Water Economics and Governance
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Lecture – 17
Valuing Water: Use and Non – Use Value of Water

Hello folks. So, in the earlier lecture we started our discussion onto the value of water or economic value of water and we will continue from there on where in todays lecture we will be talking about use and non use values of water and what are the different aspects related to this.

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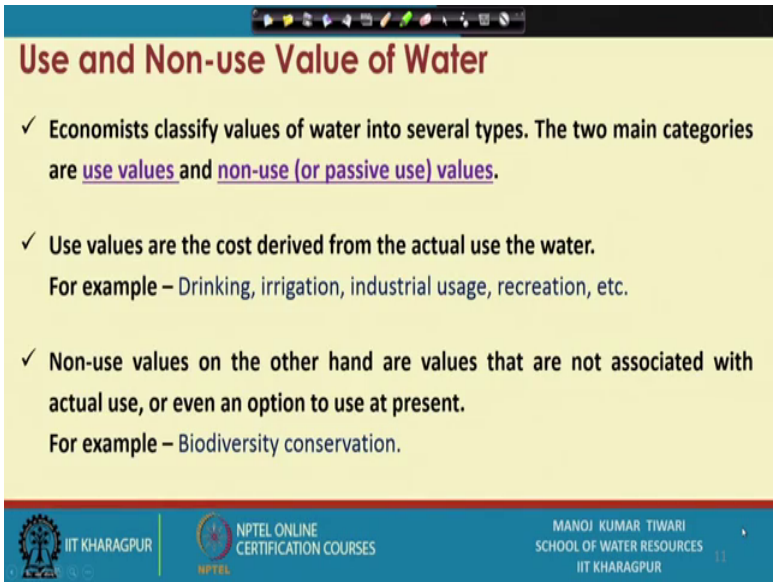

To begin with the economists classified values of water into several types which we discussed earlier the two main categories are use value and non use value non use value or passive use value also we say. So, use value are the cost derived from the actual use of water.

So, for example, if you are drinking. So, you are using the water irrigation you are using the water in your field industries you are using the water for certain type of industrial processes or recreational activities you are putting water framing holding putting through a artificial fountain or pumping whatever you are doing, but that is a use of water alongside there are several non use values of water also are there which are not

associated with the actual use or even an option to use at present. So, for example, the biodiversity conservation.

So, water in natural systems is essential for biodiversity conservation, but thats not a use of water nobody is using that water its its sheer presence in the nature is there for helping the biodiversity or helping the various other ecological functions. So, that is sort of a non use value of water now there has been various sub classes given or various different distinctive values assigned to use values and non use values of water if you see and that in combination gives the total economic value of the water.

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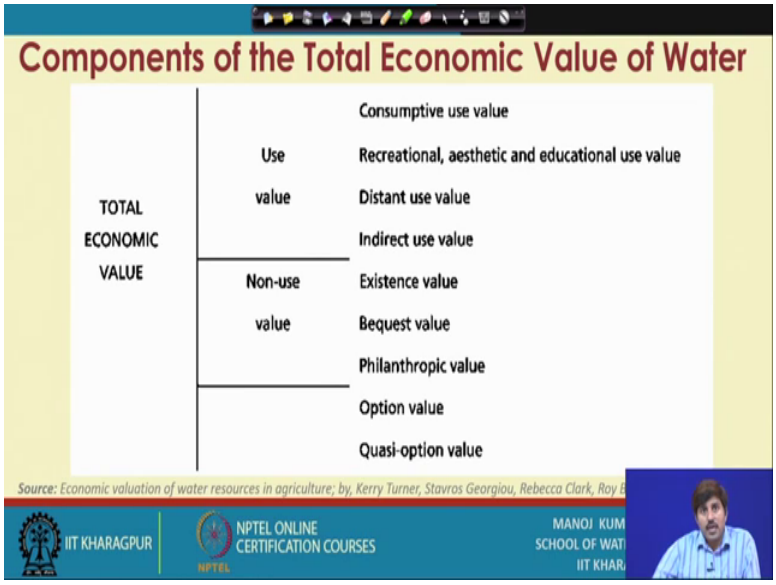

So, use value again these classifications if you see are not uniform. So, its not that its a worldwide recognized classification that these these these such and such thing will fall under use value such and such things fall under non use values of course, there are the basic set rules which says that this is used value and this is non use value; however, there are certain option values which at times people consider under use values few people few sources consider under these as and non used values few sources considered this as a separate value ok.

So, use value could be the consumptive use value where it is being consumption is being done then there is a recreational aesthetic or educational use values direct use values indirect use values then non use values is because of its existence is itself. So, existence value then bequest value how much is like the legacy wise how much water one is

holding based on the legacy transferred then philanthropic values and of course, there was option value which as we were saying that could be used under use or non use we will talk about this later and there are then quasi option values.

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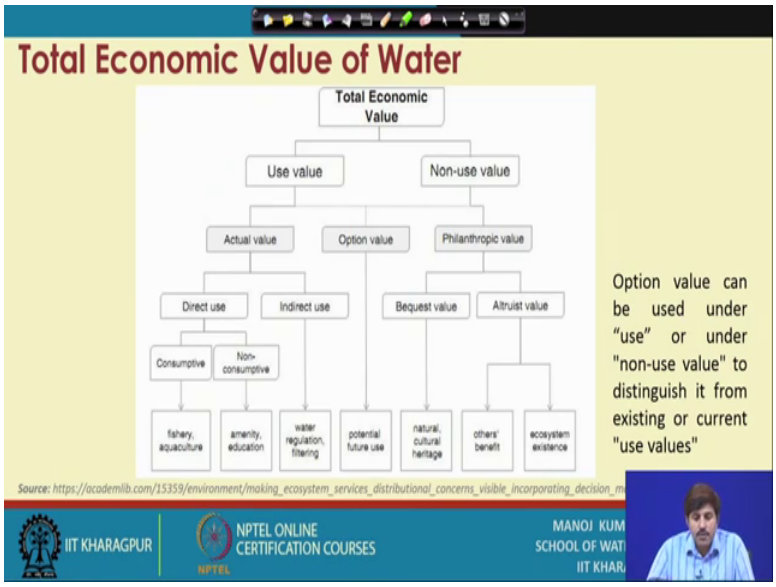

So, the classification gross classification of use and non use values says that use values would be basically the actual value whereas, non use values are primarily the philanthropic values now this the option values as we said that could be considered at times as a used or under non use to distinguish this from existing or current use values and this will be more clear when we talk about what exactly covers under the option use. So, actually use values there are direct uses and there are indirect uses the direct uses are conceptive. So, one is basically consuming water in some form and then there are non conceptive and the indirect uses will be basically onto the sort of where we are using water, but not in a direct form the optional values are certain values which are not associated with the current use, but encounters the future uses.

So, we will talk about that and then there are non use values which is by bequest value of the water which is natural or cultural heritage it is coming with it or legacy it is bringing with and there are all trees which is sort of other benefits including ecosystem existence.

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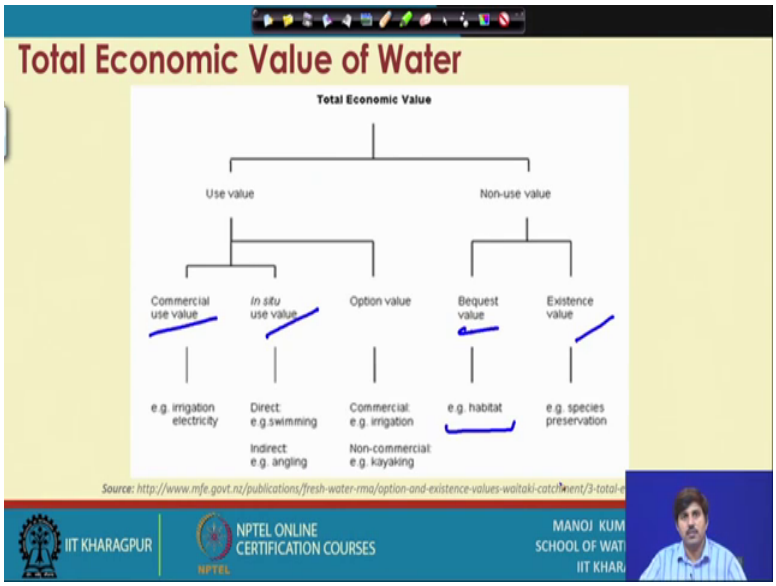

These are another classification by the sort of ministry of for ests and involvement of the government of new zealand. So, they say that you can classify the use values under the under the if you see i hope this is visible. So, if you can classify the use values under the commercial use value when you are using for commercial purpose like irrigation or electricity or these stuffs there is in situ use values when you use its in an in situ condition like for example, swimming or which is a direct in situ use and angling which is an indirect in situ you use.

So, those kind of thing then under non use values you you you have bequest values which is the legacy value of the habitat itself and its existence values which is because of the species previous preservation biodiversity control and other ecological non use functions. So, those kind of things and be there the option value is should be should consider the prospects of future futuristic uses. So, at present it is not under use, but there is a prospect of being used as a future thats why option value can be kept with use values or non use values because the option values are actually at present are not in use.

But there is the value is estimated based on the possibility of these being used in a future. So, you know maybe in a commercial or non commercial manner thats a different aspect now.

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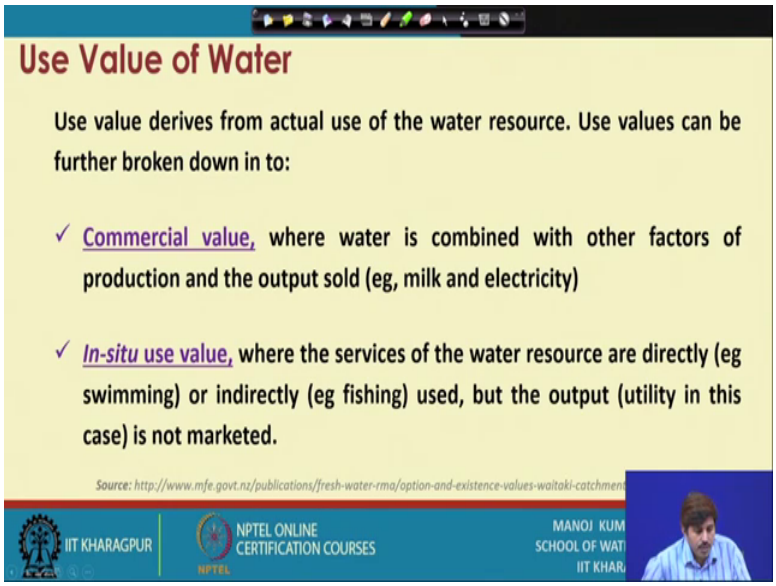

if you see the various use values of water. So, use values derived from the actual use of water resources and this can be further broken down into the commercial value where water is combined with other factors of production and output is sold for example, milk processing milk you need a certain amount of water which sort of sold as a product or generating electricity you need certain amount of water in turn electricity is sold. So, these are the commercial values of water.

Then there are in situ use values where where water or you can say the non consumption values also sort of where water is not being consumed its in its in in situ stage only; however, the benefits are derived from its in situ use. So, where services of water resources are directly like for example, swimming or indirectly like for example, fishing as used, but the output is not marketed. So, output may be like fishing and this thing could be marketed also; however, for the purpose of like when we say that use values and all that even if you are marketing the face. So, water is a non consumptive thing in that case ok.

So, will not charged for water and all that when you are going to put a price to the face in case you are marketing and if it is for domestic uses or household uses its absolutely fall under that category.

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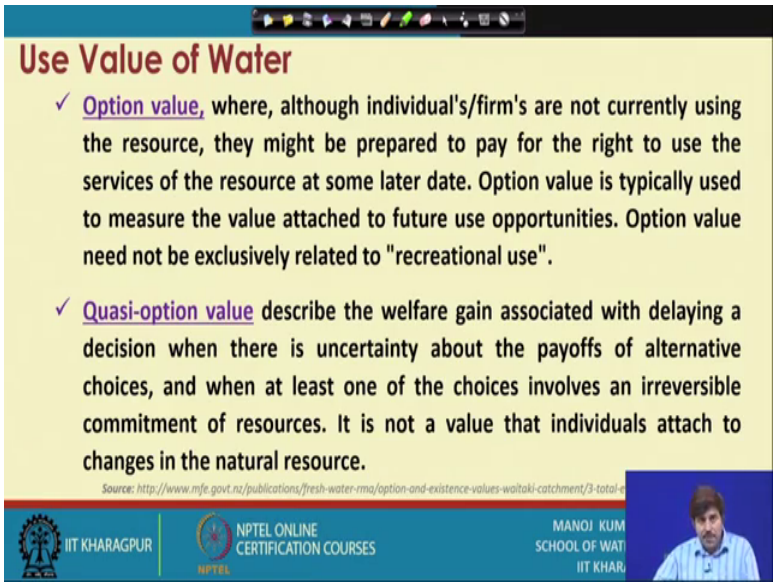

The option value which we are talking about is basically although its the water is not currently in the use they might be prepared to like the value option value typically uses the major of value attached for future use opportunities. So, and its not limited to this recreational future uses its used its sort of attached to the future uses of any form of even conceptive or non conceptive or direct or indirect in situ form in any form the future uses of water is considered under the option value where it is not currently being used, but some individual or some form or somebody is ready to pay for the right to use these services at some later stage ok

So, then it will be considered as an option value then there is another term which is quasi option value which describes the welfare gain associated with delaying a decision when there is an uncertainty about the payoffs of alternative choices; however, it is confirmed that this particular resource will be used. So, one of choices are at least irreversible and one has committed that this resource is going to be the use. So, its not a value that individual attached to the change to the change of the natural resources ok.

So, its not about the change of the natural resource its that resource is there lets say i have a i have a water resource inform of a pond or something and i have two different options of lending that thing i have committed that yes i will either give it for the agricultural supply of water or city supply of water or for whatever purpose, but if i am not able to assess at the moment that which one is more favorable or which one would be

more returning to me i keep that thing on a whole and during this whole period the values there is sort of because of the uncertainty of pay off. So, the value change during this whole period adds to the quasi option value. So, that is what is the quasi option value.

Then of course, there are non used values of water which sort of independent of individuals present use of the resource. So, non use values are due to the existence as we discussed earlier that it is primarily because of the existence which is the value from knowing that a particular environmental asset exists in this case this environmental asset is water. So, when you know that yes this particular water resource exists it will add some existence value like for example, saving the endangered species and all that. So, those kind of things are there then there is a bequest value which is value arising from the desire to bequeath that particular water resource in its sort of legacy from the past or hares or leaving it for future generation. So, that is kind of preservation of that resource habited in general habitat where resource adds a lot of value.

So, that is the another non use value or indirect value you can say to the water and which is of very prime importance. So, these in combination of course, as you have seen the different chart showing the different sub classifications and all that. So, it can be sub classified based on the very variety of criterias; however, this major concept involves that there are certain use values which depending on to the use of water may be direct or indirect use and there are certain non use values which are just due to the shear presence shear existence or from the sort of bequest value of for the bequest value of that water resources.

So, that is another form of another component of the total value of the water total economic value of the water. So, if you see the total economic value of water would be the sum of all benefits obtained from a resource use value plus non use value.

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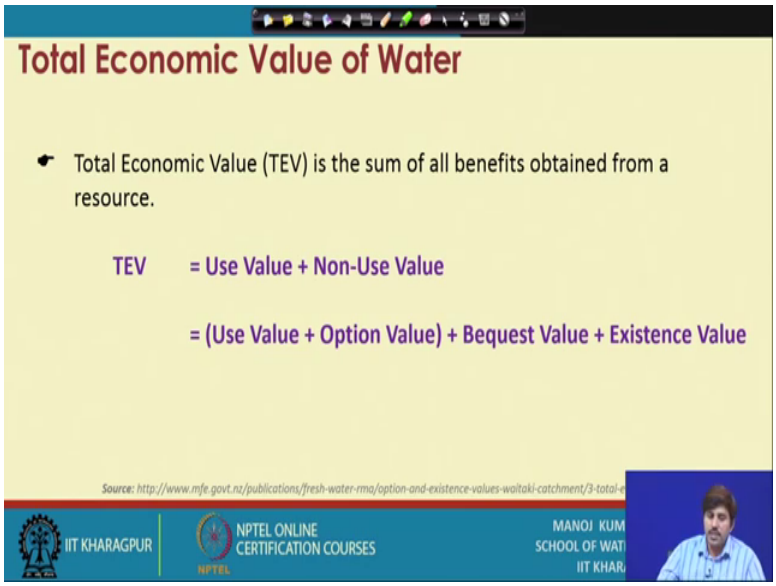

So, your total economic value which is your tev you see here. So, this tev total economic value will add use value and non use value and which non use value as we said that is bequest value and existence value and use value plus option value which you can considered as a use value or non use value based on the your opinion how and where you are keeping this. So, it will be some of use values option values bequest values and existence values. So, combination of all these will give you the total economic value.

Now, this total economic value interestingly does not only depend on to the sort of on to the these factors that we have been discussing many times when you see there are much larger or much different prospective of the water resources the existence value or particularly in the non use values if you dig into deeper the non use values or existence values and this particular kind of value to a water resource is is very difficult to monetize as it sort of changes from the prospective time and all these aspect the value of water is may may not be even even an on use value of water may not be very high in some ones prospective, but it could be very high in some other persons perspective.

For example lets say you want to you want to buy a farmhouse or those kind of thing and you know that it is beside a river or canal or something you may not be using that water, but just because it is beside of a good or healthy natural water resource its value will increase you put the same thing into a dry land the same amount of land you put into a dry system its value is going to be decreased although nobody is going maybe there is no

direct or no that way direct use of that canal system it may be just for recreational purpose or just for viewing just for sight and all that you know that the c phase apartments how how much they cost as a poor as opposed to the other in the todays marketing strategy ok.

So, its not that c phase apartments you are going to take a bath in the sea daily or the other phase department will not will not have that facility to do that its only just the view that if you get to see a view of the sea you pay higher you get to view get the view of a river or lake or something you might be asked to pay higher. So, that added value is because of a particular resource particular particular condition which is arising from that water resource.

Although it is of course, its non use value, but non use value also its not that it is going to add anything to the ecology of the system or something it is there as it is your your multistory complex will grow as per the citys norms as per these standards all these crowd and this thing is going to be there there is no biodiversity criteria and all that there is no legacy criteria that you will own that resource or those kind of thing you will pass it into the different future generations or heritage, but it is it is still the shear presence of that thing could add the value to the land.

So, thats totally indirect value the value of water is not changed here the total economic value of water still remains the same, but the value of the property or the land or these kind of services has changed. So, there is there is impact of the value of water on to the different additional elements as well in terms of the value of different additional elements if one sees that.

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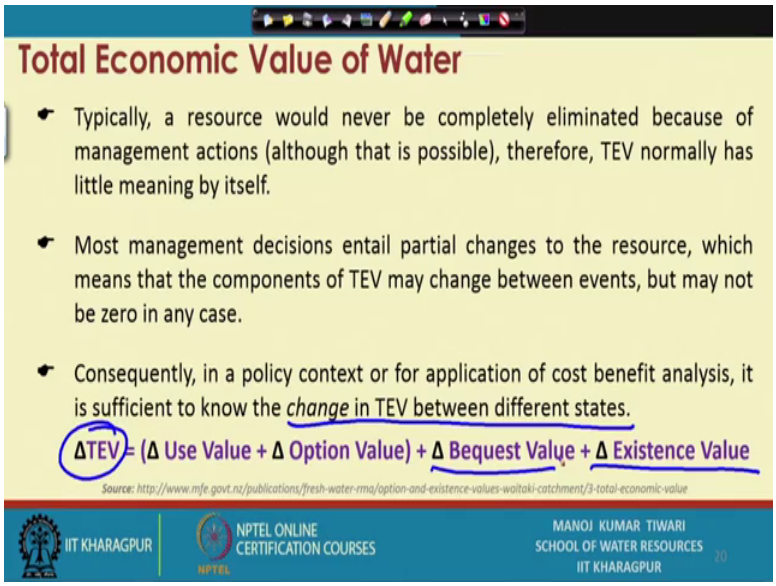

So, typically resource would never be completely eliminated because of the management action although on in practice that is possible there several resources has also been depleted, but not because of management actions primarily because of the natural actions natural calamities or natural changes or natural disturbances many of the water resources has depleted we have plenty of rivers dried plenty of lakes that has dried up we have lost the entire saraswati river in the rajasthan belt and all that. So, there there are that way the resource do get depleted.

However when we talk about the management aspect or valuation aspect or sort of assigning or whether certain activity or certain project or certain tasks how it is going to affect the value of water then in those cases generally for convenience purpose one can assume that that this sort of activity or project or this thing is not going to completely deplete the resource the resource is not going to be completely depleted or vanished. So, the total economic value of that water or resource is of very little meaning by itself there is not much value there is not much importance or not much significance of the total economic value of the water in such case what is of value then the value is to change in the total economic value of the water.

So, if you are having lets say lake and you if you are going to apply certain project how much is the change in the total economic value of that lake on today and after the project is employed or after the change has been made or after the proposed activity takes place

that estimation is of importance that whether you are at a gain or loss that will be the criteria or that should be the evaluation seek by the policy makers ok.

So, the management decisions should go based on the changes in the total economic value of water between different events or between projects before project after project and these kind of scenarios and should not be much concerned about the total economic value by itself because that is not going to be zero until unless that resource is completely depleted and as we discussed earlier that the depletion of the entire resource depletion is not that easy.

The typical management practices or the manmade interventions does not lead to the complete depletion of the resources in near future of course, in long term sustainability loss could be there which has been case with many of the water resources system with the development and all that; however, typically these small interventions or the short term interventions does not deplete the water resource completely and in that case instead of too much bothering onto the total economic value of the water one should focus on to the what is the net change in the total economic value of water.

So, in a policy context the when you tend to apply the cost benefit analysis for a project you should see that in terms of benefits or in terms of cost what is the change in the total economic value between the different states or means the state before the project implementation and state after the project implementation or state before taking on certain activity or state after that activity has taken place of course, one can add a project beginning level one can do a sort of presumptive estimation as well that what will happen forecast kind of thing that what will happen if this project is implemented because this cost benefit analysis and all that many times is done before the project is implemented in order to see whether there is financial viability of this project or not.

So, if one is seeking those sort of decision making based on the value of considering the value of water total economic value of water. So, one must see that one must understand that the importance is not the total economic value of water as in whole, but what is far more important is the total economic value change that that particular activity or that particular project is going to bring to that resource or to that water. So, when we we see that what is the total what is the change in the total economic value. So, that case our this delta tev becomes a far more important quantity rather than just the total economic value

and how this will be estimated this will be again estimated based on the changes under different use and non use value of the resource.

So, what is the change in the existence value. So, what was the existence value earlier and how this existence value has been changed. So, for example, lets say if you are willing to if you are willing to discharge the citys see wage in a lake right now if you are willing to discharge the city sea ways in a lake. So, if you see the non use value. So, earlier the lake water was supposed of good quality and then if you are discharging waste now if it is nicely treated waste it is probably going to add to the existence value of water because the treated water coming into the lake is going to increase the sort of water availability in the lake and more water could tend to basically be favorable for greater biodiversity aquatic biodiversity or to even terrestrial biodiversity depending on the water sources.

So, those kind of thing in its existence a lake which is lets say a half empty and all that will get more water. So, that existence value increases; however, the same time if lets say your the water or the sea wage which you are treated sewage which you are discharging is not fully treated its just a partially treated or untreated sewage that you are discharged discharging. So, the lake volume is increasing there is a some gain towards the existence value, but the same time the quality of water is deteriorating. So, there is a loss of existence value as well because the the ecosystem for the survival of ecosystem are greater biodiversity we need clean water resources not the polluted one

So, with the polluted water putting into the into the lake there is a possibility of decrease of existence value; however, the water putting water into the lake which may not be having adequate amount of water earlier is of addition to existence value. So, this has to be balanced out this has to be calculated that prior the project whatever the amount of water and whatever the quality of water in the lake was how it has shifted post the implementation. So, when you have implemented that particular project or when you sort of you can forecast that also as i was saying. So, you can you can quantify or you can make some assumption that what is likely to be the existence value of the water or change in the existence value of the water when i am adding this particular treated sewage in that lake

So, that way there is a possibility of either increase or decrease in the existence value the bequest value is again may not change that much based on the legacy and all that; however, that there could be another criteria and all that lets say if some if you are going to declare something as a heritage site. So, a lake or a pond or a well in that heritage site which earlier had very low bequest value could significantly gain the very high bequest value.

So, ecological existence value is not going to change in that case lets say i have a fort and there is a well that fort and that fort has been sort of considered or declared as a heritage site or this kind of or for tourist purpose and these things started coming or tourist promotion activities being planned. So, how this will have how this will help this is not going to help the ecological value. So, that way the ecological existence value might remain the same, but its bequest value is likely to change. So, what change in that value is basically coming that needs to be understood for valuation of the project.

Option value again will have impacts that based on this like what are the future aspects and what are kind of uses can be done. So, based on the project to project it will have its own option value this thing and the uses value are the one which is will also be governing largely the change in the total economic value of water. So, earlier uses value lets say pick take back the lake example again and if you are having a lake and you are putting seabird sewage discharge in that lake. So, the boating and all that activity within that lake which people who are doing could actually go away with. So, there will be drop in the users value in some cases it can enhance also if you are putting treated sewage and all that and then volume increases there is more of navigation there is more of fishing can be done there is sort of you can take some water for another activities. So, those sort of uses value could increase or could decrease depending on the project to project and there is likely to be a net change in the users value also which can be estimated.

So, one can independently estimate the changes in the different values use uses values option values and non use values and sum them up some all the changes with positive and negative signs there might be some changes might be negative some changes might be positive or all may positive all may negative depending on the intervention they are depending on the project or policy. So, for all this thing a net change in the total economic value of water can be estimated which would help in identifying to whether for go for certain type of activity or not. So, thats the thats the point that one needs the

policymaker needs to understand and needs to analyze in terms of the valuing water resources. So, we will end this lecture over here and in next lecture we will subsequently discuss how what are the various valuation techniques of the water.

Thank you.