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Hydro Power Station:
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of
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Abstract

Barely a week before the end of 2024, Chinese Govt announced its approval for construction of World's Largest Hydel Power Project in Tibet. The proposed project site is located barely few Kms North of LAC in Siang Sector of Arunachal Pradesh in Great Bend area of River Yarlung Tsangpo (known as Brahmaputra in India & Jamuna in Bangladesh). Environmental and geological controversies associated with the project had been in the public discourse since the days of its conception and initial survey undertaken way back in 1980s.

The project is sited in a highly sensitive seismic zone that falls at the junction of two tectonic plates which is further aggravated with other associated fall outs related to adverse impact on ecology and environment. Noted domain experts across reputed global institutions had voiced concerns regarding the associated risk and published numerous papers in support of the claim that the hydel project is not a viable option and could lead to irreversible damage and environmental catastrophe.

This paper is an attempt to trace the roots apart from connecting dots of possible factors guiding the timing of the Chinese decision to exploit the hydel potential of River Yarlung Tsangpo in the geologically and ecologically sensitive Great Bend Area of Tibet. The article covers geo-political intricacies in view of the Buddhist religious beliefs of local Tibetans associated with the sacred sites in Medog (Pemako) valley and geo-strategic aspects related to its security implications, Chinese narrative in support of the project, chronology of earthquakes in Tibet, possible fallouts and a counter strategy to the proposed hydel project inclusive of the mitigation measures.

China irrespective of the negative fallouts has decided to go ahead with construction of the Hydel project which clearly amounts to weaponization of water with intent to create a strategic asset to further its aggressive design in Tibet. It is imperative that India takes a multipronged approach and device a robust and resilient counter strategy to compel China to review its decision and explore other options to meet its climate goals and additional power requirements.

Keywords: Medog, China, Tibet, Water Wars, Hydel Power Project

Introduction

On 07 January 2025, a 7.1 magnitude earthquake struck Tibet at the foothills of Himalaya in an area which is known as the North access point to Mount Everest located in Tingri County of Shigatse prefecture. The strong earthquake resulted in substantial loss of life and property with initial reports quoting Chinese authorities gave out a casualty figures of 126

deaths and 188 injuries. The epicentre of powerful earthquake was located at a depth of 10 km in Tingri county which is located 75 km North of Mount Everest. The tremors of the powerful earthquake were also felt in neighbouring areas of India, Nepal and Bhutan.

It is matter of sheer co-incidence or may be termed as a divine intervention or an early warning to the mankind as geo-political strategist, research scholars and environmentalist were discussing and taking out numerous articles/ papers on the possible fallout of recent decision of the Chinese Govt to approve construction of the World's largest ever dam in Tibet in very close proximity to the Indo-Tibetan border. The proposed hydel power project is known as "Medog Hydro Power Station" with 66 Giga Watt capacity on River Yarlung Tsangpo (known as River Brahmaputra in India & Jamuna in Bangladesh) and sited along the stretch of river in the Great Bend Area in Pemako region of Tibet.

Genesis

Tibet has often been referred to as the "third Pole" for being the largest reservoir of fresh water on earth after North and South Pole, as it provides water to almost 20% of the world's population. China, since its occupation of Tibet, has continued its effort to tap the fresh water sources in the Tibetan plateau, however, owing to Tibet's harsh climate, high altitude, inhospitable terrain and limited surface connectivity, progress has been rather slow till the 1980s. However, the Chinese Government continued to engage its effort to exploit hydrological potential of water sources in Tibet most prominent among which has been the River Yarlung Tsangpo in general and in particular the Great Bend stretch of the river circumventing the Namcha Barwa Peak (7782m) through the deepest canyons and gorges in Medog valley or popularly known as Pemako among the Tibetan Buddhist.

The first documented material related to the proposed dam or tapping of River Yarlung Tsangpo can be traced in an article published in a Journal of Probe International dated 17 Jan 2011. The article mainly covered the culmination of the construction of the first dam ever built on River Yarlung Tsangpo in Nov 2010 known as Zangmu Hydro Electric Power Project having a 510 Mega Watt capacity and costed USD 1.2 billion. The project is located in middle reaches of the river between Sangri and Gyaca counties in Lokha prefecture (Probe International, 2011).

A noted geologist associated with project Yang Yong had termed it as commencement of a new age "marking the start of Hydropower Era for Tibet's rivers". As on date Zangmu Hydro Project continues to hold as a major Dam on River Yarlung Tsangpo in addition to 10 minor dams which are mainly built on its tributaries and there are three more Dams (Dagu, Jiacha and Jiexu) at various stages of construction.

The same article titled “New Era for Tibet’s River” cited that, way back in 1972, Guan Zhihua, a researcher at Chinese Academy of Sciences (Institute of Geographic Sciences and Natural Resources), headed a survey team entrusted with calculating the hydropower of Yarlung Tsangpo which has the highest per unit of length power generating capacity compared to any other River in China.

The study concluded that the entire river basin within Tibet has hydropower potential of 114 Giga Watts, bulk of which lies in the Great Bend stretch in Pemako region close to Tuting in Upper Siang district of the Indian border state of Arunachal Pradesh. A decade later in 1980, China undertook a survey of hydropower resources at the national level and the survey was instrumental in identification of 12 dam locations on River Yarlung Tsangpo which till date remains the first documented plan for dam construction on the rivers in Tibet.

In 1998, Chen Chuanyou, researcher at Chinese Academy of Sciences, in his article in Guangming Daily, came out with plan to build a reservoir in the central section of River Yarlung Tsangpo, in order to increase its water level and then channelize the water through a 16 km tunnel to its tributary to enable a drop of 2300 meters to enable electricity generation by three power stations. In 2002, Chen came out with another paper highlighting greater impact of hydropower station through electric power generation in Great Bend area which would positively impact South East Asia across the national boundaries with export of generated power surplus.

However, Chinese researchers since 1998, had voiced their reservations on negative impact of any hydel project in geologically sensitive Great Bend area. Noted among them is He Xiwu who quoted that the “geology is complicated and any construction is difficult”; another expert in the domain viz. Fan Xiao, Chief Engineer with Sichuan Bureau of Geological Exploration quoted “Tibet’s ecology is extremely vulnerable, and would be very hard to restore if damaged”.

Timing

On the day of Christmas, 25 Dec 2024, China approved construction of planet’s largest hydropower project with 60 Giga Watt capacity in the Great Bend area of River Yarlung Tsangpo. The timing of decision is significant as it has far reaching strategic implications that needs to be evaluated in light of the other factors governing the geo-political and geo-strategic landscape as China continues with its coercive and expansionist actions to exhibit its sovereignty over Tibet.

Irrespective of the fact that the study of hydel potential of Rivers in Tibet commenced in Tibet in 1972 and the first survey plan to build a Dam on Yarlung Tsangpo with prominence of the immense potential of Great Bend area came about in 1980s, the first official proposal of the Medog hydel power project was included in the 14th Five Year Plan (2021-2025). Its inclusion coincided with the 5th Plenum of the 19th Chinese Communist Party Congress held in Beijing from 26-29 October 2020.

The inclusion of Medog Hydel Project in 14th Five year plan came in the backdrop of Covid pandemic and the same year stands testimony as Indian troops gave befitting reply to PLA's misadventure in Eastern Ladakh. The events in Eastern Ladakh led to a prolonged military stand off especially post Galwan clashes and thereafter heightened security situations remained across the length of LAC along India's Northern Borders with Tibet. On 21 October 2024, India and China agreed on joint patrolling arrangement at the disputed areas of Eastern Ladakh, thus signalling the commencement of de-escalation to the four years long military stand-off across the LAC with Tibet.

It is important to highlight few developments related to Tibet which could be a contributing factor for the de-escalation, prominent among this is assessed to be the "New Strategy of Tibetan Government in Exile". This development is the result of efforts on part of the Chinese authorities in early July 2024, to establish direct talks with representatives of the Tibetan Government in Exile since the last talks in 2010. The direct talks has been a result of back channel communication initiated by China with sources in key position for over a year. Robert Barnett in his article posted on China file web page on 30 Dec 2024 has extensively covered the issue.

One of the issues highlighted in article include the Nancy Pelosi and six other US congressional members meeting with His Holiness (HH) Dalai Lama in mid June 2024 and handing over copies of the "Resolve Tibet Act" that received presidential accent on 12 July 2024. The act questions Chinese claim on sovereignty of Tibet, rejects China's historic claims and act specifically argues that "Tibet has maintained throughout history a separate and sovereign political and territorial identity".

The Resolve Tibet Act has been instrumental in forging a new strategy for the Tibetan Government in Exile—— moving away from being critique of Chinese Human Rights issues in Tibet to being critique of China's sovereignty claim over Tibet. It is assessed that the Act has made a major difference questioning the very core of Chinese sovereignty claim over Tibet. It is under this backdrop that Chinese authorities had gone into an overdrive to the extent of establishing direct talks with Tibetan Govt in Exile while not making the same public in view

of its domestic political compulsions. The initiation of direct talks, suggests substantial pressure to engage with HH Dalai Lama (currently 89 years old) for some concessions towards a negotiated settlement before his health deteriorates further and to avoid any further political escalation in Tibet while military tensions remain high on the Indo-Tibet border. It also appears to be one of the factors contributing to the recent military de-escalation across the LAC.

It is under this backdrop that the issue of Medog Hydel Project, since its inclusion in 14th Five Year Plan in Oct 2020, had remained dormant in the public discourse for more than five years till its official announcement on 25 December 2024. It is attributed mainly to the prevailing military standoff on the LAC during the period and other factors which are highlighted as under:

- Commissioning of Lhasa to Nyingchi Railway traffic on 25 Jun 2021, which marks the completion of the first phase of Sichuan-Tibet Railway (STR). Availability of railway tracks is a key component to any large hydel power project as it entails faster movement of large amount of construction related and other associated resources to the project site.
- In May 2021, construction concludes on the strategic tunnels (Laohuzui with a length of 2,114m) across the Namcha Barwa Massie as part of the new highway connecting Nyingchi to Medog. The new highway of 67.22km length completed in June 2021 and is the second road axis to connect Meto township from Nyingchi that reduces the travel time by eight hours. The first road axis to Medog (Pemako region) was opened in 2013 post the successful completion of Doshongla Tunnel. The alignment of new highway runs close to the proposed Medog Hydel Project site.
- By end of 2021, majority of Xiaokang (civil military dual use settlements) were completed in Medog county in close proximity of the border with Indian State of Arunachal Pradesh. The Xiaokang settlements provides adequate number dwelling units and associated infrastructure to support officials and personnel involved in Medog hydel project.
- In September 2021, China enacted its New Land Border Laws which came in force from 01 January 2022. Special provisions and legal framework were included in the law to further strengthen and safeguard the interest of its population and infrastructure in the border areas.

Geo-Political & Geo-Strategic Intricacies

In addition to the factors already highlighted, the issues that closely followed the announcement needs to be taken into account to understand the Chinese swing in its strategic approach from ‘reconciliation to confrontation’. The prevailing security situation in Myanmar; regime change in Bangladesh in August 2024 followed by Chinese envoy’s close engagement with interim regime and reach out to Bangladesh Jamaat-e-Islami; emerging alliance between China, Russia, Iran and North Korea (CRINK) in the backdrop of prolong Russia- Ukraine conflict has collectively provided China a favourable platform to adopt an ‘aggressive approach’ even to the tune of weaponizing water in Tibet as a strategic asset to act as deterrent against its South Asian Neighbour (India and Bangladesh).

It is indeed surprising that China, which appeared to be on a reconciliatory path with its engagement with India and on the Tibetan issue from July 2024 till November 2024, suddenly took an U-turn with the announcement of the Medog Hydel Project. On the very next, China unveiled two tailless fighter aircrafts with a buzz on social media as first flying display of its 6th Generation fighter aircraft, which was closely followed by unveiling of world’s largest amphibious assault ship on 29 December 2024. The last of the provocation, close to Ladakh region of India has been on 27 December 2024 wherein the People’s Govt of Xinjiang Uyghur Autonomous Region (XUAR) in Hotan prefecture announced the formation of two new counties of He’an and Hekang that covers majority of the territories of disputed Akhai Chin.

It has been amply understood that the announcement of construction for Medog Hydel Project after being dormant for half a decade is not in isolation but rather is a convergence of lot of factors. Chinese flip towards the end of 2024 appears to be dictated by internal political compulsions of Xi Jinping wherein his decision for de-escalation with India and engagement with the Tibetan Government in Exile, has been perceived by the domestic audience as soft and timid, therefore the sudden turn of events appears to be an attempt to project a strong and aggressive image of Xi Jinping in period where China continues to grapple with economic slowdown and stagnation in demand. The announcement of 137 billion USD Medog Hydel project can be seen as a massive investment in infrastructure that provides enough avenues to give boost to demand thereby lifting the public sentiments towards economic growth.

Narrative

China has always been traditionally strong in building a narrative and propaganda to support its global and domestic initiatives and uses all its resources to target the domestic and international audiences and shape a positive public opinion. The Medog Hydel Project is no

exception, therefore irrespective of its colossal environmental, geological, ecological and negative impact on climate, that can wipe out generations in the aftermath of a disaster, the positive narrative is built around three pillars viz. renewable energy generation, meeting climate goals and to reshape the geo-politics of transboundary water resources.

The narrative further elaborates that the electricity generated by the project would power industries and households with direct implications on economic growth together with reduction in greenhouse gas emissions with lowering dependence on coal based power. Project also creates livelihood in form of direct and indirect employment, encourage technology research and innovations with an overall impact with enhancement of core infrastructure in Tibet further boosting its tourism potential. It further focuses on how the dam regulates flow of water to prevent flooding downstream which is a recurring issue impacting a large population annually.

It is assessed that Chinese authorities will try to counter all the negative concerns to the project by orchestrating pseudo researches and support activities at the regional and global level. The Ministry of Foreign Affairs, United Political Works Department (UPWD), MSS and Academy of Sciences would continue to spearhead the campaign of building a positive narrative and countering the negative fallouts, using all its resources, to ensure smooth execution of the project.

Fallouts

The project site falls in a highly sensitive seismic zone which is at the junction of Indian and Eurasian tectonic plates that has witnessed a series of low, moderate and high intensity earthquakes in the past. In China a section of experts in earth and environmental sciences had expressed their reservations against Medog Hydel Project, however the internal dissent against the project has been brushed aside by the communist party. The delay of almost four decades since the early survey of the project is a testimony that China is aware of the magnitude of negative fallouts associated with the project but yet wants to go ahead to create a strategic asset in Tibet.

An exhaustive research paper titled “Geological Hazards Associated With a Proposed Dam on the Yarlung Tsangpo River in SE Tibet” was published as early in 2007. The publication was based on the research undertaken by Peter K Zeitler & Anne S Meltzer from the Department of Earth and Environmental Sciences, Lehigh University in US in association with three more domain experts.

The comprehensive research explored multiple dimensions associated with the project and had flagged five major issues covering the Geodynamic Context, Active Tectonics with structures and Antiform Evolution, Seismicity, Sediment Fluxes and Geomorphology and lastly covering the Implication for Dam Siting and Hazards. The research is supported by substantial amount of evidence taken from the field which were studied in detail to arrive at the conclusion that Medog Hydel project a complete no go in terms of its catastrophic impact and irreversible changes to the planet.

The Medog Hydel Project is being proposed to be the world's largest dam much larger in dimension and water storage than the existing 3 Gorges Dam on Yangtse river. In 2005, Dr Benjamin Fong Chao, geophysicist at NASA's in a post highlighted that 3 Gorges Dam is able to hold 10 trillion gallons of water. The impact of the large scale alteration of water bodies on earth based on his calculations would increase length of day by 0.06 microseconds and move the position of pole on Earth by about 2 cm which thereby influences the rotation of earth which is further compounded by the climate change with its impact of Earth Mass distribution. It is in this context that negative fallout of Medog Hydel project is not limited to South Asia primarily India and Bangladesh but it adversely affects planet Earth.

Fallouts needs to be evaluated in the realm of safety and security of lakhs of population located downstream in India and Bangladesh. Major earthquakes of the past in Eastern Himalayas and the most recent one on 07 January 2025 in Tingri county of Shigatse prefecture is indeed a wakeup call and an opportunity to undertake course correction. China has continuously downplayed the fallouts to further its agenda by quoting existing mechanism to share river flow data and emergency alerts. However, experience in the past especially during the Doklam Standoff, wherein Chinese authorities failed to share flood alerts during monsoon, hence resulting in loss of life and property due to floods in the Brahmaputra plains in Assam. In extreme scenarios, in situations where the issue of weaponisation of water is not amicably resolved between India and China, it can lead to prolonged tension on Indo-Tibetan border with possible escalation into a military conflict.

Chronology of Earthquakes

The Times of India in its article published on 08 January 2025, covering the Shigatse earthquake on 07 Jan 2025 also highlighted the past earthquakes in Tibet and China. The article reflects the intensity of seismic activity in Tibet in general and reported that in year 2024, Tibet alone witnessed more than 100 earthquakes of magnitude greater than 3. The chronology of major earthquakes in Tibet are covered as follows:

- **15 August 1950.** 8.6 magnitude in Medog, considered as one of the strongest earthquakes of 20th century. The earthquake resulted in more than 3000 deaths in Tibet and more than 1000 deaths in Indian state of Assam.
- **18 November 1951.** 8 magnitude in Damxung, it created a cracks in the ground that spanned 81km in length.
- **06 October 2008.** 6.6 magnitude in Damxung resulting in 10 deaths & 34 injuries.
- **18 November 2017.** 6.9 in Mainling which was accompanied by more than 300 plus aftershocks.
- **07 January 2025.** 7.1 magnitude in Tingri county, Shigatse with initial reports of 126 deaths and 188 injuries.

Counter Strategy

In the aftermath of Chinese announcement related to construction of World's largest Medog Hydel Power Station, India needs to formulate a multipronged approach to deal with prevailing situation in addition to forging a robust and resilient counter strategy. The counter strategy has to be effective in order to deliver a strong message which is non-negotiable with a clear end state resulting in shelving of project in the best interest of mankind in general and future of the next generations in South Asia in particular.

On the diplomatic front, the message to China has to be clear that the project amounts to weaponization of water in Tibet as it's a direct threat to India's national security. The issue needs to be flagged at the highest diplomatic exchanges highlighting the fact that as a sovereign nation, the Indian Government reserves its rights to act against any possible threat to its people and territory which is the case with Medog Hydel Project.

The diplomatic engagement needs to make it clear that the issue is non-negotiable as it involves not only the present but threatens future generations. Therefore, India reserves its rights to take recourse to all possible actions ranging from military means to global interventions involving multinational forums in case no diplomatic breakthrough is achieved bilaterally.

The Chinese narrative in support of the project needs to be debunked both domestically and internationally through well researched material evidence. All efforts should be made through a collaborative approach of the research community, scholars, domain experts, environment research organisation, multinational forums duly supported by the Indian diaspora

to create a strong public opinion that “Medog Hydel project is a threat to mankind”. The negative fallout post commissioning of China’s 3 Gorges Dam and dams on Mekong River with conditions of the lower riparian nations needs to be exploited to further strengthen the narrative.

While dealing with China diplomatically, its own created multipolar platforms like the Global Development Initiatives (GDI), Global Security Initiatives (GSI) and Global Civilization Initiatives (GCI) needs to be positively engaged. China needs to be sensitized that the Medog Hydel Projects violates the very tenants which it has created to unite the Global South.

All efforts need to be made to project that how the proposed Hydel project is detrimental to the interest of China as it pursues its national rejuvenation goals of 2049. It is in this spirit that India and China need to respect mutual concerns to progressively resolve bilateral issues and leverage from enormous potential of domestic markets to propel sustainable economic growth and development.

Over the years, the Tibetan community across the world through numerous articles and papers has voiced its concerns against the over exploitation of minerals and water in Tibet. In the name of poverty alleviation and development, the Chinese Government, as a matter of policy in occupied Tibet, continues to exploit the natural resources without considering the ecological and environmental impact that adversely affects and put at risk the lives of local Tibetans.

The proposed Medog Hydel project site is located within the Tibetan Buddhist sacred region of Pemako which is home to the ancient religious sacred sites and lakes. Sacred Buddhist religious sites are visited annually by large amount of pilgrims from all across Tibet and also from Indian state of Arunachal Pradesh. The very magnitude of the project has the potential risk to submerge the religious sites, thus hurting the religious sentiments with potential to trigger large scale public unrest in Tibet. The issue could ignite the local Tibetans resulting in political instability across Tibet to question the very basic issue of China’s sovereignty over Tibet.

In view of the strategic and operational significance, the project site needs to monitored closely to device appropriate response and escalation. At the same time, mitigation measures against the existing Dams on Yarlung Tsangpo needs to be worked out. Towards this, the India n government has planned a hydel project on River Siang in the state of Arunachal Pradesh and surveys are underway to prepare a Project Feasibility Report (PFR) and Detail Project Report (DPR) as suggested based on limited material available in the public domain. The proposed

project has three-fold deliverables viz. flood management, water flow correction and power generation.

Conclusion

The proposed Hydel project is strategically significant and has a direct bearing on India's security interest along its Northern Borders with Tibet. It is therefore imperative that the challenge posed by the significant development is taken up at the highest level of diplomatic engagement with China. The message needs to be loud and clear that under no circumstance, India as a sovereign nation will not allow weaponization of Water in Tibet. The Medog Hydel Power Station is a complete no go and this is a non-negotiable issue, therefore it is in China's national interest to review its decision and explore alternative means to meet its climate goals and increasing energy requirements.

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