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

Lecture – 20
Discussion and Conclusion

So, with this we come to the end of the course and so, I will be making some wrapping of arguments

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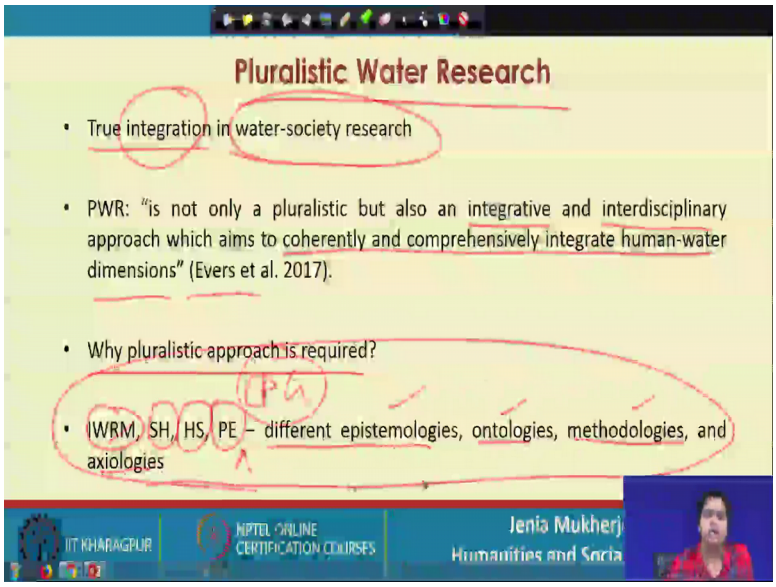

So, to begin with I will say that true integration in water society research is required. Because we have we had already learnt so many ongoing river research frameworks or water research frameworks from socio hydrology to hydro social political ecology to critical physical geography. So, these are the theoretical research framework that we are learnt, we are try to mobilize some of these frameworks within the empirical context of South Asia. So, finally, what is the message I mean of this particular course what is the big message that these a course wants to you know end with.

So, the big messages that multiple you know at multiple scales at multiple levels, the knowledge has been generated now. So, we have new and newer knowledge's, we have new and newer ontologies and epistemology etcetera. So, what is required today is a proper and truer integration you know across these various social science and natural sciences framework. So, these are very exciting article which has been published by

Evers et al last year in the journal call water. So, in the page journal reference is there in the reference list, and they have conceptualized what they call pluralistic water research.

Now this seems to be a very I mean exciting and significant kind of frameworks. Because here by pluralistic water research, veers et al they try to mean that this framework is not only pluralistic framework, but they highlight and emphasize that it is also an integrative an interdisciplinary maybe trans disciplinary approach, which aims to coherently and comprehensively integrate water human dimensions or human water dimension.

So, this is I think very important because this is the need of the hour. The need of the hour is to understand is to integrate all the parameters and all the dimensions you know across water society relationships. So, maybe whether we can really think about a pluralistic water research framework, that encompasses methods and methodologies across the different ongoing frameworks on water research we so, and the yes.;

So, I think I had already mentioned and argued that why this pluralistic approaches required, because we have as I mentioned that we have different set of knowledge systems across this ongoing frameworks for example, you know we have this I integrated water resource management, I mean which became very popular since the 1990. So, it was popularized in the 1992 Dublin conference, which state that you know the radical age in it was that. Not only when you are actually trying to manage water you not only have to manage water, but you also have to take into consideration other ecosystem resources, you know that overlap with water in as the primary ecological resource. So, apart from that we have so, many other frameworks as we all know by now by the end of this course.

We have social hydrology, you have hydro social we have political ecology again hydro sociality within political ecology of water. So, the whole point is that as all these frame was they actually they have their origin from different disciplinary backgrounds. So, their goals are little different and as their goals are different, that disciplinary backgrounds are different. So, their conceptualizations are also little difference. So, though I mean I mean we should understand and I would definitely argue that all these frameworks are unique and important and significant and relevant in a manner that, all the stream works actually trying to integrate try to forge some kind of an integration

across natural and social sciences they try to you know forge integration across physical technical and social political aspects. .

But then the idea is that, and then the main major point or argument is that as they are rooted in a different disciplinary context or background. So, the goals are different and understanding and conceptualization and also the prescriptions and recommendations are slightly different. So, what we need to do is that so, we need to understand that all these frameworks be integrative, they still you know have different epistemologies, different ontologies, different methodologies and different axiologies. I am sorry I had not mentioned critical physical geography here. So, of course, critical physical geography should also be there in this list.

So,. So, they have different epistemologies, different ontologies, methodologies and axiologies what we need to do is to see whether some sort of integration across this frameworks is also possible or not. It will obviously, be challenging it will definitely not be a one day affair and it will definitely invite lot of problems and challenges where the natural scientist and social scientist they have to really think and re think in a very robust and rigorous manner, but then the whole idea is that we need to get exposed to all these frame works, to understand the you know potentials of the this frameworks that had already emerged .

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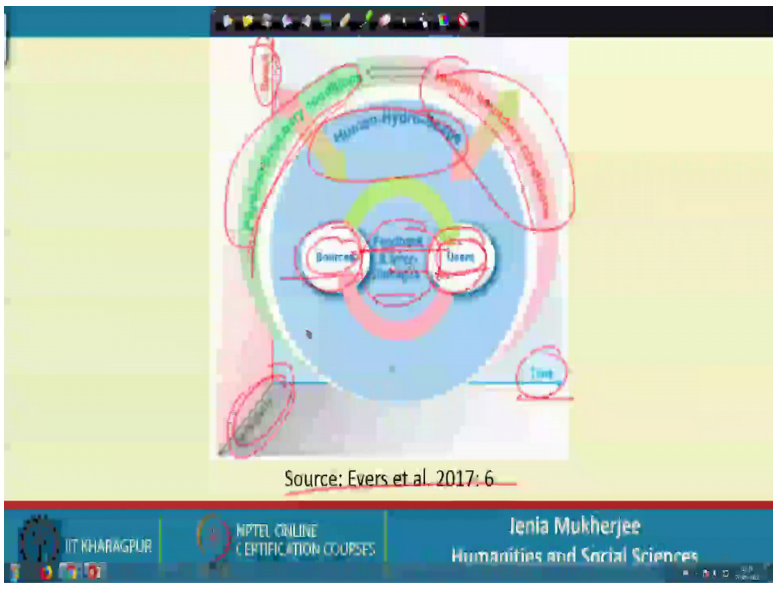

Yes. So, again from the article by Evers and his colleagues that came out in waters, they try to conceptualize pluralistic water research through this illustration through this diagram. So, on one hand we have the sources.

So, sources means rivers, groundwater reservoirs etcetera and on the other hand uses so, users basically by users they mean human beings and their demand of water and. so, human beings and they demand of the sources; and these sources and users are actually shaped by reciprocal physical boundary and human boundary conditions that operate in a setting which they term as the human hydroscape, and in this entire thing space time and sensitivity. They are all key factors; they are all important parameters and variables. So, far as these human water interaction and processes of feedback and inter linkages concerned.

So, this seems to be really a kind of a very composite illustration, that takes into consideration you know the physical sources on one hand, human beings on the other temporal scales, special scales are physical condition human boundary conditions and also sensitivity and finally, tries to study the processes of feedback of feedback loop and the inter linkages across this.

So, yes so, definitely these go through the details of this diagram and let us try to think how you know in our local conditions or whether in our local conditions this illustration they can play an important part so, far as it is you know application is concerned yes.

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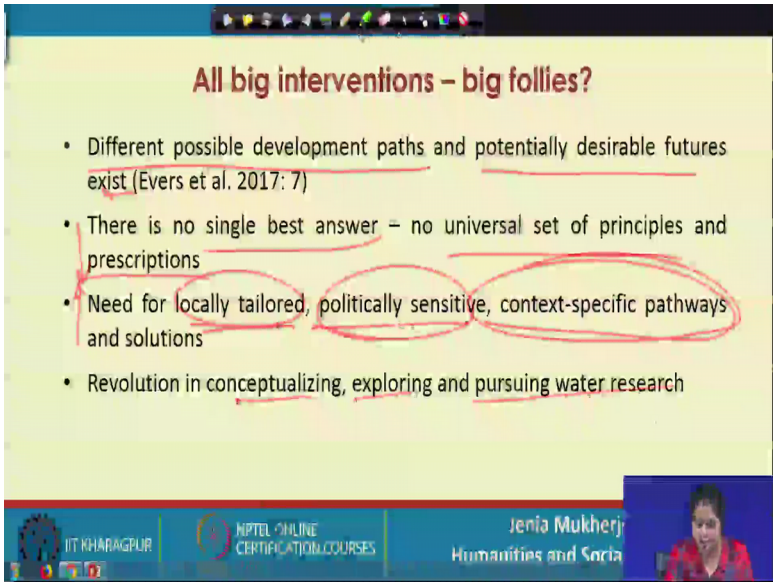

So, finally, now this very important question are all the interventions big follies. So, these debate seems to be a perennial debate you know among people. Among people coming from different disciplinary backgrounds and you know with different set of arguments and all.

So, my argument from all these readings and from a little bit of my own research work, and from my own exposure to field and all that I would definitely go buy Evers argument and say that we need to keep this in mind, we really need to get into your mind that there cannot be you know only one single best answer to different kind of water problems afford that matter environmental problems that we are encountered today. So, I mean I would definitely say that there cannot be any universal set of principles and prescriptions, which we can follow to you know provide solutions to different or you know different ecologies or for that matter different waters.

So, there cannot be any single best answer to problems and of course, different possible development paths, you know different possible alternative development paths and potentially desirable futures actually exist. So, I think I mean so, far as the different lectures are concerned; so, for as my lectures or presentations on the frameworks are concerned and then the empirical validation I mean in followed by that is concerned, I think by now we have been able to understand we have been able to grapple with the very fact that actually different possible development paths exist.

There is it is not fact, but it is rather sometimes juxtaposition that you know there is only one single path for a sustainable future that is not true; because if we go by that particular thinks that there is only one single path and unfortunately you know I do not know I mean that path may be visible or not, but then that path with definitely not be sustainable it would not be viable at the long term.

So, this we need to very much keep in mind. So, I am highlighting this we have to understand, we have to keep in keep on mind that, different possible paths different alternatives actually exist. And the next point is there is of course, an immense need for locally tailored political sensitive context specific path ways.

So, of course, there is a link between these two. So, as I am saying that there cannot be in there cannot be a universal set of principles and prescription for problems across the world. So, what we need to come up with is that, we have to really design locally tailored

solutions which take care of you know regional specificities, regional variables and all these solutions should be political sensitive. Because today you know, the kind of crisis that we are facing and if you just take a look into its gravity severity and intensity that we have to understand that we also need participation from the people who are getting affected by this grand projects schemes.

So, at the end of the day this you know the political sensitivity is very much required and as I argued previously also that solutions or pathways should be extremely context specific, because context vary. Context across the world context across the, I mean regions across countries are extremely diverse and they very alert. So, the pathways that we have to sketch the pathways that we have design should be extremely context specific, otherwise you know the solutions might seem to be you know what to say its might seem to be very grand, it might seem to be very ambitious, but it will not be unfortunately effective.

So, what we need to do is that, we need to have a kind of revolution; so, in conceptualizing exploring and pursuing water research. So, I am not talking of some violent revolutions of course, but I am talking of revolutionizing our cognitive space at least at the first step to conceptualize explores and pursue water research. I would elaborate a little bit on this ok. So, I can be little personal here because we have almost reached the end of the course. So, often when I in my classes, I mean here at I Kharagpur itself when I teach students about the negative implications of you know for example, this multipurpose (Refer Time: 13:23) development schemes are the negative implications of this big so called scientific hydraulic interventions, in I mean for the Indian rivers for Indian society at large.

Then some of the students you know coming from this engineering and technical backgrounds they I am not and most of the times actually they are not very happy with this turns criticism with me, and they encounter me and definitely I encourage that and they mainly actually raised two question. So, and they say that the first thing they argues that, they say that you know you are criticizing dams your criticizing barrages, you are criticizing all these important technological interventions. Then the question is do not you think that this technologies also have some positive sides, and do not you think that these technological interventions are extremely important for the GDP of the country.

So, this is one question that they ask, and the second question they say and that is also very valid. So, they say that you know we have to understand technology as you know continuous I mean something, which is continuously expanding or which is continuously advancing for that matter. So, technology would go on advancing. So, as the temporal scale or as the time will advance. So, similarly technology will also advance. So, one particular hydraulic intervention I mean for example, hydraulic intervention of the contemporary time would be of course, more robust and more sophisticated and for that matter more I mean bigger and grand than the technological intervention of the preceding years or the preceding century.

So, this is quite natural. So, why are you continuously saying that you know this technology is had been disruptive and all that? So, my answer to them or my responses to them are also you know two. So, as this they raised mainly these two questions. So, I also try to give two answers to this question. So, one answered the first answer is basically so, for as a second question is concerned; that technology will actually we have to understand technology as something, which will go on advancing with the advancement of time.

My caution and warning to you will be never try to understand technology from that perspective. Because technology should not be understood and should not be studied as linear progression, we really need to understand a technology or you know for that matter networks as responses to specific construction of problems. So, we need to raise some important questions that why during a particular period a particular problem was prioritized, who were the players who actually prioritized these problems? Like why other problems did not get that much of prominence or importance during that point of time?

Where there alternative or other technological choices or options that could have been implemented to meet that particular problem? So, if yes, then why those technological choices were not selected and those technological you know options were not opted and the chosen to solve that particular problem? So, these are the larger I mean these are the larger questions that we need to address. So, we need to really understand a technology by looking into the larger historical and political processes at work.

So, this is the first thing first argument, and second argument its little personal which is very much informed also by my personal research, personal investigation, personal exposure to the field and also personal observations. Like so, far I mean I have done some research in the lower Gangetic basin and so far from my limited research expertise is concerned, I have gained some insights and I have really understood to a great extent the gap that exist between official projection so, far as you know construction of dams barrages are these big infrastructure projects are concerned and the ground realities.

So, what I suggest them, what I ask them, what I even request my students to do is to sometime go to the project sites, sometime go to the you know research sites, get exposed talk to the people hear from them, learn from their perspectives so, that you can go at least little bit beyond the so, called main stream scientific and technological set of knowledge or knowledge system.

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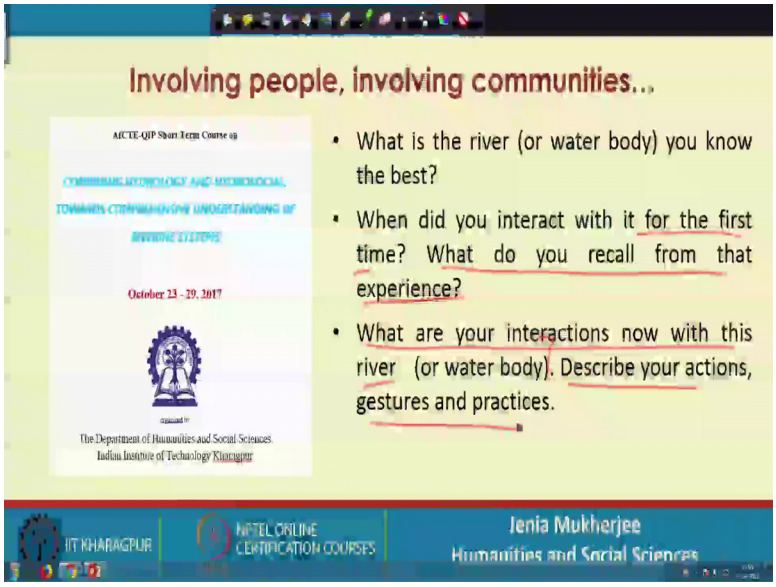

So, with that we started doing things at of course, very granular and I mean small scale. So, this was course that we try to organize at the department of humanities and social sciences, and I mean this as AICT QIP short term course and this was course was very important because you know mainly the people whom we try to train not only train, but from whom we also learnt a lot because there were a lot of interactions between the you know instructors and the participants. So, we try to do a course on what we call

combining hydrology and hydro social towards comprehensive understanding of river system.

So, the whole idea is also to give those participants mainly coming from engineering backgrounds to you know some perspective some social science; perspectives you know on hydraulic or riverine systems and a hydraulic technologies. So, on one hand we give our social science provide you insights from our social science perspectives, on the other hand we also learned from their natural science insights and perspectives.

So, overall it was a very good interaction between the natural scientist and the I mean the among the natural scientists and the social scientists, and we were really brainstorming a lot I thinking about you know what could be done and what should not be done and all those things. And this was so, important because I mean it was. So, complementary because these engineers, they made us understand many things many variables that otherwise we actually cannot see or otherwise we do not understand realize importance of those technical aspects when we do our social science research on water.

On the other hand, they themselves they confess that for the first time. They are getting exposure to kind of frame works, to kind of narratives, to kind of perspectives which they felt where so, many important to them to learn you know before they actually design technological interventions or infrastructural projects . So, this was one and then it was followed by a very very what to say, I mean very limited that simple I will say simple survey, where few faculty members who came from some of our local regional colleges.

They were so, excited after this seven day work shop, that they interest they requested us to go to their colleges, and to talk to the students and to have some interactions to involve the students in some interactions about this water society relationship and they told that it is important for you know understand and talk to them and know their perspectives. Because these engineer these you know faculty coming from engineering backgrounds, they realized at the end of the day that the peoples perspectives students perspectives participants perspectives are also very important.

So, what we did we kept three very simple questions and I would also like to acknowledge my co instructor; actually two co instructors I had in this particular thing. So, one is from she is a researchers from the university of Luzon she is (Refer Time:

21:48) and another one is my colleague from the HSS department she is Anuradha Chaudhary. So, what we did is that we formulated the simple questions went to those colleges and then ask the students just to react to this questions just to write their responses.

So, these are the three simple question what is the river or water body you know the best. So, what we try to do was that we try to you know personalize the whole thing. So, just ask you so, here the agency is given to the river and also to the respondent who was responding to this particular question. So, what is the river or water body you know the best. So, see it is such a simple question, but then you really need to think so, much and really you become passionate, really you start you know internalizing yourself with that particular river of that particular river body and you have so, many things in your memories, that you can reflect on.

The second question was when did you interact with it for the first time, when did you interact with that river or when did you interact with it for the first time? What do you recall from that experience? Again a very you know very interesting and kind of a personal thing that we asked that, actually you know provided them lot of insights to think about their memories, their narratives about that particular space that particular river; followed by what are your interactions now with this river or water body.

So, what are your. So, it mark sorry what are your interactions now with this river? So, then, when we ask that what are your interactions now? So, what are what we could do was that, we are actually involving a kind of a temporal skill. So, maybe the I mean there are three options like the river continuous to maintain its good health or whatever like it has maintained its physical form quite similarly. So, it is now what it used to be before, it has changed from what it has used to be from before and then maybe it has massively change from what it used to be before.

So, there can be multiple reactions and we knew that this multiple reactions would or responses would be generated and so, we added another I mean argument statement to this question, that is describe your actions justices and practices. So, what I am saying is that so, we try to provide agency to both the river or the water body and the person who was actually responding. And we had actually collected this answer sheets from them

and very beautiful reflections you know personal messages, and also some technical knowhow is reflected in the answers that we have received.

And later we have plans you know to interpret those answers in further details, and I try to you know to a great extent understand water society interactions from these kind of you know what to say this kind of personal anecdote, and personal feelings are also sometimes loaded with technical knowledge and expertise .

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Yes. So, I would definitely not like to conclude my course by drawing your attention again to the severities of the water sector or water crisis, at that the country of the you know for that matter South Asia, and even you know the globe is encountering with, but rather I would like to definitely end the course on a positive note by drawing your attention to what good things are going on. So, for as water society relationship is concerned; so, definitely some of the radical initiatives that are going on.

These days are like human rights are being given to rivers. So, rivers are being considered as legal and living entities. So, we know that our Uttarakhand high court it you know it pass the Verdict where it said that Gangs and Yamuna should be considered as living entities. And it was very much influenced by what happened in New Zealand. So, in New Zealand the Whanganui River, Whanganuri River was given human rights and before that also actually we should also know about Ecuador. Because equator is a

very significant country; so, for as environmental restoration projects and practices are concerned the people are extremely sensitive to nature.

Because the Ecuadorian constitution is the only constitution in the world, that provides constitutional rights to nature. So, like I mean, there were some problems related to Vilcabamba River in Ecuador and then the peoples the people fought against you know the pollution, I mean they if they file petition and they fought a legal case to restore the health of the river and of course, they won the case.

So, this is what happened in Ecuador even before the legal verdict that came out in New Zealand so, for as Whanganui River concerned. So, the Indian government also becomes very interested and Uttaranchal Uttarkand high court as I mentioned provided legal right to Gangas and Yamuna, where it was said that this river should be consider as legal entities. But again there is also a slight note of caution I am very sorry because as social scientist always we try to find out this notes of caution at that it is very important, for us we cannot really ignore this notes of caution.

So, the note of caution is that if we try to compare between what happened what had happened in New Zealand and what had happened in India so, for as giving living rights to legal rights to rivers are concerned, we will find that though there are similarities between the same, but at the same time there are also stark differences and contradictions. Now what are these differences?

Number 1 in this Whanganui case, it very much the legal verdict, it very much actually represented or I mean it was it highlighted the world view of the Maori people the tribal people indigenous people, who actually fought the battle to save the to I mean for the river. So, so what is this world view of these people? The world view of the indigenous people is very well manifested or reflected or represented in this brilliant you know and fascinating quote I am the river and the river is me.

So, this is how the Maori people feel. So, I am the river and the river is me. So, you can understand their world view. Now the question is and so, what happened is that the court has given I mean the court has recognized or regarded these people as the quote unquote parent of this Whanganui River. So, these people with this kind of a worldview they are the custodians of this river, but on the other hand unfortunately I mean. So, for is Ganges

and Yamuna rivers are concerned the legal custody shape has been given to the officials the government offices.

So, of course, you can understand there is these difference between the world view of these indigenous people and of course, the world view of the government officials. So, this is one criticism and the other criticism is that, this is a very composite verdict because I mean the New Zealand quote it has mention that as this river from now on will have human rights. So, it not only means I mean it is not only implied for this particular river, but for the entire catchment and the basic. That is you cannot pollute you cannot do harm to you cannot affect any stretch of the river from the mountains to the sea.

And also the entire catchment area where even you know there are multiple natural water courses, which flow either continuously or intermittently to this river. So, this entire basin and the entire catchment along with the entire stage of the river will be maintained and restored properly and will be thought like a human being. On the other hand so, for as Ganges and Yamuna rivers are concerned, we can see so, many contradictions you know so, many plans and initiatives and projects relating to inter linkages relating to construction of dames barrages all these kind of you know human intervention to the river.

So, from that perspective and also another thing is that in this Indian court verdict what happened is that, the catchment or the wetlands or the natural courses water courses as connected to this river system had not been mentioned. So, this is a problem that is there, but I mean again I will not only draw your attention to all these negative aspects, but there are other small scale positive radical things which are really going on for example, So, I am only giving you the recent examples. So, if you take a look into what happened I mean. So, for as this particular river in Kerala in considered that is, that within I think 70 days 700 people of this particular village Panchayat from Kerala, they could actually restored in entire stretch of river which was otherwise dead.

So, the river was reborn and you can see this picture is. So, lively; so, all these people taking a ferry ride on this river, and you can see from the picture that, how within a small span of time peoples initiative popular initiative would actually you know gave life brought back life to a particular river, which otherwise becomes stagnant and dead. So, how river was reborn you know in Kerala.

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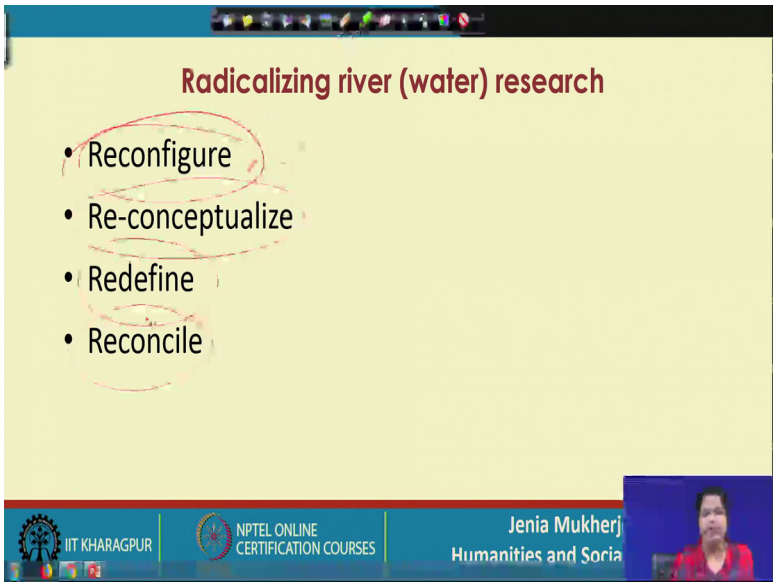

So, finally,. So, my final suggestion is that, we really need to as I said revolutionaries revolutionize. So, I will also say radicalized. So, we need to radicalize river research, we need to radicalize water research, now how can do that? Now this will of course, draw a lot of questions. So, everyone will laid question what do you mean when you say what you mean by radicalizing river research or what do you mean by you know radicalizing water research. So, this is you know I can I must say that, I will not be able to draw detailed closure statement, but I can definitely provoke you to think and rethink.

So, my argument first argument is that we need to reconfigure, our understanding of water and our understanding of river systems. So, we need to re configure our understanding of river system. This will be the first step followed by we need to re conceptualize from what we had already learnt, and the newer new and newer set of knowledge or set of information. Now that are available to ask across the across natural sciences across social sciences.

So, we had learnt the potentials and we had learnt the different methods and methodologies of the various a frameworks that prevalent today that are emerging today. So, for as water research is concerned. So, we really need to re conceptualize our understanding by you know by focusing on our existing knowledge system, and also the newer and knowledge that are they are in our contemporary times.

So, the second step then is re conceptualization that followed by. So, when we would be able to re conceptualize these, then the next step would be redefining you know river systems, river basin, redefining waters because when I say waters I mean plural waters many waters.

So, wetlands lakes reservoirs and entire connected system at the basin scale. So, then we need the third step we can redefine waters, we can redefine you know river systems we can redefine river basins in order to come up with more larger comprehensive composite robust picture you know to finally, with the purpose of reconciling our relationship with water.

So, reconciling the final step followed by redefining is reconciling human nature or redefining or reconciling water society interactions towards a just democrative desirable and sustainable future, and I want all of you not to be learners in this particular exercise, but to be active participant in this exciting venture.

Thank you all.