

## Podcast Series (Transcription)

### “Climate Disaster, Displacement and the State”

Calcutta Research Group  
Episode 5

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*“Climate Disaster, Displacement and the State”* is a podcast series by the Calcutta Research Group in collaboration with Rosa Luxemburg Stiftung which is a part of CRG’s ongoing programme on migration and forced migration studies supported by Rosa Luxemburg Stiftung, Institute for Human Science, Vienna and several other universities and institutions in India.

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**US:** Welcome to Calcutta Research Group’s podcast series “Climate Disaster Displacement and the State” which seeks to investigate the concerns of climate change and climate disaster-induced displacement in Indian Sundarbans. I am Utsa Sarmin an independent researcher associated with Calcutta Research Group and the host of this series.

I am joined today by Dr Kalyan Rudra. Dr Rudra is presently the Chairman of West Bengal Pollution Control Board and also a member of the Central Pollution Control Board. He is a Geographer by academic training having specialization in river and water management. He has worked and written about Indian Sundarbans extensively. In this concluding episode, we are going to talk about the multi-pronged challenges faced by various stakeholders in Sundarbans and the possibility of long term solutions. Thank you Dr Rudra for joining us today.

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**US:** Thank you Dr Rudra for joining us today.

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**US:** What according to you can be a long term plan vis á vis the climate crisis in Sundarban? Are we going to see more relocation/retreat as we saw from Ghoramara to Sagar recently where 30 families were relocated by the West Bengal government? Is there a policy or one in the offing addressing this?

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**KR:** The first issue that we have to understand is that the people living in Sundarban rightly are actually living in a premature land. Since late eighteenth century people were brought from Medinipur and Chhotonagpur area by the colonial rulers. 54 islands were deforested from the western part and they started to exploit the resources of the Sundarban. While height of the land above sea level is only two to four meters, the tidal storm surge maybe six seven meters high. Even a normal tide can submerge the entire Sundarban under one meter depth of water. So they are

protected by the embankment. The embankment, I believe, is a piecemeal measure to protect the people. But in such an area, which is not fit for human habitation, more than 4.5 million people are living.

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So, if you talk about the migration and rehabilitation it is really really difficult proposition. Not a single part of Sundarban is really fit for human habitation. It is prone to cyclone, it is prone to tidal to storm surge and even sometimes historically we have seen land subsidence is also a common feature here on. So... but we don't have any option that we can rehabilitate this huge number of people anywhere. We'll have to do something which can give some relief to the people. This does not necessarily mean they will be totally protected. They will have to live with many odds, many natural disasters and will have to live with these kinds of distresses which we have. But we need to reduce the distress of the afflicted community. First issue is, that let us take it for granted that we can't relocate them, but what we can do, we can identify some vulnerable communities, I mean the people living in more vulnerable areas, like you have mentioned about Ghoramara. And as I understand that this Ghoramara has substantially been reduced. Lohachara, Suparibhanga, Bedford have disappeared and even the Sagar island is being reduced in size. So we really really have to identify the people who are really more and more vulnerable like that of people in Ghoramara. As I am informed there are about 1125 families right at this moment living there and they're sure they will have to leave this place. Recently the government had identified another island where you have rightly mentioned that some thirty odd families are being relocated. But we need to make it clear that, that island is not safe for human habitation because of the reason I have already told. But since there are two kinds of islands, most of the islands are being eroded in size. But there are some areas where accretion is also taking place like that of the Noyachor. We can identify such areas which are less vulnerable and we can relocate some people thereon who are really vulnerable. But don't be so much optimistic that we can protect the entire Sundarban, we can make the more than 4.5 million people living there totally safe. We have to live with this kind of disaster.

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**US:** How effective have embankments been during natural disasters? What were the learnings from Aila and were they implemented during Amphan or Yaas?

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**KR:** This is a very difficult question and I understand most of the people have total misconception about this embankment. Even the official record says that there is a 3500 kilometers long embankment protecting Sundarban. But this database I believe is not correct, as I have measured from the satellite image, effective embankment is not more 1800 to 2000 kilometers. But the official record says it is 3500 kilometers. The reason is very simple. Many islands have been clubbed together because of the decay of the intervening channels. So those embankments earlier protecting the island have become redundant. So effective embankment have been reduced to about 1800 kilometers as I told you. The question is, yes I strongly believe this embankment is the lifeline of Sundarban, but the way they are built was flawed. The... Sundarban... you will find... undivided Sundarban, if you take into account, you'll find that there are 13 major creeks and many interlacing channels connecting each other... locally called Duani or Bharani. These estuaries are North South aligned estuaries. We have coast line of West Bengal, from Digha to onwards of about more than two hundred kilometers. There are two kinds of embankments, one is East West aligned embankments along the sea front, the second one is aligned along the both banks of the river to restrict the spill off of the water during high tide or storm surge. But what mistakes the colonial

rulers did is that they had clear lack of understanding about the hydrology of Sundarban. These are not river in true sense of term these are all tidal creeks. They have two-way flow, tide entering and low tide, when it's going back. They do not have any upstream flow of fresh water. Two fresh water outlets one is Hooghly estuary other is the Meghna estuary in Bangladesh. And all distributaries flowing in between have been virtually decayed.

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So what mistakes the colonial rulers did? Each of these tidal channels have had an inter-tidal space. I mean, during the high tide they used to spill off and during low tide they used to sink. So what they did, they aligned the embankment along the low tide line, snatching from the river, the inter-tidal space. But the hydrology of Sundarban is something else. The river spills off, deposits its element load and then comes back during the low tide. When the colonial rulers embanked the river along the low tide line, this sediment dispersal mechanism was interrupted. Unfortunately the people chose their habitation area along the river, along the embankment. So, the best possible option of protecting Sundarban is giving back the river the inter-tidal spaces. This means realigning of the embankment along the high tide line. Am I clear?

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US: Yes.

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**KS:** But it is extremely difficult proposition because this is the most densely populated part. I mean the area line between the actual low tide line and the high tide line—this was taken away from the river, and that way we compelled the river to deposit the sediment load within the narrow bit, trapped between the embankment. Result is the riverbed gradually went high and it over-topped, or it breached the embankment and it is recurrently happening. The people having the misconception that concrete embankment maybe save. We have to understand that this is a newly built delta. And this delta along the littoral tract of Sundarban is subsiding at the rate of nearly three mm per year. Okay? So, concrete embankment. There is a myth that it is foolproof. No. If you look at the geomorphology or history of the hydrology, the recurrent problem is not breaching of the embankment during the cyclonic storm surge but over topping the bank. So be it concrete, or earthen or something like that, you can't resist the overtopping. Second is that if you put more and more load along the riverbank, it will go on subsiding. So, what we said to the government of West Bengal... after the Yaas, they constituted a 24 member expert committee. What we recommended,? We recommended... we explored a kind of vegetative solution. Which part of the embankment is most vulnerable? It is the East facing concave bank, North-South aligned estuaries. East facing concave banks meaning on the right bank side, the cyclones incidentally moves in a big circular path and it attacks the East facing concave banks and this is the most vulnerable part. So, what we suggested, let it be there, it will automatically breach. We have suggested a circuit embankment and the space in between, should be afforested in such a way that they can create, a shield against the cyclonic storm surge. So, we can't render back the river, the intertidal space, but, the way we are planning to do, that will allow the river to spill off in future. We are not recommending strengthening of the vulnerable banks or embankments along the concave side, what we are proposing is that let us construct a circuit embankment beyond the present vulnerable embankment and the space in between should be used for afforestation. Along the seaside there is clear CRZ regulation... coastal zone regulation. So, what we have proposed, yes, we understand the present embankment is along the high tide line. Okay? Let us construct another embankment beyond that, about 200 meters north of that, as second line of defense. And the area trapped in between we will

clear a vegetative wall. This we have named as, ‘vegetative solution of the embankment vulnerability’. And we have recently submitted that. So, future planning will be something like that.

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**US:** But is there any immediate thoughts on how to immediately...

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**KR:** No, immediately means that, say if we mean the Ghoramara, knowing the fact that it will disappear, we are trying our level best, the committee is trying its best to protect the earthen embankment. Okay? This government has no other alternative to do. Because presently people living, along the bank of the river, they cannot be just shifted elsewhere. Because you don’t have any space. So, we will have to protect them. Two kinds of measures we are adopting. One is, short term like, repairing of the embankment etc. Long term is something else, where we have a plan to create a second line of defense.

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**US:** So you did answer my question of mud vs. concrete embankment. I just want to ask is the government policy of planting 5 crore mangrove trees, is it helpful in maintaining embankments or slowing down the erosion? What are the debates, controversies around the scheme?

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**KR:** Actually, we largely recommended indigenous plant. Okay? There is a group they have an understanding that some kind of grasses what they popularly called “Vetiver” grasses can protect them. Vetiver grasses is an invasive species that I don’t believe in a saline environment of Sundarban at coastal area, it will survive. So what we recommended more and more is the indigenous plant... okay? It will be different along the Digha coast and it will be different along the Sundarban coast. And the issue is that even the islands having dense forest are being eroded climate change issue is so powerful. If you look at my report you’ll find how the forested islands have been reduced substantially. But it can reduce the thrust of the storm surge. So we have recommended this. So, it can... the creation of a proper bio shield takes about a decade. Okay? So what we will do in between? Some piecemeal work we’ll have to do, to save the people living there. Okay... So we’ll have to wait for a decade to create proper bio-shield... if it is proper. So number of plants, it is being demanded by the forest department, it will touch nearly 15 crore, but there are subs too, this includes a sub. So, myth arising out of that, everybody may think that these are all tall trees, not that, there will be subs, there will be herbs and many other kind of plants. So, actually ... you’ll have to understand some grasses, like dhani grass in Sundarban, they are very active agents of soil binding. So, if you create a grass land along the newly emerged tract and really count the number, that may reach to a higher amount. So myths are coming out of this. So, this is doable I think, it is doable and many non-government agencies are also being involved. At least eight agencies I know, those who are being involved. Forest department is taking part, irrigation department is also independently doing some embankments.

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**US:** Because you mentioned irrigation department, just one question, when we visited the field, we found that people have this complain against the irrigation department, that they are not building the embankments during winter or summer rather they’re coming in monsoon, they’re just doing an emergency building and then because of monsoon rain and the inundation, the embankments are

again getting destroyed. So is there a reason? Is there a procedural reason why the irrigation department only goes there to build embankments in the Monsoon?

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**KR:** If you go to Mousuni, you talked about Mousuni. Mousuni was largely affected during the Yaas. What alternative irrigation had? They had no other alternatives to take immediate measures. And you know it is... at a time... 26<sup>th</sup> of May (*Yaas happened around 26th of May*). And around first or second week of June Monsoon arrived here. They had no other alternative but to do that then. Problem is that, if they wait till the end of Monsoon means that they will not be able to start the work, before first of November. Because this delayed Monsoon continues even upto October. So, November, December, January, February, March, April... The window will be very narrow to work. So, they have to work sometimes in emergency basis. Utsa, it is very easy... I had been an activist, so it is easy to criticize but implementation and working in the field is a very difficult task. The people often say, that the irrigation department does not consult the local people. I strongly respect the traditional wisdom, the people living along the bank of the river, yes we understand. But there is something beyond that, which is scientific knowledge, kind of engineering, ecological engineering knowledge. What I strongly believe that we need to harmonize this two—the traditional wisdom and that of the modern engineering science. It reminds me, K R Narayan, while delivering an address to the nation said “When I propose about the correct scientific approach, I don’t discard the, modern science. What I want is to harmonize the traditional knowledge and modern science, that will lead to the correct path.”

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**US:** Who is supposed to maintain these embankments? Is there no statutory requirement or is there a statutory requirement to maintain embankments? And then if there is, then whose burden it is? The State or the Center?

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**KR:** Yes, if you talk about in terms of disaster, responsibility of the central government cannot be denied and, you know, the financial limitations of the State government too. Say, simple one kilometer concrete embankment, the cost for it will involve 10 -12 crores... like that. So this is huge. If you multiply this by 1800 you can see what an astronomical cost the state will have to bear which is virtually impossible. I believe this is the joint responsibility of the State and Centre, this is not an issue of conflict while more than 4.5 million people are endangered.

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**US:** What is the relationship between development and migration in Sundarban?

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**KR:** If you talk about development, what kind of development we have seen in the last 10 or 15 years? Some roads were built, power grids extended, health centers we have seen... their improvement... establishment of some schools colleges etc. etc. But since this is an ecologically sensitive area and comparatively inaccessible, we don’t find industry, but we find bee keeping like, some small scale industries, you’ll find export of the beetle, you’ll find honey, etc etc. So, this... recently, in Bangladesh, they are also planning to build some nuclear power plant close to Sundarban. But in our (*India*) Sundarban side, there is no such... So, the migration of people from Sundarban, is largely, I believe, climate induced. More precisely, it is cyclone, it is invasion of the salinity, these are the major impacts of the climate change and illusion of the encroachment of the

sea... these are the major impacts. In true sense they are not development-induced migrants, they are more climate-induced migrants.

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**US:** What is eco centric development? Does prioritizing ecological development come at the cost of human development indices?

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**KR:** Actually this concept emerging in the West is not applicable to the area which is geographically different from the other parts of the continent. Even in West Bengal you will not find an area which is comparable to that of the Sundarban. So we'll have to find something, explore something, which is indigenous to the Sundarban. Say first issue, a large part of the Sundarban is single crop area. Why? It is not the issue of fertility, it is an issue of water, in spite of the fact that you will find water everywhere.. and in spite of the fact that it has nearly 1800 mm of annual rainfall. What I have suggested that let us first ensure water for irrigation and domestic uses. 1800 mm of rainfall is a huge rainfall. We need to store this water as far as possible. Ground water level in Sundarban is far below 1200 ft. So we can't exploit that for irrigation and other domestic purposes... only drinking water for a selective area is possible. So we can rejuvenate or excavate the moribund channels which have gone decayed to store the fresh water. We can... and that soil borrowed from that area can be used for strengthening the embankment and even building the land for human habitations. So that would serve the dual purpose of supplying soil as well as conserving the water. If you can ensure water, I believe the Sundarban can produce two, three crops easily. So this will change the face of the rural economy. Second important issue is that, we need to find something which is secured house building. You know the people live in a subhuman condition thereon. So we will have to find out something. Say if we put just concrete pillars around the four corners of the room that will be protected, if you can elevate the land to the desired level where water will not submerge the people. So, these are the simple issues we can address. Lastly I strongly believe that there should be a clear understanding of the hydro-geomorphology of Sundarban and also the climate changes. The school going children need to be motivated. So, there should be a special curriculum within the curriculum for the people of Sundarban, for the students of Sundarban so that they can understand what is going to happen. They are not producing any carbon, they are not contributing to carbon emission but they are the victim of this carbon emission. Sundarban absorbs carbon. So they have to understand something, I don't believe that some western style of living needs to be imported here. They are happy with the present living style. But they need to ensure safe drinking water, safe irrigation water, health facility, education and protection from cyclones and natural disasters. This will make them happy.

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**US:** Does the disaster management law adequately tackle the problems arising for climate change such as slow onset erosion or does it only handle natural disasters?

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**KR:** Erosion is not treated as disaster in this country unfortunately. So we need to think twice. Second issue is that the disaster management in this country is largely reactive. The department starts to react as and when it when strikes. But it should be proactive. Disaster management plan includes safe drinking water, you'll have to think if there is a repetition of the Yaas... the flood shelter, starting from flood shelter, safe drinking water, health facility all these issues should be taken proactively not reactively. Nowadays fortunately there's, because of the revolution in the

remote sensing technology, cyclones can be tracked far ahead of it striking the coast. I remember, Aila, in 2009, it devastated without any prior intimation to the people. But nowadays it has changed because of the advancement of the technology and because of the, I think the IMD department (*India Meteorological Department*). Even in the public domain, in your mobile phone you can see the, movement of the cyclones. So, we have to be proactive. And this erosion etc. must be included in the disaster management plan.

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**US:** The disaster management act is very centralized, does that create problems? Should the act be more federal in nature?

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**KR:** Yes, this is the problem of the country. We are not federal in true sense of term. It is a centralized system operating. I also believe that there should be more power to the states so that they can act accordingly. Because India offers a huge type of diversity, starting from Rajasthan down to Bengal, not a single flood management policy or a single disaster management policy can be adequate to handle the entire thing. Each state must have its own policy. And also it must be independent in working that... while implementing this plan.

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**US:** What is the land ownership situation of the inhabitants and rehabilitated people of Sundarban?

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**KR:** They are given right of land, as I am informed from the South Pargana district authority. Those who were being migrated from Ghoramara and to a new island they have been given the proper right of the land.

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**US:** But more in general, because there are... we have met some families who have shifted from Ghoramara in 1995. During the left front government, there was like a, huge number of climate migrants shifting from Ghoramara to Sagar, but they were not given lease until two years ago.

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**KR:** Yes I understand there is a problem of that. Say, people living on the coastal tract, okay? The sea is encroaching. We have lost more than 250 square kilometer land since 1917. But these people are not only being displaced but also losing the right to land. People have a tendency in Bengal to live around the bank of the river because the river renders many kind of resources not only water but also, see if you look at the fishing it is almost a zero investment industry. So, this is a very complex situation. The people who are living there for more than centuries, they have their right, they have their land entitlement but the people those who are continuously migrating they have no marketing title of the land where they are living. This is a serious problem, yes.

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**US:** Yeah, you've already told us what do you think are the immediate policy changes, but you have told us regarding the embankments, but is there any other immediate policy changes, do you think needed in the area?

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**KR:** We have totally... A new concept is being introduced. We have suggested a kind of engineering, yes that is what I prefer to term as ecological engineering. But I clearly also admit that, it will take a decade... to really create a protective barrier, which can protect the people, at least reduce the thrust of the cyclone. But the time in between, we'll have to depend on some kind of civil engineering methods. There is no alternative for that.

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**US:** For example, people of Mousuni and Ghoramara their agricultural lands are inundated, they cannot produce crops, and also the whole island is shrinking, and also the donations from these relief measures are also shrinking right now. So, what can be done for them, regarding livelihood, loss of property etc?

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**KR:** I told you earlier that my top priority is water harvesting. Okay? And it has many other linkage. The second one is altering the house building technology. Third one, improving the accessibility. Accessibility improvement is important to me. Fourth one, is really we will have to think that since large part of agriculture land were submerged and that water left behind a thick layer of salinity, that makes the land non productive. Fortunately this year we had a very good rainfall that will flush part of the salinity, which was accumulated in this. These are the issues we'll have to think that how the people's livelihood support can be given. Important issue is there are many departments like Sundarban Development, irrigation, Disaster Management, even partly the Panchayat and rural development etc. These departments need to be combined together while executing the plan. Each of them have their own domain. But I believe this needs to be combined while formulating or implementing a holistic management plan for Sundarban.

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**US:** So who are these displaced people of Sundaban? What can we call them? Are they forced migrants or voluntary migrants, climate migrants, climate refugees or internally displaced people? Where can we place them? I know we cannot place 4.5 million people under one category, but still people who are leaving, for example, the Ghoramara people the thirty families, even if they don't want to leave, they have to leave. Right? So Are they forced migrants or climate refugees, the yinternally displaced people?

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**KR:** It is really difficult to identify or put them in a particular group. Yes, the people living along the coast lines, that includes Ghoramara, maybe termed as climate refugees. But the people, living in a comparatively safer area but might be displaced because of the changing course of the river, I mean, riverbank erosion, collapse of the agriculture land they are really internally displaced. They are migrating from here to there and here to there. So this, I have also seen in Malda, Murshidabad area the people who were living on the riverbank, displaced by the riverbank erosion. They're displacing that way. You can classify them into two groups, one is the so-called climate refugees and the other groups maybe classified as internally displaced people.

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**US:** Okay. And these people who are migrating voluntarily to South India, are they forced migrants or voluntary migrants?

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**KR:** No, they are partly forced migrants because the land they used to cultivate became infertile or saline. So they were compelled to migrate elsewhere and they left behind their families. But these people they really are forced migrants.

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**US:** Thank you so much.

**US:** Rehabilitating people from Sundarbans is not a solution. The expert committee report that Dr Rudra spoke about, namely, “Protection of Coastal Areas Through Vegetative Solutions” details the crisis and the possibility of a long term solution. Apart from the suggested long-term solution, it is also important to keep adopting immediate measures to address the crisis. Like, rehabilitating a few people or building elevated houses, new forms of crops suitable for the land etc. These along with a more federal, proactive National Disaster Management Act may provide some relief to the people of Sundarbans. But the question is will these policies be adopted? If not, then what will happen to the 4.5 million people living in the Sundarbans? We wrap our series with these questions in mind. And if you want to learn more about CRG’s work on climate change, ecology, disaster and displacement, please visit [www.mcrg.ac.in](http://www.mcrg.ac.in). Thank you