Policy Implications of Current Dam Projects on *Drichu* – the Upper Yangtze River

Tashi Tsering

Tibet Justice Center: 2004

Tibet's environment and its implications

As a geographical landmass, the Tibetan Plateau is the highest and largest plateau in the world, exposing its inhabitants to a challenging environment of living at an average elevation of roughly 4,000 meters above sea level. This prominent landmass in south central Asia is roughly 2.5 million square kilometers in size; geologically, it is considered to be young and still growing in height. The Plateau is the predominant driver of South Asia's annual monsoon winds, which deliver summer rains from eastern Pakistan to central China. The Plateau also drives the seasonal latitudinal position, duration, and intensity of jet stream winds, which in turn drive so-called regional climate "teleconnections"[1] that influence seasonal weather trends and extreme events.[2]

The freshwater resources in Tibet constitute some 104,500 cubic metres per person, ranking the region fourth in the world after Iceland, New Zealand and Canada.[3] An important hydrological attribute of Tibet's snowmelt waters is that they provide perennial base flow to many of Asia's major transboundary international rivers, the watersheds of which are the home of more than one quarter of the human population. Apart from the perennial base flow,

[1] The most well known of these teleconnections is sea-surface temperatures in the southwestern Pacific Ocean that affects precipitation in western North America.

[2] See, e.g., See Thinley Norbu, "China to Establish Atmosphere Observation on Jomolangma," *TRIN-GYI-PHO-NYA: Tibet's Environment & Development Digest*, Vol. 2, No. 5, October 5, 2004; Lin Zhenyao and Wu Xianding, *Climate on Qinghai-Tibet Plateau*, Science Press, Beijing, 1987; Qing Tian, *Aplied climatology and Weather on Qinghai-Tibet Plateau*, Qinghai people's Publishing House, Xining, 1987; Qian Yongfu, "A Comparative Study of the Heating Effects of the Tibetan Plateau and the Western Pacific," *Acta Meteorologica Sinica*, Vol. 10, No. 3, 1996, 270-283; Wu Aiming and Ni Yunqi, "The Influence of Tibetan Plateau on the Inter annual Variability of Asian Monsoon," *Advances in Atmospheric Sciences*, Vol. 14, No. 4, 1997, 491-504.

[3] See, Sanjeev Prakash, "Water Resources in Tibet," *Tibet: Environment and* People, Eco-Tibet and Environment Sans Frontiere, 1993, p. 52; Environment Desk of Central Tibetan Administration, "Tibet 2000: Environment and Development Issues," p. 19.

Tibet's rivers and basins support a unique flora and fauna, which provide the matter and nutrient energy base for terrestrial and aquatic downstream ecosystems.

The sustainable stewardship of Tibet's climatic, hydrological and ecological systems thus has regional and global implications that China has appropriately declared much of the upper catchments of these river systems to be protected areas.[4]

Harnessing "China's No. 1 Water Tower"

Exploitation of Tibet's freshwater resources is an integral part of China's macro-level resources management strategies to overcome regional imbalances in water supply, energy production and distribution, and related resources for its population and the burgeoning economy. Projects include the "East-West Power Transmission Scheme," the "South-North Water Diversion Project," and the "Western Development Campaign, along with others that appear in China's Five Year Plans.[5] China has embarked on its large-scale "cascades of dams" model of hydro-dam development on the Yangtze (*Drichu*), the Mekong (*Zachu*) and the Salween (*Gyalmo Ngulchu*) on the Tibetan Plateau's southeast corner. Discussion of China's plans for harnessing Tibet's water resources is a topic worth intensive study. For brevity, this

[4] "Since the 1980s, Tibet [Autonomous Region] has established more than 70 nature reserves of different types. Of these, three are on the national level (four more national-level nature reserves are being planned) and 15 are on the autonomous region (provincial) level. The total area of the 18 nature reserves is 401,000 sq km, accounting for 33.4% of the land area of Tibet [Autonomous Region] and 30.8% of the total area of China's nature reserves." See China's white paper on Tibet's environment, available online at: http://www.china-embassy.org/eng/zt/zgxz/White%20Papers/t36987.htm

[5] See, for example, Li Daixin and Zhang Guoliang, "Program thinking of the water conservancy in western region," available online at http://www.yrcc.gov.cn/lib/top4/2002-12-23/jj_08490625131.html; Wang Aiguo, "The Major Water Conservancy Construction Projects of Great Exploitation of the Western Region," available online at http://www.yrcc.gov.cn/lib/top4/2002-12-23/jj_08514125133.html; and China's Yellow River Conservancy Commission, "Suggestions on the Water Conservancy Development in Northwest Region in the West Development," available on their website at http://www.yrcc.gov.cn/lib/top4/2002-12-23/jj_09011525138.html.

paper will focus on current dam projects on the *Drichu,* (upper Yangtze River) and its tributaries.

The *Drichu* and its mighty tributaries like the *Gyarong Ngulchu* (Dadu He in Chinese) are the headwaters of China's most important river, the *Chiang Jiang*, also known as the Yangtze River. The watershed of Yangtze River drains 20% of People's Republic of China's landmass, supports 322 fish species, a growing human population currently close to half a billion people, and, some of the world's "bio-hotspots" on the eastern and southeastern parts of the Tibetan Plateau. Economically, the Yangtze River watershed supports "50 percent of [China's] grain, 40 percent of its cotton and cooking oil, and more than 60 percent of freshwater fish. Because of the convenient and relatively cheap transportation of this 'golden waterway,' it [supports] a long, densely packed corridor of industrial production centers, which [account] for 40 percent of [China's] GDP."[6]

As important as the development of the Yangtze River is to the future of China, policy makers and analysts ought to bear in mind that the river is also facing premature death in the headwaters. Most studies on the Tibetan Plateau glaciers point out that global warming is causing glaciers to melt faster; these perennial sources of melt water are expected to be exhausted within several decades.[7] The trends of burgeoning economic development and excessive dam construction and water diversion on the Yangtze are causing severe strains on the watershed's ecological integrity and resilience to disturbance such that one Chinese scholar has predicted that, like the Yellow River (Chinese: Huang He) to the north "after only twenty years, the Yangtze would also have dry periods and would stop completely before

[6] Ma Jun, "China's Water Crisis: Zhongguo shui weiji," (EastBridge, 2004), p. 198.
[7] See, e.g., *Sagarmatha – the Snow and Glacier Aspects of Water Resources Management in the Himalaya,* British Department for International Development, 2004.

reaching the sea near Shanghai."[8] This is a sobering warning. China thus needs a multi-stakeholder dialogue and debate on the consequences of large-scale construction projects on Yangtze's headwaters, where, despite official protection, the situation is already, in the words of a Chinese journalist, "crazy and out of control."[9]

Some Current Projects of Tibetan Concern on Drichu / Upper Yangtze

Tiger Leaping Gorge Dam Project

> "In July 2003, UNESCO listed the Three Parallel Rivers National Park as a World Natural Heritage site because of its special importance for geological research, extraordinary natural beauty, and wealth of biological and cultural diversity. United Nations officials were puzzled when Chinese authorities asked that Tiger Leaping Gorge, one of the main features of the park, be excluded from the [designated protected area]. Why, the officials asked, was the magnificent gorge not to be included? "To allow for the construction of hydro dams," Prof. Liang Yongning [a professor at Kunming University of Science and Technology] told them.
>
> Officials at the State Environmental Protection Administration (SEPA) expressed shock about the proposed dams when a South Weekend reporter asked them about the threat to Tiger Leaping Gorge. An official in charge of environmental assessment claimed to know nothing about the plans, saying: "How is it that big dams would be permitted near Tiger Leaping Gorge? The site is one of the most dazzling and precious natural wonders in all of China. SEPA will not approve any plan to build a big dam in that area.""[10]

Located approximately 100 degrees east longitude and 27 degrees north latitude on the southeastern fringes of the Tibetan Plateau, Tiger Leaping Gorge ("Tak-Chong-Gak" in Tibetan, "Hutiaoxia" in Chinese) is a magnificent, deep gorge carved by the Yangtze's

[8] Ma Jun, op. cit., pp. 71-72.
[9] Liexie, "Use Scientific Practice And National Ethnic Policy To Guide Development," *Renmin Zhengxie Bao*, August 9, 2004. *English translation a*vailable online at http://www.tibetjustice.org/tringyiphonya/num8.html#ge
[10] "Tiger Leaping Gorge under threat," Three Gorges Probe news service, October 8, 2004. Available online at http://www.threegorgesprobe.org/tgp/index.cfm?DSP=content&ContentID=11569.

roaring natural flow. The dam project at Tiger Leaping Gorge, one of eight in the Yangtze cascade of dams, has recently grabbed the attention of Chinese civil society leaders', and media's attention – a coalition that caused Premier Wen Jiabao to suspend thirteen dams project on Salween River.

According to Fan Xiao, the general engineer of Sichuan Geological Prospecting and Development Bureau, approximately 10,000 people of many "ethnic minorities" will have to be relocated "under the current high dam plan." A concerned Tibetan whose home may get submerged under the ensuing reservoir told the author that the people of "Kongzeraba" in Weixi Xian and other "intrepid peoples of the area's most unique cultures" will never willingly move out of their ancestral lands. The first inhabitants of Kongzeraba (Chinese: Pingziling) are believed to be descendants of warriors from central Tibet who settled in the region since the time of Tibet's King Trisong Deutsen (755-797 AD).

Yeti Lake (Mugecuo / Megoe Tso) Dam Project

A dam project that has drawn significant media attention in China, and beyond, is a US$250 million dam on Yeti Lake ("*Megoe Tso*" in Tibetan, "Mugecuo" in Chinese). Located at 102 degrees east longitude and 30 degrees north latitude, near *Dartsedo* (Kangding) county on the eastern edge of the Tibetan Plateau, the lake is fed by the waters of a tributary of the Yangtze River, Gyarong Ngulchu (Dadu He). This project came to our attention after China Youth Daily published a critical article on the project. Soon after, news reports indicated that local Tibetans submitted in writing their concerns about the project to Premier Wen Jiabao.

Project construction plans include a 50 m high and 260 m wide dam, connected to another downstream pumping storage power plant and Jin'gai hydropower plant through tunnels and channels, to generate electricity. Huaneng group, China's biggest independent power company run by Li Xiaopeng, the son of the former prime minister Li Peng, will invest $300 million in the project. The project was approved in September 2004 after an investigative team sent by Premier Wen Jiabao (in response to local opposition) pushed the fate of the project in favor of the builders by overlooking local socio-economic and environmental costs.

According to the Environment Desk of Central Tibetan Administration, *Megoe Tso* is the most sacred lake in the whole of *Kham*, in eastern Tibet, and has traditionally served as a pilgrimage lake. Tibetans come, when permitted by local authorities, in great numbers to circumambulate the lake and to worship the female deity of the lake.[11] The bulk of criticism to the project made by Chinese journalists and civil society leaders, however, revolve around the immense local environmental costs of the project. The lake area is a "bio-hotspot," surrounded by 30 other smaller lakes, hot springs, and primeval forests, all of which sustain more than 1,000 species of rare tropical plants and 2,000 species of animals and birds. Officials in the forestry department are confused as the hydro-development project is to be built within a protected area—Gangkar Mountain National Scenic and Natural Conservation Area.

[11] See: John Bellezza, *Divine Dyads*, Library of Tibetan Works & Archives, (Dharamsala, 1997); A.W. McDonald ed., *Mandala and Landscape*, D.K., New Delhi, 1997; Toni Huber, *The Cult of Pure Crystal Mountain: Popular pilgrimage and visionary landscape in Southeastern Tibet*, (Oxford University Press, 1999); Toni Huber ed., *Sacred Spaces and Powerful Places in Tibetan Culture*, Library of Tibetan Works & Archives, (Dharamsala, 1999).

Construction work on the project may start soon. Efforts to save the lake have generated an informal network of Chinese and international civil society leaders, but it appears to be an uphill battle against the forces of China's water industrial complex. Yet Chinese journalists say that, after 18 months of controversy, local people and officials have become more informed and critical of the project. They recognize that the area, if unspoiled, has potential to attract visitors, ultimately in the long-term economic interest of the region. Travelers, photographers, scientists, and pilgrims from around the world visit the lake every year, and the number of visitors is likely to decline if the dam is built.

Renzonghai Lake

In the same area of Gangkar Mountain National Scenic Area, another pristine lake known as Renzonghai is under assault from dam builders. As it is common in China's dam building business, the builder (Tianwan River Hydropower Development Co.) has sealed the construction area and started construction without proper permits. Chinese tourists and environmentalists have expressed great concerns over the covert construction of roads and bridges, and the clearing of old growth trees that is destroying the "protected" area's ecological integrity and resilience.

The construction project was actually halted twice before. On July 8, 2003, the Sichuan provincial Environmental Protection Bureau demanded a halt to the project; work was being carried out without proper permits from either the Bureau or the Department of Construction, but to no avail. The second time took place after China Central Television did a critical story about the project that led to the attention of Sichuan Province's Party Secretary, Mr. Zhang Xue-zhong, as well as the Governer, Mr. Zhang Zhong-wei. This made it a

national issue. The provincial leaders ordered the Sichuan Forestry Office and Construction Office to conduct investigations, which led to a temporary halt in construction, but the project soon started up again.

Environmentalists rightly fear that this might create a hydro-power development trend in the Gongga Mountain National Scenic and Natural Conservation Area. Currently, the area's freshwater resources support more than 1,000 species of rare tropical plants. The area has 2,000 species of fauna, and is rich in old growth evergreen, broadleaf, and bamboo forest. It also has a sizable population of endangered and endemic animals.

The local people have to bear the brunt of the project. Reports indicate that at least two Tibetan villages – Zimei and Weishida villages in Liuba Xiang – will be flooded and submerged under the new reservoir. Not surprisingly, 39 out of 40 local Tibetans opposed the project in response to a survey conducted last year.[12] Economically, their traditional forms of livelihood -- farming, pastoralism and gathering medicinal herbs -- would be disrupted by the project's logging of old growth forests and the flooding of crop and pasture lands. Those that depend on the bourgeoning tourism economy are also unhappy, as the area's most important tourist attraction is its pristine natural beauty.

Other dam projects in western Sichuan Province

According to *Renmin Zhengxie Bao,* a Chinese People's Political Consultative Conference daily, "Forty-eight dams have been built along the mainstream of Dadu River [*Gyarong Ngulchu,* a major tributary of the Yangtze] and its branches. It is said that a total of

[12] Undisclosed source.

three hundred and fifty six dams are expected to be built on Dadu River [in the future]."[13] Yet another article observed western Sichuan's hydroelectric construction trend as "crazy and out of control."[14]

According to Tibetan rights groups, more than 17,000 Tibetans may be forced from their homes within the next three years to make way for a series of dams in the area.[15] These dams will be built in and around the Barkham and Chuchen (Jinchuan in Chinese) counties of Ngawa Tibetan and Qiang Autonomous Prefecture in the upland west of Sichuan Province. The main purpose of these projects is to meet demands for electricity in distant Chinese cities. The table below lists the affected Tibetan areas along with the unconfirmed number of families and people living in these areas, as per the information sent from Tibet.

Dam affected areas	*No. of families affected*	*No. of people affected*
Dzongbud	579	2,798
Tawei	288	1,451
Tsodun	3,040	7,112
Kyomkyo	743	3,716
Drakbar	485	2,349
Total	*5135*	*17,426*

Apart from forced resettlement, local issues of concern expressed in the report include the "disastrous impact" of the project to many sacred, historical Buddhist shrines in the area.

[13] Zhang Xiaoping, "Dadu River Valley Hydropower Development Craze Out of Control," *Renmin Zhengxie Bao*, August 9, 2004.
[14] Liexie, "Use Scientific Practice And National Ethnic Policy To Guide Development," *Renmin Zhengxie Bao*, August 9, 2004. *English translation a*vailable online at http://www.tibetjustice.org/tringyiphonya/num8.html#ge
[15] Tibet Justice Center, "17,000 Tibetans endangered by Chinese dams project," Press Release: June 30, 2004; Tibetan Center for Human Rights and Democracy, "Dams project to forcefully displace local inhabitants," Press Release: May 12, 2003.

These relics are likely to be submerged under the reservoirs along with ancestral homes and farmlands. These concerns were submitted in writing to local authorities but the complaints were ignored. Local Communist Party officials have added to growing Tibetan alarm by pressuring them to help fund the dam construction that threatens their very livelihoods.

All these projects are rallied under the political opportunity provided by the Western Development Campaign. Tibetan rights groups fear that these projects are being pushed to supply roads, energy and infrastructure for prospecting and extracting the lucrative deposits of gold, silver, and other minerals in the region.[16] One project of immediate concern is the Shuangjiangkou ("confluence of two rivers" in Chinese), a 1,800,000 KW hydroelectric project tapped as an important component of "Xidiandongsong" (West-East Power Transfer Project). Shuangjiangkou will be built near the confluence of Barkham County's Kyomkyo River (Jiao-Muzu in Chinese) and Chuchen County's Trokyab River (Chuosi-Jia in Chinese). According to sources, local Tibetans who have been ordered to move away to make way for dams are ambivalent about their fate and are hopeful for compensations.[17]

[16] Zhiping Li, *Comparative Geology and Geochemistry of Sedimentary-Rock-Hosted Gold deposits in the People's Republic of China and in Nevada*, USA, U.S. Geological Service, 1998. Also available online: http://wrgis.wr.usgs.gov/open-file/of98-466

[17] Dolkar Tenzing, "Shuangjiangkou Dam Enters Preparatory Stage," TRIN-GYI-PHO-NYA: Tibet's Environment Development Digest, Vol. 2, No. 1, (January 12, 2004). Also available online at http://www.tibetjustice.org/tringyiphonya/num4.html.

Chinese Policy Issues for Discussion

Liberation from the political faith in large dams

The dam building case studies above are a sample of what lies ahead for the headwaters of Asia's major river systems.

People's Republic of China is the greatest dam building country in the world. Before the Chinese Communist Party came to power in 1949, China had only 23 large and medium-scale dams and reservoirs.[18] Fifty-five years later, China has 22,000 of the world's 45,000 large dams (those more than 15 meters in height). Excluding small farm-scale irrigation dams and mini and micro hydropower units, China has about 85,000 dams and reservoirs.[19] And China continues to proudly be the most active large-dam builder in the world,[20] despite the growing scientific evidence that large dams are not economical and sustainable in the long run.[21] Dai Qing calls this trend "a blind faith that engineers and technical fixes can solve all problems," a "conscious failure by China's leaders to … respect and follow ancient [Chinese Daoist] wisdom [of self-restraint]."[22]

China's central leadership is beginning to moderate its enthusiasm for engineering projects as the answer to human problems of development, but the leaders need

[18] See e.g., Shui Fu, "A Profile of Dams in China," Qing, Thibodeau, et. al., p. 22.
[19] The World Commission on Dams, "China," *Dams and Water: Global Statistics,* available online at http://www.dams.org/global/china.htm.
[20] There are more than 90 dams of over 60 meters in height and 180 dams of all sizes currently under construction in China. Source: The World Commission on Dams.
[21] For a discussion on China's own experiences with large dams, see: Shui Fu, "A Profile of Dams in China," and Yi Si, "The World's Most Catastrophic Dam Failures: The August 1975 Collapse of Banqiao and Shimantan Dams" in Dai Qing, *The River Dragon Has Come!,* (ME Sharpe, 1998). For general discussion of the global experiences of large dams approaches to development, see the following articles by Peter Gleick: "The Soft Path for Water," *The World's Water: 2002-2003*, (Island Press, 2002), pp. 1-30; "Water in crisis: Paths to sustainable water use," *Ecological Applications*, Vol. 8, No. 3, pp. 571-579; "The Changing water paradigm: A look at twenty-first century water resources development," *Water International*, Vol. 25, No. 1, pp. 127-138.
[22] Dai Qing, op. cit., pp. 3-4.

encouragement to turn around decades of dam building. There is a long history in China of the hydraulic engineering works of emperors as their lasting gift to posterity, but the dam construction of recent years is on a far greater scale than anything in the past.

More than half a century of a large-scale state-owned engineering approach to water management in China has produced a powerful structure of bureaucratic and economic interests, a "water-industrial complex," that influence government policy.[23] China's water industrial complex has three principal features: dominance of technocratic Party elites in decision-making;[24] their professional and ideological alliance with the economic and bureaucratic interests of water project financiers and builders (water sector entities); and this alliance's major influence on government policy to further water-related construction. This entrenched elite resists the policy shift of the highest leaders who now stress sustainability and quality of life and environment rather than development at all costs.

Globally, the hegemony of conventional realist and developmentalist perceptions of water as the property of a territorial unit vs. water as a commodity to be "produced" for economic growth, for example, is now being complemented with new (re)emerging perceptions of water. The changing world water paradigm has many components, including a shift away from sole, or even primary, reliance on finding new sources of supply to address

[23] Elsewhere, I have coined the notion of a Chinese "Water Industrial Complex" (WIC), defined as the professional and ideological alliance of technocratic Communist Party elites with water-related bureaucracies and businesses that influence government policy. See: Tashi Tsering, *Hydro-logic: Water for Human Development, an analysis of China's water politics*, Tibet Justice Center, 2002

[24] Although the generation of influential *hongse zhuanjia* ("red specialists," or party leaders trained in the former Soviet Union as engineers) like Li Peng and Jiang Zemin have (theoretically) retired, the nature of internal Party politics ensures assumption of leadership by cadres with similar ideological and professional backgrounds. China's "fourth generation leaders" who assumed power in November 2002 under President Hu Jintao, for example, has secured all the seats on China's highest decision-making body – the Politburo Standing Committee – to Party elites who have an engineering background, just like their predecessors who ran the Party-state with a 7-engineer member Politburo. As of September, 2001, among China's provincial Governors and Party Secretaries, 62.9% had engineering degrees, followed by economics, physics and Chinese with 6.5, 4.8 and 4.8%, respectively: see, Cheng Li, "After Hu, Who?—China's Provincial Leaders Await Promotion," *China Leadership Monitor,* No. 1.

perceived new demands, a growing emphasis on incorporating ecological values into water policy, a re-emphasis on meeting basic human needs for water services, and a conscious breaking of the ties between economic growth and water use."[25] It is the common wisdom today, supported by authoritative studies, that addressing water issues requires a multi-disciplinary approach. As the 2002 World Commission on Dams report points out, a "conventional model of development decision-making—isolated from social, environmental, cultural and political implications—is no longer feasible."[26]

Unscientific water policies and governance processes[27]

Despite China's high standards in the area of environmental law,[28] the Yangtze dam projects discussed above point to a preponderance of unscientific policies and unlawful practices that is system-wide. Chinese civil society leaders are critical of these dam projects because of four main factors: a) general lack of democratic decision-making, b) lack of transparency, c) corruption and d) disregard for environmental and social costs.[29] Large dams are still approved without proper studies and the local hearings required by law.

From the water policy perspective, for many years the World Bank and other major international financial institutions have been urging China to raise the price of water for

[25] Peter H. Gleick, "The Changing Water Paradigm: A Look at Twenty-first Century Water Resources Development," *Water International,* Vol. 25, No. 1, March 2000, p. 127.
[26] UNDP, "Deepening Democracy in a Fragmented World." *Human Development Report: 2002,* p. 109.
[27] For a useful study on China's energy policies and hydropower development, see, John Dore and Yu Xiaogang, "Yunnan Hydropower Expansion: Update on China's energy reforms & the Nu, Lancang & Jinsha hydropower dams," (Unit for Social and Environmental Research and Green Watershed, 2002).
[28] For discussions of environmental law and policy in China, see, Xiaoying Ma & Leonard Ortolano, *Environmental Regulation in China: Institutions, Enforcement, and Compliance* (Rowman & Littlefield Publishers, 2000); Michael B. McElroy, Chris P. Nielson, and Peter Lydon (Ed's.), *Energizing China: Reconciling Environmental Protection and Economic Growth* (Harvard University Press, 1998), pp. 371-499; Lester Ross, "Environmental Policy in Post Mao China," *Environment,* Vol. 29, No. 4, May 1987; Lester Ross, "Environmental Law and Policy in China: Prospects for Research," *China Exchange News,* Vol. 18, No. 4, December 1990.
[29] Based on author's own analysis.

industrial and big agricultural use, to market levels, as an incentive to use water more carefully. Instead of spectacular dams and water diversion projects, China could achieve much by ensuring that the existing water supply is used more efficiently and less wastefully. Demand management is more effective, if less dramatic, and could enable China to live within its means.[30]

This is especially true for Tibet, which is actually one of the most arid regions, receiving far less rain than lowland China. Yet China persists in imagining Tibet as China's natural water storage tower.

According to a Tibetan working for the Yunnan provincial government, corruption is found in these dam construction projects at all levels. By the time project money reaches project builders, corrupt officials at the state, provincial and county levels would have typically embezzled more than half the project budget. This results in use of cheap, poor-quality raw materials for construction such as cement.[31] Since construction on most dam projects typically begins before completing all studies required by law, issues of structural safety of the dams – will they withstand earthquakes or landslides? – are of concern to millions of innocent people downstream.

Another unscientific practice visible within China's water development policy is the building of ecologically disruptive projects inside designated protected areas of natural and cultural significance. The Tiger Leaping Gorge is a key area of attraction in the UNESCO Three Parallel Rivers World Heritage Site. Similarly, Yeti Lake and Renzonghai Lake are key sites of the Gongga Mountain National Scenic Area as they act as sustainers of the area's

[30] Elizabeth Economy, *The River Runs Black*, Cornell University Press, 2004.
[31] The official wishes to remain anonymous for security reasons. Interview conducted by the author on October 22, 2004.

invaluable biodiversity. Local authorities tasked with enforcing environmental regulations are confused at the government's apparent double-standard: marking an area off as a protected, fragile ecosystem and then moving forward with projects that undermine the very existence of that ecosystem. Specifically, the ongoing construction work at Renzonghai Lake, despite two separate interventions by higher levels of government to stop construction, represent a direct setback to the efforts by China's fourth generation of leaders in crushing corruption and steering the country towards sustainable development.

Economic and political implications for Tibetans

Tibetans are an ecological ethnicity—a "people who have developed a respectful use of the natural resources and consequently a commitment to creating and preserving a technology that interacts with local ecosystems in a sustainable manner."[32] Their intimate knowledge of local ecosystems, respect for animals and the natural realm of the sacred lakes and mountains, have much to teach a nation long fixated on economic growth as its sole objective, now gradually learning to think more broadly of sustainability. From a human ecology perspective, preservation of the Tibetan way of life on the Tibetan Plateau is necessary to promote environmental sustainability of the Yangtze's (and other major Asian river's) headwaters.

While water-engineering projects bring benefits to China in the form of construction jobs, electricity, and water for the "thirsty north," the price that the affected people and the environment must pay is clearly unacceptable. The beneficiaries of the projects discussed above are Chinese cities, while the local Tibetans are made to bear its price. From a political

[32] Pramod Parajuli, "How Can Four Trees Make a Jungle?," *Terra Nova: Nature and Culture,* Vol. 3, No. 3, 1998, p. 7.

economy framework, this model of development is reminiscent of colonial style resource extraction, where resources are taken away from disfranchised peoples to meet the demands of the rich and powerful.[33]

And from a political ecology framework, it is arguable that current large-scale water projects on *Drichu* are resulting in the loss of traditional Tibetan access to and control over critical local resources, thereby further marginalizing and impoverishing this group. Such trends of "human poverty" among China's "ethnic minorities" must be checked and the inclusion of Tibetan people in the planning and decision making process for development projects must be encouraged.

Addressing local Tibetan concerns

Like the millions of involuntary Chinese dam migrants, the Tibetan people have no say in or a voice against the hydropower projects that are displacing them from their ancestral lands. Worse, affected Tibetans are mostly illiterate, especially in Chinese language, and live under a "climate of fear." They hesitate to raise their voice against government projects. The few brave local leaders who express opposition, even on environmental grounds, are often convicted of "political motivations."[34]

For people who are directly under threat from dam projects, issues of *governance* are more important than economic policy. They are more concerned about the survival of their

[33] The demand for hydropower in Tibet is minimal at present. Therefore the increasing number of large dams on the Tibetan Plateau is clearly meant for satisfying China's needs for water and electric-power. China's Western Route of the South-North Water Diversion Project on the source of Yangtze, for example, is a US$ 37 billion plan to supply Tibet's water into Chinese cities, through a 20 BCM (billion cubic meters) a year flow capacity project. Similarly, China's West-East Power Transfer Project includes plans to transmit electric power generated from dams in Tibet for eastern Chinese cities.

[34] See, e.g., Thinley Norbu, "Tibetans Arrested for Protesting Against Mining Activity," *TRIN-GYI-PHO-NYA: Tibet's Environment & Development Digest*, Vol. 2, No. 5, October 5, 2004.

traditional livelihoods and the preservation of their traditional ways of life than any expectations of benefits from the project. Educational campaigns and public hearings on issues such as project resettlement plans and compensations are urgently needed, so that these disfranchised people become aware of the issues and their rights, so that their voice is heard by the government – a process actually required by law.[35]

China's ethnic policy, set forth in the 1984 Law on Regional Autonomy for China's Minority Nationalities,[36] directs that "every ethnic group is a part of the Chinese nation, having equal status, enjoying the same rights and performing the same duties in every aspect of political and social life according to the law, and ethnic oppression or discrimination of any form is firmly opposed."[37] It also decrees the right of minorities to "participate as equals in the management of affairs of the state and local governments at various levels," and their right "to take part in the management of state affairs are especially guaranteed."[38] And in 2001, the Law on Regional Autonomy for China's Minority Nationalities was revised so as to grant preferential treatment to ethnic minorities in investment, finance policy and employment.[39]

Furthermore, China's constitution declares that the government will help "the areas inhabited by minority nationalities speed up their economic and cultural development in

[35] The following legal commitments of China toward "ethnic minorities" is taken from an unpublished study by Sylvie Kern, Tibet Justice Center.
[36] People's Daily Online, *China Vows to Reinforce Regional Autonomy of Minorities,* June 2, 2004, found at http://english.people.com.cn/200406/02/eng20040602_145080.html
[37] Information Office of the State Council of the PRC, *National Minorities Policy and its Practice in China* (September 1999), found at http://english.people.com.cn/whitepaper/1.html
[38] *Ibid.*
[39] People's Daily Online, *China Vows to Reinforce Regional Autonomy of Minorities,* June 2, 2004, found at http://english.people.com.cn/200406/02/eng20040602_145080.html

accordance with the peculiarities and needs of the different minority nationalities."[40] As Chinese environmental journalist Lixie claimed recently:

> The environment in the Qinghai-Tibet Plateau has little disruption from human activities. The majority of natural resources are still in a primitive condition. The environment and way of living has great value for social, economic, historical and cultural studies. This not only is a great asset for China but also for the whole world. At the same time, we should understand that the environment in western Sichuan region is very fragile. Once it is destroyed, it will be very difficult to recover. So, the model of economic development in ethnic areas should be different from those in the central and east part of China. Many facts show that natural resources development in ethnic areas is hard work and a delicate matter. It needs more time for planning. Development policy and regulation in ethnic regions should be tailored to fit the reality of ethnic region, should consider ethnic character and its capacity to withstand development, should be sustainable, should be far sighted for future generations, and should not be the same as those in inland China.[41]

[40] See Article 4 of China's Constitution, available online at http://english.people.com.cn/constitution/constitution.html.
[41] Liexie, loc. cit.

Bibliography

Aiguo, Wang. *The Major Water Conservancy Construction Projects of Great Exploitation of the Western Region*, Yellow River Conservancy Commission.

Aiming, Wu and Ni Yunqi. "The Influence of Tibetan Plateau on the Inter annual Variability of Asian Monsoon." *Advances in Atmospheric Sciences.* (Vol. 14, No. 4, 1997): 491-504.

Bellezza, John. *Divine Dyads.* Library of Tibetan Works & Archives. Dharamsala, 1997.China's Yellow River Conservancy Commission. *Suggestions on the Water Conservancy Development in Northwest Region in the West Development.*

China's Constitution. http://english.people.com.cn/constitution/constitution.html.

China's white paper on Tibet's environment. http://www.china-embassy.org/eng/zt/zgxz/White%20Papers/t36987.htm

Daixin, Li and Zhang Guoliang. *Program thinking of the water conservancy in western region,* Yellow River Water Conservancy Commission.

Dore, John and Yu Xiaogang. *Yunnan Hydropower Expansion: Update on China's energy reforms & the Nu, Lancang & Jinsha hydropower dams*, Unit for Social and Environmental Research and Green Watershed: 2002.

Economy, Elizabeth. *The River Runs Black*. Cornell University Press, 2004.

Environment Desk of Central Tibetan Administration. *Tibet 2000: Environment and Development Issues,* 2000.

_____. *Tibet 2003: State of the Environment,* 2003.

Fu, Shui. "A Profile of Dams in China," Dai Qing (Ed.), *The River Dragon Has Come!,* (M.E. Sharpe, 1998): 18-24.

Gleick, Peter H. "The Changing Water Paradigm: A Look at Twenty-first Century Water Resources Development." *Water International* (Vol. 25, No. 1, March 2000): 127-138.

_____. "Water in crisis: Paths to sustainable water use." *Ecological Applications* (Vol. 8, No. 3): 571-579.

_____. "The Soft Path for Water." *The World's Water: 2002-2003* (Island Press: 2002): 1-30.

Huber, Toni. *The Cult of Pure Crystal Mountain: Popular pilgrimage and visionary landscape in Southeastern Tibet.* Oxford University Press, 1999.

_____. *Sacred Spaces and Powerful Places in Tibetan Culture.* Library of Tibetan Works & Archives. Dharamsala, 1999.

Information Office of the State Council of China. *National Minorities Policy and its Practice in China.* September 1999.

Jun, Ma. *China's Water Crisis: Zhongguo shui weiji*, EastBridge, 2004.

Kern, Sylvie. *China's Development of the Tibetan Plateau.* Unpublished.

Li, Cheng. "After Hu, Who?—China's Provincial Leaders Await Promotion," *China Leadership Monitor,* No. 1.

Li, Zhiping. *Comparative Geology and Geochemistry of Sedimentary-Rock-Hosted Gold deposits in the People's Republic of China and in Nevada*, *USA*. U.S. Geological Service, 1998.

Liexie. "Use Scientific Practice And National Ethnic Policy To Guide Development," *Renmin Zhengxie Bao*, August 9, 2004.

Ma, Xiaoying, and Leonard Ortolano. *Environmental Regulation in China: Institutions, Enforcement, and Compliance.* Rowman & Littlefield Publishers, 2000.

McDonald, A.W., ed. *Mandala and Landscape.* New Delhi, 1997.

McElroy, Michael B., Chris P. Nielson, and Peter Lydon, ed's. *Energizing China: Reconciling Environmental Protection and Economic Growth.* Harvard University Press, 1998.

Parajuli, Pramod. "How Can Four Trees Make a Jungle?," *Terra Nova: Nature and Culture,* Vol. 3, No. 3, 1998.

People's Daily. *China Vows to Reinforce Regional Autonomy of Minorities.* June 2, 2004.

Prakash, Sanjeev. "Water Resources in Tibet." *Tibet: Environment and* People. Eco-Tibet and Environment Sans Frontiere, 1993.

Qing, Dai, ed. *The River Dragon Has Come!* ME Sharpe, 1998.

Ross, Lester. "Environmental Policy in Post Mao China." *Environment,* Vol. 29, No. 4, May 1987.

_____. "Environmental Law and Policy in China: Prospects for Research." *China Exchange News,* Vol. 18, No. 4, December 1990.

Si, Yi. "The World's Most Catastrophic Dam Failures: The August 1975 Collapse of Banqiao and Shimantan Dams." *The River Dragon Has Come!,* (ME Sharpe, 1998): 25-38.

Three Gorges Probe. *Tiger Leaping Gorge under threat,* October 8, 2004.

Tian, Qing. *Aplied climatology and Weather on Qinghai-Tibet Plateau.* Qinghai people's Publishing House, 1987.

Tibet Justice Center. *TRIN-GYI-PHO-NYA: Tibet's Environment & Development Digest*, Vol. 2, No. 5, October 5, 2004

_____. *TRIN-GYI-PHO-NYA: Tibet's Environment Development Digest*, Vol. 2, No. 1, January 12, 2004.

Tibetan Center for Human Rights and Democracy. *Dams project to forcefully displace local inhabitants*. Press Release: May 12, 2003.

Tsering, Tashi. "Hydro Logic: Water for Human Development." *Tibet: Current Environment and Development Issues* (CD Rom), Tibet Justice Center, 2002.

_____. *Globalization To Tibet*, Tibet Justice Center, 2002.

UNDP. "Deepening Democracy in a Fragmented World." *Human Development Report: 2002.*

World Commission on Dams. "China," *Dams and Water: Global Statistics,* available online at http://www.dams.org/global/china.htm.

Xiaoping, Zhang, "Dadu River Valley Hydropower Development Craze Out of Control," *Renmin Zhengxie Bao*, August 9, 2004.

Yongfu, Qian. "A Comparative Study of the Heating Effects of the Tibetan Plateau and the Western Pacific." *Acta Meteorologica Sinica* (Vol. 10, No. 3, 1996): 270-283.

Zhenyao, Lin and Wu Xianding. *Climate on Qinghai-Tibet Plateau*. Science Press, 1987.