

## ***China: Geopolitics of a Thirsty Nation***

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Meeting food, energy and water requirements is going to be the biggest challenge for China. With almost a quarter of its land classified as desert, China ranks as the world's most arid country. It loses vast tracts of grasslands every year to the dust storms from Inner Mongolia. Its freshwater sources are limited; and about 70 per cent of its rivers are badly polluted and silted. An estimated 300 million people in China have limited supply of water. China is clearly water-insecure: the south (Tibet) has an abundance of water supply while the north and west are excessively water stressed. A hydrological sketch of China indicates that south of the Yangtze River, which accounts for roughly 36 per cent of Chinese territory, has 81 per cent of China's water resources. The territory north of the Yangtze, where water requirement is extremely high, makes up 64 per cent of land but has a meagre 19 per cent of water capacity.

China's Ministry of Water Resource calculated in 2007 that the country has a total of 2469.6 billion m<sup>3</sup> water resources, of which the surface water resources are 2376.4 billion m<sup>3</sup><sup>1</sup>. Of the available water only 15.7 billion m<sup>3</sup> "flows into" Chinese territory from outside. In comparison, 569.9 billion m<sup>3</sup> of water "flows out" of Chinese territory. The "flow into" and "flow out" of water makes China a water independent rather than dependent nation. What is to be noted from the figures provided by the ministry is that though China has much in total volume of water resources, it has little in per capita terms. The total amount of water resources also is decreasing due to various factors. The amount of total water supply in 2007 was 578.9 billion m<sup>3</sup>, of which surface water was 470.4 billion m<sup>3</sup> (81.2 per cent) and groundwater 105.8 billion m<sup>3</sup> (18.3 per cent)<sup>2</sup>. But the most striking aspect of China's water availability relates to Tibet. Tibet's per capita water availability is 152,969.2 m<sup>3</sup> compared to China's national average (including Tibet) of 1916.3 m<sup>3</sup>.

Calculations and projections indicate that China is expected to face 25 per

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cent demand-supply gap by 2030, with two-thirds of its cities already facing difficulty in accessing water. Clearly, water utilization is part of China's strategic objective. Not surprisingly, in December 2010 Beijing took a decision to accelerate reform and development of water resources, known as the No. 1 Document in 2011, focusing on three "red lines": over-exploitation, usage efficiency, and pollution<sup>4</sup>.

More than anything else, water shortage becomes an impediment to China's goal of meeting food production requirements and challenges the leadership's claims to self-sufficiency in food grains. Water deficiency, prolonged drought and below-average rainfall in the nine provinces (including the six major wheat-producing provinces) of the northern plains have resulted in a surge of grain imports not experienced in the last fifteen years<sup>5</sup>. Reduced self-sufficiency is dangerous for a country with a population as large as that of China, and therefore its search for water becomes an unending imperative.

Electricity is equally crucial in China's economic development. With GDP growing at 8–10 per cent a year, China's energy requirement is projected to increase by 150 per cent by 2020<sup>6</sup>. While it is resource rich in coal and is a net importer of oil, both climate-unfriendly, China is compelled to develop hydroelectricity as a clean and renewable source of energy. China already has half of the world's large dams, including the Three Gorges Dam. Its exploitable hydropower is estimated to be around 378 GW, with an annual power supply of 1.92 trillion KWh<sup>7</sup>. Huge hydroelectricity projects for energy and water diversion schemes for food sufficiency are strategic measures in China's growth path. The Tibet Autonomous Region (TAR) in southwest China, which serves as the headwaters of many of Asia's largest rivers, including the Yellow, Yangtze, Mekong, Salween, Brahmaputra and Indus, is of existential importance for China. Without Tibet, China's hydrological supremacy would be overturned from water independence to dependence<sup>8</sup>. Mao Zedong a long time ago realized the water-resource value of Tibet when he remarked, "The south has a lot of water, the north little ... . If possible, it is okay to lend a little water."<sup>9</sup> Beijing's total control over Tibet in effect is the total control of the water resources. "Absolute territorial sovereignty" over the waters gives an added strategic sharpness to China's regional approach and its increasing "hydro-egoism" dictates the riparian relations with countries downstream. The classic lines, "He who holds Tibet dominates the Himalayan piedmont; he who dominates the Himalayan piedmont threatens the Indian subcontinent; and he who threatens the Indian subcontinent may well have all of South-East Asia within his reach, and all of Asia",<sup>10</sup> become relevant.

### **Tibet: A Water Tower**

Though geologically the Tibetan plateau is distinct from the Himalaya, geologists often regard all the rivers, including those originating from Tibet, collectively as the "circum-Himalayan rivers".<sup>11</sup> ICIMOD describes the Himalayan mountain system as the Hindu-Kush Himalaya (HKH), which extends some 3500 km from Afghanistan in the west to Myanmar in the east and includes the Tibetan plateau.<sup>12</sup> Rivers originating from this highest and biggest plateau give it a trans-boundary characteristic. This can be analysed from three perspectives. First, the majority of the rivers originate in TAR and flow through and drain into other territorially defined boundaries. Second, there continues to be ambiguity in the definitional demarcation whether river water is exclusively a "public good" (defined as non-rival and non-excludable) or a "private good" (defined as rival and excludable).<sup>13</sup> Third, planning any water resource utilization policy will have to take into account the impact of climate change in terms of seasonal flow and extreme events. River uses are deeply subjective in terms of where, what and how. New modalities of a water sharing agreement will have to factor shifting hydrograph.

Tibet's watershed raises questions particularly from an "absolute" versus "limited" territorial sovereignty concept. A large population spanning from South to South-East Asia is dependent in distinct interlinked ways on the rivers that originate and flow from Tibet. Ten major Asian river systems - the Amu Darya, Indus (including the Sutlej), Ganga, Brahmaputra, Irrawady, Salween, Mekong, Yangtze, Yellow and Tarim have their sources, in varying degrees, in the Tibetan glaciers contributing to almost 70 per cent of water resources. Overall, an estimated 2.5 billion people "directly and indirectly benefit from the food-water-energy provided by the rivers originating from Tibet".<sup>14</sup> The combined drainage of the river basins is about 8.6 million square kilometres, equivalent to the size of Brazil.<sup>15</sup> What China does in Tibet in terms of water resource development is of enormous significance to the countries downstream.

Some studies indicate that there are more than four hundred hydropower plants of various capacities under construction in Tibet. Moreover, the effects of global warming will be felt through changes in the hydrological cycle. An effective adaptation policy for the countries of the Tibetan watershed cannot be delinked from the way water resources are managed and used in the plateau.

Beijing, through various studies, is also quietly acknowledging the changing condition of Tibet's water supply. The Institute of Tibetan Plateau Research, a unit of the Chinese Academy of Sciences, reported in 2010 that the

glaciers had decreased by 7 per cent since the late 1960s. An immediate consequence of the receding glaciers is an increase in the runoff of some rivers. It is this "new water" of the glacial melt and the consequent water-level rise that is prompting many hydrologists and engineers to make a case for harnessing the hydropower potential. The Chinese argue that the rise in water level will have ominous consequences for lower riparian countries. It is not surprising that the Chinese are trying to identify power generating potential of 10 MW and above on many of the rivers in Tibet. Some of these are: Qusong-Milin stretch of the Yarlung/Brahmaputra, with a potential of 5000 MW; and at the Great Bend of the Yarlung and Motuo near the Line of Actual Control with India, with a capacity of 38 GW.<sup>16</sup>

China's policy on Tibet can be understood from a "resource dependence" perspective, in this case water, securing which is an important strategic tenet. The 2005 publication of a report titled *Tibet's Water will Save China* by a former military person, Li Ling, reflects an "idea with a long pedigree"<sup>17</sup> of damming the rivers in the Tibetan plateau. Tibet's vast water resources are key to sustaining China's northern region, revitalizing its deserts and the Yellow River itself, as well as being crucial to its Himalayan strategy. China's needs and the water requirements of the other downstream countries set up a contesting and conflicting situation, often prompting analysts to say that "China's thirst will leave others thirsty".

### **Question of Tibet**

The Tibetan glacial-fed rivers raise difficult and contesting questions, both from political and ecological perspectives. The glacial melting has put a new spotlight on Tibet's water resources. It has become a key issue for civil society and powerful environmental groups like the International Union for Conservation of Nature (IUCN) to campaign for Tibet as a vulnerable area to be protected from rampant resource exploitation. In 2003, 7.1 million hectares in Yunnan province, where the upper reaches of the Yangtze, Lancang and Nujiang run parallel, was declared a World Heritage. Interestingly, China has ratified the Convention on the Protection of World Cultural and Natural Heritage, which was adopted by UNESCO in 1972.<sup>18</sup> China is usually suspicious of such activism and considers it as West-driven interference. However, this does not demerit the fact that China needs to incorporate the ecological cost in its development of water resources. This will also have widespread approval of the local Tibetans, who consider ecology a way of life and have always derided the blatant Chinese mismanagement of the environment.

From a political perspective, Tibet's water resources raise contesting questions. Should China alone be the stakeholder to the waters in Tibet? For one, Tibet's status as an autonomous region of China has not been settled politically. Also, the crucial sustainability and ecological issues explained earlier affect an additional 2 billion people downstream in addition to the affected population within China. With the ongoing works on the Yarlung and Nujiang,<sup>19</sup> China has exploited all the rivers from the Tibetan Plateau that Mao desired to possess. None of these developmental plans takes into account the views or concerns of the lower riparian. Raising water resources in Tibet as a "commons" or a "natural heritage of humankind" would draw international attention and possibly prompt China into a water dialogue with the downstream countries on ways to preserve and share the benefits of the waters of Tibet.

China also has a strong environmental constituency, with activists, scientists and journalists, despite odds, sensitizing local people and authorities to ecological concerns. However, China's environment and growth have a disjointed relationship. The pace of its development, which is not to be compromised, fails to calculate the long-term ecological damages. Only an environmentally conscious regime in Beijing can make conciliatory moves allowing for broad-based basin management of the Tibetan rivers.

### **China's Riparian Approach**

An indicator of China's inward and unilateral approach to rivers is the fact that it has no abiding bilateral or basin riparian treaties on any water allocation or water utilization.<sup>20</sup> In fact, China was one of the three countries<sup>21</sup> that did not approve of the 1997 UN Convention on the Law of the Non-Navigational Uses of International Waterways. The Water Resource Ministry website, however, states, "... China has built cooperation relationships with more than 60 countries, and signed water cooperation agreements and memorandum of understanding with 40 countries."<sup>22</sup>

Water-related issues have always been in mainstream thinking and politics in China and water projects have played a fundamental role in its development. Even today water-related issues are an intricate part of social and political developments. Mega constructions on the rivers have raised widespread fear among the lower riparians about China's manipulation of upstream flow. Within China too, water projects have become flashpoints for local protests. Andrew Mertha says, "the control and management of water has transformed from an unquestioned economic imperative to a lightning rod of bureaucratic infighting, societal opposition, and open protest."<sup>23</sup>

The Chinese civilization flourished around the mighty river systems of the Yellow and the Yangtze.<sup>24</sup> The emergence of agriculture was first seen during the Hemudu culture dating back 6000-7000 years.<sup>25</sup> Large-scale harnessing of rivers and development of water conservancy projects led to the advancement of farming techniques, particularly rice cultivation, along the middle and lower reaches of the Yangtze. These great rivers also accompanied with themselves widespread destruction, and flood prevention became a priority issue of successive dynasties.

The history of Chinese civilization in many ways is a history of hydraulic engineering, canal building and water conservation. Modern-day projects such as the Three Gorges and the SNWP (South-to-North Water Project) carry a distinct Chinese tradition of taming the rivers which goes back nearly five thousand years, when Yu the Great of the Xia dynasty (2205 BC) dredged the vast floodplains of ancient China.<sup>26</sup> Yu's period symbolized the beginnings of Chinese water projects and water control. Other famous water projects of ancient China include the Dujiangyan Irrigation System, the Ling Canal and the Grand Canal. The Dujiangyan Irrigation System, built in third century BC on the Min River, a major tributary of the Yangtze, is regarded as the oldest water project in the world.<sup>27</sup> It still serves the Chengdu inhabitants. Li Bing, who built the project, acquired a mythic status representing man's struggle against the forces of nature and its ultimate triumph. Bing left behind a legacy of water planners and builders who are revered and commemorated in China. The Ling Canal and the Grand Canal represent engineering feats of linking rivers. China's recently revived political direction of building "a harmonious society", "harmony with nature" and a "harmonious world" does not robustly reflect in its current water management policies, and though not frequently, concerns are being raised: for example, Environmental Minister Zhou Shengxian in February 2011 said, "In China's thousands of years of civilization, the conflict between humanity and nature has never been as serious as it is today."<sup>28</sup>

The promotion of large-scale capital-intensive water projects with slogans like "big diversions, big irrigation" became part of the popular political consciousness and gathered momentum soon after the foundation of the People's Republic in 1949; and by the dawn of the current century, nearly half of the world's large dams were in China. Leaders, right from Sun Yatsen to the more monopolistic views of Mao Zedong, reclaimed the hydraulic mindset, casting it as the courage of the leader and the struggle of the labouring people against the elements of nature. Mao's historic swim in 1956 across the Yangtze in Wuhan was a demonstration of the supremacy and dominance of humans over nature. In the poem "Swimming" (1956), Mao expresses his unrelenting

desire to build dams on the Yangtze and a conqueror's mindset to nature.<sup>29</sup> "Humans must conquer nature" became the core of Mao's "grain first" campaign that set a trail of dam building and enthused new hydraulic learning.<sup>30</sup>

The next line of leaders such as Li Ping, Deng Xiaoping and Jiang Zemin rode on the "winds and waves" of Mao's China. While today's fourth-generation leaders including Hu Jintao and Wen Jiabao (both trained hydraulic engineers) have adopted a sustainable and holistic approach to development, they equally understand the strategic value of control and dominance of water resources.<sup>31</sup>

Mao believed in mass campaigns as the ultimate means to achieve "socialist transformation" and he carried this ideology to tame and transform nature to serve human needs.<sup>32</sup> Mao's thinking acquired certain invincibility particularly after the defeat of the Kuomintang and the successful creation of PRC and this was reflected in ways he looked at water resource development.

### **China's Hydro-Politics: A Comparative Assessment**

Riparian relations are shaped and developed by varied interpretations of the use of river water and the differing claims. Upper riparian nations essentially base their claims on "absolute territorial sovereignty", i.e. the right to use rivers unilaterally regardless of lower riparian concerns. The lower riparian, on the other hand, claim "absolute territorial integrity" of rivers, stressing that upper riparian actions should not affect the water flowing downstream. The two claims are incompatible. There are, however, accepted legal norms of "equitable utilization", "no-harm rule" and "restricted sovereignty" that riparian states work through, and frame negotiations and treaties accordingly to overcome such differing positions. But more often than not, these norms in state politics and power dynamics are rendered meaningless. It is almost a vague notion that nations are entitled to "reasonable share of water". Given that there is no legally binding international treaty on water sharing, riparian relations will largely be influenced by the prevailing political dynamics and strategic considerations.

China is a critical player in the hydro-politics of the region. Its hydrological position is one of complete upper riparian supremacy. In contrast India, another key player in hydro-politics, is simultaneously an upper, middle and lower riparian. India's middle riparian position increases its dependency (and thus water insecurity) on the headwaters of the rivers such as Indus, Sutlej and Brahmaputra which originate in the Tibetan plateau. China is equally water insecure, as explained earlier, but its insecurity relates to the uneven distribu-

tion of waters within its territory. China's hydrological position gives it enormous latitude in shaping larger political equations with its riparian neighbours. India, on the other hand, given its middle riparian position and its longstanding commitment to bilateral river treaties, has to assiduously balance the anxiety and concerns of its lower riparians (Pakistan and Bangladesh) without compromising its own water requirements.

For the river basin states other than China, being water-dependent on external sources is a hydrological reality. This and the prevailing politics shape fears and perceptions. For example, the Mekong lower riparian countries will remain suspicious of China's upstream hydroelectricity projects.<sup>36</sup> Pakistan (which is heavily dependent on the rivers flowing in from outside its boundary) sees India and not China as an upper riparian aggressor. This of course greatly relates to the grievances that Pakistan has over the Indus Waters Treaty with India. Similarly with Bangladesh, the lowest riparian in the Ganga-Brahmaputra-Meghna basin, water becomes a political and emotional driver. China as the upper riparian player would like the water debate in Pakistan and Bangladesh to be directed and contested with India, without highlighting its own hydroelectricity plans either on the Indus or the Yarlung Tsangpo (Brahmaputra).

While China has no formal water sharing arrangements with its neighbours, India has several treaties to address water issues with its neighbours, such as the 1960 Indus Waters Treaty with Pakistan and the 1996 Ganga Treaty with Bangladesh. Water treaties commit India to a dialogue-based water sharing approach and diplomatically become an important part of its neighbourhood policy. China, in contrast, would tend to take a strategic view of the water it commands; and given its hydrological position, factor water as a tool, leverage and a bargaining instrument in framing its regional policies. A snapshot of the riparian dynamics in the Himalayan watershed suggests that while there is considerable lack of trust on water issues between states, there is greater possibility of drawing India - rather than China - into regional water debate and breaking political deadlocks through sensible water sharing arrangements and resource development.

### **China's Dams and Diversion**

China's dams and water diversions are important components of its growth. Its increasingly aggressive hydro behaviour, as stated earlier, is intended to secure its massive water requirements in its northern plains. Though not intended but as an accompaniment, the control over such a valuable natural resource



gives Beijing enormous strategic latitude with its neighbours. On the one hand, water resource can be an effective bargaining tool when dealing with countries like India with whom it has testy political relations. On the other hand, hydro diplomacy through partnership on dam construction and infrastructure development helps it to widen and deepen its influence on other downstream countries. China's water approach driven by its need and economic rationality also fits into what many Chinese scholars call "non-combative aggressiveness".

On the Mekong basin, for example, while China is building eight dams in its territory, Chinese companies are also constructing two hydroelectricity dams in Cambodia. Lower riparian countries like Cambodia have much to lose by being too critical of China's dam construction, and would rather receive billions of dollars from China into the country's infrastructure. China's expertise and knowledge on hydrology and dam construction helps to enhance its power and influence and, importantly, weaken lower riparian coalition. Not surprisingly, its hydro diplomacy is dam-centric, with an underlying message that these engineering feats are essential to the livelihood of millions of people. China's uncompromising position on dams and diversion will only result in a dam spree in the lower riparian countries. The State Peace and Development Council (SPDC) of Myanmar and the Thai government are pushing ahead quickly and secretly with plans for a series of five giant dams on the Salween/Thanlwin River and its tributaries.

Likewise with Pakistan, China's strategic partnership has a strong component of dam building and infrastructure development. In August 2009, the two countries signed an MoU for the construction of the 7000 MW Bunji dam on the confluence of the Indus and Gilgit in Pakistan-Occupied Kashmir (in Gilgit-Baltistan region),<sup>37</sup> which was soon followed by an agreement to be a major backer of the 4500 MW Diamer-Bhasa dam<sup>38</sup> on the Indus. Many such "build-operate-own-transfer" (BOOT) projects are planned. Pakistan's east-west hydrological vise vis-à-vis India and Afghanistan has given ample scope for China to strengthen its ties with Islamabad and negate the remotest possibility of India and Pakistan joining together as lower riparians, since both the Indus and Sutlej flow from TAR. China has built its own storages and dams on the headwaters of Indus in the Ngari Prefecture of Tibet.<sup>39</sup>

Increasing Chinese presence and activity in POK irks India, but Beijing would remain increasingly engaged with Islamabad. Pakistan considers its dependency on China less threatening than its water dependency on India and would willingly ally with China to strategically counter India.

Clearly, for China its hydrological supremacy is an effective bargaining tool and potential weapon. China, accustomed to brinkmanship, will maintain

for a large part a strategic silence on its river diversion plans, to keep downstream states nervous and worried. And with no legally binding international treaty on water sharing, there is nothing to stop China from manipulating river flows and increasing downstream dependency.

China has over the years carefully mastered its role as a downstream developer, with state-owned power corporations reaching out in the framework of "strategic partnership". For example, constructions on the lower Mekong in the 1990s were based on loans from the World Bank and Asian Development Bank. Today, most dams are commercial projects. China has through its technical knowledge and expertise and a robust economy changed the game. *China Dialogue* says:

Almost 40% of the proposed tributary and mainstream hydropower development in coming years in MRC member countries - in other words, outside China - will be done by Chinese companies. These projects include four of the eleven proposed mainstream dams, at Pak Beng, Pak Lay and Xanakhm in Laos and at Sambor in Cambodia.<sup>40</sup>

Hydro business has become a strong component of China's foreign policy. According to *China Dialogue*:

At the MRC summit in Hua Hin in April 2010, China agreed to release more data on inflows and outflows from its cascade of dams on the Mekong River. This came in the wake of disquiet over the possible impacts of reservoir filling and releases on low flows and flash floods. While China's data-sharing still falls far short of full disclosure, the move did reveal awareness of the need to cooperate with downstream countries.<sup>41</sup>

### Conclusion

China's upper riparian position and its enormous domestic requirement gives water a strategic characteristic, and as such, different levels of trust and mistrust and cooperation and misperception are seen. The future stability of the Tibetan watershed would depend upon stable supply of water. Any river basin agreement is largely a reflection of the political situation within the basin. Therefore there is a need for a constant and focused dialogue among the riparian countries. Sustainable management of trans-boundary water supplies in accordance with UN watercourses conventions and other legal instruments is crucial in the context of the current water crisis. Suggestions that the Tibetan rivers, geologically called the "circum-Himalayan rivers", be treated as "global

commons" or "natural heritage for humankind" would clearly be anathema to China. However, such suggestions merit attention, given the large humanity dependent on the water resources from the Himalayan glaciers. China's unilateral water development approach in Tibet is bound to affect downstream riparians both in terms of water flow and ecological consideration.

Serious effort for a coalition of lower riparians, specifically to draw China into a water dialogue, is attainable in spite of the fact that many of them have a strategic partnership with China. It needs to be emphasized that dialogue amongst riparians will benefit both the upper and lower riparians. China's expertise and knowledge in dam building helps to enhance its power and influence and may influence some, but the coalition is worth promoting.

Any future water dialogue with China needs to feature some essential principles of water sharing:

- **Obligation not to cause significant harm:** This is the fundamental principle. No state is allowed to use the watercourses in its territory in a way that would cause significant harm to other basin states or to their environment, including harm to human health or safety, to the use of the waters for beneficial purposes or to the living organisms of the watercourse systems. The contestable question remains about the extent of the word "significant" and how to define "harm". A water dialogue can help clear the ambiguity.
- **Principles of Notification, Consultation and Negotiation:** Every riparian state in an international watercourse is entitled to prior notice, consultation and negotiation in cases where the proposed use by another riparian of a shared watercourse may cause serious harm to its rights or interests. Most upstream countries oppose this principle, but it is important to note that China during the negotiation process of the 1997 UN Watercourses Convention did not oppose these provisions (Articles 11–18): Ethiopia (Nile Basin), Rwanda (Nile Basin) and Turkey (Tigris-Euphrates Basin) did. This principle is an important opening to a water dialogue.
- **Principles of Cooperation and Information Exchange:** It is the responsibility of each riparian state of an international watercourse to cooperate and exchange data and information regarding the state of the watercourse as well as current and future planned uses along the watercourse. Many treaties, including the 1960 Indus Waters Treaty and the 1995 Mekong River Basin Agreement, incorporate these principles. These can form another element of a water dialogue with China.
- **The Tibetan watershed region desperately requires a framework on "water resources management" and "hydro-solidarity" that includes multi-purpose**

beneficial utilization of water resource with active participation of the lower riparian basin states. From a hydrological perspective, China becomes a key player in the South Asian politics.

## Endnotes

- <sup>1</sup> Data and figures are from the Ministry of Water Resources, People's Republic of China, Annual Report 2007-2008, pp. 9–10, [Online: web] URL: <http://www.mwr.gov.cn/english/2007-2008.doc>
- <sup>2</sup> Ibid.
- <sup>3</sup> Figures cited by Bijoy Das in his Fellows' Presentation, 'China's Planning on Border Infrastructure: Post 1996 CBM Period', IDSA, 18 November 2011, New Delhi.
- <sup>4</sup> CSCAP Meeting on "water resources security" in Hanoi, 23–24 March 2011. Presentation by Zhou Shichun, Deputy Secretary General ESCIR (Ecosystem Study Commission for International Rivers).
- <sup>5</sup> *People's Daily*, [Online: web] URL: <http://english.peopledaily.com.cn/90001/90776/90882/7275037.html>
- <sup>6</sup> Luft, Gal. 'Fueling the Dragon: China's race into the oil market', [Online: web] URL: <http://www.iags.org/china.htm>
- <sup>7</sup> "China – Hydropower as the Right Solution?", 21 March 2008, [Online: web] URL: [http://www.our-energy.com/china\\_hydropower\\_as\\_the\\_right\\_solution.html](http://www.our-energy.com/china_hydropower_as_the_right_solution.html)
- <sup>8</sup> "Independent" in terms of rivers originating in its territory and not being "dependent" on the headwaters from other countries.
- <sup>9</sup> Nickum, James E. 'The Status of the South to North Water Transfer Plans in China' [Online:web] URL: [http://hdr.undp.org/en/reports/global/hdr2006/papers/james\\_nickum\\_china\\_water\\_transfer.pdf](http://hdr.undp.org/en/reports/global/hdr2006/papers/james_nickum_china_water_transfer.pdf)
- <sup>10</sup> Ginsburg, George and Michiel Mathos. 1964. *Communist China and Tibet: The First Dozen Years*, Martinus Nijhoff.
- <sup>11</sup> 'Geochemistry of the suspended sediments of circum-Himalayan rivers and weathering budgets over the last 50 years', [Online: web] URL: <http://adsabs.harvard.edu/abs/2003EAEJA....13617G.ICIMOD>
- <sup>12</sup> "Hindu Kush-Himalayan Region", [Online: web] URL: [www.icimod.org/?page=43](http://www.icimod.org/?page=43)
- <sup>13</sup> Tir, Jaroslav and John T. Ackerman. 2009. 'Politics of Formalised River Cooperation', *Journal of Peace Research*, vol. 46, no. 5, September, p. 623. There is, however, a general view to perceive water resources as "collective goods" or "common pool resources".
- <sup>14</sup> The Waters of the Third Pole: Sources of Threat, Sources of Survival, A Report prepared by UCL Hazaed Research Centre, China Dialogue, Humanitarian Futures Programme,

- Kings College, London, p. 7, [Online: web] URL: [http://www.chinadialogue.net/UserFiles/File/third\\_pole\\_full\\_report.pdf](http://www.chinadialogue.net/UserFiles/File/third_pole_full_report.pdf)
- <sup>15</sup> Ibid.
- <sup>16</sup> Han Junyu. 2011. 'An Economic Strategy of Exploiting Tibet's water Resources –The Problem and Solution of China's Water Resources in the 21st Century', *Journal of Shanghai University (Social Sciences)*, vol. 18, no. 1, January. Cited in Bijoy Das, 'China's Planning on Border Infrastructure ...', n. 3. Also see: Chinese engineers propose world's biggest hydro-electric project in Tibet, [Online:web] URL: <http://www.guardian.co.uk/environment/2010/may/24/chinese-hydroengineers-propose-tibet-dam>
- <sup>17</sup> Hilton, Isabel. 2010. 'Land of Blue Gold', *New Statesman*, 18 January, [Online: web] URL: <http://www.newstatesman.com/asia/2010/01/india-china-tibet-chinese>
- <sup>18</sup> [Online: web] URL: <http://whc.unesco.org/en/list/1083>
- <sup>19</sup> Earlier, the National Development and Reform Commission had approved the construction of thirteen dams on the Nujiang to generate 21,000 MW of power that would have been bigger than the Three Gorges Project. With Premier Win Jiabao's intervention (February 2004), the massive projects were suspended. Now preparation work for Liuku dam has restarted. [Online: web] URL: <http://www.businessgreen.com/bg/news/2019684/china-start-controversial-nujiang-hydro-power-project>
- <sup>20</sup> Except for being a dialogue partner in the Mekong River Commission (MRC). The Lancang River begins in the north-eastern side of Tanggula mountains in Qinhai province, flows through Tibet into Yunnan province, and is called Mekong River when it flows out in Mengla county in Yunnan province. Mekong runs all the way through Myanmar, Lao People's Democratic Republic, Thailand, Cambodia, and Vietnam and empties into the South China Sea near Ho Chi Minh City in Vietnam. Lancang-Mekong River is 4880.3 km long; the section of Lancang River in China is 2161.1 km long. So far, twenty-five major projects have been listed: 14 inside China, 4 inside Laos, 4 along the borders of Laos and Thailand and Laos and Cambodia and 3 inside Cambodia. These dams are estimated to produce 70 per cent of China's current electricity needs.
- <sup>21</sup> The other two were Turkey and Burundi.
- <sup>22</sup> Ministry of Water Resources, The Republic of China, [Online: web] URL: <http://www.mwr.gov.cn/english/gjjl.html>
- <sup>23</sup> Mertha, Andrew. 2008. *China's Water Warriors: Citizen Action and Policy Change*, Cornell University Press, p. 3.
- <sup>24</sup> Lawler, Andrew. 2009. 'Beyond the Yellow River', *Science*, vol. 325, no. 5943, 21 August, p. 325.
- <sup>25</sup> 'Formation of Chinese Civilization', [Online: web] URL: <http://www.china.org.cn/e-gudai/2.htm>
- <sup>26</sup> 'River Dynasties in China', [Online: web] URL: <http://cdaworldhistory.wikidot.com/river-dynasties-in-china>. Also see 'Ancient History of China', [Online: web] URL:

<http://folk.uio.no/huut/xia.html>

- <sup>27</sup> UNESCO World Heritage Convention site, [Online:web] URL: <http://whc.unesco.org/en/list/1001>. Ponseti, Marta and Jordi Lopez-Pujol. 'The Three Gorges Dam Project in China: History and Consequences',
- <sup>28</sup> Cited in Economy, Elizabeth. 2011. 'China's Growing Water Economy', *World Politics Review*, 9 August, [Online: web] URL: <http://www.worldpoliticsreview.com/articles/9684/chinas-growing-water-crisis>
- <sup>29</sup> The full verse of "Swimming" along with Mao's other poems can be found at [Online: web] URL: [http://maoist.wikia.com/wiki/Selected\\_Poem's\\_of\\_Mao\\_Zedong](http://maoist.wikia.com/wiki/Selected_Poem's_of_Mao_Zedong). Also Spence, Jonathan. 1998. 'Mao Zedong', *Time*, 13 April, [Online: web] URL: <http://www.time.com/time/magazine/article/0,9171,988161-1,00.html>
- <sup>30</sup> For a wide coverage of human-nature understanding during Mao see Shapiro, Judith. 2001. *Mao's War against Nature: Politics and Environment in Revolutionary China*, Cambridge: Cambridge University Press.
- <sup>31</sup> As hydraulic engineer Hu Jintao worked on the construction of Liujiaxia hydroelectricity station in the 1960s. Wen Jiabao's professional background is in geology and engineering.
- <sup>32</sup> Ho, Peter. 2003. 'Mao's War Against Nature? The Environmental Impact of the Grain-First Campaign in China', *The China Journal*, no. 50, July, p. 34.
- <sup>33</sup> Riparian nations are those nations "across which or along which a river flows, have legal rights to use the water of river", [Online: web] URL: <http://www.waterencyclopedia.com/La-Mi/Law-International-Water.html>
- <sup>34</sup> The rule of "equitable utilization" is based on the concept that an international drainage basin is a coherent legal and managerial unit, and embodies a theory of restricted sovereignty under which each nation recognizes the right of all riparian nations to use water from a common source and the obligation to manage their uses so as not to interfere unreasonably with like uses in other riparian nations.
- <sup>35</sup> While this is enshrined in the UN Convention on the Non-Navigational Uses of International Watercourses (1997), it is not binding because the convention is not in force as only sixteen (out of the required thirty-five) countries have ratified it. The UN General Assembly approved the convention by 104-3 in 1997. There is also the "no-harm rule" in the convention, which requires riparian nations to take all "appropriate measures" to prevent causing harm to other watercourse nations.
- <sup>36</sup> Likewise, Kazakhstan and Russia will be concerned over China's diversion of the Irtysh and Ili rivers.
- <sup>37</sup> *Daily Times*, 24 August 2009.
- <sup>38</sup> The Diamer-Bhasa is South Asia's costliest dam project. In spite of having signed an MoU with China International water and Electricity Corporation for the construction, international financing has been difficult. In January 2011, the US following the World Bank has refused to fund big projects. [Online: web] URL: <http://>

[damsandalternatives.blogspot.com/2011/01/bhasha-dam-project-in-dire-straits-us.html](http://damsandalternatives.blogspot.com/2011/01/bhasha-dam-project-in-dire-straits-us.html)

<sup>39</sup> Various news reports captured Alice Albinia's book, *Empires of the Indus*, London: John Murray, 2008. The author describes a dam being built on the upper reaches of the Indus in Tibet. Reports suggest that the Senge-Tsangpo hydropower station on the Indus has a capacity of 6400 MW.

<sup>40</sup> 'The Thirsty Dragon: Triggering a Revival in Downstream Hydropower Ambitions on the Mekong', *ChinaDialogue*, 8 February 2011.

<sup>41</sup> Ibid.

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