply for industrial and agricultural usage in the basin areas of India but also water supply for living and production in the downstream basin of Bangladesh under normal circumstances.

Fourth, the river is also instrumental in development of hydropower generation for India. Hydropower reserve of the Brahmaputra River is 66.065 million KW, accounting for 44.42 per cent of India's hydropower reserves. Around 68 per cent of the hydropower reserve of Brahmaputra River is located in South Tibet, which accounts for 30 per cent of Indian hydropower reserves.[27] India has built eight hydropower stations on the Brahmaputra River, two of which are located in South Tibet. Another 19 hydropower stations are under construction in India, 14 of them located in South Tibet.[28] The total installed hydropower capacity on Brahmaputra River is 29.725 million KW, accounting for 45 per cent of the total hydropower reserves of the river.[29] India is still suffering from power shortage and its demand for electricity will further increase with the development of the economy. India has the third largest coal reserves in the world; therefore, power generation currently relies heavily on coal power. Since India is lacking in availability of domestic oil and gas reserves, increase in power generation capacity of India will mainly rely on hydropower in case of the exhaustion of coal reserves or decrease in reliance on them because of their association with environmental pollution. Thus, hydropower generation in Brahmaputra River is inevitable given the energy structure of India.

Fifth, India is suffering from extremely uneven spatial and temporal distribution of freshwater. North-eastern region of India enjoys high precipitation,

huge river runoffs, and abundant freshwater resources. On the other hand, north-western region of India has little precipitation and is facing serious threat of droughts and water shortage. India has put forward ambitious National Rriver-Linking Project (NRLP) to conduct water diversion. The project plans to build 30 canals, and 3,000 water reservoirs to link 37 rivers in the Himalayan region and Indian peninsula. The project is expected to add 35 million acres of irrigated land in India. The estimated investment amount of the Project in 2002 was about US $ 123 billion.[30] It consists of two major parts: the Himalayan Water Diversion Project and the Peninsular Water Diversion Project. The Himalayan Water Diversion Project plans to transfer 33 billion cubic meters of water annually from the Brahmaputra and Ganges Rivers to the northwest India. If the project is completed, the quantity of water transferred will reach 178 billion cubic meters.[31] NRLP has made little progress in recent years though, despite the fact that the Supreme Court of India declared a verdict in 2002 instructing the Indian government to finish the project before 2016.[32] The launch of NRLP, nevertheless, increases the importance of Brahmaputra River for India.

Sixth, in addition to providing water for people's living and production in basin areas, the Brahmaputra River is also a major shipping channel. Cargoes can go upward from the Bay of Bengal to Assam in India which connects north-eastern part of India with Indian Ocean directly. In addition, India also hopes to protect the environment and realize sustainable utilization of the river.

From the above analysis, we can say that some of the national interests of China and India concerning Yarlung Tsangpo-Brahmaputra River are compatible with each other, such as: hydropower development, environmental protection, and shipping development. In other and more important cases, however, the national interests of two countries are in obvious conflict with one another, such as: sovereignty, territorial integrity, and water diversion. Compatible and incompatible interests of India and China on the issue of trans-border rivers have

led to a complex interdependence, which plays a unique role in the Sino-Indian relationship.

Importance of trans-border rivers in the Sino-Indian relations and interdependence

From the above analysis we can infer that the importance of trans-border rivers as an issue affecting Sino-Indian relations is recognized differently in India and China. Both officials and public in India put much emphasis on the trans-border river issue, and it is a very hot topic for the press in India as well. On the other hand, Beijing does not give as much importance to it and prefers to address it from the perspective of the so-called "bigger picture of Sino-Indian relations." Chinese public does not pay much attention to this issue either with the exception of the Chinese scholars who do research on Sino-Indian relations. Since China is the upper riparian in trans-border rivers between the two countries, it has a more advantageous position in river negotiations. Trans-border rivers have actual effects on core national interests of India, such as: water supply, flood control, and even survival of population in the river basin. Thus India considers trans-border rivers issue very important in Sino-Indian relations. It is fair to say that trans-border rivers issue is one of the few issues that draw significant attention from both the government and public in India. Indian officials raise trans-border rivers issue almost in every government-to-government interaction between China and India and it is always one of the top agenda items for India during China-India negotiations.

In addition, since trans-border rivers issue closely connects with the territorial dispute between China and India, one issue is the premise for solving the other and vice versa. The issue of the territorial dispute is related to the core interests of the two countries, therefore, trans-border rivers issue between China and India will become one of the most difficult problems in Sino-Indian relations.

Complexity of trans-border rivers issue between China and India requires Beijing to rethink its current policies.

Interdependence among countries in world politics is defined as situations characterized by reciprocal effects among countries or among actors in different countries.[33] China and India, in trans-border rivers issue, are clearly influenced by each other, and one party's actions will have certain impact on the other party. This interdependence, however, is asymmetric. Vulnerability and sensitivity are two dimensions to measure the asymmetrical interdependence between two countries. Sensitivity involves degrees of responsiveness within a policy framework, that is, how quickly do changes in one country bring costly changes in another and how great are the costly effects.[34] Vulnerability refers to liability to costly effects imposed from outside before policies are altered to change the situation. Vulnerability can also extend to an actor's liability to suffer costs imposed by external events even after policies have been altered.[35]

If both China and India take a cooperative strategy on the Yarlung Tsangpo-Brahmaputra River issues and try to resolve this problem by non-violent and peaceful means, their respective vulnerabilities would be quite different.

First, in terms of national interest of territorial integrity, the vulnerability of Chinese side is greater than that of the Indian side. Since the South Tibet region — an area the Yarlung Tsangpo-Brahmaputra River traverses — is under the actual control of India, India can strengthen it by increasing river utilization; whereas the alternative of taking over South Tibet through a violent conflict is too costly for China in comparison with cooperation. Since territorial integrity is a core national interest for both China and India, once violence breaks out the danger of its intensification will most probably be the case. Violence as an alternative to cooperation and negotiation for resolving the territorial dispute will be too costly to implement. Thus vulnerability of China on territorial integrity is greater than that of India.

Second, in terms of national interest of utilization of water resources, flood control, water diversion, and ecological protection, the vulnerability of Chinese side is smaller than that of India. China and India are in a non-zero-sum game in terms of the fields mentioned above. As China is the upper riparian state in the case of Yarlung Tsangpo-Brahmaputra River, it is capable of taking unilateral action to conduct utilization of water resources, water diversion, and power generation by itself with or without India's cooperation. On the other hand, India will face great risks in flood control, water diversion, and hydropower generation without the cooperation of China.

Besides, as an alternative strategy of river utilization, China can also choose not to utilize river for power generation and water diversion, because population in the Yarlung Tsangpo-Brahmaputra River basin in China is scarce and costs of power generation and water diversion are high due to unfavourable natural conditions. The urgency of the river utilization in China, thus, is debatable. In other words, the option of not utilizing the Yarlung Tsangpo-Brahmaputra River temporarily is also acceptable for China. For India, being in the more populous downstream area of the Yarlung Tsangpo-Brahmaputra River, utilization of the river for irrigation, power generation, and water diversion is less costly and technologically easy. The Brahmaputra River is the largest river in terms of water runoff in India, and it is also the major source for water diversion; therefore, non-utilization of the Brahmaputra River as a policy option for India is a high cost one.

What should be China's strategy on issue of Sino-Indian trans-border river?

Asymmetric interdependence and difference of vulnerability is one of the sources for bringing in the factor of state power. India and China have different vulnerabilities on the issue of trans-border rivers, which should be the basis for China's policy on the issue.

Application of Linkage Strategy

Linkage Strategy in international negotiations refers to combining different issues in negotiations to establish leverage. In terms of territorial integrity in South Tibet, the vulnerability of Chinese side is bigger than that of the Indian side and in terms of utilization of water resources in the Yarlung Tsangpo-Brahmaputra River, the vulnerability of Chinese side is smaller than that of India. China should combine the territory issue and trans-border river issue for negotiations to create favourable conditions for China.

China and India are currently negotiating these two issues separately under two parallel negotiation mechanisms. Both sides have established Expert-level Negotiation Mechanism on Trans-border Rivers in 2006.[36] Eight rounds of talks have been held until the end of 2014 which were led by ministries of water resources of China and India leading to signing of several Memoranda of Understanding (MoUs) on provision of hydrological data to India by China. Despite repeated denials of the Yarlung Tsangpo River water diversion plan from the Chinese side, any move by China on the Yarlung Tsangpo River always caused strong protests and criticism in India. The Special Representative Negotiation Mechanism on Border Issues between China and India was established in 2003. 18 rounds of talks under the mechanism have taken place until 2015 which were led by State Councillor on the Chinese side and National Security Advisor on the Indian side. Nothing has been achieved from the bilateral border negotiation other than the maintenance of the status quo. Given India's actual control of the South Tibet, status quo is actually detrimental to China. Border negotiation is a typical zero-sum game, while negotiation on trans-border rivers is non-zero-sum game, so these two issues should be linked together for negotiations and for progress of negotiations.

Combining the share of hydrological data with utilization of river resources in trans-border river negotiation

As a result of the agreement reached in bilateral Expert-level Negotiation Mechanism on Trans-border Rivers between China and India, China provides hydrological data to India on trans-border rivers.[37] The next step for further negotiation should focus on mutual sharing of hydrological data between China and India and negotiation should also include utilization of river resources. In order to settle the issue, China must unequivocally protest any water diversion and hydropower generation project in the South Tibet before the settlement of final status of the region since it strengthens India's actual occupation of the region and increases the difficulties of resolving the primary dispute.

Utilization of Yarlung Tsangpo River resources

Utilization of the Yarlung Tsangpo River resources including power station construction is necessary for economic development in Tibet and improvement of the living standards of the Tibetan people. It is also in line with the basic principles of international river law, which includes the principle of "equitable and reasonable utilization."[38] Upper riparian states' maintenance of the original state of the river will be ideal for lower riparian states, but it is neither fair nor reasonable for an upper riparian state to give up its rights of utilization of river without proper compensation given by the lower riparian state. Principles of international river law and international practice emphasize on ecological and environmental protection while they require that "utilization of water resource for upstream countries do not cause significant harm for downstream countries."[39] Therefore, China should continue to promote the development and utilization of water resources in the Yarlung Tsangpo River on the basis of ecological and environmental protection.

Trans-border rivers issue is closely related with territorial disputes between China and India. The relative vulnerabilities of China and India on the

two issues are quite different though. The successful settlement of those two issues relies on the realistic attitude of both countries. China and India are in an asymmetric interdependence on both issues, which sets up the policy foundation for two countries.

Notes and References

[1] Non-traditional security emerged as a concept with the development of globalisation. It breaks through the traditional concept of security which focuses on the study of nation-state security, and its maintenance by military means. Non-traditional security goes beyond this state-centric security paradigm to a human-centric security paradigm. It includes economic security, environmental security, cultural security, energy security, and water security. Threats to non-traditional security include threats of terrorism, piracy, ethnic and religious conflicts, water shortage, weapons proliferation, human trafficking, drug smuggling, illegal immigration, money laundering, maritime security, etc.

[2] The explanation of these terms can be found in detail in: Wang Zhijian, Xin Hongfei, "On the Law of International Rivers," *Journal of Hohai University* (Social Science Edition), Vol.10, No.3 (Oct. 2008), pp.92-116.

[3] The upstream rivers of Indus flow into the disputed territory of Indian-Held Kashmir. Since the area is under actual control of India, they are included in trans-border rivers between China and India.

[4] The Department of Water Resources of Tibet of China, <http://www.tinetinfor.com.cn>, cited in Zhang Jincui, "Sino-India Strategy Game on Water Resource Dispute," *South Asian Studies Quarterly*, No.4, 2010, p.15.

[5] Studies of this kind include Lan Jianxue, "Water Security and Sino-Indian Relations," *South Asia Studies*, No.2, 2008, pp.21-26; Lan Jianxue, "Water Security Cooperation and Sino-Indian Interaction," *International Studies*, No.6, 2009, pp.37-43; and Zhang Jincui, "Sino-India Strategy Game on

Water Resource Dispute", *South Asian Studies Quarterly*, No.4, 2010, pp.15-21.

[6] He Daming and Feng Yan, *Management and Coordination of Use of Water Resources in International Rivers*, Beijing: Science Press, 2006; and Han Junyu, "Economic Strategy of Tibet's Water Resources Development," *Journal of Shanghai University*(Social Sciences), Vol.18, No.1, 2011, pp. 102-114.

[7] Li Ling, *Tibet's Water Rescue China*, Beijing: Sino-Culture Press, 2010.

[8] West line of Water Diversion Project is proposed by Guo Kai, and there are several different versions on this proposal. Proposal of Guo Kai suggested water diversion along the 3600 ~ 3400 meter, it plans to connect the Yarlung Tsangpo River, Nu River, Lancang River, Jinsha River, Ralong River and Dadu River to transfer water to Yellow River. Detailed in Yang Hongren, Li Mingsheng, "Water Diversion and Usage of Three Rivers in Southwest," *Journal of Three Gorges University*, No.4, 2001, pp.32-36.

[9] Wu Peipeng, "Ecological Hydraulic Engineering of Brahmaputra Hydropower Development," *Tibet Science and Technology*, Vol.238, No.1, 2013, pp.59-61.

[10] Yang Shu, Sheng Xiaochen, "Basis of International Law for Solving the Problem of International River Water Allocation," *Journal of Lanzhou University*(Social Sciences), Vol.37, No.4, 2009, pp.8-14; Jin Jing, "International Rivers Conflict in International Law," *Journal of PLA Nanjing Institute of Politics*, Vol.25, No.2, 2009, pp.77-80.

[11] Papers of this kind include: Jiang Wenlai: "China's Water Security Strategy in 21st Century," *China Water Resources*, No.8 (Aug 2000), pp.

12-23; Lan Jianxue: "Water Resources Security and Sino-India Relations," *South Asia Studies*, No.2, (April. 2008), pp .21-26; Liu Dengwei: "Trends of International Rivers Development and Management," *Water Resources Development Research*, No.5, (Oct.2010), pp. 35-40.

[12] See Aaron T. Wolf, Shira B. Yoffe and Mark Glordano, "International Waters: Indicators for Identifying Basins at Risk," UNESCO, IHP&WWAP PCCP Series, No.20, 2003, pp7-8. <http://unesdoc.unesco.org/images/0013/001333/133306e.pdf>

[13] There are different version of such comments in India but the core accusation is that China is taking advantage of its location and will divert water to other places which would make India suffer from drought or China will cut the river altogether. Latest reports and comments include: Sudha Ramachandran, "Water Wars: China, India and the Great Dam Rush," *The Diplomat*, <http://thediplomat.com/2015/04/water-wars-china-india-and-the-great-dam-rush/> (accessed on 5 May 2015); R N Bhaskar, "What Chinese dam on Brahmaputra means to India," *DNAINDIA*, <http://www.dnaindia.com/money/report-what-chinese-dam-on-brahmaputra-means-to-india-2038737> (accessed on 5 May 2015); IANS, "China Pushes India to the Wall on Brahmaputra," *The New Indian Express*, <http://www.newindianexpress.com/nation/China-Pushes-India-to-the-Wall-on-Brahmaputra/2015/08/08/article2964128. ece> (last accessed on 10 Aug 2015)

[14] Detailed introduction can be found in Xiao Huozhi: "Retired General and Water Diversion," *Zhong Guancun*, No.8, (Aug 2009), pp.106-109.

[15] Former Minster for Water Resource (1998-2007) Wang Sucheng has stated several times very clearly that the project is unnecessary and

unrealistic see <http://www.nsbd.gov.cn/zx/rdht/201107/t20110701_187339.html> (last accessed on 10 Aug 2013); Huo Youguang, "Why Grand West Line of Water Diversion Project is Unrealistic," *Advances in Science and Technology of Water Resources*,No.6, 2008.

16 NRLP was put forward in the 1980s and it plans to connect rivers to transfer water from north to south India and from east to west of India.

17 Tushaar Shah, Upali Amrasinghe and Peter McCornick, "India's River Linking Project: The State of the Debate," Paper Prepared for A Book Volume of the RFF Press, Water Policy Series, p.2. <http://nrlp.iwmi.org/PDocs/DReports/Phase_02/01.%20India's%20River%20Linking%20Project%20-%20State%20of%20the%20debate-%20Shah%20et%20al.pdf>. Swati Bansal, "National River Linking Project: Dream or disaster?", India Waterportal, <http://www.indiawaterportal.org/articles/national-river-linking-project-dream-or-disaster> (last accessed on 10 September 2015)

18 Wang Yizhou: "Rethinking National Interests," *Social Sciences in China*, No.2, (Feb 2002), p.161.

19 This classification on National Interests can be found in Ellsworth, Robert, Andrew Goodpaster and Rita Hauser, "America's National Interests: A Report from The Commission on America's National Interests 2000"? Washington, D.C., Report for Commission on America's National Interests, July 2000, pp.2-3. <http://belfercenter.ksg.harvard.edu/files/amernatinter.pdf>

20 For detailed explanation please refer to Kenneth A. Oye, ed. *Cooperation Under Anarchy*, Princeton: Princeton University Press, 1986.

[21] The State Council Information Office of the People's Republic of China: *White Papers China's Peaceful Development*, <http://www.gov.cn/jrzg/2011-09/06/content_1941204.htm>.

[22] Hu Xiangyang, He Zhijie, "Prospects of Hydropower Development in Tibet," *Yangtze River*, Vol.40, No. 16, (Aug 2009), p.3.

[23] People's Government of Tibet Autonomous Region: *The Twelfth Five-Year Plan of Energy Development of Tibet Autonomous Region (2010-2015)*, p.5.

[24] People's Government of Tibet Autonomous Region: *The Twelfth Five-Year Plan of Energy Development of Tibet Autonomous Region (2010-2015)*, pp.13-14.

[25] Inaugural Speech by Shri Shekhar Dutt at a seminar on "Defence, Security, Diplomacy: India's National Interests," on 24 February 2007, <http://www.associationdiplomats.org/specialevents/AnnualSeminars/200607/20070224DefenceSecurityDiplomacy/20070224DefenceSecspeech.htm>.

[26] Zhong Huaping, Wang Jiansheng, Du Chaoyang, "Water Resources and Water Use in India," *South-to-North Water Diversion and Water Science & Technology*, Vol.9, No.1, (Jan 2011), p.152.

[27] Muhammad Mizanur Rahaman and Olli Varis, "Integrated Water Management of Brahmaputra Basin: Perspectives and Hope for Regional Development", <http://www.worldwatercongress2008.org/resource/authors/abs659_article.pdf>.

[28] Fan Jicang, Li Bin, Zhao Ming, Li Junfeng, "India's Projects on Brahmaputra and Its Transboundary Effects," *World Regional Studies*, Vol.19, No.4, (April 2010), p.85.

[29] Ibid.

[30] Upali A. Amarasinghe and Bharat R. Sharma, "Strategic Analyses of the National River Linking Project (NRLP) of India, Series 2: Himalayan component Peninsular component Proceedings of the Workshop on Analyses of Hydrological, Social and Ecological Issues of the NRLP," pp.7-8, <http://www.iwmi.cgiar.org/Publications/Other/PDF/NRLP%20Proceeding-2%20Prelims%20&%20overview.pdf>.

[31] Ibid.

[32] Li Xiangyun, "India's National Water Policy and its National River-Linking Project," *Water Resources Development Research*, No.4, (April 2009), p.67.

[33] Robert O. Keohane, Joseph S. Nye, *Power and Interdependence* (3rd ed.), Beijing: Peking University Press, 2004, p.9.

[34] Ibid. 9-13.

[35] Ibid.

[36] *China and India's Joint Statement*, see <http://www.gov.cn/gongbao/content/2007/content_487047.htm>.

[37] China provides Hydrological Data to India on the Yarlung Tsangpo River and Langqin Zangbu.

[38] International Commission on Large Dame, ed., *Principles and Practices of Development of International Share Watercourse* (Translated by Jia Jinsheng, etc.), Beijing: China Water Press, 2007, pp.10-20.

[39] Please see He Daming and Feng Yan, *Water Usage and Coordinative Management in International River*, Beijing: Science Press, 2006, pp. 83-102.