Urbanization and Environment
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Module - 04
Urban environmental social sciences frameworks
Lecture - 33
Historical Urban Political Ecology (HUPE): Blue Infrastructures of Kolkata

So, this lecture is on HUPE which is a Historical Urban Political Ecology.

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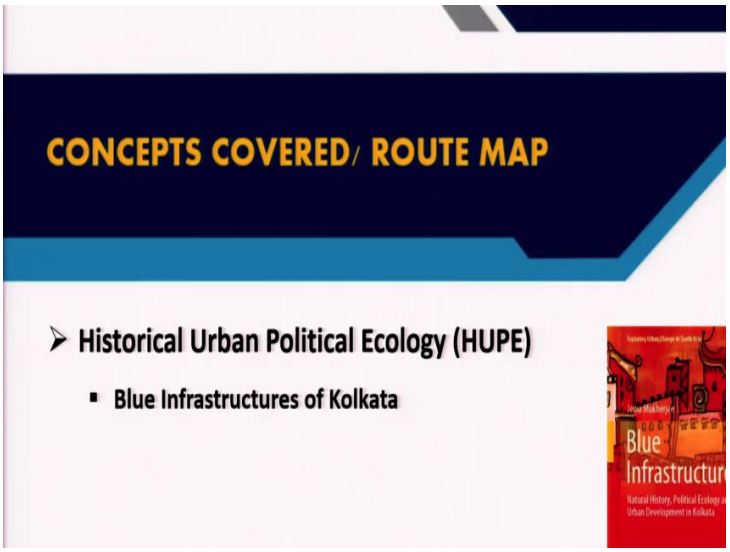

And this is mainly from my own work my book, which came out last year and the title of this book is Blue Infrastructures of Kolkata. So, I think I will be able to explain this particular framework of HUPE, what is HUPE? why is HUPE important and like how do we kind of perceive HUPE, how do we apply HUPE in urban environmental research? So, I think my very own Kolkata case study can be significant for me to explain why, how HUPE and what is HUPE all about.

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So, what is Historical Urban Political Ecology? So, I kind of formulated this field by converging, combining, cross fertilizing, the two major urban environmental social sciences research domains which we had discussed quite a lot. So, I think the most I mean, the major chunk of this particular course urbanization and environment to a great extent is dedicated you know to this urban environmental social sciences framework.

So, and these are the two frameworks, you know which I find to be very very significant to capture you know the major issues as far as urban sustainability is concerned. So, and I also think that it is significant to kind of also converge these two fields together because like for example if we you know if we do an analysis on a particular city and try to address or try to understand you know its urban environmental challenges and we do it only by deploying urban political ecology, the kind of findings that you will, get we will get.

On the other hand we only you know kind of pursue environmental history research on a particular urban space you know. Then the kind of findings that will be generated from this and then we combine these two fields and then, the kind of findings that will be generated from this combination.

So, do you think, that the findings will be remarkably different from the findings that would otherwise have been generated only through the application of either of these two fields. So, I think I am being able to make it clear. So, what I am trying to say is that I

had certain questions, I had number of research questions in my mind. When I was working on Kolkata on the canals and wetlands or the many waters which, I call the many waters of Kolkata and I mean it is almost I mean, I did this research for almost a decade.

So, I started doing my PhD, but before that also I was quite interested. I was extremely interested actually in these urban waterscapes of Kolkata and it, I all always had whole lot of questions in my mind you know about this canals and these wetlands that interspersed the city and then I started doing.

So, since my graduation days actually and then I started doing my PhD on this particular theme itself and I finished my PhD long back in 2010, but you know I kept on I mean I never took a break you know from this research because it is so exciting and enthralling actually.

And so I mean as I have done this research for a long period of time. So, and I had number of questions in my mind. So, to kind of answer these questions or to address this question, it was not possible for me to just apply any one particular field or just you know environmental history to understand this.

So, I definitely needed an interdisciplinary framework and now I also understand the significance of transdisciplinary and trans sectoral research you know so as far as environmental challenges of any particular city for that matter or its larger environment is actually concerned. So, coming back to what actually HUPE is historical urban political ecology.

So, here as I already mentioned that history or environmental history and political ecology, they converge they talk to each other. So, while history you know provides a long term temporal scale you know to political ecology, on the other hand the political ecological lens of analysis when the historian applies it to study you know an urban scheme, an urban environmental, an urban environmental you know , scheme.

Then he or she can capture I will not say conflicts or collaborations because I think mediation is a better term. So, he or she is able to capture the mediations among different actors who play an important role in shaping the urban environment. So, you definitely need to kind of deploy archival research methodology. So, far as the historical part is

concerned and on the other hand, ethnography remains the most significant methodology in order to unpack you know this mediations, along or among actors in the shaping of urban nature or urban environment.

So, history provides a temporal scales and political ecology provides a lens to capture mediations among actors in the making of urban environment in a particular cityscape which is again not restricted to the city, but which also definitely is beyond its immediate urban counterpart.

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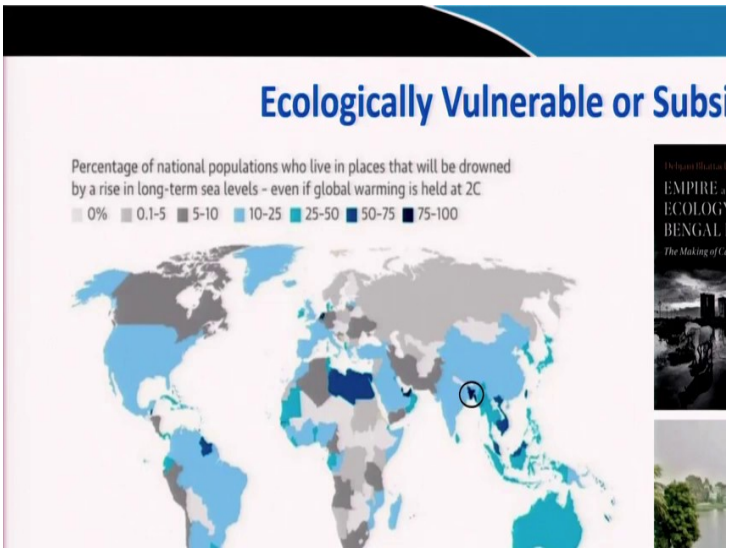

So, the question with which I actually you know, I address I started my book is that is Kolkata ecologically vulnerable or ecologically subsidized. So, is Kolkata environmentally vulnerable or is it ecologically subsidized and how did I enter into this debate now you know if you go through the different reports.

So, far as climate change and cities are concerned you will see that you know from OECD to World Bank to United Nations reports to National Geographic reports, you will see that Kolkata is kind of, Kolkata seems to be one of the most vulnerable cities.

So, far as environmental challenges and climate crisis global warming, etcetera, are concerned and you know if you go through this particular book which is Empire and Ecology, this book by Debjani Bhattacharya, Empire and Ecology in the Bengal delta,

the making of again a seminal book and I already discussed this book when we discussed urban environmental history within the Indian context.

And Debjani the you know, she says that I mean she also she shows the colonial connection and she says that the how the British they were motivated to make revenue earnings. So, they wanted to make profits by reclaiming you know Kolkata from the marshes.

So, how today's real estate speculation can actually be kind of contextualized within the larger historical context of the rise of the speculative industry during the colonial period and she says, you know that today Kolkata is facing the climate change challenges is due to the fact that the British should not actually have considered you know the reclamation of the city from the swamps and from the marshes.

Because from the very beginning you know this actually had remained a very risky venture and endeavor. On the other hand, I had the opportunity and I had the fortune you know to work in close association with this sanitation engineer who is Dhrubajyoti Ghosh and Dhrubajyoti Ghosh, he is also known as the father of the East Kolkata wetlands.

So, we will come to that in the subsequent slides. Dhrubajyoti Ghosh always he used to tell me and also he will he had published widely where he introduced this concept of ecologically subsidized Kolkata. So, he said that you know Kolkata is I mean the reason why Kolkata is very cheap, the reason why Kolkata is the most affordable city.

So, far as you know, the so far is not only the Indian subcontinent, but several other parts of the world is concerned is due to the fact that she is encircled and interspersed you know with rivers, canals, creeks inlands and she has the wetlands on her eastern periphery.

So, I mean she gets drinking water very easily, she treats her waste or effluent you know free of cost. So, Kolkata is actually ecologically subsidized. So, this so this you know the location of Kolkata is actually quite lucrative. And you know these two arguments seem to be to an extent actually to a great extent clashing with each other. So, whether Kolkata is environmentally vulnerable or is it ecologically subsidized, these seem to be the major question which I actually wanted to address through my work.

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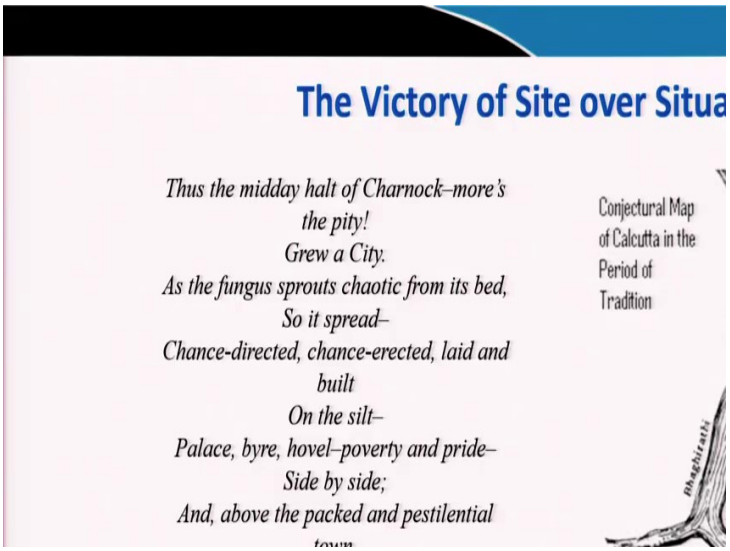

So, this particular poem by Rudyard Kipling you know, this definitely it has its aesthetic value, but unfortunately you know this is historically incorrect. So, Kipling writes that , thus the midday halt of Charnock-more's, the pity grew a city as the fungus sprouts chaotic from its bed. So, it spread chance-directed chance-erected laid and built on the silt palace, byre, hovel-poverty and pride. Side by side and above the packed and pestilential town, death looked down.

So, if you know and also this you find in the reports in colonial gazetteers in several proceedings in the letters in correspondence in exchanges, the Britisher's initially were actually complaining you know against this particular site and they were describing the site as malarial, as wild, unhygienic, etcetera.

So, this is the first conjectural map of Kolkata. So, you can see the sites that the Bhagirathi, Hooghly river on the left hand side and the salt water marshes. So, saline water on the right hand side because definitely it is just north of the sundarbans delta and the river Bidyadhari, it used to spill its you know saline water and this eastern part of the this particular area remain undulating low line. It is a low line area and that is why the saline water could not go out.

So, it remains stagnant and so, from the British reports we must see that you know how people, how the Britisher, how the colonizer were actually dying. So, the mortality rates

were quite high because they were getting enteric diseases, they were getting malaria different types of fevers etcetera.

So, then the question that I actually asked is that if the British were so much complaining you know against this particular site, against this location, then why did they finally select Kolkata as I mean not only the port city, but also as the I mean site of imperial capital.

So, then what logic, what rationale you know made way to this particular selection and this I could explain in my work, in one of the earlier works and this is also there in this recent book. So, these I have explained in terms of what I call the victory of site over situation and by accessing archival documents and historical data only I have shown that how even before the coming of Job Charnock, Joseph Townshend. So, Job Charnock came to Kolkata in 1690.

But before that as early as you know 1660s, Joseph Townshend another English man, he was employed as the pilot of the Ganges service by the London court of committees and he was asked to his task was to you know kind of note down all the details about the Bhagirathi, Hooghly river, the sand variation levels, the depth, channel length , etcetera. And he used to share these notes you know with the London authorities and after whole lot of deliberation, whole lot of the brainstorming only you know they could understand that the ecological advantages of this place, it outweighed its disadvantages right.

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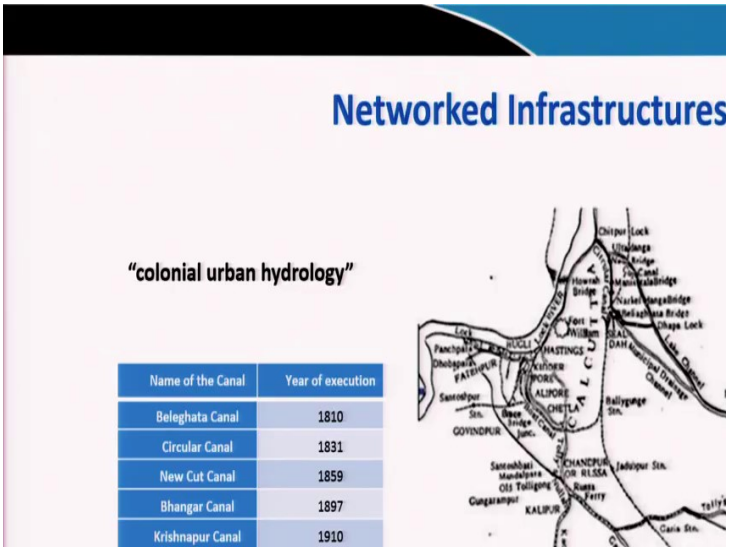

So, immediately when this logic was clear, then they wanted to tame you know this natural ecology of this particular region into networked infrastructures because the city had to grow as the port city connecting, I mean making connections with this wider hinterland and this was possible through the excavation of canals.

So, these are the major canals which were excavated during the 19th and the 20th centuries and if you I mean consult like the designs and maps, plenty of maps and designs you know the technical designs are available at the Annex building of the National Library, the national archives of India. It is also available in the India office record section in the British library.

And this I have tried to explain in terms of what I call urban colonial urban hydrology. So, we had I think already discussed the colonial hydrology I think at least in my earlier course, but so colonial urban hydrology is all about how and why the British actually wanted to tame this or manipulate this natural ecology and make profits you know through this manipulation. So, all these canals were actually excavated where the British took full advantage of the, of the origin and ecological layout of this region of this delta region.

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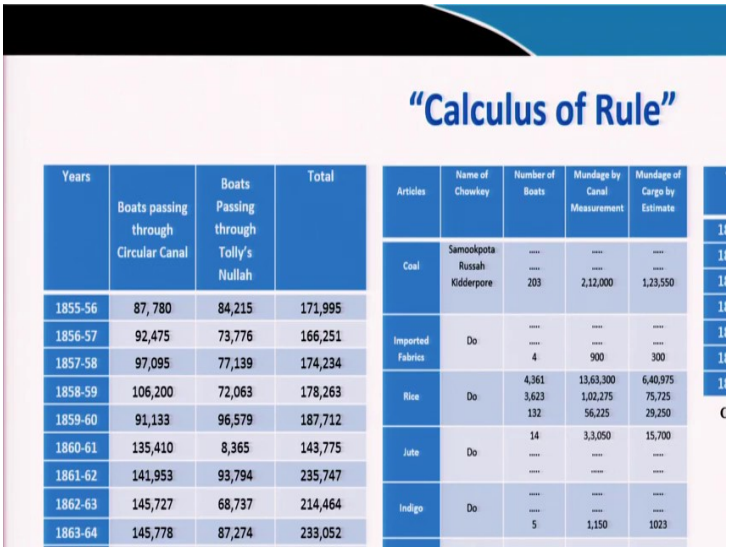

And we can and this calculus of rule that the Britisher's were motivated to make profits on expenses and you know they wanted to gain revenue over investments there becomes absolutely clear. If we see the bulk of trade which was carried by different canals you

know during the 18th, during the 19th, sorry, and 20th century. So, these are the number of boats which pass through the circular canal boats which pass through the tollys canal and yes number of articles that the boats carried and the advantage by canal measurement and cargo estimate.

And if you go through the detailed data or the you know the records which are available in the revenue documents, in the different proceedings that are kept in these repositories that I already mentioned, you will see that how they were making really you know good profits. The their collections kept on increasing and also, you know the kind of charges which were levied and the net profits which were actually made.

And also just for your information that you know between roughly, like between 1850 and 1900, the profits which were made by canal transportation were seven times you know higher than that was made by the Eastern, I mean by the Eastern Railway Network. So, the canals were really really very significant.

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Year	Amount (in rupees)	Year	
1908-09	250	1919-20	
1909-10	500	1920-21	
1910-11	750	1921-22	
1911-12	1,000	1922-23	
1912-13	1,250	1923-24	
1913-14	1,750	1924-25	
1914-15	2,250	1925-26	
1915-16	2,750	1926-27	
1916-17	3,250	1927-28	
1917-18	3,750	1928-29	

Yes and the British not only excavated canals, they also started you know reclaiming the marshes and because they were trying to gain pecuniary value out of it and they were also leasing out some of these reclaimed marshes, which were then turned into agricultural land or mainly you know sewage farming practices or sewage cultivation was practiced in, these areas and they were leased out to the landlords who were also

paying you know levy or taxes to the British. So, this reclaimed marshes also became another source of profit or revenue earning for the British.

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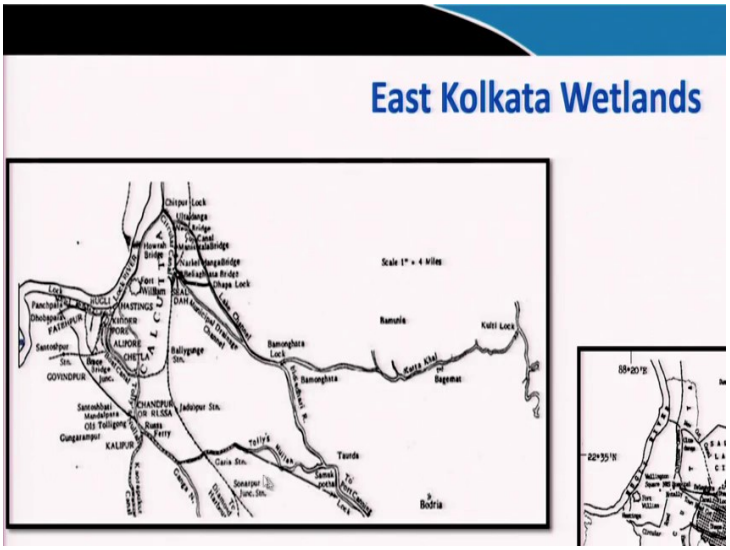

These two maps are you know very significant. So, if you see this map here you know so this one the map on the left hand side. So, this is the technical design and this you know which comprises of this several cannels which were excavated and this entire canal network was so productive in terms of trade and in terms of connecting Kolkata to its wider hinterlands.

And then the Bidyadhari River if you can see the Bidyadhari River here, right. So, this Bidyadhari River used to be the major outfall channel for the city of Kolkata till 1920s. Unfortunately in 1928, the river was declared, officially declared to be dead due to several reasons, artificial reasons and natural reasons as well because this canal was also I mean this river was I mean lot of water was extracted from the river due to the excavation of canals, etcetera.

So, after a particular point of time, it deteriorated so much that it was officially declared to be dead and then, this Kulti you can see the Kulti River here that Kulti lock gate was established here. So, after the deterioration and the death of the Bidyadhari River, the Kulti River and the Kulti lock this became the major, this became the alternative outfall channel for the city of Kolkata.

Now, this event I consider to be the most significant event so far as the ecological history of Kolkata is concerned. This was the ecological moment because with this particular change, there was a major transformation in the environmental regime of the fisheries or the marshes from saline water marshes to you know fresh water marshes.

So, from as of the fisheries changed or transformed from saline fed fisheries to sewage fed fisheries and this particular area, so what happened is that you know previously the Bidyadhari used to spill the saline water into the undulating you know marshes, but after the official death of the Bidyadhari, the canals then kind of carried the effluent or the waste water to the Kulti river.

And in between the people, the locals, they actually excavated small small inlet canals and they dug ponds and where they started practicing, they started practicing you know a sewage fed fisheries right.

So, these are all sewage fed bheries or locally excavated ponds and you know this is part of the arrangement which a Chief Engineer B. N Dey made who was Chief Engineer of the Calcutta Corporation and this you know, this the sewage fed practices by the locals were extremely encouraged by the department of fisheries and by the Calcutta Corporation and this was part of the engineering plan you know of the municipal engineers. So, this led to the birth of what is known as the East Kolkata Wetlands.

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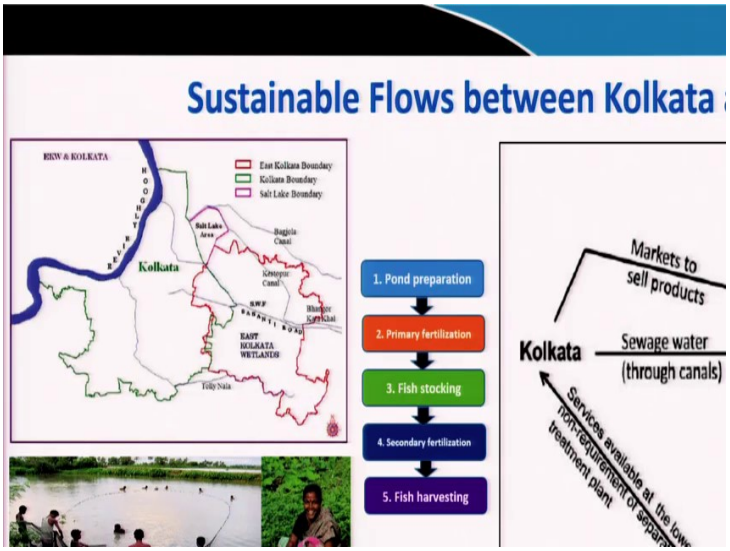

So, today there are like almost 254 sewage fed you know fisheries or bheries where people they pursue sewage fed pisciculture and this is an amazing like blessing or boon for the city of Kolkata because every day the city kind of recycle seven 50 million liters of waste and the East Kolkata, the wetland produces against the 750 million liters of waste. It produces 150 tons of vegetables and 22 tons of fish per day.

And till date Kolkata has no separate sewage treatment plants that entirely relies upon the east Kolkata wetlands for you know for its sewage treatment and on the other hand, it is an absolute win-win situation because it provides livelihood generation to almost like 1.5 lakh people.

So, this I have tried to explain as what I say or what I you know kind of perceive as sustainable flows between Kolkata and its peri-urban interface. So, this is Kolkata the green boundary and this is the east Kolkata wetlands which is the red boundary and how this, the illustration on the right hand side, it absolutely you know kind of illustrates the flows, the sustainable flows between the Kolkata and its peri-urban interface.

How Kolkata and her survival is totally dependent on the east Kolkata wetlands and how east Kolkata wetlands relies on Kolkata for as far as the availability of wastewater is concerned. So, its an absolute win-win situation and it is also the emblem of you know low cost folk technology where the local peoples, the local wetlanders they remain engaged in all these you know different types of activities from pond preparation to primary fertilization to fish stocking to secondary fertilization and fish harvesting.

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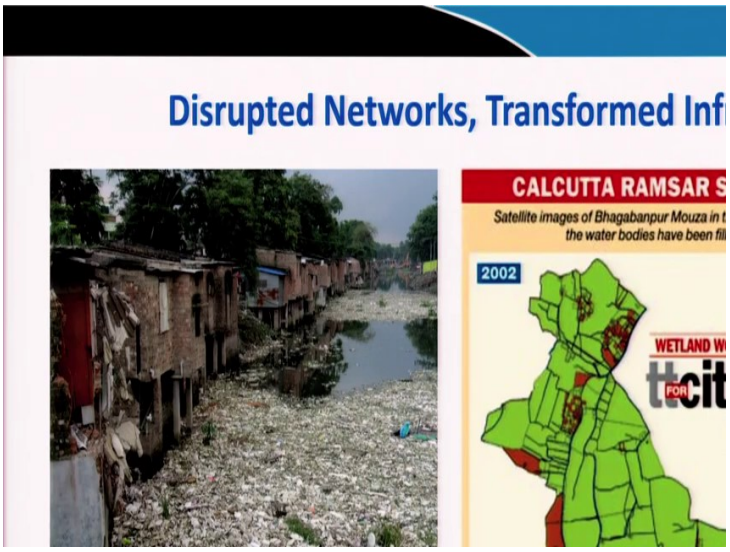

And you know and they recycle the waste water of the city and produce fish and also guarantee their own livelihood generation, but unfortunately if you enter into the contemporary period, you see that you know the heydays of the canals I mean it is no more there.

And if you come to Kolkata and I will tell you the story of this canals that how these canals were brilliant arteries of trade and communication, you will not believe me at all because this is the present state in which the canals are actually lying now. So, their condition is deplorable and East Kolkata Wetlands also had made way to real estate.

So, whole lot of real estate speculation is going on the eastern part of Kolkata, number of projects and development projects and new cities small, I mean new towns like Rajarhat like Baishnabghata, Patuli like east Kolkata Township, Salt Lake, all these towns have come up, engulfing and swallowing you know the wetlands. So, this is a present situation. So, this is the era of this disrupted networks and transform infrastructures.

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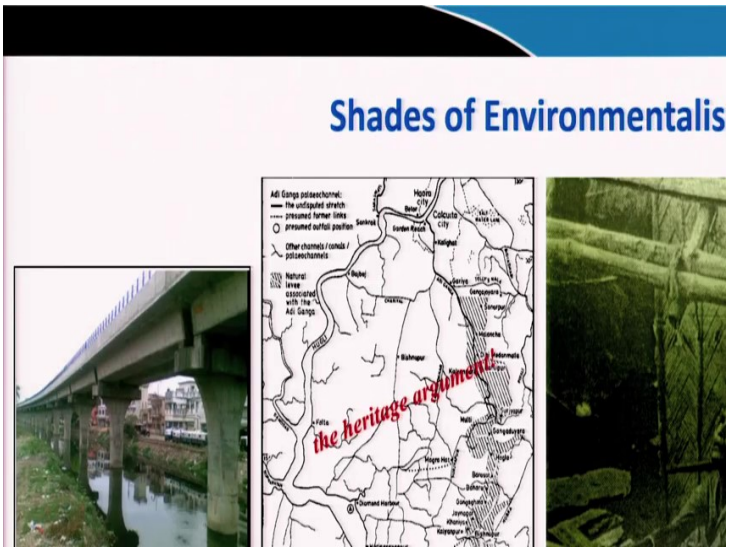

And, but you know this, it is not true that the city has not visualized waves of protest to protect the canals and the wetlands. So, you know and various types of protest had actually occurred.

So, I will take this up, this shades of environmentalism as a separate topic as two case studies where I would try to you know take you, take you through I mean, I will take you through a ride so far as urban environmentalism is concerned because urban environmentalism is also very important topic which we really need to discuss in this course on urbanization and environment.

So, very briefly just I would like to say that you know that the canals now have become disrupted and you know for example on the tollys canal, this metro railway has been constructed. So, that tollys canal now has been kind of interspersed with this with 300 metro rail pillars , absolutely kind of disrupting this or rather slaughtering you know the canal the stretch of this particular canal.

And there have been there are now like of course, there had been shades of environmentalism where people have protested. So, there have been there have been waves of environmental activism not only against the protection of the ecological resource space, but also against massive displacement, which had also been carried out you know so far as the squatters on the canal banks are concerned.

And also lot of protests and also, kind of had been there had occurred so far as protection of east Kolkata wetlands is concerned against various projects which were like approved and implemented time and again. So, and this is a very complex story of a combination of both violations and victories. So, and definitely this will get clearer when we take this up as a separate topic in our subsequent lectures.

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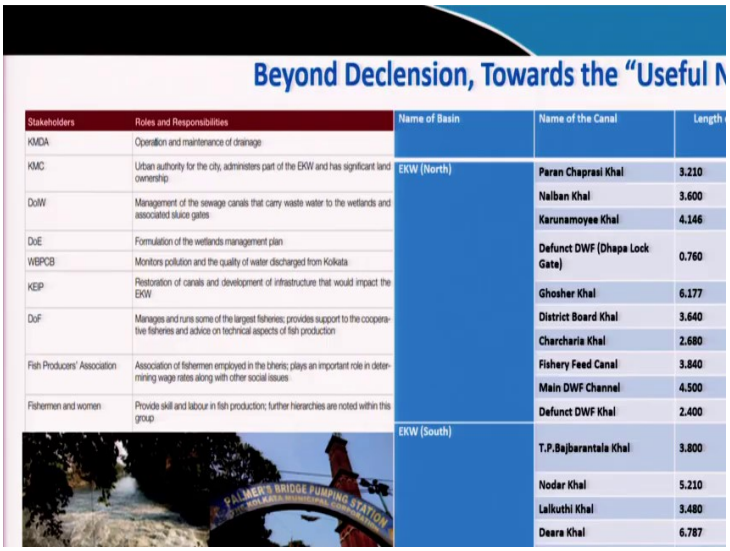

So, finally why, what is HUPE, why is HUPE important? So, I just discussed the whole story, but very quickly of course, and I personally feel that HUPE is important because it enable us. So, when we combine when I combined archival sources with ethnography, I could actually triangulate that is, I could validate and cross validate you know several arguments that you know otherwise make I mean that otherwise go into this urban sustainability discussion so far as the city of Kolkata is concerned.

So, for example if you go through the media coverage. So, in 2015, there was a whole lot of human cry when in times of India you know it was covered that the fishes they are not getting adequate waste water in the bheries, because the irrigation waterways department deliberately is not channelizing you know wastewater into the canals because they want to discourage fisheries.

And they want to discourage fisheries because that if fisheries is discouraged and after a particular point of time the fishers would be compelled to sell their bheries to the real

estate speculators and to the promoters and you know. So, the development projects can actually go on.

So, in this visualization or in this understanding, you definitely find or you can actually trace state versus locals narrative, where you see that the state they remain aligned with the development motives of the private companies and the promoters and on the other hand, the locals you know they remain absolutely neglected and deprived and though they are ecological harbingers, they are the harbingers of ecological wisdom.

But they remain deprived and they remain and their entitlement you know are not ensured in this whole story, but ethnography along with access to archival sources enabled me to see and explore who are the different stakeholders you know, who are involved in this story. So, it is important also not only to capture stories, but also story lines, the stories you know communicated, conveyed by multiple stakeholders who are part and part of, the part and parcel of this larger story.

So, if you see the table here on the left hand side top, you see the several stakeholders who play significant role and responsibilities in the maintenance of this entire system. So, the East Kolkata Wetlands have to be understood as an entire system right. So, involving technological apparatus, social arrangements, the human world, non-human world, animate agents, non-animate agents, etcetera and it is not that it is only the locals who maintain you know east Kolkata wetlands.

Now, because in conventional narratives even you know, in the narrative of Dhrubajyoti Ghosh, I must say he try to portray and project this system as absolutely locally owned and locally managed, but when I access the reports the you know the different technical , the technical plans and designs and I also went through the drainage committee reports and also, you know the reports published by Doctor B. N. Dey and all so which are there in the archive.

So, the historical documents definitely, you know it becomes absolutely clear that how east Kolkata wetlands I mean it was envy searched by several people including the irrigation you know experts, the municipal engineers, the people from the department of fisheries and of course, the locals and the zamindars and people and the community you know who are definitely part and parcel of the east Kolkata wetland.

So, it is the entire system, east Kolkata wetlands cannot be understood as, should not be understood as you know a kind of a particular patch, but you have to take into consideration the entire history of the you know, the production of this of the urban environment.

So, in the in this pictures you know you can see the flow of the wastewater, the pumping station. The, that is the largest pumping station in Asia, Palmers Bridge pumping station and the several you know infrastructures that actually play a role in the success story of the east Kolkata wetlands.

And the canals have been desilted. It is not that no work is being done. So, the irrigation experts and the municipal engineers, they are also you know they are playing, they are trying to play their part, but there are I can I will not be able to cover the whole thing here, but definitely I would encourage you to go through the book if possible Blue Infrastructures, where I have discussed that the kind of compulsions you know that the irrigation experts and the KMC, Kolkata Municipal Corporation officials, they face and sometimes they remain sandwiched between several needs you know.

So, on one hand the livelihood provisions that can be ensured through the availability of wastewater. On the other hand if lot on I mean whole lot of wastewater is actually generated at a certain point of time, then during the monsoon there can be backlash and then the same media journalists who had covered that you know, that the irrigation department is not I mean deliberately not channelizing wastewater in these wetlands.

They the same media journalists would say that the Kolkata municipal corporation is not being able to tackle the few, I mean not being able to tackle few hours of rain. So, Kolkata is such an environmentally vulnerable and I mean city which is facing the brunt of the climate crisis. So, where will you go? So, there are so many compulsions, but in spite of compulsions, in spite of compulsions you know there are lot of overlapping and converging interests which have made and is still making the system function by itself.

So, it is still a very vibrant system. So, finally if you see the right hand side bottom, the orange quote. So, where I have tried to explain you know, now I am actually trying to explain, rather not explain, but elaborate Carlisle concept of I mean of trying to understand the EKW as a living systems infrastructures and here I think urban political ecology and environmental humanities perspectives I find so very significant.

So, I am trying to in my recent research. I am trying to now understand east Kolkata wetlands as a messy assemblage of constant interactions across human fishers, canal operators, bureaucrats, technocrats, activists and non human animate, coliform bacteria, sunshine, algae, water, hyacinth, duck and inanimate lock gates, sluices, pumps, etcetera, actors. So, it is a messy assemblage. So, East Kolkata Wetlands itself is a socio-natural assemblage and Kolkata for that matter is a socio-natural assemblage.

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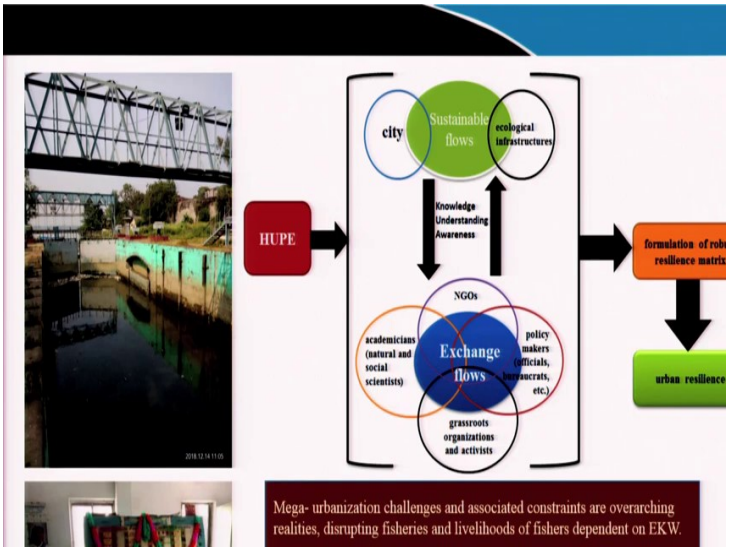

So, this is the final slide and where you know as I mentioned earlier, that HUPE help us to go beyond the declensionist narratives and you know where political ecology also kind of provokes us only to see the power hierarchies and the you know the catastrophes and the and I will not say the negative, but definitely tensions and conflicts only.

But I would say that you know there is a wide spectrum with conflict on one hand and collaboration on other and in between their negotiations, bargains, overlapping, interests, etcetera. So, it is also very important to trace and map this entire spectrum if you really want to have a long duri understanding and idea for the city or of the city, so that you can actually envision just and democratic urban environmental space.

So, from that perspective HUPE is very important and because it help us to understand sustainable flows between city and its wider ecological infrastructures and also finally, I would argue that my ethnography also you know now prompts me to come out of the academic purview only to I mean, to converse and to kind of craft conversations with the

with different sectors who are involved in this theory, so that you know there the exchange flows can be generated across different sectors.

So, HUPE I think it has a transdisciplinary essence though I mean till now it is it mainly relies on urban political ecology and urban environmental history, but now my environmental humanities framework will actually also push me to kind of plunge into the more detailed scientific, I know natural scientific aspects of it when I also study in detail the more than human entanglements in the making and shaping of urban environment of Kolkata.

So, it is not only you know it has a transdisciplinary essence, but it also forges you know trans sectoral exchange research and definitely actions. So, that is why I think HUPE is so very important. And it finally the idea is to come up with a urban resilience metric, a robust urban resilience matrix to address the penultimate question of urban resilience.

So that Kolkata can really you know it can, it can really transcend this or vulnerability can actually be addressed through and all comprehensive and encompassing and pervasive perspective and approach. So, yes mega urbanization challenges are definitely there, but HUPE help us to go beyond declensionism and to you know, bring to the forth the useful narratives.

Because the positive moments in the long evolution of the city including fascinating technical designs, carved out by municipal engineers optimizing upon the urban ecological subsidies, entrepreneurial enthusiasms among bhery owners, leaseholders and cooperative secretaries and the best intentions efforts and initiatives of bureaucrats, civil society and grassroots environmentalist to protect the wetlands have to be lived with and cherished together with the collective realization that these attempts cannot go in vain.

So, this is the significance of the HUPE framework. It help us to map the plural in political ecology craft a common language of conversation and here, political ecology you know is kind of , I mean political ecology is understood as an engaged praxis or it is felt even, it is felt as an engaged praxis, where you know it is not only about knowledge, but it is also about actions.

So, not only knowing, but how to also transcend from you know epistemological to the ecological aspect of things. So, it is about mapping the plural in political ecology crafting

a common language of conversation across all stakeholders involved in the story with their own story lines and political ecology as an engaged praxis both knowing and doing together.

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So, yes so this is the crux of it yeah. So, I have discussed, I had discussed in this lecture what, why and how HUPE through the case study of Kolkata and finally, I definitely you know, I argue why it is important to transcend from epistemological to geological research.

By you know, by kind of I mean by focusing on and also making the overlaps among these three Ts clear and visible, trans disciplinarity, through continuous triangulation that is validation and cross validation of facts and finally, trans-sectorality to make this transformation or craft you know this change and make this change happen and makes make this change possible. So thank you very much.