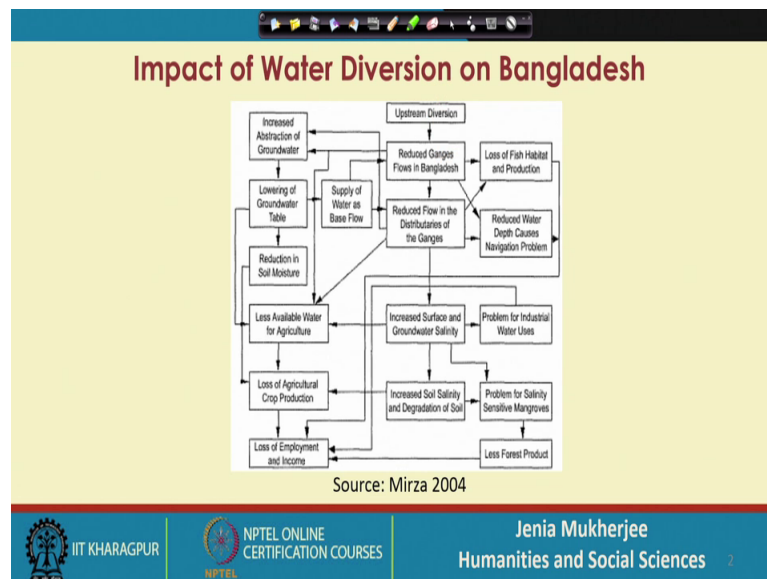


Water, Society and Sustainability
Prof. Jenia Mukherjee
Department of Humanities and Social Sciences
Indian Institute of Technology, Kharagpur

Lecture – 16
The Farakka Barrage Project: Socio – environmental Implications

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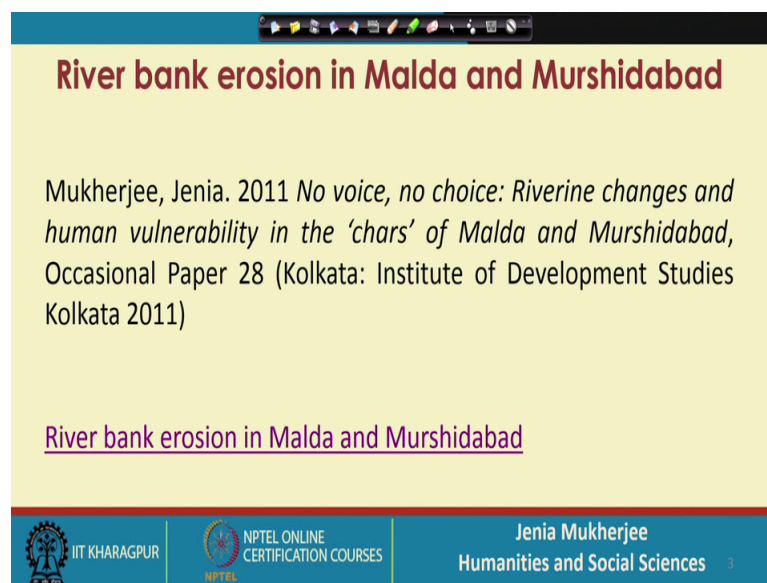
So, in this presentation I would be focusing on the Social and Environmental Implications of the Farakka Barrage Project. Mainly I would be focusing on the West Bengal scenario. But before we go to the West Bengal scenario, it is also important for us to understand that as I had mentioned in my previous lecture that Farakka had been a bone of contention between these two countries India, and Bangladesh. And Bangladesh been located at the downstream of the project; it has suffered a lot. So, like this is a particular snapshot from Mirza, which shows the you know complex impact of the Farakka Barrage on the on the environment or the you know river and topography and environmental dimensions of this particular nation at the downstream nation Bangladesh.

Now, if I just narrate in simple terms, then I mean there is a particular river distributary of the Ganges, which is called the Garai. And to a great extent the economy of Bangladesh, more importantly agriculture is dependent on the flow of the Garai River, because the Garai is connected to the Ganges; and it draws water you know as it is

connected to the Ganges, so it brings Ganges water; and it I mean to the to mainly the south western part of the nation of Bangladesh. But due to the construction of the Farakka Barrage, due to water diversion, the discharge of the Garai River to a great extent had been highly effective.

So, what happens is that during the winter season, there is drought, because Bangladesh gets reduced flow during that time. On the other hand, during the monsoon, it is peak discharge and that leads to floods and flood hazards in Bangladesh. So, it is affected or it suffers from both droughts and floods, you know due to this water diversion scheme. And by experts they argue that if this continues like this, then maybe you know whether the Garai would exist in the future that is a big question. So, so this is little bit about Bangladesh.

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River bank erosion in Malda and Murshidabad

Mukherjee, Jenia. 2011 *No voice, no choice: Riverine changes and human vulnerability in the 'chars' of Malda and Murshidabad*, Occasional Paper 28 (Kolkata: Institute of Development Studies Kolkata 2011)

[River bank erosion in Malda and Murshidabad](#)

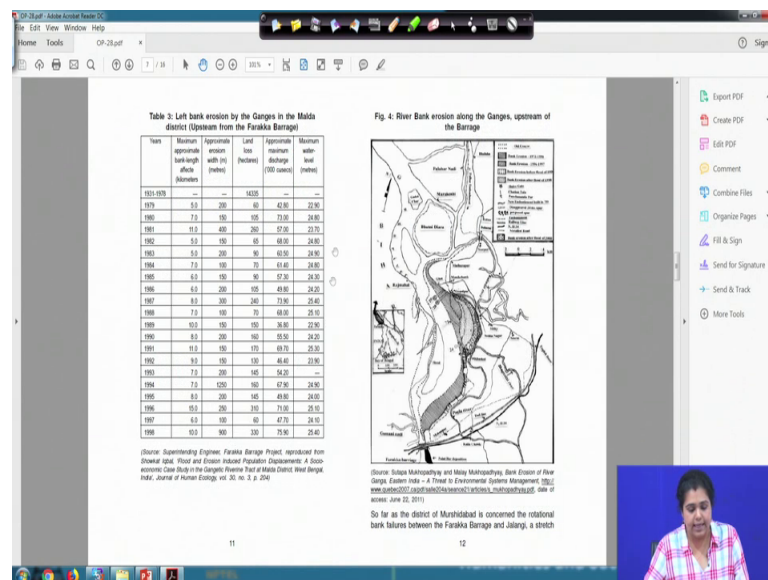
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Humanities and Social Sciences

But, then now if you move onto what is happening so far as India is concerned more specifically West Bengal is concerned, we need to understand that the social impact the environmental impact of Farakka Barrage had really not been very beneficial or positive, so far as the Indian counterpart is also concerned. Because we discussed in the you know in our lecture on multipurpose reservoir development schemes that how Nehru began with this inaugural speech that dams are the temples of modern India, but at the same. So, you know the element or the component of national glory and national pride, were associated with construction of barrages and dams.

But, at the same time, if you take a minute look, if we really make some social impact assessment, if we are concerned, if you are aware of you know the environmental impacts, then we will see that how this project it you know I mean it is really questionable, it is really doubtful, whether we would be able to you know categorize these or whether we would be able to project this as our national pride or national glory. Because data shows very shortly you know data shows that in the during the post implementation phase riverine bank erosion in both Malda that is the upstream of the Farakka Barrage, and Murshidabad that is the downstream of the Farakka Barrage had increased tremendously.

And so, as I mentioned that I did some field work in both Malda and Murshidabad in the villages in the char villages the Riverine island villages of Malda and Murshidabad. And I also could consult some data, some secondary data, some statistics on river bank erosion and I found out that really river bank erosion in Malda and Murshidabad had increased during the post implementation phase. So, I could come up with an occasional paper, which was published in 2011.

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And there I had you know from some of the very important secondary sources I had shown that how for example, this table provides information about left bank erosion by the Ganges in the Malda district. And if you consider this years, you see how you know erosion has really increased. And it also talks about I mean provides statistics and data

about loss of land. So, loss of land, loss of fertile land, it is these are fertile lands. So, loss of fertile lands in Malda. And this is again a map that shows how the river has migrated; how the river has shifted during the post implementation period. And leading to you know, the rise of the increase in the rise of river and island again an issue, which we will focus right now.

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of about 100 km, has been severe. The human impact of this has been massive. While about one million people are displaced every year by flood and erosion in Bangladesh, it is no less than 10,000 people who are evicted every year from their homelands by erosion in Murshidabad district alone in the 1970s. In Dhalai and its adjoining areas about 60,000 people became homeless. The encroaching river wiped out 50 mouzas and engulfed about 10,000 hectares of fertile land. A large part of the coastline, lying between the Bhagmati and Padma with an area of about 77 sq. km, between Nayarsahi and Gola, disappeared forever between 1925 and 1934. Thus the map of this area has been changed beyond recognition. This is evident when we compare the older top-sheet published by the Survey of India in 1925 and the recent satellite images of Farakka, Samarganj, Gola I, Gola II, Bhagatnagar I, Lalgaia, Bhagatnagar II, Bhagatnagar II, Ratinagar I, Ratinagar II and Jalangi face the problem of bank erosion massively year after year.

The following table provides a comprehensive picture of land loss and population displacement during 1988-1994 in Murshidabad District.

Table 4: Land Loss and Population Displacement during 1988-1994

Year	Eroded in sq. km.	Families Affected	Population Displaced (Projected)
1988	4.25	872	4,380
1989	107.05	8,875	44,475
1990	7.50	152	3,005
1991	8.95	763	3,815
1992	24.05	1,187	5,885
1993	18.50	1,089	5,435
1994	25.85	818	12,005
Total	208.60	14,228	79,190

(Source: Kalyan Rudra, ibid. p. 32)

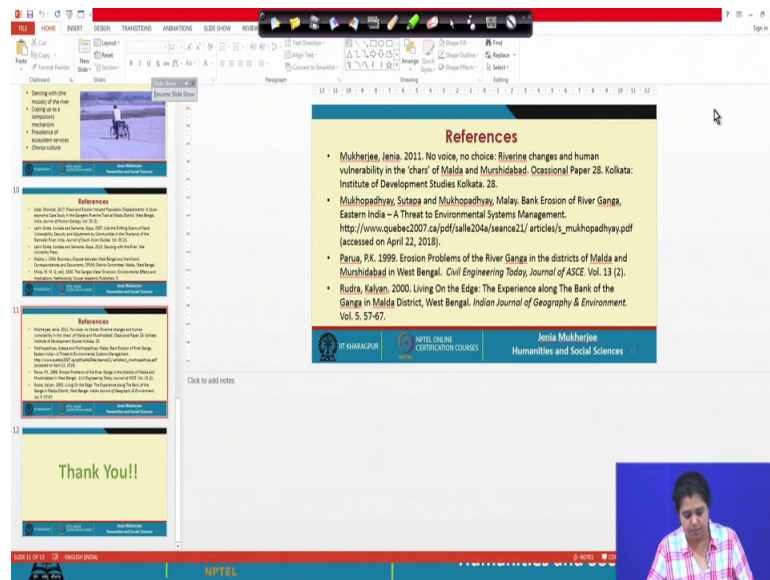
The 'Chars' in Malda and Murshidabad: Addressing the issue of human vulnerability
The human impact of continuous bank erosion and sedimentation in Malda and Murshidabad has been tremendous leading to displacement, eviction, loss of land and property, making the areas vulnerability prone. Vulnerability to natural hazards are not equally distributed and exposure to risk and vulnerability depends on certain factors such as: unstable global patterns of settlement, resource management, social organization, political economy, etc. It is important to mention Terry Cannon's concept of political economy of vulnerability (i.e. ranking the people from more to less vulnerable along a continuum from total resilience at one end to total susceptibility, at the other taking into account the various political, economic and geographical components of vulnerability) in this context. Human vulnerability is a constant reality for the rural poor in any developing region where livelihood insecurity forms a key component of human poverty. Any coincident ecological or economic shock thus directly affects livelihood opportunities among vulnerable sections of the rural population whose livelihoods become even more insecure. But the problem does not end here, and the erosion victims in the 'char' face all these problems (vulnerabilities) along with additional ones getting entangled with the problem of 'special added vulnerability' which regresses human development to its absolute maximum.

The construction of the Farakka Barrage has disturbed the apparent equilibrium condition and the river started to adjust this huge human interference by aggradations and degradation of its bed and channel pattern by erosion and siltation. In the post-barrage condition, the normal sediment transport system has been intercepted due to controlled operation of the barrage gates and the river bed on upstream started aggrading with the change of erosion/deposition pattern of river bed and banks. The new sand islands (chars) have come up gradually with the general rise in river bed level and formation of deep narrow thalweg on left side. The normal flood level has increased with reduction in channel capacity. This has increased the flood intensity on upstream at lower discharge in post barrage situation which could be noticed in Malda district in during last two decades. The river has dumped so much sand behind the barrage that the river-bed has risen over 75 meters. From historical record we find the shifting of the Ganges is a long-term phenomenon that has constantly shaped and reshaped the territorial history of the Malda district. In 1585, Man Singh decided to build a new capital for the Mughal Subah of Bengal at the new

And so, this is about Malda but, not only Malda, in Murshidabad also again if we take a look into this table, it talks about land loss and population displacement. So, displacement and eviction are other important aspects or issues that you know are highly associated with the construction of different dam projects including Farakka.

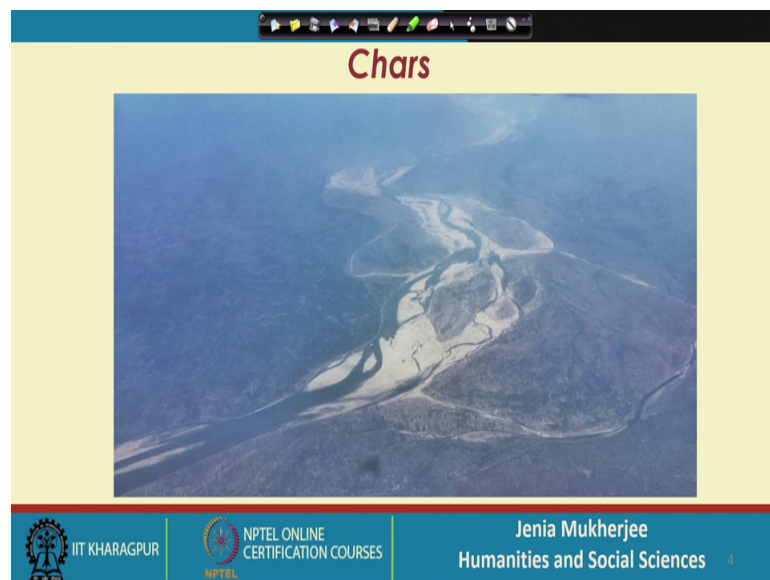
So, so we can see that how people had loss land, and how people had become I mean I mean people had been displaced and evicted from their from their original habitant and so, we can see that how between 1988 and 1994. Again data by Kalyan Rudra, it shows it provides data on erosion of land in square kilometers, number of families affected, and also population displaced including projected population.

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So, we can see that it is not only problematic for Bangladesh, but it is also problematic for people living in Malda and Murshidabad.

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Now, I will come to another very important and delicate issue, which is the river and islands; so, river and islands, which are known as chars in the local dialect. The formation of chars and the you know existence of chars is very common in tropical deltaic estuarine contexts and spaces or locations. So, char formation is a part and parcel integral part and parcel of you know of areas which are deltaic, which are estuarine,

which are mainly you know which mainly encountered the lower course of a particular river.

So, as we are discussing the lower gangetic basin, which is deltaic. So, char formation is nothing new in these areas. And so, this is validated by historical evidences, and historical reports, colonial gadgeteers, and other publications which talk about the formation and existence of this char, since time immemorial. So, for example, in Malda there is a big char with a very long history, which is known as the (Refer Time: 08:12).

But then, why am I focusing on chars, you know while I am discussing Farakka, because Farakka Barrage project and formation of char has a kind of a complex and direct relationship. Because, we have seen that due to the construction of the Farakka Barrage, there has been a massive change and transformation in the nature of char formation this is a very important point. So, there chars were there, since time immemorial.

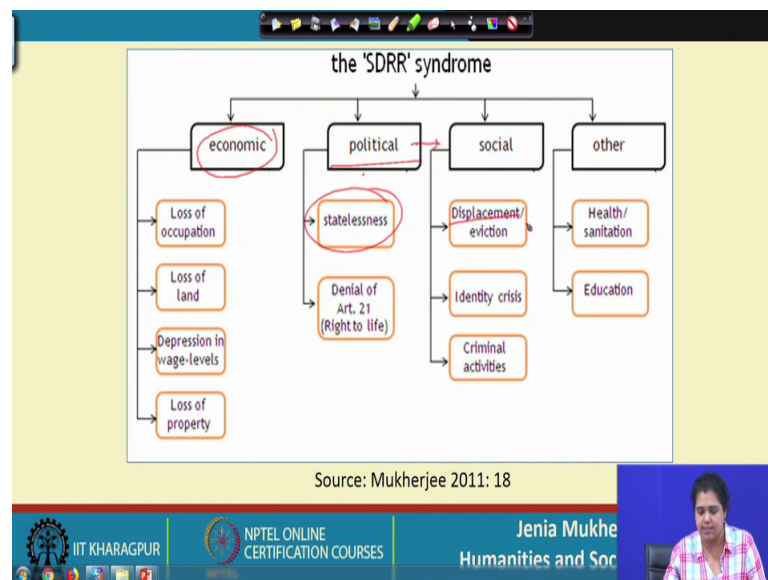
But, what had happened is that there has been a change in the nature and pattern of char formation, since the construction of the barrage. Because, we remember that you know it is a huge and a massive project with like 112 lock gates and other concrete structures. So, what has happened is that it has disrupted the natural flow of the river, it has disrupted and by doing so, it has disrupted the entire equilibrium of the area.

So, what has happened is that now when the river moves through the barrage, so there are disruptions like the massive pillars the lock gates that you remember. So, what has happened is that you know silt gets accumulated on the back side of this pillars, and so there has been a rise in the bed level of the river. And this has increased the siltation and that the erosion and sedimentation in both upstream and downstream of the barrage.

So, I would not go into the technical details of how you know the bed level has increased and how that has affected or that has increased the sedimentation and erosion of the river. Because you know any hydrologist or any technical person on doing research on water or maybe any physical geographer will be able to I mean shared lot of limelight in on these aspects in these areas. But, my concern would be I would be more interested to make the water society connection, to make the river society connection, and to show that I mean how people are to a great extent suffering in this regions.

But, at the same time, how they had also been able to come up with the coping strategies. So, to a great extent, they are highly resilient in the char. So, what I would be sharing is their life stories, and the live realities encounters by the so called charruas again charrua in the local dialect, which means people inhabiting the river and ends.

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So, this is the SDRR syndrome, which means settlement, displacement, resettlement, redisplacement due to the emergence submergence, reemergence, and resubmergence of char. So, as I just shared you know right now that there is a direct relationship between char formation and the construction of the Farakka Barrage, because Farakka had affected the nature and pattern of char formation.

So, previously you know we had this permanent chars, because I gave the example of for example, you know (Refer Time: 11:29) in Malda, so which had a long history of 300, 400, 500 years. And from official colonial reports, we find that even revenue was generated from these chars like (Refer Time: 11:42) because they these were tremendously fertile. But, now what happened is that you know due to the construction of the Farakka, the chars are forming the riverine islands or forming at the stretch of the river. But at the same time these charruas, they are their pattern has transformed in the sense that this chars have become from permanent to temporary chars ok.

So, what had happened is that this chars would be there would exist for maybe 5 to 10 years. And then after a particular point of time, they would get submerged. And then

maybe 5 kilometers ahead, there would be the formation of another char. So, what would happen is that due to the continuous emergence, submergence, reemergence, and resubmergence of char, there is this particular syndrome of settlement, displacement, resettlement, and redisplacement of the inhabitants living in both Malda and Murshidabad district.

So, people who would lose their land in the you know main land for example, in I can give a concrete example from a particular area called Panchanandapur in Malda. So, what happened is that during the late 1970s, there was massive erosion in Panchanandapur, and so people lost their homes, fertile lands so huge loss of lands hectares and acres of land. And finally, what happened is that they had to move to the newly immersed chars in the midst of river.

So, what happened is that they lost their citizenship, because they lost their all the important documents, ration cards, they lost their lands, homes, everything. And then what happened is that after 5 years, they again had to migrate from another char, because the old char where they initially settled when their homes got submerged inside the river, so that char also got submerged. And they had no other option, but to migrate and settle to the new char.

So, I have seen how people in the last you know in the last maybe 15 years, they had migrated between 4 to 16 times from one char to the other. And so, we can see that there are numerous problems due to this continuous migration. So, economic problems due to erosion, so loss of occupation so previously they were agriculturists, but then you know no more their agriculture is who actually pay a revenue to the state. So, loss of land of course, associated with these depression in wage levels, loss of property; so, the political problem of statelessness and denial of article 21, which is the right to life, because like there is no infrastructural intervention from the part of the state.

So, I mean for example, drinking water supply or sanitation or other educational facilities or the functioning of different schemes by the government, these actually do not exist in these areas, because they are not recognized as revenue villages, and these are not recognized and as part and parcel of the state. So, there is this huge problem of statelessness and the loss of citizenship rights, and from there of course, loss of identity and all that.

And again you know the connect or the overlapping relationship between the political and the social. So, we had discussed displacement and eviction in these areas relating to which is this identity crisis. And also whole lot of criminal activities in these areas, because they have porous borders. So, we will discuss that how few chars which are sometimes readily accessible from Bangladesh. But, on the other hand from the main land Malda or main land Murshidabad, it is very difficult to access these char within a few hours. So, it takes longer time to access these chars from the Indian counterpart or from the West Bengal counterpart, but it is easily accessible from Bangladesh maybe within 45 minutes.

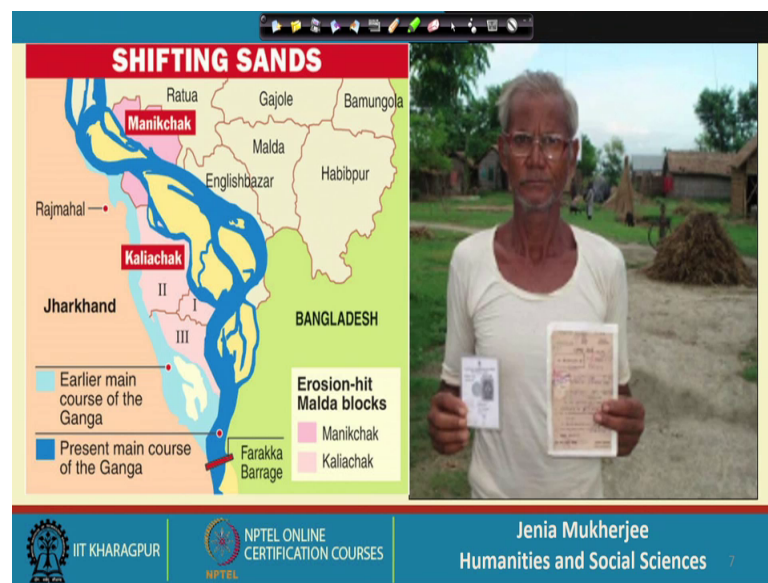
So, there are these issues you know transboundary issues, and due to which many other illegal activities like a human trafficking, animal trafficking are very prominent in these regions. So, health sanitation, education problems are of course there, because as I mentioned that no government amenities or facilities exist in these regions areas.

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So, this a picture from one of the chars in Malda.

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So, as I was discussing interstate and intrastate issue. So, this is an interstate issue an issue between the West Bengal state government and the Jharkhand state government. So, like one particular char called the Hamirpur char, it has a very interesting and a long history as I talked about also the erosion in Panchanandapur during the 1970s, and how people lost their homes, their land, and finally, migrated to a newly immature, which they named Hamirpur and it is a very interesting nomenclature. In the sense that previously you know the village in which they used to stay in main land Malda the name of the village was Hamirpur. So, though the space was different, but they you know they were carrying the nomenclature they were carrying the name of their particular village wherever they were migrating.

So, so there was really some confusion, when I was little bit doing a kind of an ethnographic study. So, every time they were saying Hamirpur. So, what happened they say that when the Hamirpur village got submerged, then we shifted to Hamirpur, and then after 5 years, again we shifted you know in another area, which was 10 kilometers from Hamirpur, and then we remained in Hamirpur for the next 10 years. So, it was very you know confusing. But, then I got to know that it was in their memory. So, it was not basically a kind of a geographical space, but it was name in the mental space.

So, and this is an interesting story of a particular man, who was the moral or the village headman of Hamirpur, when Hamirpur was there in mainland Malda. But after that you

know when the families shifted they started shifting from one char to another, this man was still the moral or the village headman of the of Hamirpur. And so, he shows a voter card, which had been issued to him by the Jharkhand government, and the ration card an old ration card, which was already there with him which had been issued by the government of West Bengal.

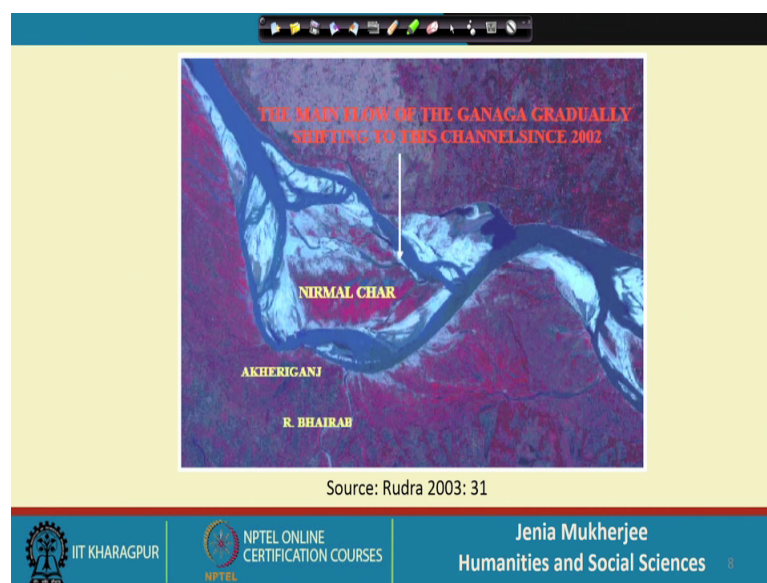
So, sometimes what we find is that you know there is statelessness or a lack and loss of citizenship right. But, on the other hand, we also find this contrast of dual citizenship. Because, what happened is that Malda I mean the West Bengal government was not interested to consider this chars as revenue villages, so but at the on the other hand, these areas were extremely fertile. So, Jharkhand thought that you know I mean it was quite lucrative for the Jharkhand government to give them a voter's card, so that Jharkhand can actually I mean acquire this fertile patches.

So, it was a political decision on part of the Jharkhand government. And so finally, these people to a great extent they were convinced and mobilized, and Jharkhand government issued like roughly 500, 600 voters card to these people. And so, there was a utter confusion, but after a particular point of time you know they protested, and said that severe Bengali speaking population. And we do not want to come under the Jharkhand government, we are fine with you know even loss of citizenship right or statelessness, but we do not want to get attached to Jharkhand government.

So, what happened is that it do lot of attention from the media, and also from the NGOs and grassroots organization like a GBPA, which is Ganga (Refer Time: 20:14) action (Refer Time: 20:16) committee; and also NGOs like CRY, Child Rights and You. And finally, to a great extent they were mobilized by these grassroots organization, and non-government organizations. And Hamirpur is a success story, because finally, they fought a battle. And finally, in 2010, 11 around 713 voters card were issued to the inhabitants of Hamirpur.

So, we did some detail research on Hamirpur and you know, because it is a one of the best examples or best case study or illustration to show that how you can also fight in this chars, and how you can also bring a change, and make the state government officials feel that you know if some protection can be provided to these inhabitants, then the state can only reap the long term benefits.

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So, this is as again so that was the Hamirpur basically it was a kind of a interstate boundary I mean illustration of an intrastate boundary problem. So, there are other dimensions also for example, as I mentioned interstate boundary problem, so boundary problem with Bangladesh. So, this is again a one particular char called and called a Nirmal char you know just which emerged near Akheriganj. So, Akheriganj it is a location within the within Murshidabad district. And again it has a an interesting story, how in the late 1970s and 80s how these how there was whole lot of erosion in this particular area.

So, Akheriganj which also virtually means, the last site or the last settled site or the last settlement, how it totally you know got disappeared from the map of Murshidabad and finally, how after few years, Nirmal char immersed in the middle of the river. And so, as I was mentioning that Nirmal char, it can be accessed by the Rajshahi district of Bangladesh within 45 minutes. But, on the other hand you know it can be accessed from Murshidabad only I mean it takes at least 3 to 4 hours to get to Nirmal char from West Bengal from Murshidabad.

So, there is this question and issue of a Bangladeshi infiltration and infiltration by Bangladeshi cultivators in this area, which is to a great extent illegal. But, and at the same time as the boundary is so porous, so it is very difficult for a government officials to you know to come up with standardized notions of so called legality and illegality.

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Life rolls on...

- Dancing with (the moods) of the river
- Coping up as a compulsory mechanism
- Prevalence of ecosystem services
- *Chorua* culture

The slide includes a photograph of a person riding a bicycle through a flooded field. The bottom of the slide features logos for IIT KHARAGPUR and NPTEL ONLINE CERTIFICATION COURSES, along with the presenter's name, Jenia Mukhe, and her affiliation, Humanities and Soc.

So, finally, what we could observe or what we could understand was that instead of so many problems, if you remember you know the diagram of SDRR and the other problems coming from it. So, we I mean the block development officers or other people you know people even from the academic circle, they often ask us that I mean why are we so interested about char, and why do we keep emphasizing on lives and livelihoods, and vulnerabilities, and resilience in this chars. Because finally, you know these are still these are these are fluid spaces, and one day they will get a submerge.

And even it is not very wise to ask the government to come up with infrastructural intervention ok. Because if a for example, government constructs the school or if the government constructs I mean a hospital for that matter, so there is no guarantee that would remain, because maybe after 2 3 years, the entire char would get submerged. So, this so I mean it is not economically viable. But, then I mean we would argue to a great extent that this is basically I mean non infrastructural intervention is a kind of a I mean it is a strategy to legitimize illegality or to legitimize the very fact that government is not really interested with the lives and livelihoods of these inhabitants, who are called charruas.

Because, we have to keep this in mind that these people, they once had homes, they once had property, they once had everything in the mainland; and it has been proved scientifically that during the post implementation phase due to the construction of the

Farakka Barrage to a great extent, these people they had suffered floods and erosions and hazard. So, I mean the whole question is the state really I mean does not the state really need to think about the lives and livelihoods of these people, who were ones part and parcel of the state. Who once had voters right, who were once voters of the state.

So, they had identity. But now, due to erosion due to floods due to the complex problems in during the post implementation phase of the Farakka Barrage, they had become charruas, they have become detached from the mainland livelihood and from the mainland culture. But finally, what we would like to argue and emphasize is that lifestyle roles on in this chars. Because what are the incent the incentives that attract, and draw the charruas to these otherwise dynamic and volatile spaces is that these areas they are thickly you know I mean they are very fruitful in terms of ecosystem resource, and in terms of ecosystem services.

So, all these services like the provisioning services, the regulating services, the cultural services, these are very much there this exist in this fertile areas. And so, the people they can easily make their livelihoods from this. So, they do not have to invest much. So, in order to carry on agricultural occupation, they really do not need to invest. And we have seen that how jute or for that matter rice, these are flourishing business in the charruas of both Malda and Murshidabad.

So, if the government can really step in if the government can really you know move forward and at least provide some so called accompanying measures, so we are using this particular term called accompanying measures. So, if the government can really come up with some accompanying measures to facilitate the coping strategies that these people had already device, then I think that can mean a lot and that can bring a lot of change in the lives and livelihoods of these people.

So, with this what I really wanted to highlight in this presentation was that it is not only important for us to understand a particular Barrage project or a dam or a public infrastructure from only the technical point of view. It is also important for us to you know take into account the complex, social, political, cultural more importantly also you know environmental nitty-gritties or environmental aspects that are thickly loaded with the implementation of big infrastructural projects on rivers and water bodies.

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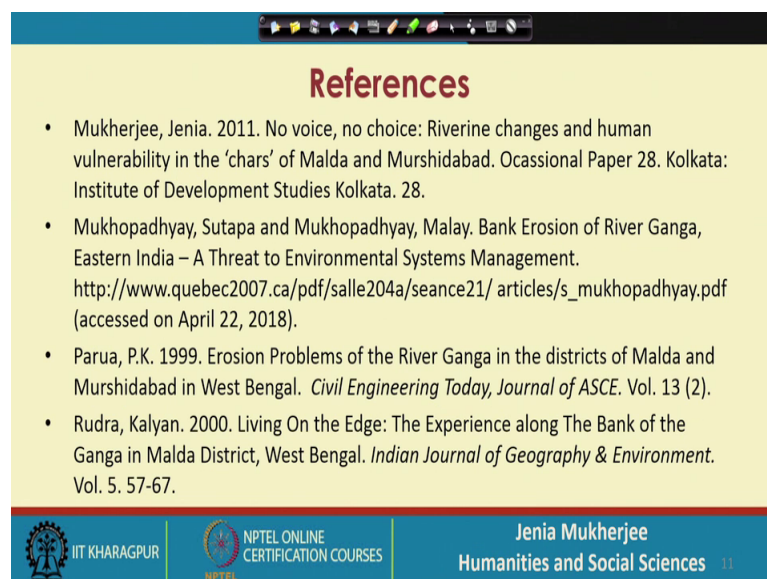


Slide 10 displays a list of references under the heading "References". The references are:

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Slide 11 displays a list of references under the heading "References". The references are:

- Mukherjee, Jenia. 2011. No voice, no choice: Riverine changes and human vulnerability in the 'chars' of Malda and Murshidabad. Occasional Paper 28. Kolkata: Institute of Development Studies Kolkata. 28.
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So, these are some of the important references.

Thank you.