Rohmoria’s Challenge: Natural Disasters, Popular Protests and State Apathy

SIDDHARTHA KUMAR LAHIRI, JULI BORGOHAIN

Rohmoria, in the upper reaches of the Brahmaputra river in Assam, is severely affected by river-borne erosion. Efforts to get government help in combating this erosion passed through different stages of peaceful agitation and ultimately took a political character. People’s resistance used oil blockade as an effective means of getting government attention. Unfortunately, the state’s response has mostly been ad hoc and geared towards temporary measures to lift the oil blockade. This article has two objectives: to portray the nature of the problem of erosion in Rohmoria and to show the history of the peoples’ movement and the state’s response.

Before landing at the Dibrugarh airport, if you look below, a few big pythons seem to guard majestically a huge tract of lush greenery. The pythons are the interwoven channels of the Brahmaputra river and the widespread green stretches having exceptionally high degree of geometric consistency maintaining almost uniform hues are, of course, the tea gardens. A number of famous tea gardens of Assam, still bearing the brand of old colonial heritage, were developed by the side of the Brahmaputra due to the cheaper navigability and the typical growth promoting climate – tropical and temperate – necessary for various plants belonging to the tea family. The commonly available tea species is *Camellia sinensis*. Kudos to blending, if Darjeeling tea is famous for its flavour, the Assam tea remained equally famous for its strength and colour for the last one hundred and more years. Along with green tea bushes at the top are to be found some of the oldest oil pools in the depth of the soil, manifested on the surface by the tall oil rigs. Sulphur rich high quality coal reserves are there in the shallow subsurface which is very effective for converting into oil by hydrogenation. Unfortunately, it is, at present, wasted due to lopsided policies by making coke out of it. Estimated hydroelectricity potential around the Brahmaputra valley is more than 60,000 mega-watts (MW), whereas, at the current level of industrialisation, the peak hour need for all the seven states of north-east India is less than 2,500 MW.

**Brahmaputra River Dynamics**

The Brahmaputra is an international river which passes through three most populous countries – China, India and Bangladesh. It acts as a conduit through which a massive transfer of sediments takes place into the Bay of Bengal from its source, which broadly represents the active zone of collision between the Indian and the Eurasian plate. On a global scale, the sediment yield of the Brahmaputra (Goswami 1985) within the Indian territory alone (804 tonnes/km² every year) is ~ 5.5 times higher than that of the Amazon (~ 146 tonnes/km² every year), the longest river on this planet.

The mighty Brahmaputra channel belt is highly dynamic due to the ongoing structural changes (Molnar and Tapponnier 1975) in the basin part and the basin margin areas as well as the sediment load dumping patterns. The word basin stands for a large size depression on the surface of the earth formed due to structural changes or erosion providing accommodation space for sediment deposition. Basin margins are usually mountainous ranges where the rate of erosion is much higher than deposition. Rivers and other channels act as the agencies to bring sediments from mountains to deposit in the basins. The sense of fluvial dynamism is related to the temporal path consistency of a channel on the surface relief. Higher consistency means lesser dynamism. The catchment processes responsible for supplying vast quantities of sediment include erosion of actively uplifting mountains of the Himalayas, slope erosion of the Himalayan foothills and movement of alluvial deposits stored in the Assam valley (Thorne et al 1993). Besides this, sediment supply from the Naga-Patkai hills (Figure 1, p 33) also contributes substantially to the ongoing sediment architecture of the valley. The rise of the Himalayas and influx of the eroded materials from the mountainous reach to the valley have greatly influenced the fluvial dynamics of the Brahmaputra.

The river gets its name “Brahmaputra” from the old confluence place called Kobo where three major rivers – the Lohit, the Dibang and the Siang – used to meet each other. The Brahmaputra can be divided, broadly, into three reaches – upper Assam reach, lower Assam reach and the Bangladesh reach. Each of the reaches can be subdivided into segments. In the present study, we are going to focus our attention on the uppermost segment of...
the upper Assam reach. Let us call it Dibru-Saikhoa segment (Figure 1).

**Why Riverbank Erodes So Fast?**

The place Rohmoria, a *mouza* in the Dibrugarh district is shown inside the location map (Figure 1) for the upper reach of the Brahmaputra. It is believed (Sarma and Phukan 2006) that in the aftermath of the great Assam earthquake of 1950, the rate of erosion in the south bank of the Dibru-Saikhoa segment of the upper reach of the Brahmaputra channel belt witnessed a sudden surge. So far, all over Assam, this segment had gone through maximum erosion (Kotoky et al 2005; Sarma 2008). But till today we do not have very clear explanations about how this earthquake could cause the spatial enlargement of the overall channel belt.

A careful measurement of some simple parameters like average channel belt widths, areas of the channel belts, channels, interfluves and the ratios of channel and channel belt areas as well as interfluve areas and channel areas shows very clearly (Table 1) that the upper reach of the Brahmaputra channel belt (includes channels as well as interfluves) experienced about 90% positive stretching in 1975 from its status during 1915. The same tendency attained a whopping 230% in 2005 with respect to the base year 1915. The ratio of actual channel areas and the channel belt areas witnessed a fall whereas the same for interfluves had a spectacular rise. Its direct implication is a very high rate of sediment dumping in the catchment areas. This may happen even if the average annual rainfall remains constant or had a slight increase. In Table 1, the term interfluve includes all the land areas within the channel belt. That also includes later deposits like sandbars as well as the earlier open lands now encircled by the channels and thereby becoming islands. The Dibru-Saikhoa Reserve Forest is such a place (Figure 2, p 33) having an area of approximately 300 sq km which has come into the map as an island very recently, after 1998. Even when we subtract the area of the Dibru-Saikhoa island, the net sand bar area within the Brahmaputra channel belt shows a remarkable increase. In this context, it may be added that a drastic rise in the sediment influx in the valley-fill zones might be due to post-earthquake instability in the mountains or perhaps the instability caused due to the anthropogenic intervention in the form of rapid deforestation and loosening of the soil binding materials. There might be a kind of overlapping too. But, either way, it emphasises the increased instability in the further upstream mountainous reach, the increased rate of sediment influx and a rapid increase in the overall width of the channel belt. Thus, the tendency of the channel-belt to increase its width caused rapid erosion and bank line migration, bringing the Brahmaputra river closer to Rohmoria. This is the first important observation.

<table>
<thead>
<tr>
<th>Geomorphological Parameters</th>
<th>1915</th>
<th>1975</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average channel belt width (in km)</td>
<td>5.28</td>
<td>10.65</td>
<td>18.48</td>
</tr>
<tr>
<td>(in +102%)</td>
<td>(in +250%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Channel belt area (in sq km)</td>
<td>358.7</td>
<td>678.39</td>
<td>1186.27</td>
</tr>
<tr>
<td>(in +89.12%)</td>
<td>(in +230.7%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Channel area (in sq km)</td>
<td>122.04</td>
<td>144, 13</td>
<td>270.24</td>
</tr>
<tr>
<td>(in +18.1%)</td>
<td>(in +121.4%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interfluve area (in sq km)</td>
<td>234.08</td>
<td>534.26</td>
<td>916.03</td>
</tr>
<tr>
<td>(in +128.24%)</td>
<td>(in +291.32%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Channel area/channel belt area</td>
<td>0.35</td>
<td>0.21</td>
<td>0.23</td>
</tr>
<tr>
<td>(in -40%)</td>
<td>(in -34.3%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interfluve area/channel area</td>
<td>1.92</td>
<td>3.71</td>
<td>3.39</td>
</tr>
<tr>
<td>(in +93.2%)</td>
<td>(in +76.6%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Variation in the parameters like average channel belt widths, areas of the channel belts, channels, interfluves and the ratios of channel and channel belt areas as well as interfluve areas and channel areas are shown for the Dibru-Saikhoa segment of the upper reach of the Brahmaputra valley during 1915, 1977 and 2005. Positive numbers inside the brackets indicate growth over the 1915 status.

**The Rohmoria Struggle**

In the aftermath of the great earthquake in 1950, the Brahmaputra channel belt started inflating in the Dibru-Saikhoa segment causing rapid bank line migration in both the north and the south banks. By 1979, a significant portion of the Dibrugarh, Rongagorah, Tinsukia metallised road, the main link that used to connect Rohmoria with the two important townships of Dibrugarh and Tinsukia, was cut heavily due to this erosion. All of a sudden, the lifeline for business and general transportation was snapped and the earlier well-connected Rohmoria was reduced, almost in one go, to a hinterland, a very interior pressure tremendously on the riverbank at Rohmoria.

Third, the intra channel belt flow characteristics keep on changing, the major channel becoming minor and vice versa. This is most probably due to the unevenness of the sediment dispersal as well as locally raised flow diversionary means of the state departments. Presently, an advancing frontier of the main channel, in the form of a “bow” (Figure 2) is directed towards Rohmoria making it highly hazardous, whereas the next half cycle of the main channel belt is directed towards the north bank, reducing considerably the erosion-borne hazard intensity for Dibrugarh town and its adjoining areas. The fourth factor is the presence of very loose sands of older flood plain deposits, just below the clayey topsoil. This causes rapid toe-cutting of the banks and its consequent slumping. Visibly, these are the four major factors responsible for the rapid bank erosion at and near Rohmoria. However, a very fundamental question that still remains unresolved is, why does the median course of the Brahmaputra channel belt show a remarkable eastward shift in the Dibru-Saikhoa segment? Is it principally sedimentological or structural?
place to which most of the town-based doctors would refuse to go even in an emergency. Peoples’ anger built up over the years as the administration did little to check this erosion. This resulted in the formation of an amorphous body called the “Rohmoria, Lahooal, Rongapara, Bokdung Baan Protirodh Samity” in 1979. The years from 1979 to 1985 can be seen as a period when the slow process of submitting memoranda to the district authorities, sending delegations to meet state government ministers, organising visits to the affected area by some of these ministers, getting election time assurances from candidates and parties, etc., was witnessed. The period 1985 to 1997 was a phase of peoples’ disillusionment (Lahiri 2008) at the non-action of the state departments.

In September 1997, in a big public meeting, the earlier body was dissolved and a new body named the “Rohmoria Khahaniya-O-Baan Protirodh Samity” was formed. This body was much stronger in its determination. This was proved by its resolve to take some anti-erosion measures of its own. Mainly mobilising people from the highly hazard-prone areas of 15 villages and three tea gardens, the voluntary body took the task of constructing six wooden spurs to divert the course of the Brahmaputra river. Some technical know-how was provided by the erstwhile embankment and development department of the government. Other than that, the entire work was based on local resources and voluntary labour and took more than four months to complete. However, during the peak flood of 1998, all the spurs gave way and practically nothing remained. The setback was immense.

Gradually, a simple idea was building up among these suffering people – if a state refuses to address the basic problems of the people, it too forfeits its rights to the natural resources of the land where these people live. It should be kept in mind that the older idea as of nationality struggle were always present and provided a catalyst to comprehend state apathy in terms of a semi-colonial legacy.

Coincidentally, in 1998 itself, Oil India Limited (OIL) discovered a big oilfield at Khagorijan within the Rohmoria area. The “Oil Blockade” started from 16 August 1999. This day onward the struggle took on a political character. Cycle rallies, more frequent protest meetings, big rallies and mass gatherings as well as technical and political workshops resulted in a rapid expansion of the support base of the movement. On 23 January 2000, a state-level organisation – “Sadau Asom Baan Khahoniya Protirodh Sangram Mancha” – was formed at the end of a three-day workshop attended by representatives from different voluntary organisations all over the Brahmaputra valley engaged in their own struggles against flood and erosion. On 31 March 2000, Bolo Gohain, a schoolteacher, died under the heap of slumped soil while raising a spur. He was the first “martyr” for the cause of resisting flood and erosion.

**The State Response**

On the basis of the report submitted by R A Oak of the Central Water and Power Research Station (CWPRS) Pune to find a long-term solution to the problem (based on a site visit on 9 August 2000), the 31st technical advisory committee meeting of the state water resources department recommended a project to the Central
and lathi-charged about 1,500 protestors who were trying to impose a blockade on national highway 37 near Chabua airport. On 24 December 2007, a daylong Dibrugarh district bandh call was given by the “Rohmoria Gora Khaboniya Protirodhi Mancha” against the crpf atrocities. Other participants of the bandh were various students and youth organisations like the All Assam Students Union, All Assam Tea Tribe Students Association, Assam Jatiyatabadi Yuba Cghatra Parishad, All Assam Tai Ahom Students' Union and the Motok Yuva Chatra Sammilan. During and in the aftermath of the floods of 2008, the Rohmoria area experienced intensified erosion. On 8 September 2008, a procession of 6,000 people with much broader representation from many more organisations submitted a memorandum to the prime minister and the president of India through the district collector. The 45 technical advisory committee (tac) meeting held in November 2008 recommended another scheme based on the pre-feasibility report of the Brahmaputra Board and the model study report on Hatighuli to Nagaghuli-Majian reach prepared by the cwprs. This proposal, costing an estimated amount of Rs 292 crore, was approved by the Assam government.

In summary, the alarming rate of erosion due to the Brahmaputra around Rohmoria for the past 50 years only led to various plans to check bank erosion by various state agencies but all these remained confined only to paper. Until the oil blockade started, nothing happened that can be said to be tangible in real terms.

‘Palliative’ Measures

The cwc, through a letter dated 16 July 2009, suggested some immediate “palliative” measures costing about Rs 60 crore for Rohmoria. All of a sudden they scrapped, on the late realisation that a project was already going on under the aegis of the Brahmaputra Board to close the Ananta Nallah in the further upstream direction, most of the earlier recommendations for stopping the erosion of the riverbank at Rohmoria. The state government was informed that if the diversion of the Lohit river through the Ananta Nallah could be closed, then the additional pressure and subsequent slumping of the riverbank near Rohmoria would also

---

**NATIONAL INSTITUTE OF PUBLIC FINANCE AND POLICY**

18/2, Satsang Vihar Marg,  
Special Institutional Area (Near JNU)  
New Delhi – 110067  
Fax No. 91-11-26852548

Invites applications for the following posts:

1. **Associate Professor** in the scale of pay of Rs.37400-67000 with academic grade pay of Rs.9000 plus allowances as per Institute’s rules. Total emoluments at the minimum of the scale will be around Rs. 85,840/- per month.

Age: preferably 40 years (relaxable by Selection Committee in deserving cases).

Qualifications Essential: (i) A creditable academic record with Ph.D in Economics and specialization in the relevant area with a good background in quantitative economics, (ii) Publications in Standard Journals, and (iii) 8 years experience in research or teaching.

Desirable: Experience in empirical analysis of industrial and/or fiscal policy issues. Selection may not be confined to only those who apply.

2. **Assistant Professor** in the scale of pay of Rs.15600-39100 with academic grade pay of Rs.7000 plus allowances as per Institute’s rules. Total emoluments at the minimum of the scale will be around Rs. 49,440/- per month.

Age: preferably 35 years.

Qualifications Essential: Postgraduate in Economics with specialization in Public Finance/ Macro-Economics, (i) Ph.D. degree obtained on the basis of dissertation in the relevant area, (ii) knowledge of quantitative techniques, and (iv) publications of good standard.

3. **Economist** in the scale of pay of Rs.15600-39100 with academic grade pay of Rs.6000 plus allowances as per Institute’s rules. Total emoluments at the minimum of the scale will be around Rs.42,440/- per month.

Age: preferably 30 years.

Qualifications Essential: (i) High second class postgraduate degree in Economics, (ii) Specialisation in Public Finance, Macro-Economics, and knowledge of quantitative techniques.

Desirable: 2-3 years research or teaching experience

General: (i) The Selection Committee can relax the number of years of experience in the case of deserving candidates, (ii) Applications can be submitted throughout the year of 2011. However, applications received within 30 days of this advertisement will be considered in the first phase. Refer our web site www.nipfp.org.in

Applications can be sent to Secretary or e-mailed to careers@nipfp.org.in
The energy and speed with which the state is implementing the massive hydro-electricity projects in the mountains surrounding the upper reach of the Brahmaputra valley is only seen in war-like situations. In comparison to that, even a bare minimum interest is not shown in understanding and addressing the problem of erosion and its connection to the instability of agrarian society. It is high time for the state to understand that prejudiced models of progress and social negligence piling up for decades may boomerang at unexpected moments with unpredictable intensities unless a really sincere effort is shown to comprehend the science behind the core issues of a place and the people therein. Moreover, implementation of all large-scale projects having questions related to ecological balance should be based on healthy, wide-ranging debates at different levels of the society.

Unfortunately, the people of Rohmoria may serve as an example of how not to deal with such natural disasters, they still have not found the state to be an enabler in providing a solution.

stop. The CWC recommendations were:

1. Consequence of RCC porcupine spurs with a fascia of 90m and a length of 60m. The RCC porcupine spurs are to be launched in five layers in the flank portion in phasewise manner to achieve the required situation. The width of upstream apron is 15m and downstream apron is 24m.

2. RCC porcupine bars at 50m intervals. The length of the bars is 2.7m below L.W.L and above L.W.L is 15m. The porcupine below L.W.L is proposed to be launched in three layers.

3. Excavation of pilot channels (Guide channel) at two locations by Berge Excavator to maintain a mid regime channel guiding the flow to the mainstream is proposed at suitable locations.

The energy and speed with which the state is implementing the massive hydro-electricity projects in the mountains surrounding the upper reach of the Brahmaputra valley is only seen in war-like situations. In comparison to that, even a bare minimum interest is not shown in understanding and addressing the problem of erosion and its connection to the instability of agrarian society. It is high time for the state to understand that prejudiced models of progress and social negligence piling up for decades may boomerang at unexpected moments with unpredictable intensities unless a really sincere effort is shown to comprehend the science behind the core issues of a place and the people therein. Moreover, implementation of all large-scale projects having questions related to ecological balance should be based on healthy, wide-ranging debates at different levels of the society.

Unfortunately, the people of Rohmoria may serve as an example of how not to deal with such natural disasters, they still have not found the state to be an enabler in providing a solution.

REFERENCES


