

IN THE NATIONAL GREEN TRIBUNAL, EASTERN BENCH
AT KOLKATA

MEMORANDUM OF APPLICATION
ORIGINAL APPLICATION NO. OF 2015

(Under Section 14 read with Sections 15, 18(1) and Section 20 of the
National Green Tribunal Act, 2010)

IN THE MATTER OF:

Pradip Kumar Bhuyan
Joydeep Bhuyan

APPLICANT
APPLICANT

VERSUS

Union of India & Ors.

RESPONDENTS

INDEX

Sl.No.	Particulars	Page No.

Date: 30.04.2015

Place: Kolkata

Filed by:

Sanjay Upadhyay and Vikram Rajkhowa

Advocates for Applicant

29, Presidential Estate, (LGF)

Nizamuddin East

New Delhi 110 013

IN THE NATIONAL GREEN TRIBUNAL, EASTERN BENCH
AT KOLKATA

MEMORANDUM OF APPLICATION
ORIGINAL APPLICATION NO. OF 2013

(Under Section 14 read with Sections 15 and 18(1) of the
National Green Tribunal Act, 2010)

IN THE MATTER OF:

Pradip Kumar Bhuyan
IITan and Senior Citizen
Ghoramara, North Guwahati,
Guwahati - 781039
Assam.

Joydeep Bhuyan

S/o Mr. Pradeep Kr. Bhuyan
House No. 11, Kanya Mahavidyalay Path
Gitanagar, Mother Teresa Road
P.S - Geetanagar
Guwahati - 781024

APPLICANTS

VERSUS

1. Union of India
Through the Secretary
Ministry of Power
Govt. of India

Saran Shakti Bhawan
New Delhi - 110001

2. Union of India
Through the Secretary
Ministry of Environment and Forests
Paryavaran Bhawan, CGO Complex
Lodhi Road, New Delhi - 110003
3. State of Assam
Through the Chief Secretary
Govt. of Assam
Dispur, Guwahati 781006
Assam
4. State of Arunachal
Through the Chief Secretary
Govt. of Arunachal Pradesh, Itanagar
Arunachal Pradesh
5. Brahmaputra Board
NH 37, Basishta, Guwahati
Assam - 781029

RESPONDENTS

- I. The address of the Applicant is given above for the service of notices of this Application.

- II. The addresses of the Respondents are given above for the service of notices of this Application.
- III. This application is within the jurisdiction of this Hon'ble Tribunal as it is pursuant to the conditions specified under Section 14, 15 and 18(1) of the National Green Tribunal Act, 2010.

THE APPLICANT MOST RESPECTFULLY SHOWETH AS UNDER:

1.1 That the Applicant No 1 is a Senior Citizen of India and a permanent resident of Guwahati, Assam. The Applicant is a Graduate from the prestigious Indian Institute of Technology and is associated with educational institutions and other social organizations. He is the Founder President of North East Initiative (NEI) which amongst other activities manages a portal, - www.issuesofnortheastindia.org wherein pressing issues of the region including those of environment are highlighted for Government's attention and for public dissemination and more importantly for government action. The Applicant is also recipient of 'Life Time Achievement Award in Education' in 2004 initiated by NE (TV), a leading channel of North Eastern region. The Applicant is a socially active public spirited person, a nature lover and has a vast

understanding of the North Eastern region from social and environmental perspective.

1.2 That Applicant No 2 is a well known wildlife photographer, naturalist and nature lover.

1.3 That the Applicants above named raise serious and substantial question relating to the environment especially with regard to mindless and mind boggling number of dams that are being sanctioned, cleared or in execution in the North Eastern region especially Arunachal Pradesh and Assam without adequate environmental safeguards and with a potential massive disaster in the making due to lack of application of mind and adequate planning especially in terms of cumulative impact that might devastate the entire north eastern region. That it is one of the fundamental duties of every citizen under Article 51-A of the Constitution of India, to protect and improve the natural environment including forests, lakes, rivers and wild life and to have compassion for living creatures and it is the state's obligation under Article 48-A of the Constitution of India to protect the environment and therefore, the Applicants are entitled to invoke the jurisdiction of this Hon'ble National Green Tribunal by way of the present Application.

1.4 That the Applicants beg to state that located in the North-Eastern region of India, the frontier state of Arunachal Pradesh, is a unique habitat with glaciers, high altitude meadows, sub-tropical forests and an amazing array of flora and fauna, all this and more strewn generously with glistening water bodies and gushing rivers.

The Lonely Planet (www.lonelyplanet.com/india/northeast-states/arunachal-pradesh), a world renowned Travel Magazine describes Arunachal Pradesh as follows:

“The final frontier of Indian tourism, virginal Arunachal Pradesh shows up as a giant patch of green on the country's map. India's wildest and least explored state, Arunachal – literally the ‘Land of Dawn-lit Mountains’ – rises abruptly from the Assam plains as a mass of densely forested, and impossibly steep, hills, which eventually top off as snow-capped peaks along the Tibetan border. Home to 26 indigenous tribes, from the robust Monpas of Tawang to the artistic Apatanis of Ziro, Arunachal is perhaps the last sanctuary for India's natural and anthropological heritage.”

1.5 That according to the website of Dept. of Environment and Forests, Govt. of Arunachal Pradesh (www.arunachalforests.gov.in):

“The state of Arunachal Pradesh is a part of Eastern Himalayan Ranges and occupies the largest area (83,743 Sq. Km) in the North-Eastern region of India, and consists of mountainous ranges sloping to the plains of Assam. The diversity of topographical and climatic condition has favoured the growth of luxuriant forests, which are home to myriad plant and animal forms, adding beauty to the landscape. Living in this incredible cradle of nature are the colourful and vibrant tribes of Arunachal Pradesh for whom the forests and wildlife are of special significance. The total human population of 8,64,558 (1991 census) lives in 3649 villages and small towns. Livelihoods of local people have been closely linked and heavily dependent on forest resources since time immemorial. As per State of Forest Report, 1999 of Forest Survey of India, about 82% of total geographical area of 83,740 sq. kms., which is about 62% of the total geographical area and includes 10185.40 sq. km. of Reserve & Protected Forests which is about 12% of the area while the Protected Area Network that is national parks and sanctuaries covers an area of 9527.99 sq. km being 12% of the area and balance 38% is Unclassified or unclassed Forest. The important forests types found in the state are Tropical evergreen, semi evergreen, deciduous, Pine, Temperate, Alpine and grassland etc. Forests are the mainstay for the people of Arunachal Pradesh and are the richest biogeographical province in

eastern Himalayan zone. The State has 20% species of country's fauna, 4500 species of flowering plants, 400 species of pteridophytes, 23 species of conifers, 35 species of bamboos, 20 species of canes, 52 Rhododendron species & more than 500 species of orchids and is considered as one of the 12 mega diversity "Hot Spots" in the world. Forests generate the largest employment and are the single largest source of revenue for the State."

That most of the major rivers in the North-East region of India including Arunachal Pradesh are largely free-flowing till date, which is a rarity in India and the world. Their basins are home to unbelievable ecological and cultural diversity. Arunachal Pradesh is home to many large rivers and number of smaller rivers and innumerable streams flows through the state almost throughout the year. However, massive hydropower projects are being planned on these rivers in cascades, which will have irreversible destructive impacts on the society, forests, rivers, biodiversity, ecosystems, cultural identity and will also have severe downstream impact on the people of Assam.

- 1.6 That the state of Arunachal Pradesh is emerging as the new "powerhouse" of India. The Central Govt. and the State Govt. of Arunachal Pradesh has planned an ambitious program to develop above

135 massive dams to produce its potential of around 57,000 MW, in this strategically important region, which borders Myanmar in the east, Bhutan in the west and China in the north. Mega-dams have been planned on all the six major river basins of the state, namely, Siang, Dibang, Tawang, Kameng, Subansiri and Lohit. According to the study carried out by the Central Electricity Authority (CEA) and individual power developers, the total hydro power potential of the state is estimated at over 57,000 MW.

River Basin	No. of probable dams	Total Capacity(MW)
Dibang	17	10,977
Siang	26	17,308
Lohit	10	7,980
Tawang	8	2,057
Subansiri	26	12,658
Kameng	46	6,183
Tirap	2	140
	135	57,303 MW

Source: As per the study by Aranyak titled Impacts of Large Dams of Arunachal Pradesh and Meghalaya on Endangered Ganges River Dolphins.

1.7 That there is large scale resentment and protest from the people of Arunachal Pradesh and more so from the people of Assam, who are likely to bear the brunt of the downstream impact of these dams. There is also growing concern among people and experts across varied fields, both within the Nation and Internationally with regard to the mega dam building exercise in the Himalayas, more particularly in Arunachal Pradesh. In an introductory write up by Isabel Hilton the Editor of www.thethirdpole.net in a collection of articles titled Brahmaputra: Towards Unity written by various scholars from Bangladesh, China and India explore the way forward for international cooperation in the Brahmaputra basin, wherein she had stated –

“The Brahmaputra, or more accurately, the Yarlung Tsangpo Brahmaputra-Jamuna river, begins in the high glaciers of the Tibetan Himalaya and executes a dramatic turn to plunge through the world’s deepest gorge. For 400 kilometres, the river twists around the mountains, dropping more than 2,000 metres in altitude and giving up huge energy potential as it goes. Hydropower experts see it as an Eldorado of energy potential. From the gorge, it bursts through to the North-Eastern corner of India. From there the river descends into the Assam valley of India and then the vast deltaic lowlands of Bangladesh to rendezvous with the

Ganga, before reaching its final destination in the Bay of Bengal, having crossed three of the world's most populous countries – China, India and Bangladesh – along its journey.

Everything about this river system is on a majestic scale: as Bushra Nishat points out, it carries a volume of water greater than the combined flow of the 20 largest rivers in Europe, a greater volume than any river bar the Amazon and the Congo; it carries vast volumes of silt, the curse of dam builders, but life giving to farmers and fish, from the high Himalaya to the tropical seas of the Bay of Bengal. For thousands of years, millions of people have lived along its banks, dependent on the mighty river's pulse for the rhythms of their lives. It has inspired music and dance, stories and legend, tributes to the unchanging presence that is the foundation of their livelihoods.

Today, this great river is under threat: climate change will alter its flow over the long-term, as glaciers and monsoon patterns and ground water reserves react to rising temperatures and changing patterns of use. More urgently, and potentially more catastrophically, the race to exploit the river's potential to produce energy, to establish the competitive claims of prior use, to build dams, diversions and barrages to harvest the river's

power, risk destroying not only the Brahmaputra's unique character, but its wider economic, cultural and ecological value.”

A copy of the collection of Articles titled
Brahmaputra: Towards Unity is hereby
annexed as **ANNEXURE (Colly.) – A.**

- 1.8 That a similar exercise of mega dam building is also being carried out by China in the Himalayas on its territory in Tibet. Well known author and journalist Prem Shankar Jha, highlights the geo-political intricacies between China and India and the undeclared race to capture the hydroelectric potential in an article titled “Why India and China should leave the Brahmaputra alone” published in the above stated ‘Brahmaputra: Towards Unity’ appended as **Annexure – A**, wherein he had stated that –

“In October 2012, Indians learned that China had begun to construct a 700 megawatt (MW) capacity dam on the Brahmaputra river (Yarlung Tsangpo). The news aroused dormant fears that China intended not only to generate power from the river but also divert some of its waters to the arid northern regions of the country. This possibility was first mentioned at the first international conference of the *Global*

Infrastructure Fund in Anchorage, Alaska, in 1986. Although Chinese officials rubbished the idea as being impossibly expensive to implement, they did not rule out the possibility of constructing dams on the river to generate power. This ambivalence raised *understandable alarm* in Bangladesh and India, but Beijing sought to allay their fears by assuring them that it intends to build run-of-the-river dams that will redirect, but not stop, the flow of its waters into India and Bangladesh.

These reassurances have not, however, prevented China and India from entering into an undeclared race to capture the hydroelectric potential of the *Brahmaputra river basin*. Chinese writers began to air plans for *harnessing the Yarlung Tsangpo* in 2005, but it is possible that the Indian government had already begun to formulate its plans after the *publication of a book* by Li Ling in 2003 entitled *Tibet's waters will save China*. As the downstream riparian, India is hoping to establish first user rights to stake its claim to an uninterrupted flow of the Brahmaputra's waters. In international law, first user rights start upon the completion of a project, so the number of projects that India has signalled it will take up in the Brahmaputra basin has risen rapidly – from 146 announced in a 10-year hydroelectricity plan unveiled by India's *Central Electricity Authority* in 2007, to about 200 today. What is more, a scramble has developed to start as many of these as soon as possible.

The pace of planning and implementation has also picked up in China. Citing the need to cut down carbon dioxide emissions, the *12th Five Year energy plan*, unveiled in 2012, shifted its emphasis back onto giant hydroelectric projects once more. One of its most important goals is to harness the hydropower potential of the Yarlung Tsangpo basin. In all, China intends building 40 dams on the river and its tributaries. Of these, 20 dams on the Yarlung Tsangpo will generate 60,000 MW of power, while 20 smaller dams upon its tributaries are expected to generate another 5,000 MW. Eleven of the 20 projects on the Yarlung Tsangpo will be located between its source and the Big Bend where the Brahmaputra turns northwards, executes a huge ‘U’ turn and falls from 3,500 metres on the Tibetan plateau to 700 metres in the undulating hills of Arunachal Pradesh in India. These will generate 20,000 MW of power. The balance, of 40,000 MW, will be generated at the Big Bend itself. The plan for doing this has been put forward by ex-Premier Li Peng’s family-dominated corporation, the Three Gorges Dam Company. It envisages building a vast tunnel under the ridge that separates the two arms of the Big Bend to divert 50 billion cubic metres of water a year from the northwestern flowing arm of the river to the south-eastern arm over a succession of nine cascading hydropower dams that will generate 40,000 MW of power. India, for its part, plans to generate 22,000 MW from two

large dams on the Brahmaputra in Arunachal Pradesh and 10,000 MW from dams on its tributaries. In all, therefore, the two countries plan to generate 97,000 MW of power from this tiny region of their respective countries.”

Mr. Prem Shankar Jha further states that, “These plans are engineers’ dreams run amok. If they have their way, up to 360 dams will be built on slopes with a gradient of as much as 60 degrees, at the meeting point of three of the youngest and most unstable mountain ranges of the world. But neither the Chinese nor the Indian government have made even a rudimentary assessment of the impact that gouging out billions of cubic metres of rock and earth to build dams, tunnels and roads, and store millions, in some cases billions, of cubic metres of water, in will have on the stability of the earth’s crust in this region.

This is turning a blind eye to nature with breathtaking insouciance. Both governments cannot but know that the Himalayas have regularly experienced the most powerful earthquakes on land in recorded history. Four of these, measuring 7.8 to 8.9 on the Richter scale, have occurred within a span of 53 years between 1897 and 1950. The first and last occurred just in the region immediately south and west of the Big Bend in the Brahmaputra. The 1897 earthquake measured 7.8 on the Richter scale

(equivalent to the explosion of 7.6 million tonnes of dynamite, or a medium sized hydrogen bomb) and caused widespread damage and loss of life in what was then called Upper Assam. It was caused by the build up of pressure as the Indian (tectonic) plate pressed against the Shillong Plate, a part of the far older Eurasian Plate.”

If the above were not enough the massive earth quake in Nepal that ripped through two countries and including the Bihar to Assam and the devastation and the aftermath that it has left is another great alarm for such mindless development. As exerts rightly observed “if a bigger one is in store”? everyone whose remotely associated with geology have been fearing the “Big Himalayan Quake”. Should be build these massive dams and wait for the bigger Himalayan quake or nip it in the bud and take preemptive and precautionary steps now to prevent man made disasters in this highly sensitive seismic zone.

- 1.9 That award-winning Canadian journalist Micheal Buckley who has extensively toured and studied about Tibet throws further light on the above highlighted intricacies in his book “Meltdown in Tibet” wherein he had stated that –

“The Tibetan Plateau is the source of the major rivers of this vast region, stretching all the way from the coast of China in the east to Pakistan in the west. Ninety percent of the run-off from Tibetan rivers flows downstream into China, Vietnam, Cambodia, Laos, Thailand, Myanmar (Burma), Bangladesh, India, Nepal, Bhutan and Pakistan. At the tail end of those same rivers lie the world’s largest deltas. One way or another, close to 2 billion people rely on Tibet’s waters – for drinking, for agriculture, for fishing, for industry.

Water, not oil, is now becoming the world’s most important resource. Though we live on a planet covered by water, very little of it is accessible. More than 97 percent is seawater, which is too salty: at this point of time, desalination plants are very costly, in terms of both money and energy. Roughly another 2 percent of water resources are locked in ice and snow. That leaves a paltry 1 percent to supply drinking water, grow crops, run factories, cool power plants, and handle all other key roles that water plays. And it’s possible that up to half of that paltry 1 percent is polluted or contaminated water, which is not usable. As non-renewable groundwater resources are used up, the global supply of freshwater is dwindling at an alarming rate. This will lead to great tensions between nations over shared water resources.

Although there is freshwater derived from the ice in Arctic and Antarctic, most of it cannot be funnelled into usable freshwater for human consumption. Tibet is often referred to as the “Third Pole”, because it is the third largest source of water locked in ice and snow. Tibet is unique in the world as a mass provider of freshwater, via rivers, to a dozen nations downstream. It is the source of major headwaters for the rivers of Asia and the Himalayas, and additionally provides key tributaries or feeders for other major rivers, such as the Ganges. There is no parallel to this situation anywhere else on this planet.

Tibet’s glaciers are melting rapidly, and its lakes are drying up. The plateau is under siege from climate-change factors, but instead of seeking ways to minimize the impact of all this, both India and China are aggravating the situation.

Why should this matter to someone sitting halfway across the world? The initial impact will be on the nations downstream. Any water shortages will disrupt rice or wheat harvests and drive grain prices to record highs, causing great social unrest – and causing nations like China or India to import massive quantities of grain.

What appears to be just a Tibetan Plateau problem or a Chinese problem is going to become an Asia-wide problem. Ultimately it will become a global problem because there are no boundaries when it comes to environmental impact.”

That the Applicants crave leave to produce a copy of the above referred book titled ‘Meltdown in Tibet’ written by Micheal Buckley as and when it is directed by this Hon’ble Tribunal.

- 1.10 That in a timely article titled India-China-Brahmaputra: Suggestions for an Approach by Ramaswamy R Iyer from Centre for Policy Research and former Secretary, Water Resources, Government of India published in the Economic and Political Weekly, February 28, 2015, Vol. L No. 9, analyses and further elaborates on the China and India’s cauldron and the mega dam building exercise carried out on both sides of the Himalayas, wherein it was stated that –

“Incidentally, there is a perverse, suicidal view that India must quickly build a number of hydroelectric projects on the Brahmaputra to establish a “prior useright” to pre-empt Chinese projects. One does not

know whether to laugh or to cry at this naïve and bizarre proposition. China is hardly likely to pay much heed to this legal argument, and we would have done ourselves immense hydrological, ecological and other kinds of harm.

What is it that a lower riparian can demand from an upper riparian under customary international law? Both the old Helsinki Rules and the present UN convention lay down the principle of equitable utilisation, but there are multiple criteria for what is “equitable”, and there can be divergence on this. A lower riparian cannot veto interventions in a river by the upper riparian, but can ask for prior notice of intention of intervention, full detailed technical information, due regard for the concerns of the lower riparian, advance consultations, and the acceptance of the principle of avoidance of “substantial harm” (Helsinki language) or “significant injury” (UN convention language) to the lower riparian.

Is China likely to be responsive to such a demand by India? If it is, it will not be because international law says so, but perhaps for political considerations. If China feels that good relations with India are desirable, it may be willing to pay heed to India’s concerns. It is mindful of its relations with the lower Mekong countries, and willing to listen to them to a limited extent. It is also not totally unresponsive to popular project-

related concerns within China. Similarly, it may be willing to take India's concerns as a lower riparian into account to a limited extent. This is essentially a question of what kind of a relationship it wants with India.”

The author further states that –

“The effort will be rendered slightly more tractable if India could make common cause with Bangladesh on this matter. That may not be easy, as they may turn around and say that China is only doing to India what India has been doing to Bangladesh. India has to find ways of overcoming that awkwardness. A joint India–Bangladesh approach to China on this matter would be far more effective than separate approaches. The difficulty is that India will not be on strong ground in objecting to China's projects on the Brahmaputra, if any, because it is constructing many such projects within its own territory, giving rise to protest movements within the country. Dibang, Subansiri, and so on, are subjects of controversy. There is a view that the so-called hydropower potential in the North East must be harnessed by a series of projects, and a large number of such projects are on the anvil. While Arunachal Pradesh is enthusiastic about undertaking these projects, there is a people's movement — an andolan — against them in Assam. If it is all right for India to go on a project-building spree on the Brahmaputra, with

what moral justification can India object to China doing so? Besides, in what way is a Chinese project for south-north water transfer different from the massive interlinking of rivers project which the Government of India wants to undertake, and which has caused a great deal of concern and anxiety in Bangladesh? It is clear that we need to reconsider our own thinking about rivers, and achieve a degree of consistency:(a) between what we do internally and what we expect our neighbours to do, and (b) between our behaviour towards our downstream neighbours and the behaviour that we expect from China vis-à-vis ourselves.”

A copy of the above stated article titled India – China-Brahmaputra: Suggestions for an Approach is hereby annexed as ANNEXURE – B.

- 1.11 That the Applicants beg to state that Govt. of India, instead of differing with China’s destructive development model in the Himalayas on the Tibetan side and instead of building consensus among various countries more particularly the downstream countries of South and South-East Asia to put pressure on China against pursuing the destructive exercise of mega dam building in Tibet, Govt. of India in a similar vein is pursuing

the same destructive model on the Indian side of Himalayas particularly in Arunachal Pradesh, by entering into an undeclared race to capture the hydroelectric potential of the Himalayas in Arunachal Pradesh, by throwing winds to the security and safety of millions of its citizens without having made even a rudimentary assessment of the cumulative impact that gouging out billions of cubic metres of rock and earth to build dams, tunnels and roads, and store millions, in some cases billions, of cubic metres of water, in will have on the stability of the earth's crust in this region, as highlighted by noted journalist Prem Shankar Jha, which is contrary to the principle of 'protection and improvement of the human environment' as espoused in the United Nations Conference of Human Environment held at Stockholm in June, 1972, in which India participated and is part of the preamble of the NGT Act, 2010 and is also contrary to the Precautionary Principle and Principle of Intergenerational Equity and in violation of Article 48-A of the Constitution of India, which provides that the State shall endeavour to protect and improve the environment and to safeguard the forests and wildlife of the country.

- 1.12. That the right to water has been derived from the fundamental right to life under Article 21 of the Constitution. In addition, the Constitution recognizes economic, social, and cultural rights under the Directive Principles of State Policy. Although non-judicial, they are fundamental to

the formulation of public policy, governance, and the interpretation of constitutional rights.

Article 39(b) provides: “The State shall, in particular, direct its policy towards securing.....that the ownership and control of the material resources of the community are so distributed as best to subserve the common good”

Under Article 48A read with 51A (g) of the Constitution obliges the State and all citizens to save and protect the environment including forest and wildlife.

2. IMPACT OF MEGA HEP's (UNDER-CONSTRUCTION/ PLANNED/ PROPOSED) IN ARUNACHAL PRADESH ON THE ENVIRONMENT, ECOLOGY AND PEOPLE.

2.1 That the Applicants beg to state that all HEPs (big or small) have environmental and social impacts during their construction and operational phases. The negative impacts of small projects can be less intense and therefore mitigated more easily. Large projects often lead to massive impacts that are hard to mitigate and may result in permanent scarring of nature and society. Many of them are not even seen or felt immediately. They emerge over time.

- (i) **Diversion of Water:** Most of the HEP's in Arunachal Pradesh are diversion projects which divert water upstream of a dam into a tunnel and drop it several kilometres downstream in order to obtain a large head. Series of dams are proposed for the major rivers (including their tributaries) in Arunachal Pradesh. As per this scheme number of large / mega dams will be built across the length of the rivers. The rivers shall then be converted into a series of ponds (reservoirs behind the dams) connected by pipes (tunnels). Large fragments of these rivers could be left with minimal flow as almost all the river water is extracted for producing

hydroelectricity, as per current practice. Scientific studies have shown that this has led to disruption of fish migration and the loss of aquatic biota and diversity.

- (ii) **Fragmentation of river length:** When a number of dams are built in a series on a river, each dam fragments the river due to minimal flows between the dam and the power house. In these stretches the rivers lose their continuity and spread. As a result they are unable to perform their natural functions. The loss of natural flows also affects anthropocentric values of rivers, i.e., social, economic, cultural, aesthetic and recreational values. Almost no EIA report discusses the cumulative impact of minimal flows due to multiple projects in its valley. The ratio of the river length diverted to its total length is a good indicator of the cumulative impact of multiple dams. The construction of multiple dams on a river leads to fragmentation of the river's length, affecting riverine biota and diversity.

- (iii) **Dry River Beds:** It has been highlighted by scientific studies that when large fractions of river lengths go dry or convert into a form of reservoir due to multiple projects on them, changes in the micro climate may occur. The temperature in the river valley may

increase. The accompanying reduction in moisture can diminish the valley's biodiversity and productiveness. In the long run it may also speed up the melting of nearby glaciers.

2.2 **Four (4) hr generation Dams:** That over 135 hydro power dams are proposed in the 6 valleys of Arunachal Pradesh, namely, Lohit, Dibang, Siang, Subansiri, Tawang & Kameng. These hydro projects are termed as Run of the River (RoR) schemes, giving an impression that whatever is flowing in the river is flowing through turbines and/or over the dam without disturbing the natural flow of the river. Nothing is further from the truth. The flow of the river is held up for 20 hours or so in the dam when the project is “off-grid”, and is released in 4 hours or so by running all the turbines at night, in the lean months. We may term these dams as 4 hr peaking generation dams to distinguish them from true Run of the River (RoR) dams. These types of dams destroy the environment & ecology completely downstream of the dam during the lean months, irreversibly.

The crux of the problem:

- (i) When water is held up by the 4 hr generation dams completely or to a trickle for 20 hours or so in winter, the river downstream of the dam will dry up for 20 hours and a flood will then descend for 4 hours, and when this unnatural sequence continues day after day in winter months, the ecology of the river will be devastated along with the lifestyle and livelihood of the riparian people. It will also result in high dams as a big reservoir is needed to hold the water for 20 hours, creating environmental issues upstream and downstream of the dam and many 'risk factors', specially, downstream of the dam, in the fragile sub Himalayan areas in zone V of the seismic scale.
- (ii) These dams are planned as per the Hydro Power Policy, 2008 of Govt. of Arunachal Pradesh. The 'objective' of the Hydro Power Policy, 2008 is only to develop Hydro Power and to accelerate the pace of hydropower development. There is no mention about the environment, ecology, riparian people in the 'objective' of the Hydro Power Policy 2008. The Policy objective completely ignores the water allocation priorities as set in the National Water Policy of Drinking Water, Irrigation, Hydro Power and Ecology etc.

- (iii) Since environment, ecology and riparian people are not a part of the above mentioned Hydro Power Policy's, 'objective', *arbitrary* level of generation is fixed for the Hydro Power projects of Arunachal, which is totally destructive in its bid to generate maximum power for maximum profit for the Developer.
- (iv) The Respondent No. 1 i.e. Ministry of Environment & Forest and Climate Change (MoEFCC) has acted as a 'Complementary Ministry' to this 'maximum power generation for maximum profit' policy by endorsing the 4 hr generation dams through their Environmental Clearance process, at the cost of total destruction of environment, ecology and the riparian people.
- (v) These so-called RoR schemes (4 hour generation dams) snatches away from the riparian people, what they have – a flowing river in the winter that gives them livelihood and a social and cultural lifestyle endemic to each river. They also have been deprived of any stake on their rivers which makes the Hydro Power Policy, 2008 a mockery of the National Water Policy, 2005 which envisages some benefit to the riparian people like irrigation, ecology etc. from hydel projects.

In an article titled India-China-Brahmaputra: Suggestions for an Approach published in the Economic & Political Weekly of Feb 28, 2015, Ramaswamy R Iyer of Centre for Policy Research (appended as **Annexure – B**), has described RoR peaking dams as below:

“They are perhaps among the most destructive human interventions in nature. ‘RoR’ is a most misleading description: the projects involve high dams; and apart from the usual impacts of dams, there are two special features in RoR hydro projects. First, there is a break in the river between the point of diversion to the turbines and the point of return of the waters to the river, and the break can be very long, upwards of 10 km in many cases, even 100 km in some cases; and there would be a series of such breaks in the river in the event of a cascade of projects. Second, in such projects the turbines operate intermittently in accordance with the market demand for electricity, which means that the waters are held back in pondage and released when the turbines need to operate, resulting in huge diurnal variations — from 0% to 400% in a day — in downstream flows. There is one case in which the river is dry for 20 hours in the day and in the remaining four hours there is an eight metre water wall rushing down the river. No aquatic life or riparian population can cope with that

order of diurnal variation. A RoR hydroelectric project spells death for the river.”

2.3 Power only Philosophy: That in order to accommodate the ‘Power only philosophy’ as enunciated above, the Government of India through its Ministries only goes through the motions of fulfilling the statutory requirements such as Environmental Clearance, Forest Clearance etc. The Ministry of Environment & Forest and Climate Change (MoEFCC) has thus stipulated:

- (i) Environmental Impact Assessment (EIA) is to be conducted to only 10km downstream of any project.
- (ii) No water or only a trickle is to be released from the dams when the project is ‘off grid’ for 20 hours or so. For Subansiri Lower Hydro Electric Project (SLHEP), MoEF stipulated release of only 6 cumec of water from the dam for 20 hours during lean months to the biggest tributary to Brahmaputra.
- (iii) Longitudinal Connectivity need not be maintained by the project developers - Power House can be located many kms downstream

of a dam carrying the river water through tunnels/pipes in order to maximize power generation.

2.4 **Upfront Payment by Project Proponent:** Govt. of Arunachal (GoA) takes upfront payment on signing of any MoU for a Hydro Power Project. The GoA has received an upfront premium of Rs. 93 crore in the year 2007-2008 for Upper & Lower Demwe, long before the projects received any clearances.

As per clause 9.13 of the Hydro Power Policy 2008 of Govt. of Arunachal Pradesh, the Developer(s) of viable projects shall have to deposit non-refundable 'Upfront Premium' including Processing Fee as stipulated hereunder

Minimum Upfront Payment

- | | |
|--------------------|----------------------|
| • 25MW – 95mm | Rs. 1.00 lakh per MW |
| • 100MW – 499mm | Rs. 2,50 lakh per MW |
| • 500MW – 999mm | Rs. 3.50 lakh per MW |
| • 1000MW – 1499mm | Rs. 5.00 lakh per MW |
| • 2000MW – 2999mm | Rs. 6.00 lakh per MW |
| • 3000MW and above | Rs. 7.00 lakh per MW |

The Developer(s) pay huge Upfront Payments as they are confident of receiving the necessary clearances as a matter of formality only. This has vitiated the safety, security and the need to exercise due diligence on behalf of our forests, wildlife and people from these Hydro Power Projects.

A copy of the above stated Hydro Power Policy 2008 of Govt. of Arunachal is hereby annexed as **ANNEXURE – C.**

2.5 Government of Arunachal (GoA) is a Project Developer: In many big projects, Govt. of Arunachal, are major shareholders. As an example, in the 3097 MW, Etalin Hydro Electric Project, on Dibang (Dri & Tangon tributaries), Hydro Power Development Corporation of Arunachal has 26% shares and Jindal Power Ltd. has 74% shares. When the Govt. itself is a stakeholder in a project, where will be the sanctity of its reports for various mandatory statutory requirements for sanctioning of the projects. It is an established principle of natural justice derived from the latin phrase '*nemo iudex in caus sua*', which means "no one should be a judge in his own cause." Maximum Power at any cost becomes the guideline for

obtaining statutory clearances through manipulation and subterfuge and because of this, grave consequences in Arunachal and Assam manifests from the 4 hr peaking dams.

2.6 **Policy of Hydro Power at any Cost:** The GoA and GoI have pursued the policy of the Hydro Power Policy 2008, which has in its objective no place for ecology, environment and people, relentlessly for maximum power for maximum profit to the Developer. In this pursuit, statutory environmental and forest requirements have been made a mere formality for sanction of Environmental and Forest Clearances.

(i) **Dibang Multi-purpose Project – A case in point**

The manner in which Forest Clearance was given by Forest Advisory Committee (FAC) to the Dibang Multipurpose Dam (DMD) is an eye opener. A study by researcher with **Nature Conservation Foundation** posted on November 13, 2014 by SANDRP reveals:

Quote -

‘Forest Advisory Committee’ which is a statutory body of the MoEFCC formed under the Forest Conservation Act of 1980 and FAC rejected the Forest Clearance proposal of the Dibang Multipurpose

Project (DMP) twice. The proposal was rejected by FAC in July 2013 and again in April, 2014, where FAC said that 10m reduction in dam height as advocated by NHPC Ltd., the Project Proponent, does not take care of any pertinent impacts for which the proposal was rejected in the first place. **The 10m reduction in dam height from 288 m still means destruction of 3.24 lakh trees and submergence of 4577.84 HA of rich bio-diverse forest.**

After the Second rejection, the FAC was reconstituted and the reconstituted FAC has obliged the Minister of Power in its very first meeting by according clearance to DMP **by retaining the original stand of the Developer to reduce the dam height to only 10m!** There is no legitimacy and sanctity in the clearance, because what was rejected twice has suddenly become 'acceptable' without any change after the FAC was reconstituted by the GoI with their minions as members.

The **Ecological impact of the Dibang Multi Purpose HEP** would be hugely adverse for which the FAC gave clearance in such a cavalier manner.

The project, in its earlier version involved diversion of more than 5000 hectares of relatively undisturbed grassland and tropical forest habitat.

These and the adjoining forests harbour endangered species such as Tiger, Leopard, Serow as well as the critically endangered Takin, all of which are protected under Schedule I of the Wildlife (Protection) Act, 1972 (these species are also listed as present in the area in the Environmental Impact Assessment report of the project, undertaken by National Productivity Council, Guwahati). The grasslands in the area harbour the critically endangered Bengal Florican, a grassland habitat specialist (Sinha et al. 2014). Other species recorded from the area include the critically endangered White-rompedVulture, the Slender-billed Vulture and the White-winged Wood Duck. The project site lies in an area identified by the Bombay Natural History Society as a Ramsar site and an Important Bird Area (Islam & Rahmani 2004). The habitat of six endangered plants (*Aconitumferox*, *Coelogyne mossiae*, *Dendrobium aurantiacum*, *Paphiopedilum fairieanum*, *Paphiopedilum venustum* and *Vanda coerulea*) will be submerged by the reservoir (Chernaik 2007).

The project will also affect aquatic species; the dam will block the breeding migration of four species of fish: the vulnerable snow trout *Schizothorax richardsonii*, Endangered golden mahseer *Tor putitora*, Near-Threatened mahseer *Tortor*, and chaguni *Chagunius chagunio*. The recommendation of the Environmental Management Plan of the Project to

establish fish hatcheries for these species is impractical and can have further damaging effects on the species due to collection of eggs and spawn from the wild population.

The project will have other collateral damages such as through Compensatory Afforestation (CA) that often involves converting an area with diverse native species into monocultures, as has been shown for other dams such as the Sardar Sarovar Dam on the Narmada river (Bhatnagar 2004). The project involves CA of a relatively large area of over 100 sq. km (double the area of forest being affected by the project). The ill-effects of this conversion particularly for the project can be expected to be higher if tree-less natural grassland habitats in Dibang Forest Division, Namsai Forest Division and Anini Social Forestry that harbour grassland habitat specialists are planted with undesired native or non-native tree species. Perhaps the irreversible loss of biodiversity in the forests and grasslands that will be diverted for the project could never be 'compensated'.

Downstream effects include those on fisheries, agricultural lands and wetlands (beels) and the dam will also increase the vulnerability of the region to flash floods. For instance, in the year 2007, flash floods caused due to sudden release of water from the relatively smaller 405 MW

Ranganadi project in the Lower Subansiri district in Arunachal Pradesh swamped 83 villages and caused huge loss of lives and property in the Assam State. The Dibang project will have a considerable impact on the Dibru-Saikhowa National Park in Assam **which has not been studied in detail in the EIA.**

The Seismic consideration of Dibang Multi Purpose HEP: Tallest gravity dam in the world.

On shaky ground: A critical issue with the project is that the site lies close to an active Fault Line in the Mishmi Thrust of the Mayudia Group in Eastern Arunachal Pradesh with a history of several seismic activities including the Great Assam earthquake of 8.6 magnitude in 1950 (Figure 1, Misra 2009). In the event of an earthquake, the project poses a risk of catastrophic submergence of several villages and vast areas of forests downstream. The recommendations of the Environmental Impact Assessment (EIA) report of the project **are cursory** and suggest further research on the natural seismicity of the region as well as reservoir-induced seismicity, which should be the basis for the decision about the project.

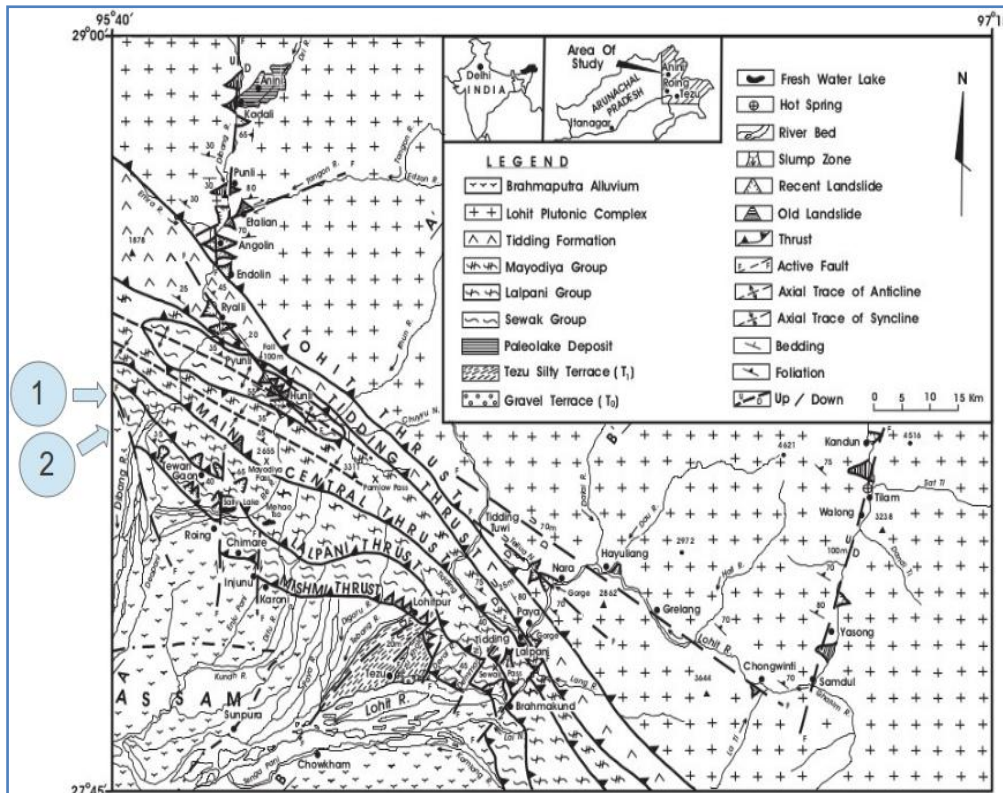


Figure 1: (Modified from Misra, 2009) showing the location of the fault lines around the proposed project site. 1 is the location of the Fault line and 2 is the location of the proposed site.

Notwithstanding, in Oct 2014 the project was cleared by the FAC constituted by the new Government, although the committee still had four of the six members who had earlier twice recommended rejection of clearance. Is this decision driven by changes made by NHPC in their project plan? Clearly not. Diversion of forests has now been reduced by a mere 9% to about 4600 hectares; instead of 3.55 lakh trees, the felling has been reduced to 3.24 lakh trees, the power generation capacity has been reduced by 2.3% and the height of the proposed dam reduced by 10 m. In

fact, the FAC rejection of April 2014 was for this 10 m rejection proposal!



The beautiful Dibang valley that faces the threat of submergence due to the Dibang Multipurpose Project (Photo by Soumya Dasgupta).

NHPC misleadingly and baselessly claimed that they ‘were not in a position to reduce the height of the dam any further, as it would significantly affect the power generation’. The decision to provide clearance to the project seems like a hasty one driven by the blinders of development and the consequences of such projects is evident from the fate of the Lower Subansiri Hydropower Project in the same State, also by NHPC. After 12 years since the LSHP was initiated and after an

expenditure of over Rs. 5000 crores, the work has been on a standstill for the last 35 months as a result of India's biggest anti-dam people's movement (Dandekar & Thakkar 2014). Considering the economic, ecological, environmental and social costs of the project as well as the geophysical risk it poses, it would be prudent to withdraw the project **till a credible, detailed cumulative study covering these aspects is undertaken in a transparent and participatory way**. While the rest of the world is recognizing the ill-effects of dams, with the largest dam removal project on the Elwha river in the United States completed just three months back, it is paradoxical that we are heading in the other direction; of building the highest dam in the country and largest capacity reservoir of the North East India without even basic studies, credible impact assessment and democratic decision making process.

Quarrying, Tunnelling& Muck from DMP

From the Dibang Multipurpose project (DMP), during the construction it is estimated that the following boulders, sand will have to be extracted.

- Boulders to be extracted : **32,00,000 truck load** (32 lakh truck load)
- Sand to be extracted : **16,00,000 truck load** (16 lakh truck load)
- The project will generate **198,00,000 lakh cu³m of muck**

Mind boggling, but for one project only! Unsustainable extraction of sand and boulder has significant negative effects on geomorphology, bank stability, flood character of the river, water quality, river flow and biodiversity in the river basin (*Padamlal et al 2008*). Removal of large quantities of boulder and sand increase many times the erosive power of rivers during flood condition as was witnessed in Uttarakhand.

A copy of the above stated study of Nature Conservation Foundation is hereby annexed as ANNEXURE – D.

(ii) Dams in Siang Valley:

The same is the story of the dams in the Siang Valley. In the Siang Valley, 44 dams with an installed capacity of 18,293 MW have been planned.

According to a news item published in the national daily newspaper Hindu dtd. 17/02/2014, a report commissioned by **Central Water Commission** has recommended scrapping of 15 of the 44 dams planned across the Siang River in Arunachal Pradesh. The report has warned that the proposed 44 dams, meant to establish a capacity of 18,293 MW will

affect the river ecology and biodiversity and the river all the way down to Assam. Cumulatively these projects will impact more than 500 KM of river stretch of this 353 KM will be converted to reservoirs and water will travel through tunnel for another 160.8 KM. More than 18,000 HA of forest cover will be impacted.

The report notes: Siang Lower Hydro Electric Project (2700MW), Siang Upper Stage II (3750 MW), Siang Upper Stage I (6000 MW) are planned to cover almost the entire length of the Siang in India. 208.5 KM of the river will be converted into one continuous reservoir as all the 3 projects are planned back to back without any free flowing intermediate river stretch.

The report further states that, “It is strongly recommended that after dropping these projects, these river reaches should be kept free. These projects should not be re-allotted by altering their features, locations and names. Also on other free stretches/tributaries, no further hydropower projects should be planned/allotted in the entire Siang basin even if they are small (less than 25 MW) and do not fall within the purview of the EIA notification”.

From the above it is absolutely clear that the longitudinal connectivity of the river would be completely destroyed – in other words the river is proposed to be “killed”.

Arunachal people of the valley will hold huge reservoirs of 6000 MW, 3750 MW, on their ‘heads’ literally in this fragile and highly seismic zone(zone V).

A copy of the above stated news item published in the Hindu dtd. 17/02/2014 is hereby annexed as **ANNEXURE – E**.

(iii) Dams in Lohit Valley: Demwe Lower

This policy of Power at any cost has resulted in perfunctory Environmental Impact Assessment (EIA) of all the Hydro Electric Projects of Arunachal. As an example, again we may compare the EIA of Demwe Lower (Lohit–Lower), with the special report that was asked for by the Standing Committee of National Wildlife Board and MoEF through its constituted team of Dr. Asad Rahmani, Director, BWHS and Pratap Singh, CCF (Wildlife), Arunachal Pradesh Forest Department, on the feasibility of the proposal.

Dr. Asad Rahmani's Observation on the Demwe Lower HEP in Lohit

District: Dr. Rahmani's report threw up grave issues of concern about the project for which Environmental Clearances is already given. According to the report of Dr. Rahmani's the following major issues of wildlife and other biodiversities concerns needed to be addressed in depth:

1. Dibru–Saikhowa National Park and Biosphere Reserve
2. Chapories of Lohit River as Important Bird Area
3. Impact on grassland ecology and grassland-dependent species such as Critically Endangered Bengal Florican.
4. Impact on Gangetic Dolphin
5. Daily fluctuation of water and its adverse impact
6. Asiatic wild buffalo
7. Siting of project (Kamlang Sanctuary, Parasuram Kund and MPCA etc)
8. Strategic importance and first-user rights issue
9. Development of Arunachal Pradesh (as well as Lohit river basin in particular)
10. Likely impact on local communities in Arunachal Pradesh and Assam

11. Cumulative impact of proposed hydro-electric dams on Lohit, Dibang and Siang rivers.
12. FAC referral to NBWL Standing Committee

These issues need comprehensive assessment and review. **Some extracts of Dr. Rahmani's report as given below reflect the grave environmental impact which were ignored by the EIA.**

(a) Dibru-Saikhowa National Park and Biosphere Reserve in Assam

Dibru-Saikhowa National Park, Poba Reserve Forest, Kobo *chapor*i (river islands) proposed reserve forest, Amarapur *chapor*i, Maguri and Motapung *beel* (lake), and the adjacent riverine tract of the Brahmaputra and Lohit rivers form one of the major biodiversity areas of Assam. This complex has been identified as an Important Bird Area by BNHS and Birdlife International in 2004. Dibru-Saikhowa has the largest salix swamp forest in North-Eastern India. Tropical Moist Deciduous, Tropical Semi-evergreen, Evergreen Forests and grassland forms the main habitat type. (Choudhury 1998). The Dibru-Saikhowa National Park proper covers 34,000 ha in the districts of Tinsukia and Dibrugarh in eastern Assam. It is 13 km north of Tinsukia town. A larger area of 765 sq. km. is also a Biosphere Reserve. The area is known as a major haunt of the globally

threatened White-winged Duck *Cairina scutulata*, Black-breasted Parrotbill *Paradoxornis flavirostris* and Marsh Babbler *Pellorneum palustre*. The relatively remote Amarapur area, on the northern side of the Brahmaputra river, not included in the Sanctuary but is a part of the wider Dibru-Saikhowa Biosphere Reserve, has significant areas of tall grass, which are largely absent in the other areas of the Sanctuary. The Amarapur peninsula within the Biosphere Reserve covers about 3,000 ha. It is generally low-lying and much of it is flooded during the monsoon season (Allen 2002). This grassland has some of the most threatened avifauna of the Brahmaputra Valley.

(b) Globally Threatened Bird Species in Dibru-Saikhowa

Dibru-Saikhowa is very rich in bird life, with more than 310 species already identified (Choudhury 1994, 1997). Out of the 15 Critically Endangered bird species of India, the following five are found in Dibru-Saikhowa: White-bellied Heron *Ardea insignis*, Oriental White-backed Vulture *Gyps bengalensis*, Slender-billed Vulture *Gyps tenuirostris*, Red-headed Vulture *Sarcogyps calvus*, and Bengal Florican *Houbaropsis bengalensis*. Among globally Endangered species, we have White-winged Duck *Cairina scutulata* and Nordmann's Greenshank *Tringa guttifer*. Earlier, Masked Finfoot *Heliopais personata* was also reported from Dibru-Saikhowa. The tall wet grasslands of Dibru-Saikhowa are

important for many threatened and non-threatened species. Swamp Francolin *Francolinus gularis*, Black-breasted Parrotbill *Paradoxornis flavirostris*, Jerdon's Babbler *Chrysomma alirostre*, Long-tailed Prinia *Prinia burnesii* and Marsh Babbler *Pellorneum palustre* are found in the grasslands. In the wetlands and beels, the following birds are seen; Spot-billed Pelican *Pelecanus philippensis*, Greater Adjutant *Leptoptilos dubius*, Lesser Adjutant *Leptoptilos javanicus*, Baer's Pochard *Aythya baeri*, Pallas's Fish-eagle *Haliaeetus leucoryphus*, Black-necked Stork *Ephippiorhynchus asiaticus*, Oriental Darter *Anhinga melanogaster* and Greater Spotted Eagle *Aquila clanga*. It is also an important wintering site of Black Stork *Ciconia nigra*. According to recent surveys, it has a total of 13 Vulnerable bird species.

(c) Other key fauna

Other fauna includes Asian Elephant *Elephas maximus*, Tiger *Panthera tigris*, Leopard *P. pardus*, Sloth Bear *Melursus ursinus*, Slow Loris *Nycticebus coucang*, Pigtailed Macaque *Macaca nemestrina*, Rhesus Macaque *M. mulatta*, Assamese Macaque *M. assamensis*, Capped Langur *Trachypitecus pileatus*, Barking Deer *Muntiacus muntjak*, Hog Deer *Axis porcinus*, Flying Squirrel *Petaurista* sp., Gangetic River Dolphin *Plantanista gangetica*, Monitor Lizards *Varanus bengalensis*, *V. salvator*, various turtles including *Kachuga sylhetensis*, snakes including Cobra

Naja naja, and Python *Python molurus*. Assam Roof Turtle *Kachuga sylhetensis* was also recorded for the first time in the area, constituting the easternmost limit of its distribution (Choudhury 1994). The Lohit river influences the eastern and southern part of the Dibru-Saikhowa area and given the richness of the habitat as described above, comprehensive and prior studies are required on the impacts of flow fluctuations on the park. WAPCOS was given the consultancy to conduct this study last year and has submitted a modeling study recently to indicate flow fluctuations in the park. But we are very surprised during our interaction with the DFO, Vaibhav Mathur, that no field work has been done inside the NP in different seasons by the consultants (nor has permission been sought from the Chief Wildlife Warden, Assam, to do so) to study the habitat and wildlife behaviour at different times of the year to co-relate it with the flow changes for impact assessment. This is indeed a serious issue. It is unacceptable to conduct wildlife impact assessment only using computer modeling (which may be vital for understanding flow variations).

(d) Chapories of Lohit River as Important Bird Area

The chapories or river islands of Lohit River existing in Arunachal Pradesh and Assam are extremely important from biodiversity point of view. Considering their importance for grassland, birds such as critically endangered Bengal Florican, White-bellied Heron, Red-headed Vulture,

and endangered White winged Wood Duck and many other species, these chapories were identified as Important Bird Area by BirdLife International and BNHS. This IBA includes the entire riverbed of the Lohit River, at places more than 10 km wide with sandy and grassy tracts. The area is the floodplains of the Lohit River and the entire area is criss-crossed by numerous channels turning it in to a complex of waterbodies, riverine islands, grassland and forests. More than 140 species of birds have been listed during general wildlife surveys, and hence the total diversity could be more than 300 species, including large number of wintering waterfowl. There is extensive habitat for Jerdon's Babbler and Black-breasted Parrotbill – two globally vulnerable species. As the area is remote and difficult to access, proper studies have not been conducted. Among mammals, Tiger, Asian Elephant and Asiatic Wild Buffalo and Hog Deer have been reported. The Gangetic Dolphin is occasionally seen towards extreme west. Even in the book *Important Bird Areas in India*, published in 2004, it was written (page. 226) “The proposed dams in the upper reaches would have serious impact in downstream ecosystem and the entire riverine tract will be affected.”

(e) Impact on grassland ecology and grassland-dependent species such as critically endangered Bengal Florican

The critically endangered Bengal Florican is perhaps the most famous bird of the grasslands of north-Indian terai and Brahmaputra river systems. Looking at its critical status (less than 300 survive in India), the MoEF has identified it as a species for which recovery plan has to be implemented. Only recently, a recovery plan workshop was held to develop Guidelines for Bengal Florican Species Recovery Plan. The Bengal Florican is an extremely habitat specialist and indicator of good grassland. Once widely distributed in the grasslands of India, Nepal, Bangladesh, Cambodia and Vietnam, is presently found in Cambodia and restricted to few pockets of protected areas in India and Nepal. With its precarious conservation status, habitat specificity and indicator of threatened habitat like grassland, the Bengal Florican is an effective flagship species for wildlife conservation of grassland ecosystem. The Bengal Florican needs a mosaic of grasslands, with short grass for display of male, tall grass for hiding and foraging, and taller grass for nesting and chick rearing. It breeds after winter and just before monsoon. The nest is made on the ground, hence it is susceptible to winter and summer flooding of grasslands. In order to maintain this mosaic of grassland habitat, natural or man-made controlled firing of dry grasslands, and/or wild ungulate grazing is necessary. As a management practice, the Forest Department set fire to grasslands (in Kaziranga, Orang, Dibru- Saikhowa etc.) in January-February to control the grass biomass and also to allow

new growth of grass that is good for wild ungulate. In order to burn the grass, it has to become dry. With daily fluctuation of water level in Lohit River due to Demwe Lower dam, it is likely that the grass will not dry sufficiently hence burning will be difficult, resulting in total habitat modification. At the same time, dense unburnt grass may become suitable for other birds and animals. However, looking at the precarious position of the Bengal Florican, and MoEF's commitment to protect it, we should not do anything to jeopardize its remaining limited habitat in Dibru Saikhowa and chapories of Lohit River. The study by the AP government on the IBA (chapories of the Lohit river) has made a point that the bigger islands do not get submerged and has shown the elevation differences between average lean season flows (400 cumecs) and peaking non-monsoon flows (1729 cumecs) at a few cross-sections in the river.

But it is important to note that the IBA is not restricted to the bigger islands alone, but covers the entire tracts of the Lohit river as indicated earlier. There is nothing in the report about the impact of the different stages of the peaking operations and ensuing diurnal fluctuations between 35 – 1729 cumecs. The Committee comes to a conclusion that “*the transition zone between terrestrial and aquatic ecosystems of islands ... are located at elevation higher than the elevation corresponding to peaking release*”. It is not clear how any transition zone between

terrestrial and aquatic ecosystems (e.g. habitat of shore or water edge communities of flora and fauna) can remain unaffected by water level changes in the river, whatever the peaking release is in any season. It will be good if the developer/state government can provide data for elevation differences for the full diurnal fluctuation (35 – 1729 cumecs). Since a new minimum flow of 70 cumecs is being discussed (not finalised), the elevation differences for 70 – 1729 cumecs could also be provided in addition to above.

It would also be useful if elevation differences (for above variations) are provided at cross-sections at other points where large islands are not located (e.g. between Parasuram Kund and Cross-section A, two cross-sections between C and D in the relatively narrow cross-sections of the river).

(f) Cumulative downstream impacts of proposed HEP's on Lohit, Dibang and Siang rivers

A WAPCOS report (November 2011) on impacts of peaking operations of projects on the Siang, Dibang and Lohit rivers has recently been uploaded on the MoEF website and was also forwarded to us before our field visit. The report involves flow estimation using computer simulated

models and therefore cannot be verified fully by us. Some comments on flow data in this report have already been given earlier in the report. A few additional observations about the origins of this report and some findings. The Expert Appraisal Committee (EAC) on River Valley and Hydroelectric projects had in its August 2010 meeting while discussing the Lower Siang project observed that:

"The impact of Lower Siang Dam on the altered hydrology of Brahmaputra river was discussed. It was consciously felt that Brahmaputra river is influenced by significant contribution from Lohit and Dibang rivers. The operational pattern of terminal dams on Lohit and Dibang may influence the flow in Brahmaputra, particularly in the downstream Dibrusaikhowa National park and Chapory. It is therefore decided that the three developers J.P., NHPC and Athena will coordinate to get the downstream impact study of Siang by a comprehensive examination of the three rivers Siang, Dibang and Lohit .The MoEF may issue necessary instruction in this regard."

Thus this study became a part of the downstream impact assessment, ToR granted as part of the Scoping process for the Lower Siang project. An earlier version of this study forms a part of the EIA report of the Lower Siang project currently uploaded on the website of the Arunachal Pradesh

State Pollution Control Board (APSPCB) website. After the EAC meeting held on November 12, 2011, WAPCOS has modified this study and submitted a modified version on November 18, 2011 (present version on MoEF website). This requires more detailed scrutiny but a preliminary perusal indicates that there are substantial differences in the findings of the two reports (in terms of cumulative water volume and level fluctuations due to operation of three projects in downstream Dibru-Saikhowa). For example, the revised report shows less fluctuation in flows and level at Dibru-Saikhowa due to operation of three projects on Siang, Dibang and Lohit than the earlier version. Along with seeking a clarification from WAPCOS, this report also needs to be peer reviewed as modelling results can vary substantially due to their sensitivity to accuracy of parameters (e.g. boundary conditions, how different water streams and channels have been accounted for while taking the computational channel and other factors). Since the project will also require permission from the Assam government as per section 35 (6) of the Wildlife (Protection) Act, 1972 since flow fluctuations will take place inside Dibru-Saikhowa National Park, they could be asked to take the opinion of local experts (IIT Guwahati and the local universities) on the report.

An important point to remember is that the floodplains of all three rivers – Siang, Dibang and Lohit – are Important Bird Areas and potential Ramsar sites. The Siang floodplain has the D’Ering sanctuary. Therefore, comprehensive individual and cumulative impact assessment studies will have to be conducted as this entire Brahmaputra tri-junction landscape is very sensitive from a wildlife/ecological point of view.

**WHAT HAS BEEN SPECIALLY STRESSED IS CUMULATIVE
DOWNSTREAM IMPACT OF PROPOSED HYDRO-ELECTRIC
DAMS ON LOHIT, DIBANG AND SIANG RIVERS (AS
CONSTITUENTS OF BRAHMAPUTRA).**

Dr. Rahmani’s detailed scientific report illustrates the effect of the Lohit Lower Damon Dibru-Saikhowa National Park and Biosphere Reserve in details and reflects the convenient lies of the EIA report.

A copy of the above stated report of Dr. Asad Rahmani is hereby annexed as **ANNEXURE – F.**

(iv) Dams in Kameng Valley in West Kameng district

The following dams are proposed in the Kameng Valley in the West Kameng District of Arunachal:

- (i) Kameng Hydro Electric Project – 600 MW by NEEPCO.

Work in this project is in progress.

- (ii) The other projects in the pipeline are

Tenga Hydro Project	:	600 MW
Bhareli Hydro Project	:	1120 MW
Kameng Dam	:	600 MW
Bhareli II	:	600 MW

No Cumulative Impact Assessment of the valley has been undertaken.

The river Kameng in the foothill of Assam is called Jia Boreli. Jia Boreli flows through the Nameri National Park at the foothills of the Kameng Valley. Nameri shares its northern boundary in Arunachal with Pakhui Wildlife Sanctuary and together constitute an area of over 1000 Km² of which Nameri has a total area of 200 KM².

Nameri and Pakhui are rich with flora & fauna and houses many endangered species. Nameri is a birdwatcher paradise with over 300 species of birds. The rare White-winged wood duck is a resident of Nameri.

The Cumulative Impact of the cascading 4 hr peaking dams on the Nameri National Park and the Pakhui Wildlife Sanctuary cannot be just wished away as one is a National Park and the others is a very important Wildlife Sanctuary and being contiguous together they form a very important ecological landscape and biodiversity hotspot.

2.7 Annihilation of the Gangetic Dolphins – India’s National Aquatic Animal in Schedule I of the Wildlife Protection Act (1972) and in the red list of IUCN.

A study by **Aranyak**, a reputed nature conservation organization, the following facts are revealed about the effect of the proposed dams on the Gangetic Dolphins. These dams in the present format are death knell for the dolphins. The dams which have the maximum possibility to affect the Gangetic dolphins:

Name of the Dam	Name of the River	Production capacity (MW)	Dam location	Dam height (m)	Status the Dam	Minimum distance to known dolphin habitat(km)
Lower Siang Dam	Siang River	2700	Rotung (near Pasighat) of Arunachal Pradesh	65	Proposed; undergoing environment clearance	12
Dibang Multipurpose Dam	Dibang River	3000	Near the confluence of the Ashu Pani and Dibang Rivers and	288	Proposed; undergoing environment clearance	5

			about 43 km from Roing in Arunachal Pradesh		e	
Lower Demw e Dam	Lohit River	1750	Near Parasuram kund of Arunachal Pradesh	124	Propose d; received environ ment clearanc e	30
Lower Suban siri Dam	Sudan siri River	2000	Near Gerukamu kh of Assam- Arunachal Border	116	Undergo -ing construc tion – currently stayed by the Hon'ble National	12

					Green Tribunal	
Kulsi Dam	Kulsi River	36	Near Ukium village of Assam-Meghalaya a border	42	Proposed	15

Distribution map of the dams of Arunachal Pradesh

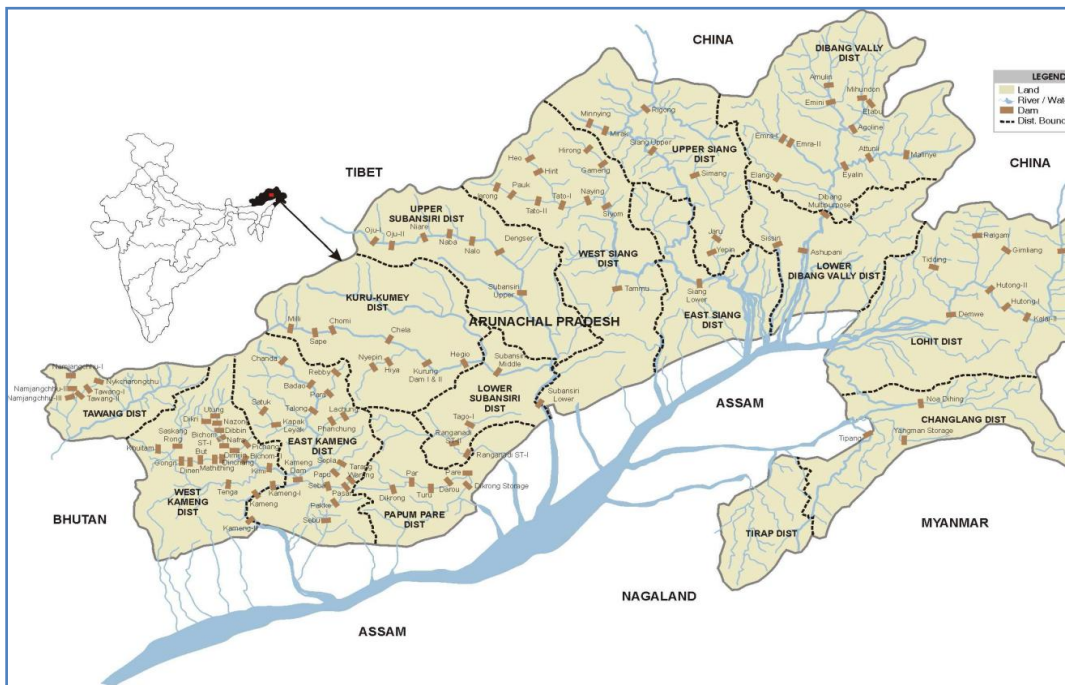


Fig...: Four Large Dams are indicated in the map marked in red coloured circle which might affect Brahmaputra River Dolphins. Map credit: Sanctuary Asia (*the map is adapted from the map of Dept of Hydropower, Arunachal Pradesh*). The Kulsi Dam is in Meghalaya and not shown in the map.

Why these Dams will cause serious threats to the Brahmaputra dolphins?

Dam construction and operation cause major changes in the flow regime, sediment load, and water quality of running waters (Smith & Reeves, 2000). Dams degrade the dynamic attributes of downstream waters and reduce the flow of sediments essential to the formation of stream channel islands and bars (Ward 1975, Sioli 1986, Ligon *et al.* 1995). Downstream discharge is often prevented from reaching the critical magnitude necessary for water to overspill riverbanks onto adjacent floodplains, thereby resulting in dramatic decreases in biological production (Junk *et al.* 1989). Many riverine fishes in India rely on the annual flood to spawn on the floodplains. Dams suppress natural fluctuations in flow, temperature, and detritus loading, which encompass optimum conditions for a large number of aquatic organisms, and the number of ecological riches available for supporting diverse biotic communities is reduced

(Smith & Reeves, 2000). The combination of these radical changes in environment and ecology downstream of the dams will likely affect the Ganges River Dolphins by changing the type and seasonal availability of prey, changing the geomorphology of dolphin habitat and disrupting the natural flow regime of the river.

The Siang, Dibang and Lohit Rivers are the main water sources for Brahmaputra River in India and Bangladesh. The Siang River has a water flow of average 830 cumecs in January (source: EIA Report of Lower Siang Dam; http://www.apspcb.org.in/japl_eia_emp.html). Likewise, the Dibang River has 400 cumec average flow in January (source: draft DPR) and the Lohit River has 350 – 400 cumecs water flow in winter season (source: EIA report on Lower Demwe at http://www.apspcb.org.in/eia_demwe.htm). All these water flow level will fluctuate greatly when the proposed dams begin operation. For example, in the Siang River, the water flow will fluctuate from 60 cumecs (when water will be stored behind dam for approximately 20 hours) to 5440 cumecs (when water is released during power generation during peak load hours of 3-4 hours). Likewise, in the Lohit River the flow will fluctuate between 35 to 1729 cumecs. These huge flow fluctuations will result in rapid unpredictable increases and decreases in depth and velocity. This has caused a reduction in fish diversity and abundance in

other rivers subject to similar fluctuations (Bain *et al.*, 1988). The dramatic and rapid changes in discharge downstream of the dams will likely make the downstream of the rivers unsuitable for dolphins and will also affect the species in the Brahmaputra mainstream.

Within Assam, the Subansiri and Kulsi River are the last two tributaries of Brahmaputra River, where dolphins are found round the year. The Subansiri River has about 23 dolphins and the Kulsi River has about 29 dolphins (Wakid & Braulik, 2009). The Subansiri River has a water flow of 250-550 cumecs in winter season (Expert Committee Report, 2010), which after construction of the dam will fluctuate between 6 cumecs (when water will be stored behind dam for approximately 20hours) and 2560 cumecs (when water will be released during power generation during peak load of 3-4 hours). The 2560 cumecs is equivalent or more than average monsoon flows, which will be released for a few hours in winter. The same event of unusual flow variations in winter will also impact the Kulsi River. These types of alternate starving and flooding on a daily basis with massive flow fluctuations will be strong enough to wipe out these two last remaining dolphin populations from these two rivers.

A copy of the above stated report prepared by Aranyak is hereby annexed as **ANNEXURE –G**.

2.8 **Grave safety risks to Arunachal valleys & Cumulative Risk Impact in**

Assam: In the report of the Technical Expert Committee (TEC) of Thatte & Reddy to study the various aspects of Subansiri Lower Hydro Electric Project, the TEC opined that there is ‘risk’ of “panic release” of the reservoir by the ‘operator’ in monsoon, apprehending a probable maximum flood, thereby, creating catastrophic consequences. TEC also commented that, ‘**seismic science**’ based on which safety of the dam is established, is not an exact science yet. These are ominous warnings by the apex Technical Expert Committee (TEC) as appointed by the Planning Commission for Subansiri Lower Hydro Electric Project. But these warnings are true for all the dams as proposed in Arunachal.

The proposed dams of Arunachal in the present format will destroy the environment and ecology of the pristine Arunachal and based on TEC’s report on Subansiri, will also pose a major safety hazards to the people of the valleys. After what has happened in Uttarakhand where over 10,000 people lost their lives, in which, HEPs had a “significant impact”, the warning of the TEC can be brushed aside only at our own peril, as it will

impact safety and security of the people in Arunachal and in the Brahmaputra valley of Assam.

- 2.9 That the entire Arunachal Pradesh falls under Seismic Zone V, wherein the risk of major earthquakes, is much higher than any other region in India. Noted journalists and author Prem Shankar Jha's above referred article titled "Why India and China should leave the Brahmaputra alone"(appended as **Annexure – A**), gives a fairly good idea as to the risk of Seismic events / Earthquakes in Arunachal, in the following words –

"The 1950 earthquake was the severest ever recorded in the Himalayas. It occurred at Rima, in Tibet, not far from the site of the 1897 'quake. Measuring 8.7 on the Richter scale, it is one of the 10 most severe earthquakes in recorded history. Its epicentre also lay on the fault line where the Indian continental plate smashes into the Eurasian plate. Survivors from the region reported mudslides damming rivers and causing giant floods that brought down sand, mud, trees, giant boulders and all kinds of debris when these broke.

These were neither isolated nor exceptional events. Earthquakes in the Himalayas regularly cause landslides that block rivers, causing them to rise till the pressure of the stored water breaks through. The result is a

flash flood downstream that causes havoc among the villages and towns that lie in its path. The avalanches caused by the 1950 earthquakes blocked several of the tributaries of the Brahmaputra. One such dyke in the Dibang valley broke quickly and caused relatively little damage. But another, at Subansiri, broke only after water had collected behind it for eight days and unleashed a seven-metre-high wave that submerged several villages and killed 532 people. Geological studies, including the radio carbon dating of sand found on the surface, have uncovered at least one other giant earthquake in the same area in 1548, and two others in the central region of the Himalayas that were severe enough to rupture the earth's surface. The first of these occurred in 1255. The second was the devastating Bihar earthquake of 1934.

The 1934 earthquake, which measured 8.1 on the Richter scale had its epicentre about 10 kilometres south of Mount Everest. It devastated the northern part of the Indian state of Bihar and large parts of eastern Nepal, and killed at least 30,000 people. This was the death toll when there were no dams in the mountains. The dykes that the landslides created were made of mud and boulders, and they broke in a matter of days. But earthquakes of this magnitude will almost certainly crack concrete dams as well. The Richter scale is a logarithmic scale.

An 8.1 magnitude earthquake releases three times as much energy, and an 8.7 magnitude releases 23 times as much, as a 7.8 magnitude 'quake. Should any of the giant dams being contemplated by the two countries crack during an earthquake, the colossal wave of water, mud and boulders that will be released will kill millions of human beings and devastate tens of thousands of square miles of the downstream areas of Tibet, India and Bangladesh. The overwhelming majority of such deaths would take place in India and Bangladesh.

India got a foretaste of what a flash-flood upriver in the Yarlung Tsangpo basin could do when one wiped out an entire island in the Brahmaputra, killing nearly all who lived on it. Chinese hydrologists knew that the flood would occur, but did not warn their Indian counterparts. India got another taste of it in June 2013, when a landslide caused by three days of incessant rain blocked a tributary of the Bhagirathi river, one of the two main tributaries of the Ganga, 25 in mid-June 2013. When the dyke it had created broke on the third day, the resulting flash-flood destroyed the entire pilgrimage town of Kedarnath and killed between 5,000 and 10,000 pilgrims in a matter of hours. Had the hillsides overlooking the Bhagirathi not been ravaged by the construction of dams and tunnels for the Tehri hydroelectric project, this catastrophe might not have happened.

The Tehri project is a pygmy compared with the nine-cascade project proposed for the Big Bend, as its generating capacity is only 1,000 MW. The death toll from the fracture of even one of these dams will, therefore, run into millions. If the two governments go through with their plans for the Brahmaputra–Yarlung Tsangpo basin, the entire region will become a calamity waiting to happen.”

2.10 **Dam induced Earthquakes and/or Reservoir induced Seismicity**

(RIS):On May 12, 2008, an 8.0-magnitude earthquake in Wenchuan, Sichuan Province, shocked the world. The immediate consequences of the Wenchuan earthquake were devastating: more than 80,000 Chinese citizens were killed, swept away by landslides and crushed by tumbling rocks and collapsing buildings. Since then, some 50 to 60 articles and studies have investigated this massive seismic event and its relationship to the Zipingpu reservoir.

That according to a study conducted by Fan Xiao, Chief Engineer, Regional Geological Survey Team, Sichuan Geology and Mineral Bureau, Chengdu, China on behalf of Probe International, Canada to review the vast literatures available on the above mentioned earthquake in Wenchuan, stated as follows:

“Experts in the field of Earth sciences observed that a plethora of “abnormal” phenomena occurred in relation to the earthquake, which led them to suspect that the Zipingpu reservoir had induced the earthquake. For example, before the Wenchuan earthquake, no earthquakes over magnitude 6.5 had ever been recorded in the Longmenshan region. For this reason, China’s national seismic zoning maps had classified the region as having a seismic intensity of VII. But the Wenchuan earthquake reached a seismic intensity of X, and even XI. Moreover, before the earthquake, the original ground motion parameters in the Wenchuan area ranged from 0.1 g to 0.15 g but, during the earthquake, the ground motion parameters reached six to ten times those figures. In addition, with a low tectonic deformation rate of only about 1-2millimetres (mm) per year in the Longmenshan Fault Zone, the seismogenic process of stress change in the focal region of the earthquake could be characterized as slow growth. Therefore, in terms of medium and long-term seismic trends, no great earthquakes were expected along the Longmenshan Fault Zone. Therefore, in many ways the plethora of abnormal phenomena were associated with the Wenchuan earthquake.”

Furthermore, the abstract of the above stated study stated as follows:

“...that the mounting body of evidence and analysis indicates that the magnitude 8 earthquake was triggered by the mass loading and increased pore pressure caused by the Zipingpu reservoir. It also concludes that the initial seismogenic rupture of the Wenchuan earthquake did not occur along the Yingxiu Fault Belt at a depth of 14 to 19 kilometres, as previously thought, but at a depth of 6 to 9 km along the Shuimo-Miaoziping Fault Belt, which passes underneath the Zipingpu reservoir. This initial seismogenic rupture subsequently expanded and spread in a series of rupture events that were closely linked to each other for 90 seconds along the Longmenshan Central Fault, moving 200-300 km from southwest to northeast. The near absence of a typical precursor before the Wenchuan earthquake, in addition to seismic recordings of abnormal, small earthquakes in the reservoir area as early as April 5, 2008, suggest that this was not a conventional case of reservoir-induced seismicity (RIS) in which the accumulation of stress in a fault zone is nearing the critical point, and the impounding activities of a reservoir merely trigger the inevitable seismic event. Rather, the new findings suggest that the filling and drawdown of the Zipingpu reservoir triggered clusters of small earthquakes which caused new ruptures in the rock that, in turn, altered the stress field in the Longmenshan region and led to an accelerating release of energy. This series of events culminated in the giant rupture that became the Wenchuan earthquake. In light of these

findings, Earth scientists and decision-makers alike must now address a dangerous new reality: if reservoir-induced seismicity can be considered human induced foreshocks to a major earthquake, then the science of reservoir-induced seismicity must consider the possibility that reservoirs can trigger unanticipated tectonic activity. Most urgently, the findings presented in this paper about the Wenchuan earthquake make a review of current plans to build dozens of large dams with accompanying large reservoirs, in and near areas of high regional tectonic stress in western China, a high priority.”

That the Applicants beg to state that more than 135 mega dams are planned in cascade in one of highest seismic zone (zone v) and in the highly fragile Himalayan state of Arunachal Pradesh, without conducting any study in regard to the possibility of Reservoir Induced Seismicity (RIS) or Dam Induced Earthquakes resulting from the cumulative impact of all the big / mega dams taken together. As stated above, earth scientists and decision-makers alike must now address this dangerous new reality so as to avoid any further devastation and death of thousands of people.

A copy of the above stated study by Probe International is hereby annexed as **ANNEXURE – H.**

2.11 The Banqiao Dam disaster

The Discovery Channel listed the Banqiao collapse as the world's largest technological disaster, alleging that 240,000 people were killed.

In an article titled "Dams in Distress" by Xie Xing published on October 2012 issue of News China (www.newschinamag.com/magazine/dams-in-distress) highlights the world's worst dam disaster in the following manner:

Quote –

In 1975, over 60 dams collapsed after a rainstorm in Zhumadian city, Henan Province, causing the world's worst ever technological disaster. Recent revelations about the incident have brought scrutiny to thousands of potentially unstable dams in China. "On August 5, 1975, the year's third-largest typhoon took shape off the coast of the southern province of Fujian, moved northwest and hit Henan Province, bringing with it record rainstorms.

According to meteorological statistics at the time, the precipitation over the 20,000 square kilometers of land struck by the typhoon registered 400-1,000 mm between August 5 and 7, with Linzhuang village in

Zhumadian city seeing the heaviest – 830mm of rain fell within six hours, roughly equivalent to the annual rainfall in an average year.

The storm quickly raised water levels of the upper reaches of the area's rivers, putting immense pressure on reservoirs and causing small dams to collapse one after another. The runaway flood poured over the broken dams and eventually struck the Zhumadian area, the site of the Banqiao Dam, one of the four largest dams in the province.

“The flood overran our village, uprooting the trees and smashing the houses to pieces. All the villagers clinging to the trees and perching on the rooftops were engulfed by the mountainous waves...I was surrounded by a vast ‘sea,’ with naked human bodies and dead animals floating by,” recalled Wu Futang from Weiwan village, in *World's Largest Dam Burst – Zhumadian Flood in 1975*, a 2005 book by scholar Qian Gang.

- Unquote

A copy of the above stated article titled ‘Dams in Distress’ is hereby annexed as **ANNEXURE – I**.

2.12 The Chinese Equation

The Sangpo flows around 1200 KM through Tibet before entering India in Arunachal Pradesh. India and China do not have any water sharing treaty. India and Bangladesh are trying to work out a mutually acceptable water sharing arrangement over Teesta river water.

China at present is constructing 24x7 continuous flow true Run of the River hydro power dams over Sangpo in Tibet. Zangmu (510 MW) is recently commissioned. Dagu (640 MW), Jiexu 560 MW, Jiacha 320MW are under various stages of construction and commissioning.

But what prevents the Chinese to construct 4 hr. peaking generation type of dams for maximization of power (at the cost of ecology and people) as is being done in Arunachal? In the same Siang river, GoI is planning Siang Lower (1800 MW), Siang Middle (1000 MW), Siang Upper II (3750 MW), Siang Upper I(6000 MW).

What will happen if China decides to,

- (a) Utilize some water (may be upto 50%) of the river Siang for its own use as India uses Teesta river water which flows into Bangladesh.

(b) Construct Arunachal type 4 hour peaking type of dams which holds up water for 20 hours or so.

In such an event, all the hydro projects in Arunachal as is being planned will become non-functional. Investment of thousand of crores of public money will go down the drain. More importantly the country's energy needs and planning will get a very very severe jolt which will need decades to recuperate.

When the Hydro Power Project are true RoR dams where water is flowing naturally, investment level will be drastically reduced and will generate realistic and sustainable power. An arrangement of sustainable dams is a win-win situation for both the countries as the ecology, environment and miseries of the people will be addressed.

3. UTTARAKHAND FLOODS OF 2013 – A CLEAR WARNING

3.1 Affidavit submitted by Ministry of Environment, Forests & Climate Change in Alakananda Hydro Power Co. Ltd. etc – vs. – Anuj Joshi & Ors., before the Hon’ble Supreme Court of India:

The affidavit submitted by the Director of the Ministry of Environment, Forests & Climate Change (MoEF&CC) on 5th December, 2014, in the Alakananda Hydro Power Co. Ltd. etc – vs. – Anuj Joshi & Ors. before the Hon’ble Supreme Court of India, has significant ramification in the entire issue at hand as well as in the construction of Dams in Arunachal Pradesh with major downstream impact in Assam.

The genesis of the said affidavit is the aftermath of the June 2013 disaster in the Himalayan basin of Ganga in Uttarakhand, with colossal loss of human and animal lives along with large scale destruction of property and infrastructure, which shook the entire nation. The Hon’ble Apex Court taking *suo-moto* cognizance of the said disaster in the above stated matter on 13th August, 2013, issued a number of directions, including directing the MoEF&CC as well as State of Uttarakhand not to grant any further

Environmental or Forest Clearance for any Hydro Electric Power project in the State of Uttarakhand, until further orders, and also directed to constitute an Expert Body consisting of representative of the State Government, Wildlife Institute of India, Central Electricity Authority, Central Water Commission and other expert agencies to make a detailed study as to whether Hydroelectric Power Projects existing and under construction have contributed to the environmental degradation, if so, to what extent and also whether it has contributed to the tragedy occurred at Uttarakhand in the month of June 2013.

That according to the Affidavit submitted by MoEF&CC, it is stated in para 19 that,

“It is clear from the report submitted by the Expert Body, which is inclusive of the findings of many researches/committees, that with the construction of hydro power projects the local ecology is certainly overburdened. There are clear citing of irreversible damages of environment, in terms of loss of forests, degraded water quality, geological, social impacts and that they enhance landslides and other disasters.”

Furthermore, in para 20 of the said Affidavit, it is stated that,

“It was commonly observed that all HEP (existing and under construction) in the disaster affected areas have been significantly impacted and the maximum damage sites, in the disaster affected areas, were located either just upstream, or around or immediate downstream of these HEPs. It is pertinent to conclude that there has been a direct and an indirect impact of the HEPs in the aggravation of the floods of 2013.”

After the damaging findings of the Expert Body report, the MoEF&CC in para 27 (ii) in its Affidavit submitted that,

“Three months time allotted to the Expert Body was not found adequate.”

MoEF&CC also prayed that,

“The Expert Body with some additional members may carry out a cumulative impact assessment and carrying capacity study of these rivers to optimally work out and suggest as to how many HEPs, at which locations, their design and with what capacity could be allowed in a sustainable manner. The study shall also factor further the 2013 tragedy, geological and tectonic instability, river fragmentation, possible damage caused by the existing HEPs both in the environment and lives and

livelihood of the local population, effect of tunnelling and blasting vis-a-vis shrinking water springs, frequent cloudburst in the upper reaches of Ganga on account of climate change effect.”

Furthermore, in para 27 (iv) of MoEF&CC’s Affidavit, it is stated that

“In order to have a thorough, comprehensive study and critical examination of the HEPs, this Group may be allowed a time period of at least 12 months”.

- 3.2 That the MOEF&CC has further stated in the above mentioned Affidavit, in Para A: Background section, that -

Quote -

- (1) The rejuvenation of the river Ganga is on top priority for the present government in view of her current highly degraded state.
- (2) A cradle of civilization, it is a life support system for about half-a-billion people who live in its basin today. All along her path anthropogenic interventions have overburdened the flow of the

river. The restoration of an *aviral* and *nirmaldhara* of the Ganga has thus become essential immediate steps.

- (3) In the upper reaches of the Ganga, growing concerns on *Aviral Dhara* of Ganga as well as deteriorating health of the fragile Himalayan ecology has been a primary concern for past decade. A large and small hydro power projects on the Ganga and her tributaries all over the Himalayas are a threat to the *aviral* and *nirmaldhara* of the Ganga.
- (4) The construction of hydro projects, especially in upper stretches has been a contentious issue among the various representatives of civil society and concerned authorities. Concerns have been raised against the construction of series of hydro projects in the upper reaches by several peoples including spiritual leaders, environmentalist, experts, social activists and local affected population in the past few years in the state of Uttarakhand.
- (5) After the formation of National Ganga River Basin Authority (NGRBA), in consideration of the *Aviral Dhara* of Ganga in terms of her cultural significance and in relation to the eco sensitivity of the Ganga-Himalayan basin, the Govt. of India took cognizance of

this issue and intended to reach a solution for conservation and protection of the Ganga.

- Unquote

That the Applicants beg to state that the concern shown by MoEF&CC, Govt. of India as stated in the above submission is a welcome development, but **why two different yardsticks, one for Ganga and the other for the Brahmaputra (Siang), Subansiri, Dibang, Lohit, etc?**

If river Ganga is a cradle of civilization and life support system for the central Indian states like Uttarakhand, U.P, Bihar, etc, then the Brahmaputra (Siang) and its tributaries is a cradle of civilization, life support system and has equal cultural significance for the people of Assam and Arunachal Pradesh. If the big dams of Ganga and her tributaries are a threat to the *aviral dhara (continuous flow)* and *nirmal dhara(unpolluted flow)* of Ganga, then there is no doubt that the mega dams over the Brahmaputra (Siang), Dibang, Lohit, Subansiri, etc in Arunachal Pradesh are a threat to the *aviral* and *nirmal dhara* of these rivers many folds more, being in a highly eco-sensitive and earthquake zone V.

3.3 That the MOEF&CC has also stated in the above mentioned Affidavit, at C (9) **Role of HEP's on Environmental Degradation**, that -

- i. Based on reviews of available scientific studies, official documents and field visits the EB has concluded that existing and under construction hydro-power projects (HEPs) in Uttarakhand have led to several deleterious environmental impacts. Among the significant impacts it has identified are on the (i) river eco-system, (ii) forests and terrestrial biodiversity, (iii) geological environment and (iv) social infrastructure. These are elaborated below:

- ii. All HEPs (big or small) have environmental and social impacts during their construction & operational phases. The negative impacts of small projects can be less intense and therefore mitigated more easily. Large projects often lead to massive impacts that are hard to mitigate and may result in permanent scarring of nature and society. Many of them are not even seen or felt immediately. They emerge over time. In the state of Uttarakhand, findings of Expert Body shows that the mitigation measures adopted by the project authorities are almost not effective and further the degradation is enhanced due to in-effective compensatory afforestation (CA) scheme, catchment area treatment

plan (CAT) and violation of other stipulated norms and conditions by the project authorities.

- iii. Most of Uttarakhand's HEPs are diversion projects which divert water upstream of a dam into a tunnel and drop it several kilometers downstream in order to obtain a large head. Series of dams are proposed for the major rivers of Uttarakhand. As per this scheme a dam shall be built every 20 to 25 km of the length of river and in some cases in even shorter stretches. The rivers shall then be converted into a series of ponds (reservoirs behind the dams) connected by pipes (tunnels). Large fragments of these rivers could be left with minimal flow as almost all the river water is extracted for producing hydroelectricity, as per current practice. Scientific studies have shown that this has led to disruption of fish migration and the loss of aquatic biota and diversity.
- iv. The construction of multiple dams on a river has led to fragmentation of the river's length, again affecting riverine biota and diversity. For example, a series of dams on the Bhagirathi between Maneri in Uttarkashi district and Koteshwar in Tehri Garhwal district which have disrupted free flow in a stretch of about 110 km, almost half the length of the Bhagirathi from its

origin to Devprayag. Similar dried river beds can be seen downstream of Vishnuprayag in Alaknanda for a stretch of approximately 20 kms.

- v. It is speculated that when large fractions of river lengths go dry or convert into a form of reservoir due to multiple projects on them, changes in the micro climate may occur. The temperature in the river valley may increase. The accompanying reduction in moisture can diminish the valley's biodiversity and productivities. In the long run it may also speed up the melting of nearby glaciers. The ratio of the river length diverted to its total length is a good indicator of the cumulative impact of multiple dams. This is also reflected in the AHEC, WII and IMG reports. The affected river length was first determined by AHEC. IMG recommended that some of the rivers be maintained in a pristine state which would mean the cancellation of a few projects and hence changes in the river length affected.

3.4 That the MOEF&CC has also stated in the above mentioned Affidavit, atC (11) **Impact of 24 proposed projects on Biodiversity**, that –

- i. In chapter-4 of the EB report, review of the 24 HEPs cited by WII concluded that the cumulative impact of all the 24 projects on biodiversity would be significant. There are several reasons for reaching to this conclusion.
- ii. It is well known that in several river stretches of the Alaknanda and Bhagirathi basins there are series of dams. Hence, their cumulative impact on the biodiversity has to be considered also. The EB noted that all the 24 HEPs were located in sub-basins with high to very high biodiversity values (Table 4.2 of the Main Report).
- iii. On the suggestion of the CWC representative in the EB for a peer review of the WII report, the EB Chairman with the concurrence of the Co-chair, requested Dr. Brij Gopal, an eminent ecological scientist, to review WII's report. In his review (See Appendix 7a, Main Report), Prof. Gopal mentioned that the methodology adopted by WII had certain limitations. But he agreed with WII's findings that the 24 proposed hydropower projects would significantly impact the biodiversity of the Alaknanda and Bhagirathi basins. He added that WII could have gone further in its recommendations. Based on his own analysis, Prof Gopal

recommended that several more than the recommended 24 should actually be dropped.

- iv. In its analysis of the 24 projects the EB stated, “In discussions on WII’s analysis and other terms of reference of the EB it was also realized that some of the HEPs would lie at elevations above 2200-2500 m. Field visits and published scientific literature, cited in Chapter 3 of EB report, show that these altitudes come in the paraglacial and glacial zones. In these zones the rivers are capable of mobilizing tremendous amounts of sediments, under intense rainfall conditions, from the moraine material left behind in the past by receding glaciers. In such situations, they cause havoc in the vicinity of HEPs as witnessed at the Vishnuprayag HEP barrage site and below during the June 2013 disaster.

- vi. It may be noted that the Inter-Ministerial Group appointed by MoEF to consider issues related to HEPs and environmental flows recommended that six rivers, *viz.*, Nayar, Balganga, Asiganga, Dhauliganga (upper reaches), Birahi Ganga and Bhyundar Ganga be kept in pristine form. This would entail cancelling 11 out of the 24 projects.

- vii. The stretch of Ganga from Devprayag to Rishikesh falls in the lower Himalayan range. A major spring-fed perennial river Nayar joins Ganga near Byasi and several small streams also drain into this basin. This area encompasses the subtropical sal and mixed forests, open grassy slopes and scrub, and patches of riverine forests along the river. This stretch of river Ganga has many deep pools and rapids, which are the most preferred habitat for large size fishes like *mahseers* and carps.
- viii. This is the richest sector of the entire Ganga river basin in terms of fish diversity and abundance in Uttarakhand. A total of 56 species of fishes, including 30 restricted range fishes, 16 threatened fishes and 2 endemic fishes namely *Glyptothorax alaknandi* and *Glyptothorax Garhwali* have been recorded in this sub-basin. These two species are endemic to the upper reaches of Ganga. The threatened species of this basin are: *Tor putitora*, *Tor chelinoides*, *Schizothorax richardsonii*, *Bagarius bagarius*, *Garra gotyla gotyla*, *Garra lamda*, *Chagunius chagunio*, *Nemacheilus multifasciatus*, *Pseudecheneius sulcatus*, *Puntius arana*, *Puntius chola*, *Botia dario*, *Amblyceps mangois*, *Crossocheillus latius latius*, *Glyptothorax cavia* and *Glyptothorax telchitta*.

a. In the entire Ganga this is the only sector with a viable population of golden *mahseer*. This population moves along the Nayar river during monsoon for breeding. Based on the WII survey, the Nayar river is recognised as one of the critical habitat for the golden *mahseer* and associated species, and therefore proposed as 'Fish Conservation Reserve'. This is why the IMG recommended that the Nayar be maintained in a pristine form. (There are reports on the presence of otters, but potential otter habitats are present in some stretches along this basin.)

3.5 That Hon'ble Supreme Court in fact has scrapped around 24 out of 39 dams as these dams are significantly impacting the biodiversity of the basins. The Hydro Power dams of Uttarakhand had a great devastating impact on the catastrophe of June 2013 and this has been admitted now. The vital aspects of cumulative impact study of a river basin, longitudinal connectivity and aviral dhara (continuous flow) have been articulated by the government through MoEFCC now in its Affidavit to the Supreme Court and new norms for Environmental Clearances (EC) for Uttarakhand HEPs is in the pipeline, in fast track, based on these vital aspects of environment and ecology.

In view of the above whatever is applicable in the case of Ganga and other rivers of Uttarakhand, should also be applicable to Brahmaputra (Siang), Dibang, Dihang, Subansiri, etc, and all other rivers of Arunachal Pradesh.

A copy of the above stated
affidavit of MoEF&CC dtd.
5/12/2014 is hereby annexed as
ANNEXURE –J.

4. BASIN-WISE CUMULATIVE IMPACT ASSESSMENT OF ALL HEP's (UNDER-CONSTRUCTION/ PLANNED/ PROPOSED) OF ARUNACHAL PRADESH

4.1 As stated above, GoI/GoAP are studying all the Hydro Projects individually in a most perfunctory manner. Only a proper Cumulative Impact Assessment of all the 6 basins, will throw up true scale of the devastating impact of these projects, and in simple terms may ask as to,

- How many sq. kms of forest land will be destroyed in a basin?
- How many million trees will be cut in a basin (3.24 lakh trees in one project only – Dibang Multipurpose Dam)?
- How many kms of rivers will be transformed in tunnels / pipes killing the free flowing rivers (rich in biodiversity) completely in a basin?
- How the Dihing-Dibang Biosphere Reserve will be affected?
- How the Dibrusaikhowa Biosphere Reserve will be affected?
- How the Brahmaputra all the way to Bangladesh will be affected?
- How wildlife will be decimated? Many endangered species will be affected including the Gangetic Dolphins etc. etc.
- What kind of geo-morphological changes may occur due to billions of cubic meter of quarrying and muck?

- What kind of cumulative impact on the rich and mega biodiversity of this region?
- What kind of downstream impacts especially for four hour peaking projects?
- How these activities in a vast areas in a mega scale in a world biodiversity hotspot area will affect the global warming and climate change which at present is an unknown enigma?
- How many cultural and environmental heritage would be affected?
- How would the socio-economic fabric change with the influx of hundreds of thousands of migrant workers and their impact and biotic pressure on environment?

That the above questions are merely illustrative and not exhaustive to assess the true cumulative impact of so many dams in the region. The Applicants crave leave to submit more such questions and criteria for assessing the cumulative impact which should be mandatory for such ecologically sensitive and highly seismic zones.

4.2 That MoEFCC in their Affidavit to the Hon'ble Supreme Court in Anuj Joshi & Ors. vs. Alaknanda Power Co. Ltd. & Ors (appended as Annexure – J), had highlighted and referred to a number of important

observations and recommendations made in other reports: (Task Force report of Planning Commission in 2010) has stated as under:

- (i) At the same time, the cumulative impact of multiple hydropower projects along the same river basin and the threat of a cascading chain of catastrophes in case of structural failures of even from purely natural causes suggest the urgent need for a region or entire basin based Strategic Environmental Assessment (SEA) rather than individual project oriented environmental impact assessments (EIA) that neglect the summation effect. The Task Force supports the MoEF's decision on basin based assessments for project....”
- (ii) It further supplements that – “It also seems logical and essential to demarcate zones in the higher Himalayan region that are naturally unstable. In these areas, no hydropower projects should be allowed to be developed....”
- (iii) The importance and need of strategic environmental assessment (SEA) was categorically mentioned and recommended by the task force stating that – ‘...A new perspective to replace the practice of project based environmental impact assessment (EIA), with

Strategic Environmental Assessment (SEA) needs to be introduced...”.

- (i) Three months time allotted to the EB was not found adequate. The EB with some additional members may carry out a cumulative impact assessment and carrying capacity study of these rivers to optimally work out and suggest as to how many HEPs, at which locations, their design and with what capacity could be allowed in a sustainable manner. The study shall also factor further the 2013 tragedy, geological & tectonic instability, river fragmentation, possible damage caused by the existing HEPs both in the environment and lives and livelihood of the local population, effect of tunneling and blasting vis-à-vis shrinking of water springs, frequent cloudburst in the upper reaches of Ganga on account of climate change effect.
- (ii) MoEF&CC proposes that an expert team comprising of members of already constituted Expert Body with a seismologist from Wadia Institute of Himalayan Geology, a social scientist from Tata Institute of Social Science,

Mumbai, a climatologist and a glaciologist to jointly conduct a detailed study to establish the following impact:

- (a) Status of and vulnerability of the Himalayan Mountain in Uttarkhand from the point of view of seismological instability and fragility of the mountain.
- (b) Glacial movement including the status of paraglacial valley and there likely impacts on structures, constructed, under construction and planned.
- (c) Possibility of cloud burst in the light of changing climate and global warming.
- (d) Detailed social and economic impact of the existing, under construction and likely social impact from the planned HEPs in the state.
- (e) To establish and identify such locations/ areas in the state which need to be designated as 'no go' areas with respect to HEP constructions taking into account the fragility, bio-diversity and tectonic status of Himalayas.
- (f) To advise location, size and design of future HEPs.
- (g) To advise suitable modification in design in the existing and under construction projects to ensure Ganga river

rejuvenation and their least impact on environmental degradation.

(h) Ecological carrying capacity of the disaster affected valleys of Uttarakhand.

(i) Hydro-geological & Micro climate change studies including impacts on sediment transportation.

(j) Setting up guidelines for disaster preparedness of Hydro Electric Projects in disaster prone Himalayan river valleys.

(iv) In order to have a thorough, comprehensive study and critical examination of the HEPs, this Group may be allowed a time period of at least 12 months. A comprehensive ToR would be prepared for this and this Hon'ble Court will be kept informed about the progress of bi-monthly basis.

(v) As far as six HEPs namely; Jhala Koti (12.5 MW), Lata Tapovan (171 MW), Bhyunder Ganga (24 MW), Kotilibhel 1A(195 MW), Alkananda Badrinath (300 MW), and Khirao Ganga (4.5 MW) which have got certain clearances such as EC or/and FC may be referred to the above mentioned Committee to give reports on priority within three months on issues relating adequate longitudinal connectivity to ensure uninterrupted and continuous

flow of biota, sediment and adequate water, detailed month wise e-flow provisions, detailed safety measures required during tunneling, muck disposal and transportation etc. and also cover measures to mitigate bio-diversity impact and overall design modification to ensure the above.

- 4.3 That the position regarding the proposed hydro dams in Arunachal is in a much better footing *for affecting changes* because, unlike Uttarakhand, where many dams were already constructed or under construction, in Arunachal – out of 135 dams as planned to generate 57,000 MW work on only 2 have started – Kameng 600 MW and SLHEP 2000 MW and hence the situation can be rectified in this early stage itself. This also conforms to the precautionary principle as envisaged in Section 20 of the National Green Tribunal Act, 2010.
- 4.4 That basin wise survey for placement of sustainable dams must be undertaken immediately now for all the 6 Arunachal basins and to identify ‘no go areas’ as is being recommended in Uttarakhand by MoEFCC. It has taken the lives of over 10,000 people in Uttarakhand for MoEF to come up with the changes including Cumulative Impact Study if the same steps are not taken now for the Arunachal Dams, where

catastrophies of great magnitude are only predicated, it will be a travesty of justice.

- 4.5 Cumulative Impact Assessment of all the 6 basins of Arunachal is a must for a flowing Brahmaputra with special emphasis on Lohit, Dibang and Siang valleys, where river Lohit, Dibang and Siang are the constituents of Brahmaputra. The 4 hour generation dams of Demwe Lower (Lohit Lower), Dibang Multipurpose Dam, Siang Lower on Lohit, Dibang and Siang, the constituent rivers of Brahmaputra, meet within 25 – 30 km in the rim of the Dibru Saikhowa National Park. When water of the Lohit, Dibang and Siang is held up in the lower dams for 20 hours or so and all the water is then released in 4 hours by running all the turbines, Brahmaputra will dry up during the winter months for 20 hours or so near Dibru Saikhowa National Park and in the evening a Tsunami will descend when all the turbines will be switched on, sweeping away everything in its path. These 4 Hour model dams will destroy Brahmaputra and Assam valley environmentally, ecologically, socially and culturally. Dibru Saikhowa Biosphere Reserve, Majuli, Kaziranga will be devastated. **If the Hydro Power projects of Arunachal are completed in the next decades in the present format, the above scenario will manifest by itself, in two or three steps or suddenly, one day, with irreversible**

consequences. Also, any impact of disasters in Arunachal valleys will be cumulative for Assam. A truly frightening environmental scenario!

- 4.6 That a biosphere reserve is a controlled conservation reserve created to protect the biological and cultural diversity of a region while promoting sustainable economic development (Council 2009). Scientist will use these areas to research data on how man impacts the environment. These sites will help preserve some of the world's most wonderful creatures and areas. The country of India has many biosphere reserves. These biospheres are very important in preserving the wilderness of India. India has thousands of plant and animal species scattered among the different states of India. One of the most famous Biosphere reserves is the Dihang-Dibang valley Biosphere reserve. Dihang-Dibang is located in the district of West Siang, Upper Siang and Dibang valley of Arunachal Pradesh (Jupiter Infomedia 2009). The Dihang-Dibang Biosphere reserve is roughly 5112 sq. Km (Ringu 2009). Dihang-Dibang consists of Upper and Lower Dibang Valley which has an area of 16,900 sq.km. The Dihang-Dibang reserve is said to be one of the only nature reserves in the world that is untouched by modern civilization (Ringu 2009). But no Cumulative Impact Assessment study has been made while planning the Siang Upper Stage I, II and Upper Dihang Dams on the world hotspot Dihang-Dibang Biosphere Reserve.

4.7 As per a news item in the Hindu of March 15, 2015, under the heading “IIT roadmap for Ganga revival filed in Court’ has stated -

“In an Affidavit dated March 10, the Ministry told the Court that the Ganga River Basin Management Plan (GRBMP) 2015 drafted by the IIT consortium has said that ‘wholesomeness’ the Ganga can be revived by focusing on the four aspects-aviral dhara (continuous flow), nirmal dhara, and the rivers importance as an ecological and geological entity.”

4.8 **Cumulative at basin and project level:**

That when Sri. Jairam Ramesh, was the Minister for Environment and Forest in UPA regime, who had committed to undertake Cumulative Impact Assessment of the valleys of Arunachal for setting up of the hydro power dams. But soon after his this assertion, he was removed from the Ministry!

Recently Jairam Ramesh, giving the inaugural address at the first ever “India Rivers Week” speaking on development objectives and growing energy needs of India, commented that

“Hydro Projects may be painful choice, but we cannot close our doors to it what we can do is ensure stricter environmental regulations & their enforcement, **a cumulative at basin and not project level.....**”

A copy of the above stated comments posted in SANDRP are hereby annexed as **ANNEXURE – K.**

5. PEOPLE'S PROTEST AND APPREHENSIONS

5.1 The Public Hearings for various projects are treated merely as a statutory requirement. The issues raised by the Public are hardly addressed while granting Environmental and Forest Clearances. As an example, minute of Environmental Public Hearings of Dibang Multipurpose Project (3000 MW) conducted on New Anaya, Dibang Valley District, Arunachal on 12/3/2013, saw many issues being raised by the Public.

Dr. Mite Linggi, Representative of Kera-a Initiate for Cultural and Ecological Security(KICES) raised the following questions:

- Concerned about the upstream land owners in the Dibang Valley of the Idu Mishmi Community
- Would be happy if the project affected brothers and sisters get proper compensation and thereby benefit from the coming up of the 3000 MW Dibang Multipurpose Project.
- It is evident that the 2000 MW Lower Subansiri Project is stalled since December, 2011 because the technical, environmental and social concerns of the people of Assam were not considered earlier.
- Report of the Planning Commission – appointed Committee of Dr. C.D. Thatte and M.S. Reddy has raised several serious concerns about

the downstream impacts of the 2000 MW Subansiri Lower Project. Therefore, keeping this in mind, it is absolutely important that public consultation in Assam is carried out before the Dibang project gets environmental clearance.

- Public consultation in Assam is not only necessary to address the concern of the people, but is a pre-requisite for the people of Dibang Valley in the upstream to get benefits from this project.
- Ignoring downstream concerns will only ensure that this project too will meet the same fate as Subansiri Lower Project (2000 MW) and get stalled by people of Assam.

**Shri Lokha Elapra, President, All Idu Mishmi Students' Union
(AIMSU)**

- The mitigation measures laid down in the EMP report for impacts during construction phase fails to address various issues like Demographic Impacts, Socio-Cultural concerns and traditional land and livelihood.
- The population of Idu Mishmi tribe is only around 12000. The influx of a large number of outsiders will outnumber the locals and this will negate the constitutional and legal safeguards provided to small

population of Idu Mishmis. This will impinge on the traditional way of life and rights of the Idu Mishmi people.

- During construction phase of the dam the simple traditional way of life will be obliterate as the tribal unity and culture will be diminished. This is our worst fear because we find no convincing address to these issues in the EMP report of the NHPC Ltd.
- The Idu Mishmi people lives along the river banks. Our main source of livelihood being traditional Jhum(Shifting) cultivation, rearing mithuns, fishing and hunting. Our is a land of Mishmi Takin(rare animal), Mishmi Monal(rare bird) and Mishmi Teeta(rare medicinal plant). In the EIA and EMP report we do find neither mitigation measures nor compensation measures for the permanent loss of the mithun grazing areas, fishing grounds and medicinal plants.
- We don't want to be refugees in our own land. It is obvious for many reasons that the 12% royalty to the State government will not materialize into the betterment of the Idu Mishmi people on whose sacrifice of the land and livelihood this is to be built.
- Since many dams are about to be built on the Dibang(talon) river basin, it is important that immediate study should be undertaken to assess the cumulative impact of these projects.

These and many other concerns of the Public Hearing have been merely brushed under the carpet – the mandatory requirement of Public Hearing for the DMP project has been completed for processing the next step toward Environmental and Forest Clearance!

A copy of the above stated Public Hearing's are hereby annexed as **ANNEXURE –L.**

5.2 Demographic Concerns in Arunachal: These mega dams will need huge work forces. As per NHPC's web page information, on Salal Hydro Electric Power Plant in J & K, a work force of about 12,000 people was employed. The 3000 MW Dibang Multipurpose Dam, touted as the world's highest gravity dam (288m), will need many times more work force than Salal Hydro Electric Power Plant (690MW). All the other 16 HEPs of the Dibang Valley are mega projects. When the work on these projects will start, the huge work force will totally outnumber the 12,000 or so of the indigenous community of the Idu Mishmis of the Dibang valley. It will create very serious socio-cultural and demographic issues and these concerns have been expressed by many Arunachalis including the President, All Idu Mishimi Student's Union (AIMSU) in the Public Hearing for the Dibang Lower Dam. These small tribal communities of

rich and unique cultural heritage are now protected by the Inner Line Permit System.

According to an article published in www.indiawaterportal.org titled 'Water Conflicts in Arunachal Pradesh: The Dam Debate' by Raju Mimi, it is stated that –

Quote -

Arunachal Pradesh has the least population density in the country, with just over 13 lacs of people living in the vast area of over 80,000 kilometers square. Proponents of large dams in Arunachal see these projects as 'economically viable' as it has little direct 'displacement' and negligible 'rehabilitation and resettlement' issues. Such estimates are grossly underestimated. For example, the Dibang river basin is home to small indigenous Idu Mishmi community whose population according to the 2001 census is 9350. One single dam, the 3000MW Dibang Multipurpose project proposed in Dibang river requires an estimated workforce of about 5800. Local affected groups has claimed that cumulatively for 17 large dams proposed in Dibang river basin will bring in population workforce of more than one lakh. Similarly, the 1250MW Hutong II hydroelectric project proposed in Lohit river basin in Anjaw district is likely to submerge the habitation of half of the population of

Anjaw district. Collectively 11 dams are proposed in Lohit river basin in Lohit and Anjaw district. Therefore, direct and indirect displacement is high if looked at in the perspective of local population. As a result, there have been protests against large dams in Lohit river basin, where affected people had staged road blockade to demand scrapping of controversial dams. Also Dibang project have faced more than 6 years of public opposition and public hearing for the project cancelled 14 times.

Resettling displaced people to other locations might also be a difficult task. In Arunachal, lands are traditionally demarcated between different tribes and clans. So, attempt to resettle displaced people to areas that belong to other tribes or clans can lead to conflicts. The Chakma and Hajong tribes resettled in Arunachal Pradesh as a result of Kaptai dam had led to serious conflicts with the local tribal groups. This dam built in the Chittagong Hill Tracts of East Pakistan (now Bangladesh) in the 1960s had submerged the traditional homelands of the Chakma and Hajong tribes, and forced them to migrate into parts of Northeast India.

Arunachal is predominantly mountainous characterized by rugged and undulating terrain, so there isn't much land available for permanent cultivation and habitation. The cultivable land is found mainly in lowland areas near the rivers where settlement is high. For example, the Adi

people practice their wet rice cultivation mostly in areas near the Siang river. So if these lands are submerged then it is a significant threat to their land and livelihood. Therefore, protest sparked off over 2700MW Lower Siang project since the first public hearing notice was issued on April 28 2010. Several affected villagers protesting against the dam on May 25, 2010 were injured after police resorted to baton charges. Even female members of the community were severely beaten up.

Protests against dams have also intensified in Tawang district of Arunachal Pradesh. On December 24, 2012 hundreds of people, mostly monks and villagers led by the Save Mon Region Federation (SMRF), took out a rally in protest against the construction of dams in the district. The local Monpa tribe of the district fears that the dam construction will lead to distortion of the cultural dynamics of the area. The population of Tawang district is 49,950 as per 2011 census with an area of 2085 sq km lying close to Indo-China border. Due to its strategic importance, it is heavily militarized. More than a quarter of land in the district is occupied by Indian military forces. Another quarter is acquired by the civil administration that leaves very little land for common man's sustenance. The influx of labourers due to dam construction will further put pressure on resources. Each dam building requires more than 2000 to 3000 workers with fifteen dams planned in Tawang. These outside labourers

will completely overwhelm the local indigenous population, which will have a serious health, cultural and social impacts.

- Unquote

(http://www.indiawaterportal.org/sites/indiawaterportal.org/files/water_conflict_-_by_raju_mimi.pdf)

However, smaller 24x7 sustainable dams will need less work force and may not pose as serious demographic threat to these small tribal communities.

A copy of the above stated article by Raju Mimi is hereby annexed as **ANNEXURE – M.**

- 5.3 That according to a news item published in the Times of India – Guwahati Edition dtd. May 7, 2013, Buddhist monks in Arunachal Pradesh's Tawang -- which China claims as its own -- have risen against construction of dams that they fear may endanger monasteries in the district. One of the shrines under threat is the famed 400-year-old Tawang monastery, considered the largest in India. On Tuesday, hundreds of protesters - including members of the Monpa tribe which inhabits the

region, along with monks from different monasteries - marched through the town, reciting prayers and shouting anti-dam slogans. The protesters' anger was directed at the 13 Hydel projects that are planned in the district. Many of these are on Tawang Chu and one on Nyamjang Chu — the two major rivers in the district — and may end up destroying holy sites along the river basin.

- 5.4 That 'People's Protest' is inevitable if proposed dams of Arunachal are not scrapped to be replaced by sustainable smaller dams. When the 408 MW Ranganadi Hydro Electric Project of NEEPCO in a sub basin of Subansiri itself was under construction there was no public protest for construction of the dam. People welcomed the project. Only after commissioning of the project in 2002, when people witnessed the consequences of the project – the river turned into a sandy desert in the winter, and devastating floods swept the area in monsoon due to sudden release of the sluice gates, did the people realize how these dams affected the riparian people. Opposition to Subansiri Dam was triggered by the reality check of Ranganadi Hydro Electric Project when people witnessed and experienced the devastation from these hydro power dams. (In Ranganadi the tailrace water was even diverted to a separate basin)!

5.5 That similar to the Ranganadi devastation, the people of Assam has also experienced the dam induced floods of the Kopili dam. According to an article published in SANDRP titled Lower Kopili HEP: Outstanding issues that must be resolved before EAC can consider the project”, it was stated that -

“The Kopili dam has changed the character of flood in the river downstream for the worse. Before the construction of Kopili dam, floods occurred mainly during monsoon season. Increase in water volume due to heavy rains used to be the reason for flood. These were normal floods which occurred not more than two or three times a year. But after the construction of the dam, number of artificial floods occurring in a year has gone upto 5- 6 times. These floods mainly occurred from the month of August to the first one or two weeks of November. Government of Assam never made an attempt to investigate the source of these floods(*this information is from a field visit done to the area*).

In the catastrophic floods of 2004, out of 140 revenue villages of Kampur circle of Nagaon district 132 were affected by floods with area of 135.12 sq. miles. Due to these floods 1,92,000 people were temporarily displaced. These floods also took the lives of 4 people. Even government had confirmed that the main reason for the devastation in these Nagaon

and Morigaon districts was the release of the water from the NEEPCO's Kopili project. The team that was deputed by the government found that water level of the Khandong reservoir went up to 727.70 meters against the FRL of 719.30 meters on 18th July 2004, which rolled down and led to catastrophic disaster. Flood release from the dam happened without prior warning and affected the whole valley. Kampur is one of the towns located in the downstream of Kopili dam where people were give only 2 hours to evacuate the area and move to nearby relief camps. July 18 is less than midway through the monsoon and questions arise why was the dam allowed to be filled up so soon which had led to such disaster. Had the dam operations were conducted properly the disaster could have possibly been avoided.”

[\(www.sandrp.wordpress.com/2013/09/21/eac-must-address-issues-first-before-clearing-lower-kopili-hep/\)](http://www.sandrp.wordpress.com/2013/09/21/eac-must-address-issues-first-before-clearing-lower-kopili-hep/)

- 5.6 That a Memorandum has been submitted by 13 grassroot organizations of Assam, to the Hon'ble Prime Minister for sustainable hydro power development in Arunachal. The Memorandum under the heading “Awareness of People” has stated, “The undersigned organizations, will visit every village, town and will educate people on various aspects of

these projects in Arunachal, so that the issues of development is brought to the forefront,

- that we want power
- that we want power in a sustainable way
- that present dams will destroy us and must be opposed at any cost.

A copy of the above stated
Memorandum is here annexed as
ANNEXURE – N.

6. SUSTAINABLE HYDROPOWER DAMS

6.1 That for **sustainable development, there is an urgent need to convert the 4 hr generation Hydro Power Projects to true 24x7 Run of the River Projects.**

In true 24x7 RoR projects the river flows through turbine(s) as per its flow specially in the winter months, generating power continuously and / or over the dams, so that the natural flow of the river is not disturbed. Power Houses are located in the toe of the dam itself and water from the Power Houses after going through the turbines, generating power, is released next to the dam in the river.

In short the solution to the present format of 4 hr peaking generation dams of Arunachal which to quote Ramaswamy R Iyer (Annexure B), **“A RoR hydroelectric project spells death for the river”**, is to convert these dams to true 24x7 RoR dams. There are many such dams in the world. Chief Joseph Dam in Washington, USA over river Columbia is a major RoR project without a sizeable reservoir to generate 2620 MW of power.

6.2 The Chinese are planning to generate 2030 MW through 4 dams in Yarlung Tsangpo (Brahmaputra) in Tibet, - Zangmu 510 MW, Dagu 640 MW, Jiexu 560 MW, Jiacha 320 MW. These are true 24x7 RoR hydro

projects. The 510 MW Zangmu is commissioned recently. Dagu and Jiexu are planned to be constructed within 18 km upstream of the Zangmu Dam. It is possible to place three hydro projects in such a short distance only because these are true RoR projects with small pondages. In comparison, the 2000 MW Subansiri Lower Hydro Project has a reservoir which is over 40 km long.

- 6.3. That further in India too, there are 24x7 true RoR dams in Western Kashmir due to the Indus Water Treaty of 1960. That in river Chenab, - Baglihar Dam (900 MW), Dul Hasti Hydro Electric Project (390 MW), Salal Hydro Electric Project (690 MW) are some other good examples. In river Jhelum too there is the Uri Hydro Electric Project (480MW). These are true 24x7 RoR river where water of the rivers flow naturally downstream. In this context, 24x7 true RoR hydro projects, is therefore known to the Respondents and can be executed in this ecofragile zone after a detailed and cumulative impact assessment. If this is not done, then the profit only approach of the Project Proponents / Developers with 4 hr peaking dams for maximization of power development shall cause total annihilation of ecology, environment and people.

- 6.4. That our development model must be sustainable as per Hon'ble Prime Minister's vision and a DEVELOPED INDIA needs power 24x7 not just for 4 hour. By converting the 4 hour generation dams to true Run of the River Dams where water flows naturally from the dam, generating sustainable power 24x7, the ecology of the rivers and livelihood of the riparian people shall not be destroyed. The height of the dams will be reduced greatly. Reservoir will become smaller into pondages. Cost of the projects will come down drastically. There will be no scope of 'panic release' of the reservoir in monsoon, as there will be no sluice gates and the river will flow naturally downstream. The cost and gestation period of the projects will be reduced. Instead of one, say, 3000 MW dam, the same power can be generated by 3 sustainable dams close to each other. People will welcome such dams. People's right over water shall be established.
- 6.5. That the work on Subansiri Lower Hydro Electric Project is suspended since Dec, 2012 due to people's protest on various aspects of the Dam. Subansiri Lower Hydro Electric Project (SLHEP) can be converted into a 24x7 true RoR project, by utilizing the Power House and the Intake to Power House which are already constructed. This is eminently feasible because the level of construction of the dam is still at a low level – 70 m of the dam is yet to be constructed. This conversion will resolve the

present impasse over construction of the dam. It is not surprising that this Hon'ble Tribunal has recorded the suspension of work due to the constitution of an oversight committee and is waiting for their report for further action. Clearly, the precautionary principle is already being exercised by this Hon'ble Tribunal.

7. IN CONCLUSION

7.1 **A free flowing Brahmaputra is the heart beat of the rhythm of the lives that live by its banks.** To quote Isabel Hilton (Annexure A),

Quote

“For thousands of years, millions of people have lived along the banks dependent on the mighty rivers pulse for the rhythm of their lives. It has inspired music and dance, stories and legends, tributes to the unchanging presence that is the foundation of their livelihood.”

Free flowing sustainable dams in the valleys of Arunachal is the key for balance of nature and development in Arunachal and Assam and in the region as a whole.

7.2 Safety and Security of the people

- (i) Under the 'PRAYERS' of the Affidavit (appended as Annexure – J) for Uttarakhand HEPs, Sl. No. 27(i) it is stated that

“The Government is very concerned at the disaster of Uttarakhand. It’s great cause of pain, anguish and outrage that so many lives have been lost and properties damaged. Any decision on developmental projects especially hydropower projects should therefore, be on very strong and sound footings with scientific back up.”

- (ii) In the same case, the Hon’ble Supreme Court in its judgment has remarked in Sl. 36 of the Judgment.

“Safety and security of people are of paramount importance when a hydro electric project is being set up and it is vital to have all safety standards in which public can have full confidence to safeguard them against risks which they fear and to avoid serious long term or irreversible environmental consequences.”

A copy of the Hon’ble Apex Court judgment is hereby annexed as **ANNEXURE – O.**

Only smaller 24x7 RoR dams with small pondages can give a measure of safety and security to the people in the valleys of Arunachal from natural disasters due to earthquakes, cloudbursts, compounded many manifold by huge reservoirs of water from all the proposed mega dams and due to human error in releasing reservoir, water in ‘panic release situations’.

Nepal Earthquake – A Clear Warning:

That the Himalayas is one of the most highly fragile mountain ranges in the world, which amounts to nearly 12-15% of the Earthquakes globally and some of the most severe earth quakes in recorded history of the planet has occurred in the Himalayan region.

In an article titled“Nepal isn't the big one: The next Himalayan quake maybe far more serious, and closer to home”, published in the First Post, dtd. April 27, 2015, stated as follows –

<http://www.firstpost.com/world/nepal-isnt-the-big-one-the-next-himalayan-quake-maybe-far-more-serious-and-closer-to-home-2214286.html>)

Quote

Even as the death toll from the 7.9 magnitude earthquake climbs to over 3,200 and stunned survivors struggle to come to terms with the magnitude of the disaster, experts say the worst is yet to come.

The quake, which reduced large parts of Kathmandu to rubble, is not the 'great Himalayan quake' that the region has been bracing for.

Down To Earth [magazine](#) quoted Roger Bilham, geologist with the University of Colorado Boulder who studies the seismicity of the Himalayan area as saying, "At a magnitude of 7.9 on the Richter scale, the April 25 earthquake has caused devastation but it is not the anticipated "great Himalayan earthquake". This does not qualify as a great earthquake which needs to be of magnitude 8".

And Prof Sankar Kumar Nath of IIT Kharagpur, who has studied seismic activity in the Himalayan region had an even more gloomy outlook.

"This earthquake would only be classified as medium in terms of energy released. That area, the 2500-km stretch from the Hindukush region to the end of Arunachal Pradesh, is capable of generating much bigger earthquakes, even nine on Richter scale," he said. "If you look at it differently, we are actually lucky that only a 7.9-magnitude earthquake has come. I would be very happy to have a few 7.9-magnitude earthquakes than a 9-magnitude earthquake which

would be absolute disaster. The trouble is that in terms of energy release, which is what causes the damage, it would take 40 to 50 earthquakes of magnitude 7.9 to avoid an earthquake of magnitude 9,” he [told the Indian Express](#).

- *Un-quote*

That the devastating earthquake which has just occurred in Nepal on Saturday, 25 April 2015, is a clear sign of warning for people in general and the proponents of mega dam projects in particular which highlights the power of nature, especially when interfered with. It is further stated by the applicants that the respondent authorities having being fully aware of the fragility and eco-sensitivity of the entire Himalayan region is still allowing such large scale, unsustainable and massive dam projects, numbering above 135 mega dams across the state of Arunachal Pradesh, which is one of the highest ecologically sensitive, fragile and seismic zone V (*has witnessed earthquakes above 8.5 in the richter scale*) not only in the country, but also globally, thereby throwing all winds to precaution and sustainable development. The said action of the respondent authorities to pursue a policy and program of mega dam building across the state of Arunachal Pradesh and Assam, putting at grave risk the life and safety of the people and animals of Arunachal and Assam, including the Environment and Biota at large, is therefore a fit case for the interference of this Hon'ble Tribunal.

GROUNDS

That the Applicants are filling the present Application on the following among other grounds which the Applicants may take at the time of hearing of the matter:

- A. Because the Environment (Protection) Act, 1986 defines environment to include water, air and land, and the inter-relationship which exists among and between water, air and land, and human beings and other living creatures, plants, micro-organisms and property. The definition of environment would therefore include the inter-relationship that exists in and around the area of the proposed Mega Dams across the state of Arunachal Pradesh and also the downstream areas of Arunachal Pradesh and Assam due to the construction and operation of the said Mega Dam projects, which will interfere with this equilibrium and lead to consequences that will be disastrous to the fragile eco-system of Arunachal Pradesh with massive downstream impacts on Assam. That the central government is very much within its statutory obligation specially under Section 5 to prohibit or regulate any operation or process which has the potential of adversely impacting the environment.

- B. Because the environment impact assessment regime categorically states that cumulative impact assessment is an important parameter to ascertain the impacts of projects which are in vicinity of each other. The fact that there would be more than 150 dams which are proposed or some of which are in execution clearly warrants a detailed cumulative impact assessment and river basin studies as a mandate of the EIA process. Infact, it is believed that in the past the Respondent No. 2 MoEF has already prescribed cumulative impact assessment for the Bichom river basin as well as the Lohit river basin in Arunachal Pradesh as far as 2008.
- C. Because the Government's policy of 'power at any cost' as is evident from the fact that no comprehensive basin wise survey is undertaken for the Hydro Electric Projects and due to the fact that it accepts upfront money in crores on mere signing of MOUs for these projects, fully confident that all statutory requirements will be taken care of as mere formalities at the total cost of safety, ecology, environment, livelihood and lifestyle of the riparian people. This is clearly violative of not only article 21 of the Constitution of India but also makes Section 20 of NGT Act redundant.
- D. Because the present four hour peaking hydropower dams which are the products of power at any cost policy of the government are most

distruction to the environment, ecology and the riparian rights of the people whose bonafide stakes over the rivers are liable to the snatched away by the format of operation of these dams. The lack of any assessment would not only the violative of the Environment Protection Act but also the Biodiversity Act and the NGT Act.

- E. Because, Aviral Dhara and Longitudinal connectivity as advocated by MoEF now for Uttarakhand HEPs is equally or more so, applicable to the HEPs in the rivers of Arunachal, that together constitute the major part of the flow of the mighty Brahmaputra. A naturally flowing Brahmaputra is a sacrosanct requirement for any HEP planning in the Arunachal valleys. Because two different stands or yardsticks cannot be taken by the state / centre and is violative of Article 14 of the Indian Constitution.
- F. Because the Mega Dams of Arunachal valleys – Siang Upper I & II – 6000 MW, 3750 MW, Elatin in Dibang (Middle) 3750 MW and Dibang Lower 3000 MW which is also built as the tallest gravity dam in the world and other major dams with huge storage reservoirs are all located in a highly seismic region of highest seismicity zone (zone V) in a fragile Himalayan ecology, which poses a very potent threat to the people of the valleys in Arunachal and also in Assam. Because they may directly

interfere with Article 21 of the Constitution of India and it would be prudent to apply Section 20 of the NGT Act, 2010.

G. Because the '4 hr peaking generation type dams' as planned in Arunachal, may give wrong signal to neighbouring countries such as China in Tibet especially over Yarlung Sangpo (Brahmaputra), and this will make all the planned mega dams in Arunachal practically inoperable because the Chinese could then hold up water for 20 hours or so in their dams, making the proposed hydropower projects of Arunachal practically inoperable with losses of astronomical investments and more importantly a great irreparable setback to the Energy Plan of the country which will be pushed back by decades. This has the potential of not just losing investment but huge environmental consequences affecting right to life of the riparian citizens of India.

H. Because it is a duty of the state under Article 48-A of the Constitution of India, that the "state shall endeavour to protect and improve the environment and to safeguard the forests and wildlife of the country."

- I. Because under Article 51-A sub-section (g) of the Constitution, every citizen of India has a duty to “protect and improve the natural environment including forests, lakes, rivers and wildlife, and to have compassion for living creatures.”
- J. Because the Hon’ble Supreme Court in *Vellore Citizens Welfare Forum vs. Union of India & Ors.* (1996) held that the Precautionary Principle is part of the environmental law of India and stated further that the onus of proof is on the actor or the developer / industrialist to show that his action is environmentally benign.
- K. Because the right to access to the waters flowing in the river can never be denied to the riparian regions, and the people living in those regions. “Water, one of the greatest gifts of nature, is an attribute of the right to live” as observed by the Apex Court in *MC Mehta v. State of Orissa*, AIR 1992 SC 522, p550 The present formats of 4 hr peaking dam will deny the people a flowing river in the winter for 20 hours or so every day.
- L. Because non release of natural flow of water will devastate the riparian indigenous and tribal people whose livelihood and every aspect of life which is entwined with the river, will be affected very adversely in violation of Article 21 of the Constitution as right to livelihood is an integral facet of the right to life.

M. Because non release of natural flow of the rivers of Arunachal is violative of the National Water Policy 2005, wherein amongst other benefits from any Hydel Project, consideration and implementation of 'ecological concerns' is a must.

N. Because National Water Policy suggests that project planning should pay special attention to the areas inhabited by tribal people and other disadvantaged groups such as Scheduled Castes and Scheduled Tribes, and evolve schemes of water distribution to all weaker sections of people. In all these ventures, equity in water distribution and use should be the basis.

O. Because the key word to development must be 'sustainable development' with ecological balance, especially more so, in the highly seismic and fragile Himalayan region of Arunachal Pradesh to avoid immense environmental and human catastrophes like the one in Uttarakhand in 2013 as well as in Nepal in 2015.

P. Because naturally flowing sustainable dams offer a solution towards sustainable development which is also part of Article 21 as recognised in the above mentioned Vellore Citizens Case rather than the destructive

four hour generation peaking dam which will destroy the ecology downstream of the river. Such sustainable, smaller dams and reservoirs would not only meet the needs of the riparian people but also minimise the seismic risks and more over meet the energy requirement of the country in a sustainable way.

Q. Because the NGT Act, 2010 in Sec.20 states that “The Tribunal shall, while passing any order or decision or award, apply the principles of sustainable development, the precautionary principle and polluter pays principle.”

INTERIM PRAYER

To hold in abeyance all the proposed destructive four hour peaking dams in the Arunachal valley till the basin wise surveys are completed in all the valleys where more than hundred fifty dams are proposed.

PRAYER

The Applicants humbly prays before this Hon'ble Tribunal, to direct the Respondents -

1. To scrap all the four hour peaking proposed 150 plus mega dams of Arunachal Pradesh with immediate effect and replace them with 24x7 naturally flowing run of the river dams to avoid destruction of environment, ecology, livelihood and culture of the riparian population of both Arunachal Pradesh and Assam.
2. To carry out basin wise assessments of the HEP's which should be comprehensive Cumulative Impact Assessment and Strategic Impact Assessment by an Interdisciplinary Expert Group so that sites for the sustainable dams and other parameters can be fixed scientifically;

3. To demarcate zones in the higher Himalayan regions that are naturally unstable, particularly in para-glacial regions in Arunachal Pradesh, where 'No Hydropower Projects' should be allowed to be developed.
4. The Dihang-Dibang Biosphere Reserve in the Upper reaches of Siang and Dihang valleys must be declared as a NO GO ZONE to preserve the biodiversity of the world biodiversity hotspot area.
5. To ensure that true Run of the River Hydro Electric Projects with natural flow of the river unhindered through the dams, must be constructed in Arunachal Pradesh to ensure sustainable development in Arunachal and a naturally flowing Brahmaputra in Assam.
6. To ensure through 24x7 RoR Dams for release of natural flow of water from the HEPs during lean period to sustain the endangered dolphins and livelihoods of the Riparian people.
7. To carry out Biodiversity Assessment and the impact of all the HEP's as the same is mandated under Section 36(4) of the Biological Diversity Act, 2002;

8. To carry out Social Impact Assessment from the impact of all the HEP's on the indigenous and tribal people of Arunachal Pradesh;
9. To prohibit any destructive dam (s) in ecologically sensitive areas declared or otherwise as well as within or in the vicinity of protected areas
10. Pass any other such order(s)/directions(s) as this Hon'ble Tribunal deem fit and proper in the present case.

Date: 30.04.2015

Place: Kolkata

Filed by:

Sanjay Upadhyay and Vikram Rajkhowa

Advocates for Applicant

29, Presidential Estate, (LGF)

Nizamuddin East

New Delhi 110 013