# Big Steamers Running on Brahmaputra from Saikhowa to Padma Only can Open the Path of Silt Reduction and bank line Erosion

**Manik Kar**
**Gemorphologist**

The river Brahmaputra and its tributaries are on a most severe seismic zone of the world. The northern organic movement and low gradient of the valley is most suitable platform for shifting nature of the river Brahmaputra. We should not do work on proposition but should study the matter and its action through models and replica prior to implement a project like construction of bridges and its width, dams, diversion of channels, embankments and roads and railways. In this study aim has been taken to analyze the various natural parameters.

**Character of The River:**

The Brahmaputra used to change its courses, especially near the confluence of the tributaries and the most of its tributaries used to change their courses for better gradient. The tributaries and the main channels of the river are most unstable. In reality these rivers are swinging from one end to the other from time immemorial. Therefore bankline erosin is frequent phenomena. Now this part of the river Brahmaputra is most densely populated. It is the nature of human civilization that more flooded area is more densely populated, in spite of heavy loss of life and property, because of its some positive sides. Name may be mentioned as the Chinese, Egyptian and Babylonian, those who are expert and pioneer on river valley management because they are early sufferers. Work on this line was done by Hammer, T. R., (1972 ) Hazen, A., (1930 ) Hagget, P., and Chorley, R. J., (1969) Harding, D. M., and Parker, D. J., (1972) Williams, G. P. and Guy, H. P., (1973) and Kar (1994, 95, 97, 98). From the word it is clear that among all other natural disasters, flood is a manageable disaster of the world .On the other hand river flood is easy to manage than flood on coastline.

## Flood management in N.E. India requires integrated effort among,

1. Flood is an International Riddle.
2. Discussion with National govt. of different watersheds,
3. Management on upper watershed, valley Management and channels Management,
4. Need awareness of the flood plain dwellers and cultivate knowledge on it,
5. In seismic zone there are three hazards appear at a time earthquake, flood and Landslide.
6. Adjustment, abatement and protection should continue simultaneously

**Glorious institutional project:**

Geomorphologists and geologists should take key role in flood plain management. As for India is concern that the govt. is busy in a temporary management which is called only channel management. We ignore valley and watershed management due to many hurdles. As for example Tezpur town a important place on big Himalayan River Jia- Bharali which flowing over the area. We must know that character of the Brahmaputra and the river Jia- Bharali. The catchment of the river is very big; it covers Greater Himalaya and Lower Himalaya and varying the height from 1830M to 7100M and at Tezpur 70 M (MSL). Massive developmental work, large scale investment for built up area as Tezpur University which is not proper.

***A design of Ideal Bridge in N. E. India (specially on The Brahmaputra River)***

**Projects like Bogi Bill bridge on the Brahmaputra River**

For long time demand and for improvement of transport and communication and to improve tourism industry Projects like Bogi Bill bridge has been taken but ignore the future loss and other alternative due to less awareness of mass .The project will bring down stream erosion and lateral expansion in future. Whereas Assam has tremendous potentiality than any other place of the world in water ways. The vast water resource is with us, but is it utilized properly? Answer is no. Very big **python** like the Brahmaputra is flowing in the middle of the region but we are feeling our transport cost is very much fluctuating due to land transport system.

We are talking about our cheap transportation system but we never thought about our, Brahmaputra as a great inland transport system, even we are closing the path constructing low height bridges? Why we are not thinking about international water transport. It will not be possible in future when we will think for such more ordinary

pillar based bridges. Our bridges should be wider and middle part higher so that one big ship can pass easily . We never thought about multiplication of this transport.

Rather we are satisfied with only on road and rail transport systems. Which increase our flood hazard day by day, due to more restriction on free flow of water by culverts and narrow bridge. If we could increase water transport and linear plantation (Kar1994) on the Brahmaputra then this python like river would be more dominant by us, its flow would be channelized hence flood and erosion would be reduced, on the other hand lateral erosion or bank line erosion would be minimized in magnitude and intensity.

**Some points on Bogibill Bridge**:

If we observe the bridges of any river of any foreign country then it is clear to us that these bridges are on more height and more length for easy discharges of water. As for our bridges are with low height and very narrow in comparison with its summer width. Such narrow bridges restrict the flow hence, increase the lateral or bank line erosion in down streams.

Twelve Kilometer downstream of the Brahmaputra from Dibrugar Town, on the left bank, is a place called Bogi bill, from the place Buridihing mukh of north bank is more than 8 km. wide. Near Bogi bill there is a dyke to protect the area from the Brahmaputra, and from this place to Buri suti width of the Brahmaputra is 9.5 km. Again from Burisuti to Sisi Nai 8.5 Km. But we are going to construct a **bridge** on it which is called **Bogi bill Bridge** which is only less than 5 km. Long. Again at 12 km upstream near Rangajan ($27^0 35^/ N, 95^0 5^/ E$) to Sengajan ($27^0 40^/ N$ ,$95^0$ E) width of the river is 12 km. In 12 km downstream Barbill gaon ($27^0 15^/ N, 94^0 34^/ E$ ) to a place on north bank ($27^0 15^/ N$, $94^0 34^/ E$)here the width is 15 Km.

On south bank a most meandering river is Buridihing. Senoi is a tributary of Buridihing is also most meandering river. All the chars (islands) are very long, Barkichapari is 9 km. (Long east to west). Several embankments were built to protect the South bank from erosion. On chars we found very long grasses. Two big chars (Islands) are found here. If Chars be stabilized then lateral erosion will be increased. If the Bogibill bridge be completed then due to less width therefore the river will resist the summer flow exactly half the previous flow on the other hand due to big pillars it will protect the free flow of the Brahmaputra, hence it will obviously submerge the up stream area and erode the down stream area to a certain belts.

However we should take an example from our neighbouring country and its very ambitious bridge called the **Jamuna Multipurpose Bridge** on mighty river Jamuna (Brahmaputra) is the biggest project in Bangladesh.

**Some important points are on Jamuna Multipurpose Bridge of Sirajgange**

1.The bridge (Named as Bangabandhu Bridge) of about 4.8 km long and 18.5 meter wide road ways.

2. Construction of two guide bunds : the west guide bund is 3.26 km long while the eastern one is 3.07km and reduced the width of the river at the bridge site from 11.13 km to 4.8 km.

Being the densely populated country with numbers of components, Jamuna Bridge has significant impact on the inhabitants of the project area. It acquired more than 2863ha of land and affected more than 16 households, which included about 105 thousand populations. In addition more than 28 thousand households which encompassing more than 180 thousand people were affected by induced flood and river erosion.

From the above projects we should take care of it, which will create an adverse situation in this part. This is important that is the area is a seismic zone, so any massive structure should be constructed with great care.

Construction of dam for flood control, and other allied purposes being used from long 6000 years back, Aswan Dam is one of them. Recent time Hoover Dam on the Colorado river, Bennet Dam on peace River of Alberta, the Lower Van Norman Dam in South California, Teton Dam and so on are causing damage to life and property and they are now fear to the people of those locality.

No doubt about it that Dam may give immediate result, but it is a costly and risky measure for the purpose. But there should be good economic condition of the country, expert hands and good coordination among geomorphologists, geologists, Hydrologists, environmentalists, seismologists and civil engineers before final selection of a site.

It is found that the long time demanded bridges like *Saraight*, *Kaliabhomora*, *Pancharatna and Bagibeel bridges* all started to create tremendous impact on easy flow of water due to very narrow breadth. These narrow spaces in general increased the velocity of water and thus intensified the lateral erosion in down stream due to high velocity and magnitude. As a result erosion in Gomi Palasbari is increased; same thing happen by *Kaliabhomora* Bridge, in Buragaon, Dhumkura and Mairabari area and its ferocity of erosion is intensified too.

Conclusion:

These Projects are not based on natural condition, therefore natural laws and bylaws are there that should be properly followed. Therefore without knowing all the parameters like climate, soil, hydrology, seismology, geomorphology, geology and the human activities of the locality no project should be implemented on a geomorphic sensitive area on demand of public only. Therefore only the structural management in no circumstances can give an optimum level of benefit rather it gives reverse result for the purpose. At present science and technology can give full benefit of a project if and only if it obeys the natural laws.

**References: -**


1. Kar,M.,1994: "flood hazard in nagaon and morigaon district of assam ;a geographical perspective" unpublished ph.d. thesis, guwahati university,guwahati,india, pp-108-181

2. Kar,M.,1997(a): flood hazard management of assam: a case study of assam, institute of land scape ecology and ekistics ,indian journal of land scape systems and ecological studies calcutta vol.20, no.1 pp 29-44

3. Kar,M.&goswami d.c.,1997(b): evaluating alternative techniques for flood frequency analysis: a case study on the kopili river,assam.indian journal of geomorphology,indian institute of geomorphologists vol.2, no.1, pp.71-90

4. Kar,M.,1998: "mitigation of flood : a case study of the brahmaputra valley" international conference on disaster management (icodim) -guwahati, tezpur university, pp-256-271
5. Kar.M.,Nath .T , 1998: existing flood hazard adjustment process in Assam : a case study of nagaon undivided districts of assam ,proceeding national association of geographers india, environment and sustain able development vol.1 no 1 pp-245-252

6. Kar .M,singh.h and basumatari.b,1998: gis in flood plain management of central assam , ,indian cartographer ,cartographiy in action ,inca international congress,journal of the indian national cartographic association vol 18, pp-259-262

7. Kar,M.,mishra,m. and goswami,d.c., 1993(a)runoff modelling using satellite remotesing data :a case study of selected sub basin of the brahmaputra river, assam. proceedings of national symposium on remote sensing application for ""resource managementwith special emphasis on north eastern region", indian society of remotesensing application centre, guwahati ,assam. pp, 511-517

8. Kar,M,2001(b): earthquake preparedness and disaster mitigation: a study on nort & n.e.india assam,india,written by kar,m , silpi printers guwahati 781008

9. Kar,M,2001(c): ,earthquake is a disaster of triple effect in north east india,presented in a ugc sponsored national seminar and workshop on earthquake and related hazard management, october,2001.silchar ,assam

10. Kar,M,2001(d):knowledge about earthquake of n.e.india : special issue of ugc sponsored national seminar and workshop on earthquake and related hazard management,october,2001.silchar ,assam

11. Hammer, T. R., (1972) :Stream Channel Enlargement due to Urbanization, Water Resource Research, 8, pp. 1530-1540.

12. Hazen, A., (1930) :Flood Flows, John Willey and Sons, New York.

13. Hagget, P., and Chorley, R. J., (1969) :Network Analysis in Geography, Arnold, London.

14. Harding, D. M., and Parker, D. J., (1972) :A Study of the Flood Hazard at Shrewsbury, Paper presented at Seminar on Natural Hazards, Institute of British Geographers, January, (1973).

15. White, G. F., (1964a) :*Flood Plain Adjustments and Regulations*, Handbook of Applied Hydrology (ed., V. T. Chow) McGraw Hill, New York, Section 25-V.

16. White, G. F., (1964) :*Choice of Adjustment to Floods*, Univ. of Chicago, Department, of Geography. Resea. Paper 93.

17. Williams, G. P. and Guy, H. P., 1973 :*Erosional and Depositional Aspects of Hurricane Camille in Virginia*, 1969, U. S. Geol. Surv. Prof. pp. 804.

18. Wolman, M. G., 1959 : *Factors Influencing Erosion of a Cohesive River Bank*, Amer. Journal Sci. Vol. 257, pp. 204 -216.

19. Wolman, M. G. and Leopold, L. B., 1957 :*River Floodplains : Some Observations on Their Formation*, U. S. Geol. Sur. Prof. pap. 282c pp. 87–109.