

SOUTH ASIA POLITICS

Water War in South Asia?

Brahmaputra: Dam & Diversion

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China Grand Projects

Traditionally, the Chinese people's respect for their Emperor increases when the latter is undertakes projects that no human mind can conceive of. After all, the Emperor is the Son of Heaven, and only in Heaven can projects such as the Grand Canal or the Great Wall can be envisioned. It is also the role of the Emperor to bring Heaven's vision down on earth. If he fails, his Mandate is terminated by Heaven and a Revolution or a Rebellion occurs.

This story began long ago: a Chinese website proclaims: *"The Grand Canal of China is the world's oldest and longest canal, far surpassing the next two grand canals of the world: Suez and Panama Canal. The building of the canal began in 486 B.C. during the Wu Dynasty. It was extended during the Qi Dynasty, and later by Emperor Yangdi of Sui Dynasty during six years of furious construction from 605-610 AD. The canal is 1,795 Km (1,114 miles) long with 24 locks and some 60 bridges."*

The Great Wall was also 'furiously' constructed under different dynasties, through what the communist Party terms today as 'management contracts': *" The construction of the Great Wall, drew heavily on the local resources for construction materials, was carried out in line with the local conditions under the management of contract and responsibility system. A great army of manpower, composed of soldiers, prisoners, and local people, built the wall. The construction result demonstrates the manifestation of the wisdom and tenacity of the Chinese people."*

The Communists came into power in China in 1949. On October 1, from the rostrum of the Tiananmen Square, Mao addressed the masses assembled to listen to the new Emperor. He told them: *"The Chinese people have stood up"*. A dynasty was born.

The First Generation of this dynasty also had to build a new Canal or a new Wall. Mao's Dream was to catch up with the West and produce as much steel as UK in a few years time. It resulted in the Great Leap Forward and the death of 40 million people. Mao lost his mandate for a few years, but came back with an even greater project: a Great Proletarian Cultural Revolution which also took the lives of a few millions. Deng Xiaoping continued along the same direction with his new economic Revolution: "To become rich is Glorious". In many ways, he succeeded and entered the Pantheon of the Great Emperors. In the next generation, the Premier Li Peng, an engineer by profession, undertook the massive Three Gorges Dam which is to produce 18,000 Mega Kilowatts of electricity. A yet more colossal project was put on the design tables¹ as the Fourth Generation was taking over: the South-North water diversion. Will this new dream demonstrate the wisdom and the tenacity of the Chinese people?

The New Projects

Four mega projects have been described in an article in 2001 by Zhao Qinghua, the Chinese Ambassador to Bangladesh². To quote him: *"Four gigantic projects to be built in the next five years in China are expected to balance the supply of the nation's water, energy, mineral and human resources, which are vital to a coordinated development of the national economy but unevenly distributed in the vast land..."*

¹ Is it a coincidence that most of the leaders of the Third and Forth Generation in China are engineers trained in former the Soviet Union?

² *The Independent* (October 1, 2001), *New projects to balance China's resources* by Zhao Qinghua.

The four projects are designed to solve these problems. They are the diversion of southern water to the north, a west east natural gas pipeline, transmission of electricity from west to east and a railway linking Tibet with the rest of the country³."

We shall now spend some time on the South to North water diversion project mentioned in *The Draft Outline of the Tenth Five-year Plan for National Economic and Social Development (2001 2005)* and expounded by Zhao: *According to the 10th Five-year Plan, water will be diverted from the south via three channels in the eastern, central and western regions, respectively. The western route draws water from Tongtianhe, Yalongjiang and Daduhe, tributaries of the Yangtze River in southwest China⁴, to the upper reaches of the Yellow River to solve water shortage in the northwestern regions. The central route is to fetch water from the Danjiangkou Reservoir on the border between Hubei and Henan provinces to Beijing and Tianjin. The eastern route draws water at Yangzhou on the lower reaches of the Yangtze, flowing through a section of the ancient Grand Canal⁵ and lakes northward to reach Hebei and Tianjin.*

Upon completion, the project will link up the Yangtze, Huaihe, the Yellow River and Haihe valleys, forming a network of four horizontal and three vertical waterways that allows a rational allocation of the country's water resources nationwide. The project is designed to divert 38 48 billion cubic

³ We shall go in a forthcoming study the railway line to Lhasa.

⁴ We have quoted from the article of Zhao Qinghua because it gives a good overview of the four mega projects, but the Ambassador has conveniently omitted the Brahmaputra component in his presentation. Being posted in Bangladesh, he probably did not want to alert his host country.

⁵ Part of the project is to use the Grand Canal, but to reverse the course of its water towards the North. Can one imagine watching the Ganga from the Ghats of Varanasi and seeing the mighty river flowing in reverse? It is what will happen to the people residing along the banks of the Grand Canal.

meters of river water a year, which equal the annual flow of the Yellow River, the second longest in China. It is expected to quench the thirst in the north and break the bottleneck hampering economic and social development in China so as to promote a sustainable social and economic development and benefit future generations, according to the Ministry of Water Resources. With the relocation of water resources, not only some 20 large and medium-sized cities like Beijing, Tianjin and Shijiazhuang will be relieved of the constraints of water shortage, new economic growth points will rise up along the new waterways, especially in the western regions in a short time."

One can have an opinion on most of these projects and particularly on the gigantism of some of its components, but they are internal problems of China. However one is not: the Brahmaputra diversion⁶!

The Problem of food: can China feed itself?

Let us first see the rationale of these projects.

Two of the most acute problems facing China today are the questions of food and water. These two issues are closely interlinked and, if not solved, are bound to have grave social and political consequences for the country.

The leadership in Beijing has proclaimed: *"China can feed itself in the next century"*⁷, but the mere fact that the problem is often discussed at the highest level of the Chinese hierarchy shows that the problem is not solved, that the new emperors are not sure where the solution lies or even if there is a solution.

This has been pointed out in a remarkable book written by one of the foremost world experts in agriculture, the American Lester Brown. His book, *Who Will Feed China*⁸ published in the mid-eighties in *the Worldwatch*

⁶ Omitted by Zhao Qinghua.

⁷ See White Paper on food production on the *People's Daily* website:

<http://english.peopledaily.com.cn/whitepaper.html>

⁸ Brown Lester R., *Who will Feed China?*, (New York: *Worldwatch Institute*, 1995).

Environment Alert Series, forced the Chinese leadership to rethink their agricultural strategies a few years ago.

In an article in the *Beijing Review* in September 1996, a reporter admitted: "The fact that China's population of over 1.2 billion continues to grow by an annual rate of 10 millions have led some to ask if China can feed its people."

The problem is very simple, again according to the *Beijing Review*⁹: "China's total coverage of cultivated land dropped by an astounding 21 millions hectares between 1958 and 1995, while the nation's population grew significantly from 660 millions to 1.2 billion during the same period."

The theory advanced by Lester Brown is the following: with the growth in population, which will stabilise only in 2045 at 1.6 billion and the increase in industrial development, the arable lands reduce rapidly but the needs of the population increase simultaneously. The result will be that China will have to import more and more grain from outside increasing the rise of the price of grain on the world market. A point will be reached when the planet will not be able to produce enough grain for the world demand or the poorer nations will not be able to buy their food.

Today everyone admits that 90 million extra human beings on the planet every year is beyond the limits that the planet can produce or give to her children. Due to the size of the country, China's problems immediately take greater proportions. It is obvious that a problem affecting 1.2 billion people, is very different to when it concerns a smaller country. To give a practical example, if the entire Chinese population would today drink two extra bottles of beer, it would require the entire annual grain production of Norway in order to produce these additional bottles.

According to global statistics, the conversion of agricultural land into other uses (factories, residential areas, airports, roads, fly-overs, etc...) has provoked the loss of 52% of Japan's grain harvested areas, 46 of Korea's

⁹ *Beijing Review*, October 1996.

and 42% of Taiwan's. China's development is not different from these three countries though it started later.

Another problem which is a direct consequence of the rapid economic development is that the affluence of the population has risen tremendously during the past two decades. Deng Xiaoping had asked his people to become rich. It may be a fine motto for someone who had just come back from political exile, but when it translates into national realities, becoming richer has many unpleasant consequences. First of all people change their culinary lifestyle; before buying a flat or a vehicle, an individual will try to improve his diet. And traditionally Chinese people are not vegetarian as in India¹⁰. The Chinese love to eat pork, eggs or chicken. To produce these animals more grain is needed and the problem of food grain becomes further compounded. The forces which were (and still are) at play in Japan, Korea and Taiwan are not different in China. Today the above three Asian countries are importing 71% of their food grain. How can China avoid facing the same problem? One of the solutions is to increase the yield, but China's yield is already quite high and to succeed where Japan failed is not an easy task.

Eighty per cent of the agricultural lands are irrigated land, one way to get a better production is to increase the irrigation. But the result is a depletion of the aquifers. This problem is even getting more serious as traditional irrigation water is being used for industrial purpose.

Lester Brown concludes his study by citing again the examples of the industrialised Asian countries Japan, Korea and Thailand which in spite of the best conditions have become grain importers. He prophesizes: *"In an integrated world economy, China's rising food prices will become the world's*

¹⁰ This is certainly one of the factors which has helped to make a similar situation less acute in India. Another factor is that the economic liberalisation of India has been less successful, partially due to the obstructive *License Raj* established by the Nehruvian economic planners and the red tapism of the bureaucracy. The industrial development has also been more decentralised than in China.

rising food prices. China's land scarcity will become everyone's land scarcity. And water scarcity in China will affect the entire world... It could well lead us to redefine national security away from military preparedness and toward maintaining adequate food supplies."

A small mercy is the fact that for the past two years China's development growth has been reduced to a more manageable per annum 7-8%.

The Problem of Water

This leads us to the problem of water. We quote from another study of the *World Watch Institute*¹¹:

In 1999 the water table under Beijing fell by 2.5 meters (8 feet). Since 1965, the water table under the city has fallen by some 59 meters or nearly 200 feet, warning China's leaders of the shortages that lie ahead as the country's aquifers are depleted.

Hydrologically, there are two Chinas -- the humid south, which includes the Yangtze River basin and everything south of it, and the north, which includes all the country north of the Yangtze basin. The south, with 700 million people, has one third of the nation's cropland and four fifths of its water. The north, with 550 million people, has two thirds of the cropland and one fifth of the water. The water per hectare of cropland in the north is one eighth that of the south.

The northern part of the country is drying out as the demand for water outstrips the supply. Water tables are falling. Wells are going dry. Streams are drying up, and rivers and lakes are disappearing. Under the North China Plain, a region that stretches from just north of Shanghai to well north of Beijing and that produces 40 percent of China's grain, the water table is dropping by an average of 1.5 meters per year.

¹¹ For full article: *China's Water Shortage Could Shake World Food Security*, by Lester R. Brown and Brian Halweil, see website: <http://www.worldwatch.org/bookstore/>

Farmers in the north are faced with losses of irrigation water both from aquifer depletion and from the diversion to cities and industry. Between now and 2010, when China's population is projected to grow by 126 million, the World Bank projects that the nation's urban water demand will increase from 50 billion cubic meters to 80 billion, a growth of 60 percent. Industrial water demand, meanwhile, is projected to increase from 127 billion cubic meters to 206 billion, an expansion of 62 percent. In much of northern China, this growing demand for water can be satisfied only by taking irrigation water from agriculture.

What happens to irrigation water supplies directly affects China's agricultural prospect. Whereas less than 15 percent of the U.S. grain harvest comes from irrigated land, in China it is close to 70 percent.

In the competition for water between cities, industry, and agriculture, the economics of water use do not favor agriculture. In China, a thousand tons of water produces one ton of wheat, worth perhaps \$200. The same water used in industry will expand output by \$14,000-70 times as much. In a country that is desperately seeking economic growth and, even more, the jobs it generates, the gain in diverting water from agriculture to industry is obvious.

Though some may disagree with this pessimistic view of China's future, nobody dares to reject them outright. The fact that the Chinese Government published a *White Paper* entitled "*The Grain Issue in China*" shows the vital importance of the question for the leadership. In this document, Beijing tries to answer the following questions: "*What is the food situation in China? What is the country's grain production potential? Can the Chinese people feed themselves? And how will China improve its grain production? Through scientific analysis the Chinese government, in the manner of seeking truth from facts, now addresses these questions of universal concern.*"

The problem can be analyzed but not wished away.

From where the waters flow

This led the Chinese experts in Beijing to look around for water. Where did most of Asia's waters flow from? The obvious answer was not far: the Tibetan plateau, the principal watershed in Asia and the source of its ten major rivers. Tibet's waters flow down to eleven countries and are said to bring fresh water to over 85 percent of Asia's population, approximately 50 percent of the world's population.

Three of the world's ten major rivers, the Brahmaputra (or Yarlung Tsangpo in Tibet), the Yangtze and Mekong have their headwaters on the Tibetan Plateau. The other major rivers which originate in Tibet are the Huang Ho (or Yellow River), the Salween, the Arun, the Karnali, the Sutlej and the Indus. About 90% of their runoff flows downstream to China, India, Bangladesh, Nepal, Pakistan, Thailand, Myanmar, Laos, Cambodia and Vietnam.

For us in South Asia, the main concern is the Brahmaputra, the Indus, the Sutlej, the Arun and the Karnali whose waters give life to more than one billion people living downstream.

It is roughly estimated that 10-20% of the Himalayan region is covered by glacial ice while an additional area ranging from 30-40% has seasonal snow cover. Himalayan glaciers cover around 100,000 square kilometers and store about 12,000 cubic kilometers of fresh water: the most incredible water tank one can imagine.

The perennial run of the rivers originating from these glaciers also result in a stable flow of water to regions which are dominated by monsoon rainfalls (with rain pouring for only a few months of the year). Consequently, the Tibetan rivers, independent of seasonal precipitation patterns, are an important factor in sustaining hydrological regimes of South Asia.

South-North Water Diversion

As mentioned in the *Draft Outline of the Tenth Five-year Plan for National Economic and Social Development* and explained by Ambassador Zhao, the

'gigantic' project to divert the waters of three major Tibetan rivers (Yangtze, Yellow River and Brahmaputra) to China's drought-stricken north involves the construction of massive canals, aqueducts and tunnels.¹²

In September 2001¹³, *Associated Press* commented: "The sheer scale harkens back to the megaprojects of imperial China and the heyday of communist central planning. But even in the home of the 1,500-mile Great Wall, the scheme is raising eyebrows. Some question if such a gargantuan project is needed - or even wise."

Imagine one route following two-thirds of the northern section of the 1,900-km Grand Canal with 15 enormous pump stations built to push water uphill to Tianjin, a major port near Beijing. Then, a second route going through central China which will require digging a 1100 km long trench towards Beijing. The aqueduct will have to pass under the Yellow River in an 8 km tunnel. The trickiest route will be the third one - cutting through some of Tibet's tallest mountains. Some optimists thought that the plans would stay on the drawing boards for a few more decades. But it is not so.

This study shall concentrate on the third route, mainly the southern most components: the diversion of the Brahmaputra river, the life-giver to eastern South Asia.

¹² Once finished the man-made rivers will carry 12.6 trillion gallons of water a year – which according to some studies are enough to fill New York City's taps for a quarter century.

¹³ *Associated Press* (10 September 2001), *China Plans to Reroute Part of River*.



Asia and Tibet's Rivers

The case of the Yarlung Tsangpo

The Yarlung Tsangpo or Brahmaputra as it is known in India, has an immense bearing on the life of hundreds of millions in the sub-continent. It is the largest river on the Tibetan plateau, originating from a glacier near Mt Kailash. It is considered to be the highest river on earth with an average altitude of 4,000 meters. It runs 2,057 kilometers in Tibet before flowing into India, where it becomes the Brahmaputra. One of its interesting characteristics is the sharp U turn it takes at the proximity of Mt. Namcha Barwa (7,782 meters) near the Indian border.

Like the Nile in Egypt, the Yarlung Tsangpo has fed the Tibetan civilization which flourished along its valleys, particularly in Central Tibet. The two larger tributaries of the Tsangpo are the Kyichu (or Lhasa River) and the Nyangchu. Near Shigatse region, the Yarlung valley is 20-30 km wide. This area with its sand dunes and lakes is the cradle of a two thousand year-old civilization.

China's Tibet, a Chinese magazine describes the scenery: *"The complex and unique geographic and climatic conditions created by this great river provide Tibet with a wide array of wildlife. Black-necked cranes, Tibetan antelopes, wild Tibetan donkeys, sheep and Tibetan gazelles are among the larger animals found in the river valley¹⁴."* In Tibet, the river is often navigable, local people use coracles (made of yak hide and bamboo) to cross it.

The Yarlung Tsangpo enters in India in Siang district of Arunachal Pradesh. When it penetrates Assam, it is joined by two other rivers (the Dihang and Lohit).

The Brahmaputra as always been considered as the very soul of the State by Assamese poets and ordinary people alike. Its valley has fertile farmland, with large areas covered with Sal forests, a valuable tree that yields resins. Crops of tea, rice and jute bring wealth to the region. River floods over much of the valley in the rainy season providing natural irrigation to rice growers.

¹⁴ *China's Tibet*, November 1997.

The rare one-horned rhinoceros, extinct in other parts of the world, is still found in Assam, along with tigers, elephants and a large variety of fishes. Around the settlements in the Brahmaputra Valley many fruit-bearing trees like mango, jackfruit and papaya are easily grown. Entering Bangladesh, the river unites with the Ganga and is known as the Padma, before becoming the Meghna-Brahmaputra after merging with the river Meghna. Finally it divides into hundreds of channels to form a vast delta which flows into the Bay of Bengal.

The Grand Canyon

But let us come back to the Tibetan plateau. When the Tsangpo reaches its easternmost point in Tibet, it takes a sharp U turn known as the Great Bend. Only recently it has been found that the Yarlung Tsangpo gorge forms the longest and deepest canyon in the world.

For the first time in May 1994, *Xinhua News Agency* mentioned about the length and depth of the canyon: *"Chinese geologists claim that a remote Tibetan canyon is the world's largest, bigger and deeper than the Grand Canyon. The Yarlung Zangbo Canyon, in the vast Himalayan range that encircles China, averages 3.1 miles (5 km) in depth and extends 198 miles (317 km) in length. The Grand Canyon in the southwestern U.S. state of Arizona is, by comparison, a mere 1 mile (1.6 km) deep but 217 miles (347 km) long, with a width of between 4 and 12 miles. The dispatch did not reveal the width of the Yarlung Zangbo Canyon. The canyon was cut during the Pliocene Epoch two million years ago by the Brahmaputra River, which flows from the Tibetan capital of Lhasa before swooping down to the Indian subcontinent. Scientists found that the canyon, located in the Himalayan range, averages 5,000 meters in depth, with the deepest section reaching 5,382 meters.¹⁵"*

¹⁵ *Tibet World News* (May 4, 1994), *China Claims Tibetan Canyon is Largest*.

A few years later, it was found that near Mt. Namchakbarwa (7,756 metres), the Tsangpo Gorge is eight times as steep and three times as large as the Colorado in the Grand Canyon.

It is in the Great Bend that China is planning one of the most important components of the 'western route' diversion scheme. This pharaonic project is perhaps the most mind-blowing part *"of the national strategy to divert water from rivers in the south and west to drought-stricken northern areas."*

The Project

The Tsangpo project will have two components: one will be the construction of the world's largest hydroelectric plant that would generate twice the electricity produced by Three Gorges Dam. Today, the biggest power station in the world is located in Itaipu in Brazil: it has a total installed capacity of 12,600 Megawatts. The Three Gorges Dam on the Yangtze River (still uncompleted) will have a 18,200 Megawatts capacity. The hydroelectric plant on the Great Bend of Yarlung Tsangpo will dwarf all these projects with a planned capacity of 40,000 Megawatts.

The second component of the project will be the diversion of the waters of the Tsangpo which will be pumped northward across hundreds of kilometers of mountainous regions to China's northwestern provinces of Xinjiang and Gansu.

For the Chinese leaders, it is enough to know that the Tsangpo river tumbles down over 3,000 meters in less than 200 km. This gives the gorge one of the greatest hydropower potentials available in the world. It makes emperors dream.

For the Tibetans, it is one of the most pristine regions of their country. They consider the area around the Bend as the home of the Goddess *Dorjee Pagmo*¹⁶, Tibet's Protecting Deity. Many believe that this place, locally known

¹⁶ In English: *The Diamond Sow*.

as Pemakö is the sacred realm often referred to in their scriptures: the last hidden Shangrila.

For South Asia and more particularly for India, the enormity of the scheme and its closeness to the Indian border can not be ignored. It is not only the sheer enormity of the project which has to be considered, but the fact that if it is accomplished, it will have ominous consequences for millions of people downstream. Their basic need for water and their survival would be endangered. Once Ismail Serageldin, a former Senior Vice President of World Bank said: *“The next World War will be over water”*¹⁷. China’s green light for the project could be considered by South Asia as a declaration of war.

History of the project

The gigantic project was first mentioned at a conference in Alaska in July 1986. Projects under the Global Infrastructure Fund¹⁸ (GIF) were discussed and the *‘Himalayan Hydropower project’* was short-listed. At that time, it was envisaged to have a series of 11 dams around the *‘Brahmaputra loop’*¹⁹. It included a tunnel through the mountains bringing water to a powerhouse projected to have a capacity of 48,000 Megawatts. The overall capacity of the *‘loop’* was speculated to be 70,000 Megawatts.

Later, the GIF stopped mentioning the project, engineers in Beijing had not shelved it. On the contrary, its new avatar appeared a few years later, as a single mega power station with an installed capacity of around 40,000

¹⁷ The World Commission on Large Dams, *Dams and Development: A New Framework for Decision Making*, p. 3.

¹⁸ According to their website: *“The concept of the Global Infrastructure Fund (GIF) was announced in December 1977 by a study task force led by the late Mr. Masaki Nakajima, who then was president of Mitsubishi Research Institute, Inc. of Japan. The GIF concept is that the development of infrastructure on a global scale should be promoted to realize sustainable development so that all humankind can enjoy a better quality of life in a restored living sphere and a better environment.”*

¹⁹ Or Great Bend.

Megawatts.

The project was reported in the *Scientific American* in June 1996. This article giving credence to the Chinese plans. The journal wrote: *"Recently some Chinese engineers proposed diverting water into this arid area [Gobi Desert] from the mighty Brahmaputra River, which skirts China's southern border before dipping into India and Bangladesh. Such a feat would be 'impossible' with conventional methods, engineers stated at a meeting held last December at the Chinese Academy of Engineering Physics in Beijing. But they added that "we can certainly accomplish this project" with nuclear explosives."*

The Journal continued: "This statement is just one of the many lately in which Chinese technologists and officials have touted the potential of nuclear blasts for carrying out non-military goals."

It is said that one of the reasons for China's refusal to sign the Comprehensive Test Ban Treaty (CTBT) was because their desire to keep the possibility of experimenting with what is called PNE (Peaceful Nuclear Explosion). The Chinese argument was *"why should promising and potentially useful technology be abandoned."*²⁰

The first (and almost only time²¹) that the matter was reported in the Indian Press was in June 1997 when *Outlook* magazine wrote a piece entitled: *"A river runs through it -- China proposes to divert the Brahmaputra at source to green the arid Gobi desert."* The magazine wrote: *"The initial report -- that the Chinese were planning to raise their food output in the decades ahead -- was hardly stop-press material. But as details leaked out, policymakers in India and Bangladesh felt a shiver of apprehension: the*

²⁰ China finally signed the CTBT in September 1996 but never ratified the Treaty which means that Beijing is still keeping a door open for using PNEs.

²¹ This writer contributed an article on the subject in *The Pioneer*, New Delhi, *China and the River network* (13 February 2003).

Chinese proposed to divert the Brahmaputra river at source, in Tibet, even set off a peaceful nuclear explosion, to serve their purpose²²."

At that time, the only thing that a former director, *Asian Development Bank* said was that under international law, no one could stop China and that "*The Chinese government has equal rights to the use of the river.*"

However, *Outlook* revealed that "the concern in Assam and Bangladesh is understandable. The Luit - as the river [Brahmaputra] is locally called - figures prominently in the folklore and culture of Assam and the Northeast; has been the theme of countless Bhupen Hazarika songs. The river is crucial to the economy of the entire region, where the concept of irrigation through groundwater sources has not really taken off."

In the coming months, more publicity was given to the dam as well as the diversion proposals. In September 1997, *Agence France Press* in Beijing²³ reported: "*Three experts propose construction of giant dam in Tibet*". It stated: "*After a long experience of exploration on the site, we believe that the project could begin to be included in the agenda of the concerned department*". Electricity produced was claimed to be: "*available for export to Bangladesh, Burma and India, [a feature of the GIF plans] and the diverted water could irrigate the northwestern deserts of the country*".

The project was also mentioned in news briefs in the *China Daily Business Weekly* (21 September 1997) and the *International Water Power & Dam Construction Monthly* (November 1997).

In January 1998, , the German TV channel ZDF presented a feature on the Yarlung Tsangpo project, in a program entitled "*Die Welt*" [The World]. The Chief Planner, Professor Chen Chuanyu was interviewed. He described the plan to drill a 15 km (9.3 miles) tunnel through the Himalayas to divert the water before the U turn and direct it to the other end of the bend. This would

²² *Outlook*, New Delhi (18 June 1997).

²³ *Tibet 2000 – Environment & Development Issues*, (Dharamsala, DIIR, 2000).

shorten the distance of the approximately 3,000 meters altitude drop from 200 km to just 15 km. He explained that the hydropower potential of 40,000 Megawatt could be used to pump water to Northwest China over 800 km away.

An interesting aspect that we have briefly mentioned is that this area known to the Tibetans as Pemakö was considered to be a sacred area, rarely visited by outsiders. The difficulty of access to this unexplored region must have created one of the greatest obstacles for the engineers in Beijing. At the end of the 90's, the Chinese government decided to permit foreigners to explore the Grand Canyon. The well-known *National Geographic* expedition, with ultra sophisticated materials and highly professional rafters made the first discoveries. Though it resulted in the death of an American kayaker, Doug Gordou in October 1998, it permitted a far greater knowledge in several previously unexplored parts of the gorges. Books and video footage of this expedition (as well as subsequent ones) certainly helped the Chinese planners to get a more accurate picture of the difficulty of the terrain (as well as the potentialities).

The opening of the area to adventure tourism was certainly the step of the preparatory work to find an approach way for dam site.²⁴

In the recent years, the Chinese have been more discreet on the project, although a few reports have continued to come in. The correspondent of *The Telegraph* in Beijing wrote in October 2000: "*Chinese leaders are drawing up plans to use nuclear explosions, in breach of the international test-ban treaty, to blast a tunnel through the Himalayas for the world's biggest hydroelectric plant.*"

The Telegraph justly warned: "*China will have to overcome fierce opposition from neighbouring countries who fear that the scheme could endanger the*

²⁴ It should be remembered here that the U turn of the Tsangpo is very close to the Indian border of Arunachal Pradesh (no more 10-15 km as the crow flies) and that China claims the Indian state as its own.

lives and livelihoods of millions of their people. Critics say that those living downstream would be at the mercy of Chinese dam officials who would be able to flood them or withhold their water supply."

According to the London paper, the cost of drilling the tunnel through Mt Namcha Barwa appears likely to surpass £10 billion. The article gives further details: *"At the bottom of the tunnel, the water will flow into a new reservoir and then be diverted along more than 500 miles of the Tibetan plateau to the vast, arid areas of Xinjiang region and Gansu province. Beijing wants to use large quantities of the plentiful waters of the south-west to top up the Yellow River basin and assuage mounting discontent over water shortages in 600 cities in northern China."*²⁵

However, it seems that the proposal has drawn flak from several Chinese scientists. Yang Yong, a geologist who had explored the river, stated that the dam could become an embarrassing white elephant amid growing signs that the volume of water flowing in the Yarlung Zangpo could shrink over the years.

But in 2000, before becoming Premier Wen Jiabao had declared: "In the 21st century, the construction of large dams will play a key role in exploiting China's water resources, controlling floods and droughts, and pushing the national economy and the country's modernization forward."²⁶

In China, the only pertinent question is perhaps: does a Chinese emperor have any choice other than to take up pharaonic works if he wants to remain emperor?

The Implications

The construction of this multi-billion dollar project is tentatively scheduled to begin in 2009, the year the Three Gorges Dam is supposed to be completed.

²⁵ *The Telegraph*, London (October 22, 2000), *China planning nuclear blasts to build giant hydro project*, by Damien Mcelroy in Beijing.

²⁶ *Ibid.*

Based on mean annual flow, the Yarlung Tsangpo, constitutes 33 per cent of the total flow of the Brahmaputra when it enters India. In other words for the sub-continent, it is the largest proportion of stable flow from glacial sources. The implications of a huge storage dam on the Yarlung Tsangpo and the diversion of the waters to northwestern China are multiple and far reaching for Tibet, India and Bangladesh. But most importantly, this project represents a direct threat to the people living downstream in India and Bangladesh.

1. For Tibet and the surrounding areas

A reservoir for a 40,000 Megawatts capacity dam would create a huge artificial lake inundating vast areas of virgin forest within the canyon and beyond. The reservoir would stretch hundreds of kilometers upstream the Yarlung Tsangpo into the Kongpo region. Rare species of flora and fauna within the canyon (though not yet well documented) will be lost for scientific study. The Chinese authorities themselves admit that the Canyon is the home for more than 60 per cent of the biological resources on the Tibetan Plateau.

- Although the population in the canyon is rather small, the indigenous people would suffer great hardship and be forced to leave their ancestral lands. It may not be a problem for Beijing who has 'resettled' more than one million Chinese Hans since the beginning of the construction of the Three Gorges Dam, but for the Tibetans, it would mean the loss of a last sacred place and the home of their Protecting Deity. Furthermore, Tibetans would not benefit in any way from the power produced by the hydroelectric plant, as it would be sold to China's southern neighbours or used to send the water upstream to northwestern China.
- Additionally, the water diversion scheme is likely to be a highly inefficient and wasteful exercise with billions of cubic meters of water being lost to evaporation, leakage, percolation, etc... through the 800 km-long

canals and aqueducts.

If the project comes to fruition, Tibet and the world would have lost this virgin region and its canyon, a great treasure heritage. The Central Tibetan Administration of the Dalai Lama even suggested recently that the *“Yarlung Tsangpo canyon is a unique and magnificent natural phenomenon with diverse plant and animal life which should be considered as an UNESCO World Heritage Site or similar preserved site of international significance²⁷.”* But, when the stakes are so high and the ego of the small emperors so big, one can have no doubt that the scheme will be implemented.

- The potential use of nuclear devices to create tunnels for the project raises further serious concerns about the environmental impacts of such a project for the region and those living downstream. There will also be a great danger of sending contaminated waters to northwestern China.²⁸ This is perhaps one of the most important side-effects, not yet addressed by the Chinese scientists.

2. For South Asia

India and Bangladesh would be at the mercy of China for adequate release of water during the dry season, and for protection from floods during the rainy season. India knows from its own internal problems how difficult it is to solve

²⁷ Tibet 2000, op. cit.

²⁸ The *Scientific American* (June 1996) said that the US PNE program was discontinued in 1973: *“The largest excavation experiment took place in 1962 at the Department of Energy's Nevada Test Site. The so-called Sedan test displaced 12 million tons of earth, creating the largest man-made crater in the world; it also generated a “vast amount of fallout” that drifted beyond Nevada and over Utah, according to Derek S. Scammell, a spokesperson for the Nevada Test Site. Explosions in oil and gas fields did indeed stimulate production, but in some cases they also made the fuel so radioactive that it could not be used. The Plowshare program was discontinued in 1973 after the U.S. decided that the cons of PNEs—including criticism from the growing environmental movement—far outweighed the benefits.”* For full article see

<http://www.hindunet.org/saraswati/brahmaputra/scientificamerican.htm>

a water dispute. When it comes to a transboundary question (when the boundary is not even agreed upon), it seems practically impossible to find a workable understanding. The Cauvery dispute in the South or the Ravi-Beas disagreement between Haryana and Punjab are nothing compared to a possible confrontation between India and China over the use of the Himalayan waters.

Precipitation in North India (particularly Assam) and Bangladesh is very high (80%) during the four monsoon months (between June to September), and low (20%) during the remaining eight months. China, seeing her own interests, could withhold water for power generation and irrigation during the dry season and release water during the flood season with the catastrophic consequences for eastern South Asia.

The Arunachal floods

An event which occurred in June 2000 could be an illustration at a very reduced scale of what could happen if the Tsangpo project is one day completed. At that time, the breach of a natural dam in Tibet led to severe floods and left over a hundred people dead or missing in Arunachal Pradesh. It is not difficult to understand that areas downstream in Arunachal or Assam are extremely vulnerable to what takes place upstream in Tibet.²⁹ At the time of the incident, Rediff.com reported:

“Although news of floods in distant north-east may not be hot for Delhi, the flash floods that hit the border state of Arunachal Pradesh in June has made officials at the Central Water Commission and the MWR sit up and take notice. As officials pour over the technical data, a new dimension that the Chinese Army in Tibet, as part of an experiment, may have deliberately blasted the dam has been added to the already hazy picture.

²⁹ See also the following articles: *Breach in Tibet Dam Caused Arunachal Floods*, Times of India (July 8, 2000); *India Blames Flash Floods on Chinese Dam*, Agence France Presse (July 10, 2000); *Arunachal floods—dam breach in Tibet, China ‘hushed’ it up*, Indian Express (July 10, 2000).

According to Nabam Rebia, member of Parliament from Arunachal Pradesh, puzzled by the nature of the floods and the equally mysterious response of China, the Government of India's remote sensing agency hired a Canadian satellite to take a close look at the scene of the breach. Top officials who confirmed this said, "All the technical details and pictures from the area are with us now and confirm that a breach had taken place on a dam on the river Tsangpo leading to flash floods in the north-eastern region. According to the official, who had seen the technical data, the flash flood occurred because of a breach in a dam located in an area pinpointed as latitude 30.15 degrees north by 94.50 degrees east, which falls in China controlled Tibet.

A few weeks later, a similar mishap took place on the other end of the Himalaya. The Tribune in Chandigarh reported this strange event³⁰: *"Even three days after the disaster, the mystery of the flashfloods in the Sutlej, which wrecked havoc along its 200-km length in the state, remains unresolved."* It added: *"Experts are at a loss to understand where the huge mass of water came from."*

Imagine a 50-ft high wall of water descending into the gorges of Kinnaur in Himachal Pradesh! In a few hours, more than 100 persons died, 120 km of a strategic highway (Chini sector) was washed away and 98 bridges destroyed.³¹ The details of this incident were similar to the Arunachal Pradesh's one.

A detailed study carried out a few months later by ISRO scientists confirmed that the release of excess water accumulated in the Sutlej and the Siang river [the Tsangpo] basins in Tibet had led to the flooding. Nearly a year later, the weekly India Today commented³²: *"While the*

³⁰ *The Tribune* (4 August 2000), *Flood Started in Tibet?*

³¹ This writer personally witnessed the extensive damage while traveling Spiti valley a few days after the incident.

³² *India Today* (25 June 2001), *Made In China.*

satellite images remain classified, officials of the Ministry of Water Resources indicate that these pictures show the presence of huge water bodies or lakes upstream in Sutlej and Siang river basins before the flash floods took place. However, these lakes disappeared soon after the disaster struck Indian territory. This probably means that the Chinese had breached these water bodies as a result of which lakhs of cusecs of water were released into the Sutlej and Siang river basins."

In this context, it is interesting to go back to one event of 1950. In the evening of August 15, a terrible earthquake shook Eastern Tibet³³. *"This was no ordinary earthquake; it felt like the end of the world,"* wrote Robert Ford, the British Radio operator working in Eastern Tibet. *"Mountains and valleys exchanged places in an instant, hundreds of villages were swallowed up, the Brahmaputra River was completely rerouted and for hours afterwards, sky over the south-eastern Tibet glowed with an infernal red light, diffused with the pungent scent of sulphur."*³⁴ It is a fact that the course of the Brahmaputra changed during those few hours. One may argue that only nature can produce such an upheaval, but nothing is less certain, especially if PNEs are used.

Nehru visited the Indian side of the border and made a long vivid description of the damages and sufferings of the people. On his return from Assam, he made a broadcast to the nation on All Indian Radio³⁵: *"It is said that the epicenter of the earthquake was somewhere in Tibet, near a place called*

³³ The Dalai Lama later remembered: *"It was like an artillery barrage – which is what we assumed to be the cause of both the tremors and the noise: a test of some sorts being carried out by the Tibetan army...Some people reported seeing a strange red glow in the skies in the direction from which the noise came..."* See The Dalai Lama, *Freedom in Exile* (London: Hodder & Stoughton, 1990).

³⁴ Ford Robert, *Captured in Tibet* (New York: Oxford University Press, 1990), p. 94.

³⁵ *Selected Works of Jawaharlal Nehru* (Second Series), Vol. 15, Part II, (New Delhi: Jawaharlal Nehru Memorial Fund, 1993), p. 166.

Rima, some miles from the Assam frontier. We know nothing of what has happened in Tibet or on the mountainous regions of the border. As a result of the landslides, rivers were blocked up for a while, and when they broke through, they came down with a rush and a roar, a high wall of water sweeping down and flooding large areas and washing away villages and fields and gardens. These rivers have changed their colour and carried some sulphurous and other material which spread a horrible smell for some distance around them. The fish in them died. The remains of villages, animals, including cattle and elephants, and large quantities of timber floated down these raging waters. Paddy fields were destroyed, stocks of grains were washed away and some tea gardens also suffered great damage."

The reading of this broadcast gives a clear idea of what could happen on a much larger scale, if this project is carried out.

The second component of the plan a massive diversion of the river to China's northwest. This would have even more devastating consequences. North India and Bangladesh would be starved of their life line. Nutrient-rich sediments that enrich the soils of these regions would be held back in the reservoir. With no more reaching the river's delta, millions of people would be affected. A water war would ensue.

In a recent interview with the Dalai Lama, he told us: *"I remember that one day in the early sixties, one man from Xinjiang³⁶ came to see me. He was an ex-minister of the local government belonging to the Ugyur nationality. While we were having some food, (it was not here, it was in my previous residence in Dharamsala), he told me that there is a real danger in the future of China changing the course of the major Tibetan rivers towards the deserts of Xinjiang or Gobi areas.*

The Chinese can do it! If that happens, what will happen to India? At that time, I thought that it was very difficult, but now I think that it is possible.

³⁶ Chinese province of Eastern Turkistan.

For example, look at the Three Gorges project, the Chinese can undertake such big projects.

In fact in Tibet, it is easier, arrangements can be made to divert rivers because [the Tibetan plateau] geographically slopes from higher areas to lower areas.

[To make such diversion] on a few hundred kilometers, from Kongpo in Southern Tibet to Northern Tibet, is not that difficult."

The Dalai Lama who met Mao for the first time 50 years ago, knows well how the minds of the Chinese leaders function. His interview confirms the apprehensions of many experts'.

Another aspect to be considered is that once a project has come on the drawing board, it must to be executed for leaders in Beijing not to loose face, and this, whatever be the cost or consequences. There is also the competition angle. A couple of weeks ago, *The Pravda* in Moscow mentioned diversion the Siberian rivers.³⁷ Beijing also knows about the Vajpayee government's project to link most of the Indian rivers during the next ten years. They certainly would not like to be seen lagging behind their southern neighbour in terms of grandiose schemes.

³⁷ The article said: *"This is not ruled out that very soon the Soviet project for diverting of the Siberian rivers will be revived. Some scientists say that today the idea doesn't sound absurd at all. At an international conference "Transboundary water resources: protection and ecological stability strategy" held at Akademgorodok last week the idea of diverting the Siberian rivers of Ob and Irtysh to Central Asia was touched upon once again.*

The issue was actively initiated by journalists which seems to be quite logical after the last year's speech of Moscow Mayor Yury Luzhkov on the same subject. He said that in the 21st century the price for water would be on a continuous rise and it might even exceed, he said, the oil price. Yury Luzhkov added that as far as Russia had abundant water resources it was reasonable to consider the Soviet project of diverting Siberian rivers to Asian republics to earn money through realization of the project."

For full article see:http://english.pravda.ru/science/19/94/379/10842_water.html.

[It has to be noted that if the Tsangpo project is implemented, large parts of the scheme of linking the Indian rivers would become redundant.

Last and perhaps most serious: the Great Bend is located in a highly earthquake prone area. A huge reservoir and a few NEPs could provoke new earthquakes even more serious than the one in August 1950. Will men will be wise enough to learn from the past and study Nature's limits and reactions before wanting to alter her?

The Situation Today

In June 2003, the Indian Prime Minister spent 6 days in China. On his return, everyone clapped. At last the past could be left behind and a new era begun for the two Asian giants. Analysts thought that the old dream of Nehru, a true *Hindi-Chini Bhai-Bhai*, could finally manifest. The ancient ideologues of the Long March were dead and gone, a Fourth Generation of young, pragmatic and dynamic leaders had taken over. One could finally speak business.

The Prime Minister was only just back, when the news of Chinese intrusions on Indian soil was flashed by the Indian press. Such an embarrassment for the MEA's officers who had worked for months to draft a Panchsheel type of declaration! Once again, like 45 years ago, the Five Principles had been violated.

Everything could still have passed off without too much fuss. The MEA could have 'diplomatically' handled the situation. But the unfortunate happened: the Chinese Foreign Ministry spokesman declared: *"China does not recognise the so-called Arunachal Pradesh mentioned by the Indian newspaper report"*.

A weak Indian External Affairs Ministry could only feebly respond that the GOI was aware of the 'transgression' of the LAC by a Chinese patrol.

This raises an important question: why did Beijing chose this particular time to kindle the most sensitive issue of the Sino-Indian relationship. Why stir up this question when China had already won a battle over Tibet?

Perhaps, the 'Arunachal' announcement was a diplomatic diversion to hide a far more serious matter for India: the Tsangpo project. On July 17, 2003 the *People's Daily* had published a small item "*China to Conduct Feasibility Study on Hydropower Project in Tibet*" It ran thus: "*China plans to conduct a feasibility study in October on the construction of a major hydropower project on the Yarlung Zangbo River, in the Tibet Autonomous Region... an expert team [was sent] to the area for preliminary work between late June and early July. The Chinese section of the river, 2,057 kilometers long, boasts a water energy reserve of about 100 million kilowatts, or one sixth of the country's total, ranking second behind the Yangtze River. The location for the possible hydropower plant is the U-shaped turn of the river in the southeastern part of Tibet. The river drops by 2,755 meters in the 500 kilometer-long "U" section.*"

The cat is out of the bag, though very few people have noticed it.

Conclusions

Nobody can deny that China has a very serious problem with food and water. Even the rivers are drying up. Recently, Jasper Baker described the situation in a series of excellent articles in *Asia Times*.³⁸

A few years ago, Lester Brown had warned:

An unexpectedly abrupt decline in the supply of water for China's farmers poses a rising threat to world food security. China depends on irrigated land to produce 70 percent of the grain for its huge population of 1.2 billion

³⁸ Baker wrote: "*China at the dawn of history was much warmer and wetter than it is today, with elephants, rhinoceroses and crocodiles living north of the Yangtze River. Five or six thousand years of cutting forests and draining marshes have changed the climate to the point where the landscape has been devastated. China has the highest ratio of actual to potential desertified land in the world, according to the World Bank.*" For the four articles series, see, <http://www.atimes.com/atimes/China/EH26Ad01.html>

people, but it is drawing more and more of that water to supply the needs of its fast-growing cities and industries.

... The problem is now so clearly linked to global security that the U.S. National Intelligence Council (NIC), the umbrella over all U.S. intelligence agencies, has begun to monitor the situation with the kind of attention it once focused on Soviet military maneuvers.

Indeed, it is clear today that these questions do not pertain to environment only, but also to international security. If Beijing was to go ahead with the Tsangpo project, it would practically mean a declaration of war against South Asia.

The only solution seems to lie in bringing the matter to the negotiating table. If a river-water Treaty could be signed between India and Pakistan in the early sixties, why can not a similar agreement be made between China, India and Bangladesh, in order to assure a decent life for all in the region?

But do the bureaucrats and politicians even want to know about the problem? That is the billion dollar question.