

REPORT ON

**One Day Consultation Workshop on
Integrated river basin management for mitigation of flood and
erosion disasters in interstate rivers of Arunachal Pradesh and
Assam: Perspectives in the context of climate change**

Organised by Aaranyak (Guwahati, Assam)

&

Arunachal Citizens Rights (Itanagar, Arunachal Pradesh)

Date: December 9, 2013.

**Supported by India Water Partnership (New Delhi) and the International Centre for
Integrated Mountain Development (Kathmandu, Nepal)**

Venue: Hotel Donyi Polo Ashok, Itanagar:: Time: 9.30 am-4.30 pm

Prepared by

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Session-I: Inauguration, Main presentations and discussion

The first session of the workshop was chaired by Er. Gaken Ete, Secretary, Water Resources Department (WRD), GoAP, who was also the Chief Guest on the occasion. Mr. Belatee Pertin, IAS, Secretary, Department of Land Management, AP was the Guest of Honour. Prof Chandan Mahanta of IIT Guwahati and Mr. Bamang Tago, Political Secretary to the Chief Minister of AP also sat at the dais as distinguished speaker from Assam side and a special commentator respectively.

‘Sab mein aag laage toh Pani bujhata he, agar Pani mein aag laage kaun bujhaega’....?’ This is how Mama, the President of Arunachal Citizens Rights (ACR) tabled the main theme of the workshop while welcoming the participants to the workshop. A self-introduction by all the participants followed.

In his opening remark Prof. Chandan Mahanta of IIT-Guwahati described the workshop as a welcome move by a selected group of people of Assam and AP. Conflicts should not be the only issue to be discussed in such a forum. Issues like natural disasters also bring opportunities of cooperation for both the sides which

need to be explored in such a platform. Mr. Jairam, Director, State Language Board, Government of Arunachal Pradesh, commented that soil and water are two sides of the same coin, integral part of human and therefore should be conserved.



Photo 1: The Chief Guest Er. Gaken Ete, Secretary, Water Resources Department (WRD), GoAP delivering his speech while other dignitaries Bamang Tago(1st from left), Prof Chandan Mahanta(third from left) and Belatee Pertin(right most) listen

Dr. Partha J Das of Aaranyak, who was the main coordinator of the workshop, narrated the background of the workshop and raised the main issues of interstate water basins of AP and Assam through a presentation. He reminded the audience of the catastrophic flash floods in the river Siang in June 2000 which was triggered by a landslide dam outburst flood (LDOF) on the river Yigong (a tributary to the Yarlung Zhangbo, the name of the mainstream of Brahmaputra in Tibet) in Tibet. This flash flood although was generated in Tibet in a faraway place created havoc in both AP and Assam) especially in Dhemaji District). He highlighted the

upstream-downstream linkages of hydrological disasters by demonstrating how effects of climate change in the Himalayas can adversely impacts on downstream foothills of AP and flood plains of Assam.



Photo 2: Dr. Partha J Das of Aaranyak delivering his presentation on the key issues in transboundary river basin of Assam and AP.

He also narrated how both states are equally vulnerable to water induced disasters by citing the example of the devastating Gai river flash floods that occurred on the 15th of August, 1911 and created havoc in many places of AP(in West Siang District) and Assam(in Dhemaji District). Interestingly while the devastations created by this flood in Assam was widely reported in media with appealing visuals of people getting swept away by the floods waves, the significant destructions and disturbances caused in the territory of AP was much less covered in media since the places of occurrence were remote and not easily accessible at that time. He cited other examples like land degradation due to sandcasting on riparian soils of Lakhimpur and Dhemaji districts of Assam caused by rivers flowing from AP to drive home the point how the high rate of soil

erosion caused by the geological fragility and deforestation of upstream AP leads to environmental disasters and changes in the Assam flood plains. Similarly the railway line and the NH-52 on the north bank of Assam get frequently damaged every rainy season due to the flood and erosion caused by the torrential floods in rivers where the flood waters flow from the hills of AP.

On the other hand a considerable population of the districts of Assam bordering AP dependent on the rivers flowing from AP for drinking water, agriculture and other domestic and community needs. Finally he mentioned the controversial issue of observed and planned Chinese interventions in the Brahmaputra River and its possible negative consequences for both AP and Assam. Dr. Das insisted on creating an archive of hydrometeorological and climatic database for the two states to enable research and policy making to mitigate flood and erosion which is a common problem for the two states in the shared rivers.

Bamang Tago, Political Secretary to the Chief Minister of AP, former Chairperson of the ACR (Co-organiser of the workshop) and the nodal person for co-organizing the workshop in AP observed in his opening remarks that the workshop had provided a much needed platform for interaction among the most important stakeholders of river basins of both the states. Earlier such platforms where civil society people can sit with government official and scientists, were not available, to discuss the issues of flood, dam, and climate change etc., he observed. It was usually difficult to meet government officials to discuss the issues face to face. He expressed hope that this workshop would help to address the issues related flood and erosion that are burning environmental problems for both the states, Assam and Arunachal Pradesh. He also requested the participants to discuss the issues from a scientific perspective rather than advocating for political solutions.

Er. L. Angu, Chief Engineer, Water Resource Department of Arunachal Pradesh, started his key note presentation by quoting that, Assam and Arunachal Pradesh belong to same hydrological boundary. He added that the management of basin is a complex issue, that former president of U.S. Mr. Nixon has rightly told that the one who succeeds in managing the water resources should be given two Nobel prizes; one for science and technology, i.e. for perfect scientific design input and

other one for managing the society peacefully i.e. for conflict resolution. His presentation showed that the total area of Brahmaputra is 5,80,000 sq. km., of which, 50.5% is lies in China, 33.6% in India and rest is shared by Bangladesh and Bhutan. Within Indian Territory Arunachal Pradesh shares 42% of the basin area, Assam 36% and rest is shared by West Bengal, Meghalaya, Nagaland and Sikkim.



Photo 3: Er. L. Angu, Chief Engineer, Water Resource Department of Arunachal Pradesh delivered the key note address

He informed the house that the landmass of AP is divided into two basins with respect to hydrological boundary viz. the two banks of Brahmaputra. These two basins have been sub-divided to six sub-basins which are then further split into nineteen catchments. The river network in Arunachal Pradesh is very fragile due to the hilly slopes. He added that some parts of Arunachal Pradesh experience floods almost every year resulting in an annual loss of 51.4 sq. km. with a depth of 1 m due to landslide. According to Mr. Angu, they have adopted some structural and non- structural measures to tackle with the disasters of erosions and

landslide. In the year 2006 the state promulgated the **Water Resources Regulatory Authority Act** to deal different issues of managing its water resources.

Er. Gaken Ete Secretary, Water Resource Department, Arunachal Pradesh who was also the Chief Guest of the workshop appreciated the step taken by Aaranyak and ACR in the beginning of his speech. He apprised the audience that earlier the Water Resource Department which he was heading now was known as the Flood Control Department. However it was later realized that floods cannot be controlled, it can only be mitigated. As a result the department was restructured and restructured as Water Resource Department.

He lamented that his state is yet to have an appropriate Disaster Management Plan for mitigating the flood or flash flood. He felt that the need of the hour is to have an integrated disaster management plan for both the states, Assam and Arunachal for tackling flood and erosion problems jointly. He alerted the audience by stating that the fertile land of Arunachal drains to Assam every year with the rains and floods which is a huge loss for agricultural productivity of AP. Floods in the interstate river basins had two important effects to be considered, one is erosion in Arunachal and the other is inundation occurring in Assam. In Assam the river banks are not rigid and therefore succumb easily to the river flows in the form of erosion. On the other hand there is heavy siltation on the river bed. Dredging is the solution for this but it cannot be done as it is very costly.

Mr. Ete also pointed out that Assam also has no master plan for mitigation, rehabilitation and relief during the flood season. To mitigate the disaster of flood we need to have good flood forecasting, flood warning as well as relief and rehabilitation plan. As flood is a recurring phenomenon, we need to teach our people how to live with flood. He revealed that some discussion has already taken place between the two Governments and the Bangladesh Ambassador to India regarding integrated river basin management. His department has given top priority to the matter of intervention of China on the Brahmaputra River in Tibet and pursuing it consistently with the GoI. He added that, of late China has shares some hydrological data with India and the same has been available through the Central Water Commission of India.

He requested the experts and researchers present in the workshop to prepare a good integrated master plan to deal with disasters like flood and erosion for both the states. He concluded his speech by underlining the importance of integrated watershed planning in order to regulate the flow of water during flood season and to retain the silt which is the basic requirements of mitigation of flood and erosion in AP, Assam and Bangladesh.



Photo 4: Prof Chandan Mahanta of IIT-Guwahati elucidates his views on Assam-Arunachal collaboration for mitigation of water hazards.

Prof Chandan Mahanta, IIT-Guwahati, started his initial remarks by appreciating previous presentation from Er. L. Angu. Water is no longer a technological issue; it has also become a social and political. He appealed to the gathering to adopt a holistic approach for solving water problems since the source and nature of the water induced disaster is such that they affect all the people from both the states. Dr. Mahanta thinks our present knowledge on climate change is not adequate enough to tackle with the present situation. That is where we need to focus with a holistic and integrated approach. 'We have to focus on the whole stretch of

Brahmaputra in China, India and Bangladesh and have to study how the changes in China bring changes in the downstream. We need to address the both the issues of flood and siltation in both the states'. Assam has to take the responsibility to give the passage to the rivers flowing from upstream. He emphasized on developing local expertise to tackle with these kind of situation. He also urged participants to come up with concrete resolutions at the end of workshop.

Mr. Belatee Pertin, Commissioner, Department of Land, AP emphatically submitted that there is an urgency for the people of AP and Assam to sit together to discuss about the flood and erosion by overlooking the political differences between the two states. He informed the audience that he has visited many countries in Europe and was privileged to see many hydro-projects abroad. "They do have nationalistic approach to deal with river and water related issues even though they have political conflicts or differences among countries. We can also replicate the same approach here in Assam and Arunachal Pradesh", he observed. He emphasized on developing strong political policies at national and state levels so that both the states are compelled to bear responsibility for managing their river basins properly.

Mr. Pertin accused the Government of India (GoI) for showing negligent attitude towards the interstate water issues of AP and Assam. He asked the Forest Department of AP to work extensively for afforestation of the eleven major shared river basins of Arunachal Pradesh that. He suggested that afforestation can be done both the states jointly. He called for checking probable future conflicts between two states on the management of rivers and river basins through such workshops. Such conflicts are triggered by parochial and vested political views and to counter the same understanding and coordination among stakeholders of the two states need to very strong in managing the river basin collectively.



Photo 5: Mr. Belatee Pertin, Commissioner, Department of Land, AP presented his opinion about bilateral water issues of Assam and AP forcefully in a free and frank speech

He enlightened the audience about the traditional land tenure system of AP. There is no *patta* system or land revenue system in AP; historically traditional holding of land by the community has been the only system prevalent there. Whenever the Government is in need of land for any purpose it has to request the community, the land holder for making land available to the Government. He recommended that consultation with community and their participation is a must in all activities related to water and river basins management. Mr. Pertin declared that although he considers hydro-projects essential for AP and the NE region for fulfilling the need of electricity, he is not in favour of mega dams. He was of the opinion that the development needs can be met by constructing small dams.

Session-II: Common concerns in shared river basins

The second session of the workshop held after lunch during 2.00-3.15 pm envisaged a discussion on Issues of common concern in shared river basins. This

session was chaired by Dr. Nani Bath, Head, Department of Political Science, Rajiv Gandhi University (RGU), Itanagar.



Photo 6: Dr. Nani Bath, Head, Department of Political Science, Rajiv Gandhi University chaired the session on common concerns

Mr. Khanindra Barman, Assistant Executive Engineer, Lakhimpur(Water Resources Department), Government of Assam tabled an important suggestions that both the states need to collaborate and work together for preparing the Detailed Project Reports(DPR) on flood and erosion mitigation plans for those rivers that they share and these DPRs should be prepared for the whole river basin transcending state boundaries. He also supported the view of Mr. Belatee Pertin that it is better to have small river dam than large river dam.

Azing Pertin, a local journalist working for the Echo of Arunachal(a local English daily), pointed out that Arunachal Pradesh does not have any Water Policy, although it was apt to adopt a hydropower policy already. He requested the concerned authorities to introduce a water policy before starting a river basin

management programme. Reacting to his comment Bamang Tago replied that, Arunachal Pradesh has a Water Policy which had already presented by Mr. L Angu, Chief Engineer of WRD, GoAP in the first session of the workshop. Mr. Tago asked the journalist to collect the details from the Water Resources Department. (But it was later pointed out by others that what Mr. Angu was referring to was the Water Resources Regulatory Authority and not any water policy, lending credence to the observation of Ajing Pertin that AP does not have any water policy per se)

Another journalist from Arunachal Pradesh questioned the Government official present in the workshop why the Government of AP was still ignoring people's reaction on mega dams when people have expressed concern that these mega dams would destroy whole environment of the state. Supporting his views, Dr. Swapnali Gogoi, Associate Professor of Geography, North Lakhimpur College, added that "Unlike South Indian hills, hills in Arunachal Pradesh or Eastern Himalayan region are made of soft sedimentary rocks. And they are not at all in a condition to support huge dams."

Regarding cooperation between Assam and Arunachal Pradesh, Chief Engineer of WRD, AP, Mr. Angu said that, they are open to extend their cooperation to Assam, but someone has to pull the trigger from Assam as earlier efforts had died due to lack of initiation from the Assam side.

Dr. Arnab Bandyopadhyay of North Eastern Regional Institute of Science & Technology (NERIST) remarked ruefully that agencies dealing with water and hydrology in NE India are equipped very poorly and insisted on adopting modern technology to carry out hydrological research for mitigating hydrological disasters. He also criticized the out dated technology applied by the Central Water Commission (CWC) and other governmental agencies.

Er. L Angu recommended that rivers should be allowed to flow freely on their way and nobody should try to change the course of a river. 'We have to change the outlook regarding river management because we, the human being are encroaching on the rivers; the rivers are not trespassing on us'. Further he enjoined that the river projects ought to be designed by taking into consideration

all concerns from all the sides such as ecological, economic, social and also cultural. In reference to an earlier observation of Mr. Azing Pertin, he admitted that Arunachal Pradesh has no Water Policy, but they have a water regulatory act¹. So he also recommended having a strong water policy for the state.

Prof. Chandan Mahanta intervened in the discussion appreciating the presentation of Mr. Angu which, according to Prof Mahanta, reflected his sound knowledge and meticulous documentation of the hydrological sector of AP. He also supported to the recommendation of Mr. Angu and Mr. Pertin to have a bilateral institutional mechanism between the two states. He criticized the type of technology still being used in the country to deal with hydrological hazards. He noted that Bangladesh was the ultimate gainer in terms of receiving fertile soil that is eroded and transported with river run-off starting from Nepal, AP and Assam. Referring to a research work he cited that 80% of sediments carried by the Brahmaputra are generally produced by about 2% of whole basin area and insisted that appropriate research is needed to identify that 2% area.

Prof Mahanta revealed that according to Chinese Academy of Science's latest assessment the Brahmaputra is 3848 km long which was thought to be 2848 km in length till few years back. He emphasized that the whole water scenario should be looked into with a positive frame of mind and a way should be found out to convert the misery to prosperity. For example, the Brahmaputra river basin has the largest availability of per capita ground water in the world, a fact which can motivate positive steps to utilize this potential.

"Damages due to flood and other water hazards are increasing day by day. Even though there is huge fund from the GoI, it is not properly channelized", he added. According to the Hadley Centre model, there will be an increase in average rainfall by 3 mm in the NE region which is a matter of concern since it may exacerbate seasonal flooding in the region. However 'climate change is always not bad' he added citing an example from a recent research of IIT-Guwahati which found that by 2030 there will be a positive trend on the production of tea and rice in Brahmaputra basin. He highlighted the adverse impacts of conventional river

¹ Mr. Angu was actually referring to the Arunachal Pradesh Water Resources Regulatory Authority Act, 2006

management structures like the *porcupine*. 'We are really lacking in knowledge base to arrive at a regional consensus when it comes to water and climate change; we have to redefine IWRM. Touching on the Chinese intervention issue he surmised that if the river Tsangpo is diverted by China, the whole Siang River will be dried up till it meets Lohit and Dibang in eastern Assam to form the Brahmaputra River. He requested all to overcome the constraints and problems and contribute to cooperation between the Governments agencies of the states.

Session-III: Way forward for interstate cooperation



Photo 7: K.J. Joy, Coordinator of the Pune based Forum for Policy Dialogue on Water Conflicts in India addressing the audience as the chairperson of the last session on collaboration and cooperation

This session on 'Towards an agenda for collaboration and cooperation' was chaired by Sri K.J. Joy, Coordinator of the Pune based Forum for Policy Dialogue on Water Conflicts in India and a well know expert on water conflicts. The chair person mainly invited constructive suggestions from the participants for forging

cooperation between the two states in various aspects of management of the shared river basins..

This session resulted in drafting of a set of recommendations in participatory manner. The issues, concerns and suggestions adopted unanimously are presented below.

Shared concerns and recommendations

- Flood and river bank erosion are two common water induced disasters experienced in most of the river basins shared by the two states.
- While in AP flash floods, landslides and river bank erosion affect infrastructure like roads and human settlements and cause huge loss of valuable top soil from the land surface due to excessive soil erosion, in Assam the same events lead to colossal loss of public property, crop and crop land besides taking a large toll of livestock, wildlife, human lives and environment.
- Conventional flood management measures have not succeeded in providing adequate respite from flood and erosion in both states
- The flood and erosion problem can be mitigated by adopting holistic, integrated approach and strategies.
- Integrated river basin management can be an effective approach to address these water induced hazards especially given the probable impact of climate change.
- We need to enhance our knowledgebase about our shared rivers and their basins including traditional knowledge of communities
- There is a strong need of collaborative efforts by both states to tackle these problems together. For this purpose joint Master Plans may be developed for assessments of basin scale hydrological processes in the shared river basins. Joint Investigation may be carried out to prepare DPR of such river basins.

- Coordination between the two states to address these problems must include all aspects of governance such as administrative, scientific, cultural and political involving all stakeholders especially communities.
- The unique cultural characteristics and land ownership of Arunachal Pradesh should be kept in mind while developing any plan of intervention on its rivers.
- There can be joint efforts for research on specific issues related to rivers and river basins at institutional level between the two states
- The two states should share hydrometeorological and other environmental data and this should be made accessible to all relevant institutions.
- There should be a mechanism set up at the initiative of this group (organizers of the workshop and the participants) to continue and sustain a regular dialogue between AP and Assam on various aspects of management of rivers and river basins.
- The two state Governments should form a joint scientific committee to explore the possibilities of joint research on specific themes e.g. best practices in drainage and sediment trapping mechanism, flood warning, soil erosion protection and bank erosion protection.
- The workshop has agreed to create a knowledge and action network for shared river basins of AP & Assam.
- The present organisers are requested to take this process forward with possible association of other organizations and individuals
- Focus of disaster management should be on risk mitigation and building up resilience of communities
- Micro zonation studies of the flood prone area with special reference to geo-environmental appraisal like Geology, Structural, Drainage, Slope, Hydrological conditions, Neotectonic studies, Geomorphology etc. by using Remote sensing application are required before preparing plans for flood managements for an area in the Assam-Arunachal region.
- Recognising that the sustainability of some of the water and sediment related solutions will be influenced by the developments taking place

upstream of AP in the Chinese part of the BP basin, the workshop urges the Gol to take up appropriate measures to address the concerns.

The workshop came to an end with a vote of thanks form Dr. Partha J Das of Aaranyak. He expressed gratefulness to ACR, for facilitating organization of the event at Itanagar with special thanks to mama and bamang Tago. He thanked all who participated in the workshop to make it a successful event. He observed that this was one of the first workshops dedicated to promoting interstate cooperation for mitigating water hazards in Assam an AP. He promised the audience to take this mission forward and continue the bilateral engagements at different levels in the coming months. More than sixty participants attended the workshop.



Photo 8: Participants pose for a group photo during the first tea break of the workshop at the premises of the Donyi Polo Ashok Hotel, Itanagar, AP