

Tibet: The Third Pole, Importance of Environmental Stewardship

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Introduction: Transboundary commons

With an average elevation of 4500 meters above mean sea level, the Tibetan Plateau physically dominates the geographical map of the world. The whole plateau stretches for almost 3,000 kilometers from west to east and 1,500 kilometers from south to north. Since time immemorial, the plateau held the Hindu Kush Himalayan Ice Sheet, considered as the largest ice mass and reservoir of fresh water outside the two poles, hence the name 'Third Pole'. The Tibetan plateau even though very inhospitable to many species due to its high altitude and extreme climates holds one of the most diverse plant and animal species, some of which are unique to the Tibetan Plateau for instance Wild Yak, Tibetan Antelope and medicinal plants such as *Rheum palmatum* (Chumtsa), *Frittilaria* (Abhika) and about 400 species of Rhododendron.



Tibet from Space (Courtesy NASA)

The Tibetan plateau is also known as 'The Water Tower of Asia' as major rivers of Asia have their source inside Tibet. Glacial runoff from these snow peak mountains and the underground aquifers feeds these rivers that flow into India, Bangladesh, China, Nepal, Pakistan, Thailand, Burma, Cambodia and Vietnam. For China alone, 30 percent of its fresh water supply is met

from the rivers flowing from Tibet. These rivers give hope to and sustain life of millions of people downstream, from the arid plains of Pakistan and India to the rice paddies of Southeast Asian countries. It is estimated that 1.3 billion peoples live in the watersheds of these major rivers. Beyond the populations residing in the watersheds of these rivers are the additional millions who depend on monsoon rains drawn inland by the Tibetan Plateau. It was also indicated that this Southeast Asian monsoon that recharges most of the rivers downstream varies in intensity according the snow cover on the Tibetan Plateau.

Unlike any other country, almost the entire plateau of Tibet lies on the permafrost soil and seasonally frozen grounds. For centuries, these permafrost soils have acted like a sponge, conserving and managing the flow of these mighty rivers. They have also been the store house for millions of tons of carbon. Lying few meters above these frozen soils are the Tibet's rangelands, from the Northern Plateau of upper Tibet to the extreme eastern edge of the plateau dominating almost 70 percent of its total landscape. These rangelands represent one of the last remaining agro-pastoral regions in the world. The types of rangeland vary from alpine meadows and mountain scrub to mountain sparse wood and mountain desert, which helps sustain domestic herds and nurture a wide variety of wildlife species. These alpine grasslands not only serve as feed to the wild ungulates but recent scientific studies have revealed that they actually store more than 7400 million tons of carbon. These inhospitable and cold pasture lands are made habitable through the co-existence of the Tibetan herders and their yaks. Through their efforts they have maintained the sustainable use of this area for many centuries.

Tibetan Highland holds over 51 percent of total natural wetlands (*excluding lakes and floodplains*) in China. These wetlands are dominated by Salt Marsh, Peat land and Freshwater Marsh. The Wetlands in Tibet play a major role in regulating the flow of rivers by absorbing the excess water during the summer and releasing it in the winter when the runoff is short.

Prevailing Environment Situations:

Being one of the earth's most sensitive environments and a unique bio-geographical zone, a healthy Tibetan Plateau benefits the entire Asian sub-continent. Over the past five decades, the landscapes on the Tibetan Plateau have experienced much environmental negligence and degradation. Some degradation is by natural phenomenon such as climate warming, earthquakes and others due to human interference such as resource extraction, unskillful policy implementations and infrastructure developments.

In recent years on the Tibetan Plateau, there has been a continuous rise in temperatures, almost twice the global average. This rise in temperature not only accelerates glacial meltdown but also accelerates many natural processes such as desertification, evaporation, shrinking and disappearance of lakes, drying of wetlands, thawing of permafrost¹, and reduction of flow regimes in many rivers.

Glacial retreat:

¹ In geology: permafrost soil is soil at or below the freezing point of water (0 °C or 32 °F) for two or more years

According to the Chinese Academy of Science, glaciers on the Tibetan Plateau are melting at a rate of 7 percent annually and if the current rate continues, two-thirds of the glaciers on the plateau will be gone by 2050. A separate study by NASA revealed that 20 percent of Tibetan glaciers have retreated in the past 40 years and more than 60 percent of the existing glaciers could be gone in the next 40 years. Some recent studies have also indicated that the black soot depositions on these glaciers are also responsible for accelerating the rate of meltdown due to reduced surface reflection and more heat accumulation.

Permafrost degradation:

Up until now, the low winter temperatures have well preserved the permafrost soil and the seasonally frozen grounds on the Tibetan Plateau. The increase in the winter temperatures as a result of climate warming slowly degrades or melts the frozen earth. As such the soil loses moisture in spring before the growing plants can access the water. This affects not only the crops but also the native vegetation of Tibet, especially in wetlands and other low lying areas.

Apart from climate warming, human activities are also responsible for destroying the permafrost cover as indicated in some research works conducted on the Tibetan Plateau. The researchers cited examples of much higher heat accumulations under the asphalt paved road compared to the natural surroundings. They also indicated that the ground temperature has been increasing noticeably leading to permafrost degradation.

End to Pastoral Nomadism and Grassland degradations

The implementations of different grassland and land-use policies have severely affected these grasslands. For centuries, the Tibetan nomads and herders have lived successfully with their herds using only their local knowledge and by keeping a mobile lifestyle. For some social scientists, nomadism, while often ridiculed as primitive or even 'incomplete' by outsiders, is in fact a highly sophisticated adaptation for exploiting energy captured in the grasslands of the region.

The vital role played by the Tibetan pastoral nomads in maintaining these pastures are acknowledged only in research articles, and the policy makers often fail to understand these intricate relations since they judge everything in black and white. The current grassland rehabilitation policy that is implemented throughout Tibet referred to as the '**Restore Grassland Policy**' or '*tuimu huanco*' in Chinese, (*meaning closing pasture to restore grasslands*) is restricting the mobility of the nomads and blames their livestock for overgrazing the grasslands. In fact the actual degradation or overgrazing of these grasslands started during the commune system 50 years ago when all the herds were collectivized for one main reason: more meat production (*refer to Box for more detail*). In recent years, moving the nomads from the grasslands to state built housings is being largely intensified and has now become the central measure in protecting these grasslands.

China's own scientists have now learned through patient observation that the grasslands of Tibet, when grazed moderately and intermittently actually maintain a higher biodiversity and healthier pastures. Many researchers have indicated in their findings that depopulating these

grasslands and labeling the nomads as ecological migrants will not help to restore the pastures.

Field observations conducted on these grasslands have revealed positive connections between the grazing herds of the nomads and the grasslands. The researchers say that abandoning these grasslands will lead to the domination of the invasive species, reduce biodiversity, and do more harm for the grassland which in turn would affect the permafrost soil.

Box1. Grassland degradations

- *1958 - 1976: Mao Zedong's land reform policy 'Collectivism' and The Great Leap Forward campaign resulted in extensive destruction/conversion of forest and grasslands to croplands. All the nomadic herds were collectivized; renovation of Xiling Lhasa Highway led to vast degradation of grasslands and permafrost soils.*
- *1976 - 1999: Deng reintroduced 'Household Responsibility' which in turn led to more aggressive farming and conversion of more Tibetan Plateau grasslands to croplands.*
- *The Chinese government has sponsored the systematic poisoning of pikas (rodents) over an area of 320,000 square kilometers. These rodents are the keystone species of the grasslands and such large-scale killing of rodents is harmful for the grasslands, and is almost certain to affect other wildlife.*
- *2001 onwards: (grain to green, fencing of the grasslands) the unproductive croplands are converted back into grasslands and nomads are blamed for the destruction/ overgrazing of grasslands.*
- *2003 onwards: Restore Grassland Policy or 'tuimu huancao' in Chinese, (meaning closing pasture to restore grasslands) is restricting the mobility of the nomads and encourages them to sell their herds and settle.*

According to Chinese state media, about 300,000 families involving 1.43 million Tibetan nomads and farmers have been removed from their ancestral pastures into new permanent settlements. Another 185,500 families are expected to move into new homes by 2013.

According to the latest 2011 Qinghai statistical year book, the area of Amdo region (Ch: Qinghai) affected by drought increased from 108 thousand hectares in 2007 to 158 thousand in 2010. This clearly shows that the current policy of removing nomads from the pastures to protect its water tower is failing badly in terms of what was initially intended.

UN Special Rapporteur on the Right to Food, Prof. Olivier De Schutter said during his mission to the PRC (15 -23 December 2010) that, the herders should not, as a result of the measures adopted under the 'tuimu huancao' policy, be put in a situation where they have no other options than to sell their herd and resettle. On 6 March, 2012 at the UN Human Right Council in Geneva, Prof. Olivier De Schutter spoke about his concerns regarding those people living in the "new socialist" villages. He further added that, so far this policy of resettling the herders and nomads among the Chinese has resulted to self-immolation of many members from the newly resettled herding community.

Such extreme measures of sacrificing one's own life show unmistakably the current Chinese policies are failing in all terms.

Tourism industry endangering the lives of Mogru Nomadic Clan

At China's "atomic city" on the shores of the greatest lake in Tibet, where China once tested nuclear weapons for submarines, patriotic red tourists now come to see China's military triumphs. They also come to see the native Tibetans, who must dress as if they are timeless nomads, people without history, forever smiling. Chinese tourists like to be photographed with Tibetan children of the Mogru clan, perhaps not even knowing that the land of the clan was taken to build the tourist facilities, and the Mogru Tibetans have no source of income other than posing for happy tourist snaps. Attempts by the Mogru Tibetans to petition Beijing and seek justice has come to nothing.

Resource Extraction:

China refers to Tibet as 'Xizang' which literally means the western treasure house. The Plateau's rich natural resources became a resource curse for the local residents and its ecosystem. Since late 60's, these resources have been exploited in various scales and mostly under very poor environmental norms and regulations. The mining not only undermines the sanctity of the local landscapes but also creates social tension and distrust when standard corporate policies are not followed.

Tibetan communities try to put forward their grievances in numerous petitions to higher authorities against the miners: they are either ignored or harassed. After failing to respond adequately, the local residents then resort to street protest and are immediately suppressed by heavy armed forces. Unlike those protest related to environmental negligence and accidents in many parts of China, those that occur in Tibet are classified as political and the protestors are severely suppressed. In the frequent protests by Tibetan villagers, quite often their immediate concern has been the damages done by the miners to the local streams, rivers, landscapes and pasture land.

Over the past two years (2010 -2011), there have been more than 12 protests against mining activities that Environment Desk has documented and many more remains unknown. With the recent announcement of more than 3000 potential mining sites and many precious mineral deposits in Tibet, it is very likely that there will be more such protests in the future if the miner's and the local cadre attitude remain unchanged. The state itself is doing everything in tapping these resources, as it is evident from the budget in the 12 FYP for improving the resource extraction economy infrastructures such as highways, railway lines, and hydropower plants. All these are essential to the smooth operation and transportation of mineral ores to various smelters located in distant mainland China.

So far, copper, chromium, gold and iron are the four minerals of greatest interest to Chinese and other foreign miners. These are being mined to different extents at various locations throughout the Tibetan Plateau. Over the past few years, the Chinese state government has shown more interest and has invested in the extraction of lithium ores (lithium carbonate) on the Tibetan Plateau.

According to China Chemical Reporter, (2009), China's demand for lithium salt has grown rapidly, and lithium salt output capacity was expected to increase to 60,000 ton/ yr in 2010. Most of the salt lakes containing lithium resources (80% of the total reserves) are located in

the western part of the country. Drangyer Tsaga (Ch: Lake Zabuye) is a landlocked salt lake located at an elevation of 4,400 metres in the Drongpa county of Shigatse (Ch: Rikaze) district. In 2008, the salt mine at this lake was regarded as the major source of lithium in China. Zabuye Lithium High-Tech Co. Ltd. planned to expand its lithium salt output capacity by 20,000 ton/ yr from 7,500 ton/ yr.

These days' rare earth elements (REEs) are considered as one of the most important natural resource for the modern world to make high-tech goods such as iPhones, fibre-optic cables and missile guidance systems. The global demand for these seventeen REEs is booming, tripling over the past decade from 40,000 to 120,000 tons. By 2014 its global demand is expected to hit 200,000 tons a year. At present, China provides 97 per cent of the global supplies of rare earth elements, but for several years China has been steadily reducing the amount of material it makes available for export. According to a recent news article, United States, European Union and Japan jointly accused Beijing of breaking trade rules and lodged a complaint with the World Trade Organization that China is monopolizing global supply of REEs.

Most of the Chinas REEs are coming from a single mine in Inner Mongolia (Baotou Cho) and few years back an article published in *Environmental Geology*² mentioned that the concentration of REEs at the southern part of Nam-Tso Lake basin (Ch: Namco basin) in central Tibet is much higher than the average values in the whole of China and the world. But so far there has been no clear information whether REEs are actually being extracted at Nam-Tso basin.

Such rich reserves of minerals resources attracts miners of various scales who plan to make quick money and not bothering about the standard environmental norms and laws stipulated in the PRC constitution and Law of Regional National Autonomy [Article 9ⁱ and 26ⁱⁱ (under the general principles of PRC constitution) and Article 27ⁱⁱⁱ, 28^{iv}, 45^v & 66^{vi} of 'Law of Regional National Autonomy'].

Many Canadian companies are also attracted towards the resource rich Tibetan Plateau (Table1). We fully hope these companies will not follow the practices of Chinese miners by undermining the sanctity of the holy landscapes and depriving the local Tibetans their right to self determination and equal opportunities.

² *Heavy metals and rare earth elements (REEs) in soil from the Nam Co Basin, Tibetan Plateau. Chaoliu Li, Shichang Kang, Xiaoping Wang, F. Ajmone-Marsan, Qianggong Zhang, Environ Geol (2008) 53:1433–1440.*

Table1. Canadian Mining and Exploration Companies on the Tibetan Plateau

No	Name	Property/ ies in Tibet	Company website
1	China Gold International Resources	Gyama Mine, TAR	http://www.chinagoldintl.com/s/Home.asp
2	Eldorado Gold	Tanjianshan Mine, Qinghai	http://www.eldoradogold.com/s/Home.asp
3	Inter-Citic	Dachang Gold Project, Qinghai	http://www.inter-citic.com/
4	Lara Exploration*	Huangnan Project, Qinghai	http://www.laraexploration.com/
5	Silvercorp Metals**	Nabao Project, Qinghai	http://www.silvercorp.ca/
6	Sterling Group Ventures	Danxiangcuo Salt Lake, TAR	http://www.sterlinggroupventures.com/index.html
7	Tri-River Ventures	Lianlong Project, Sichuan; Kunteyi Salt Lake, Qinghai	http://www.tririver-venture.com/index.php

* the company stated (privately) that they'd like to get out of China but their partner, the Western Mining Group, has failed to keep their agreement regarding transferring an interest in the property. Lara invested \$500,000 in the project but never received the shares they were promised

** have sold 2/3 of the Nabao project but still retain 1/3 which they hope to sell.

Tibetan water resources and Chinese dams:

Rivers originating from Tibet flows to more than ten countries and play a vital role in the environmental services and socioeconomic of each country. These rivers (Table2) enable the Tibetan Plateau to become a strategic platform in exercising its dominance over the lower riparian states.

Table2. Major rivers flowing from Tibet

No	Tibetan name	Common name	Watershed Regions/ Countries
1	Machu	Yellow River	Tibet, China, Inner Mongolia
2	Drichu	Yangtze	Tibet and China
3	Zachu	Mekong	Tibet, China, Vietnam, Laos, Cambodia, Thailand
4	Gyalmo Ngulchu	Salween	Tibet, China, Burma, Thailand
5	Yarlung Tsangpo	Brahmaputra	Tibet, India, Bangladesh
6	Macha Khabab	Karnali > Ganga	Tibet, Nepal, India
7	Langchen Khabab	Sutlej	Tibet, India, Pakistan
8	Senge Khabab	Indus	Tibet, India, Pakistan
9	Bhumchu	Arun	Tibet, Nepal, India
10	Lhodrak Sharchu	Manas	Tibet, Bhutan, India, Bangladesh

Source: DIIR, 2007

The International Centre for Integrated Mountain Development (ICIMOD) has revealed alarming details on the sustainability of the Himalayan glaciers in the time of climate change. According to their findings, the current trend of melting glaciers suggests that the Ganges, Indus, Brahmaputra and other rivers across the northern India plains could most likely become seasonal rivers in the near future, flowing only in monsoon season.

World Wide Fund (WWF) for Nature, formerly known as World Wildlife Fund, named the Indus River as one of the world's ten rivers most at risk. The Indus which already faces an acute shortage of water flow due to climate change suffered more obstruction after China built a dam on the dying river (in Ngari, Western Tibet) without informing the downstream countries - India and Pakistan.

So far China has dammed every major river and its tributaries in Tibet and has unveiled plans to construct even more dams in the coming years. In its 12 Five Year Plan (2011 -2015), hydropower projects are to be prioritized and those that are not completed during its previous five year plan are now scheduled.

The Chinese dam building boom and its water transfer projects are creating additional worries to the lower riparian states, especially in India where it was estimated that by 2030 the water demand will be higher by 50 percent from the current demand of 740 billion cubic meters.

The Zachu or Mekong River, originating from central Tibet through Yunnan Province in China and then flowing through Laos, Thailand, Cambodia and finally ending its journey in Vietnam is the lifeline for the Mekong-region countries. This river directly supports approximately 70 million people along its basin from fishermen to farmers.

The damming activities along the upstream of Zachu/Mekong have significantly affected the flow volume of the river. So far, the China has in total 21 Hydro Power Projects on Zachu either built, under construction and under active consideration in Tibet alone. Water user community downstream are turning their frustration on the Chinese government whose damming projects on the upstream Mekong River has greatly affected their lifestyles. Fishing boats are seen stranded on the shores of dried Mekong River in Mukdahan Province and at Nakhon Panam in Thailand. The livelihoods of the local fishermen and many other communities from Cambodia are threatened by the reduced flow of the river but their concerned voices are muffled by the aid their government receives from China.

Green NGOs in China believe hydropower projects could bring economic development, but not necessarily to the benefit of local people. They believe that today's insufficiently transparent policymaking mechanisms are maximizing the interests of hydropower industry, officials and a small number of experts, while driving ecological destruction, affecting local livelihoods and increasing the risk of geological disasters. Chinese government policy is that the hydropower is the cheapest source of electricity.

Not only are these rivers and tributaries dammed for generating electricity but some are also polluted with chemicals and other toxins dangerous for human consumption. For instance, the tap water of Kumbum monastery in Amdo detected high concentrations of lead (Pb) due to a mining activity. This is not an isolated episode, similar cases of mining chemicals polluting the natural water supply are common where ever mining activities are prevalent.

Growing industrialization, population growth, and increasing levels of consumption are placing heavy demands on water resources, which provide vital support for the subsistence livelihood to millions of people. Currently, there exists no regional framework or forum for

South and East Asian nations to discuss or negotiate over water resources, other than the Mekong River Commission which does not include China.

Looking Forward & Recommendations:

Tibetan nomads are the expert custodians of the alpine pastures and their knowledge and experience should be incorporated into rangeland management practices. The Tibetan herders should be directly involved in the decision making process or there should be at least a principle of collaborative management attending to the needs of the pastoral nomads and herders alike.

Central Tibetan Administration (Dharamsala) welcomes development activities related to social and economic upbringing of Tibetan communities inside Tibet, but these developments besides being sustainable, should not outweigh the preservation of the unique Tibetan culture, language and the environment. These development projects should not spark off any social tension and unrest amongst the Tibetan communities. The development projects should first prioritize training the local Tibetans in their daily life skills and technical know-how to participate in new economic activity and add value to their customary economy.

A healthy and sustainable Tibetan Plateau would not only benefit the entire Asian continent but also it helps in promoting peace and harmony within the region, especially between two major emerging powers (India and China). This is an important geostrategic factor.

The Tibetan Plateau is the land bridge connecting South Asia with East Asia. The very survival of almost 1.3 billion people depends on the water resources originating from the Tibetan Plateau. The impact on Tibet's landscape and its natural resources due to climate warming and human intervention will threaten not only the future food security of many nations but also their development.

Parliamentarians can help address the problems related to climate warming and human interventions on the Tibetan Plateau and its consequences by raising the issue in their own parliament and provide political, financial and institutional support. To this end, we offer the following recommendations to all the parliamentarians who are attending this conference in Ottawa:

1: MONITORING.

Your country, in collaboration with private and academic institutions, should partner with Chinese and international scientific institutions to monitor glacial retreat, temperature rise and carbon levels on the Tibetan Plateau, with a goal of creating better models to understand warming trends and the resultant impacts on permafrost, river flows, grasslands and desertification, and the monsoon cycle.

2: MITIGATION.

Your government should engage with the Chinese government and NGOs to encourage a systematic re-thinking of policies related to grassland management and nomad resettlement. Changes in the ecosystem of the Tibetan Plateau will require sound mitigation policies and on-the-ground stewardship, which must include the integral participation of Tibetan stakeholders, primarily the nomads and their indigenous experience in managing this land for centuries.

3: REGIONAL FRAMEWORK.

Your government should promote creation of a regional framework on water security. Such a structure would facilitate cooperative agreements among all riparian neighbours that would promote transparency, sharing of information, pollution regulation, and arrangements on impounding and diversion of river water.

ⁱ **Article 9:***[...the state ensures the rational use of natural resources and protects rare animals and plants. Appropriation or damaging of natural resources by any organization or individual by whatever means is prohibited.]*

ⁱⁱ **Article 26:***[The state protects and improves the environment in which people live and the ecological environment. It prevents and controls pollution and other public hazards...]*

ⁱⁱⁱ **Article 27:***[...destruction of grasslands and forests by any organization or individual by whatever means shall be prohibited. Reclamation of land from grasslands or forests by destroying grass or trees shall strictly be prohibited.]*

^{iv} **Article 28:***[In accordance with legal stipulation, the organs of self-government of national autonomous areas shall manage and protect the natural resources of these areas...]*

^v **Article 45:***The organs of self-government of national autonomous areas shall protect and improve the living environment and the ecological environment and shall prevent and control pollution and other public hazards, so as to bring about the coordinated development of population, resources and environment.*

^{vi} **Article 66:***[...while exploiting resources and undertaking construction in national autonomous areas, the organizations or individuals shall take effective measures to protect and improve local living and ecological environment and to prevent and control pollution and other public hazards.]*