Environmental and Resource Economics
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Effectiveness of Incentive design and Economic valuation of Environmental goods and service Part – 7

Welcome to our discussion on environmental economics and today we are going to talk about economic valuation of environmental goods and services which is a new topic that we are going to start from today onward and this is also a very very interesting and important topic in the context of environmental economics. So, the topic name is economic valuation of environmental goods and services.

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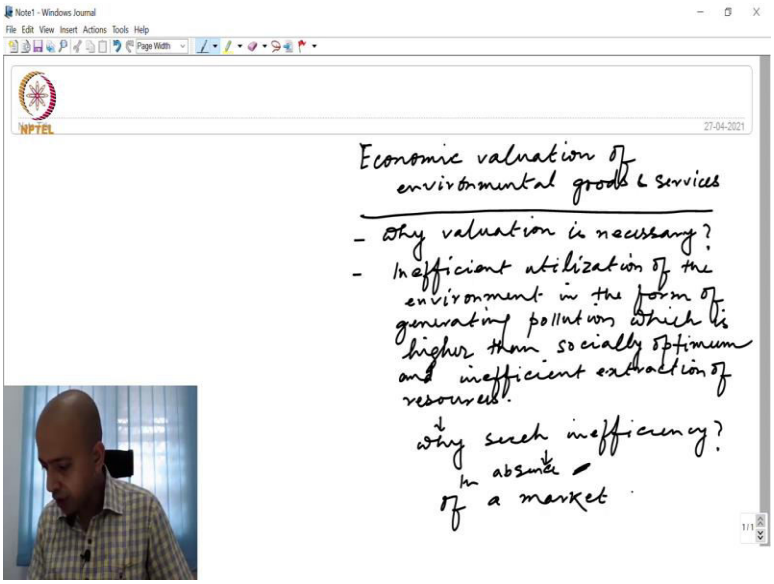

So, this is economic valuation of environmental goods and services. This is what we are going to talk about today. So, first of all why do we need to learn the valuation of environmental goods and services? So, the first question what we need to answer is, why valuation is necessary.

Now, to answer this question, if you go back and think closely the basic objective of this course this entire course of environmental and resource economics is to answer is to find out a suitable answer for environmental degradation and when I say environmental degradation, it happens in two ways.

Either we pollute the environment or we extract the resources inefficiently. So, that means basically inefficient utilization of the environment. So, inefficient utilization of the environment leads to environmental degradation. So, we are trying to understand why such inefficiency occurs in the context of utilizing environmental goods and services.

So, the point here is we observe inefficient utilization of the environment in the form of generating pollution which is higher than socially optimal and inefficient extraction of resource. So, this is what we understand by environmental degradation. So, if somebody asks you what is environmental degradation basically inefficient utilization of environment.

Now, environment you can think of as an input in our production process. So, that means, when you generate pollution as a by-product of any productive activities, environment by its absorptive capacity absorbs those pollution. So, that means, when I am throwing garbage to the environment when I am polluting the environment, basically what I am doing I am inefficiently utilizing the service of the environment as a dustbin, if you think about three different services, what we discussed earlier we are talking about inefficient utilization of the service or the environment provide and inefficient utilization of the extraction of the resource also.

Now, why is such inefficiency? Next question is then arise, why such inefficiency? Now, if you recall when we discussed about market failure and government intervention we say that market actually achieves market actually allocates the resources efficiently. So, that means, market ensures that goods and services are consumed by those customers who value them maximum.

Now, what happens in the context of environmental goods and services for most of the environmental goods and services there is no market there is no market and when market does not exist, so, obviously, when market does not exist the valuation what we get for the environmental goods and services becomes improper, improper valuation of environmental goods and services in absence of a direct market for these goods and services. So, the inefficiency basically occurs in absence of, so, in absence of in the absence of a market. Why this is so?

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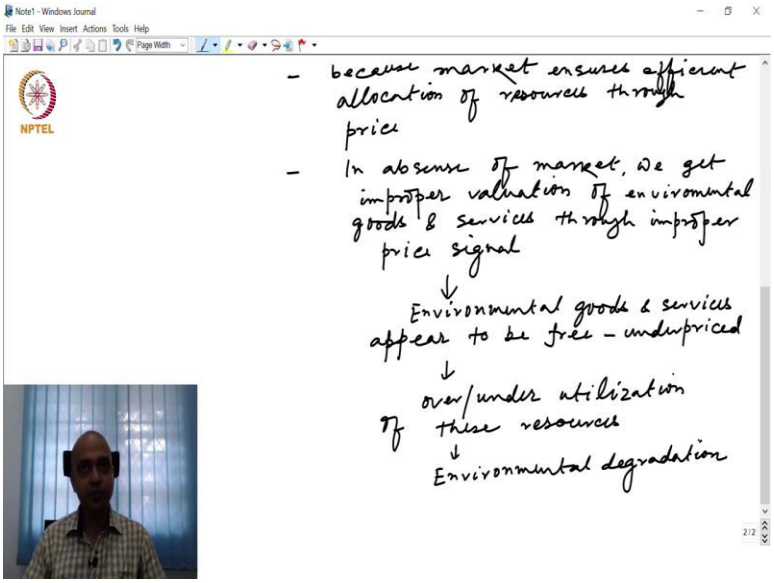

Because market ensures efficient allocation of the resources through price mechanism through price instrument. So, price is the single most powerful instrument that market utilizes to ensure efficiency in resource allocation and resource utilization.

Since there is no direct market for most of the environmental goods and services, we get improper valuation because of this improper price signalling. So, that means in absence of market we get improper valuation of environmental goods and services. For most of the environmental goods and services, the price signal what we get is improper.

So, what happens through this improper price signalling these environmental goods and services appears like a free good. What happens here environmental goods and services appear to be free. They appear to be free and when environmental goods and services appear to be free that means, the moment that they are under-priced. So, these are under priced. So, that means they are under-priced pricing.

And since they are under priced we tend to consume more of these goods and services. So, that means, this under-pricing leads to over utilization or sometimes under utilization of these resources most of the cases it is over utilization there are very few cases where we get underutilization of the resources also.

So, this over utilization of the resources leads to environmental degradation. So, if we connect the points what we have discussed right now in the context of environmental degradation then

what happens the major source of environmental degradation is basically inefficient utilization of these goods and services.

Why inefficiency arises in absence of the market because economists they are a great believer of the market mechanism what they believe if market exists then market through its single most powerful instrument price pricing mechanism ensures that efficient allocation and utilization of resources happens, how, because, through pricing mechanism market ensures that goods are consumed by those who value them maximum. That means, we get a proper evaluation of the goods and services and then market allocate those goods and services to those particular consumers who have the maximum.

So, that means, the existence of market is a necessary prerequisite for efficient allocation of resources. Now, what happens in the context of environmental goods and services, these goods are mostly non market goods. That means, there is no direct market for these goods and services. in absence of a direct market, what the price signal what we get from for this is environmental goods and services are improper and improper price signalling will give you improper valuation of these goods and services.

So, most of the cases environmental goods and services they appear to be free. So, that means, they are under priced and this under pricing because of this under pricing, what happens consumers they tend to over consume the goods and services and as a result of which environmental degradation happens. So, that means somehow to protect the environment from degradation, we need to have a proper valuation of these goods and services.

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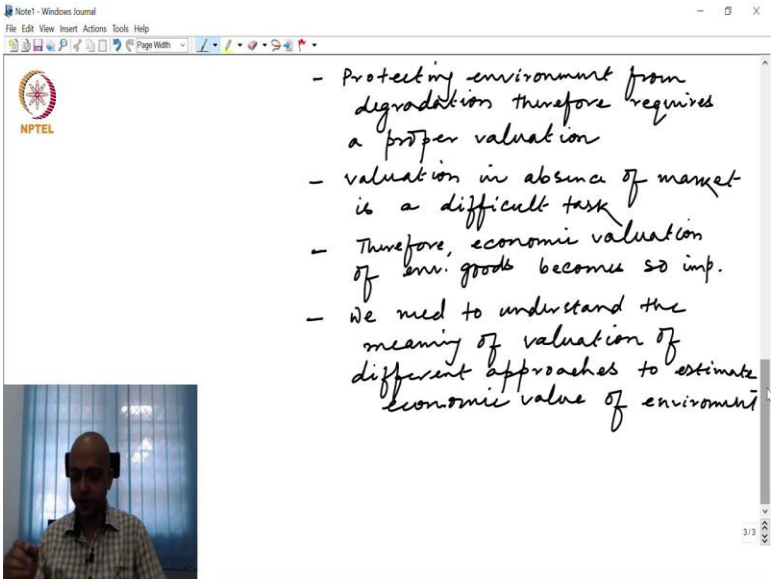

So, that means protecting environment from degradation therefore request a proper valuation and valuation of the environmental goods and services in absence of the market is challenging valuation in the absence of market is a difficult task and therefore, environmental economics they devote a good amount of time to understand what exactly valuation means and different techniques to come up with a proper valuation.

Therefore, environmental economics therefore, economic valuation of environmental goods becomes so, important and that is the reason we will devote a good amount of time to understand different techniques different ways different approaches of estimating economic value of environmental goods and services.

So, that is the objective of our today's discussion. So, that is the reason we need to understand the meaning of valuation and different capital approaches and different approaches to estimate economic value. So, we will now discuss about different approaches for estimating the economic value of environmental goods and services.

Before we discuss about different techniques for estimating the economic value of environmental goods and services, let us spend some more time to understand what exactly economic value means. So, let us say that this is total economic value total economic value is then categorized into different categories.

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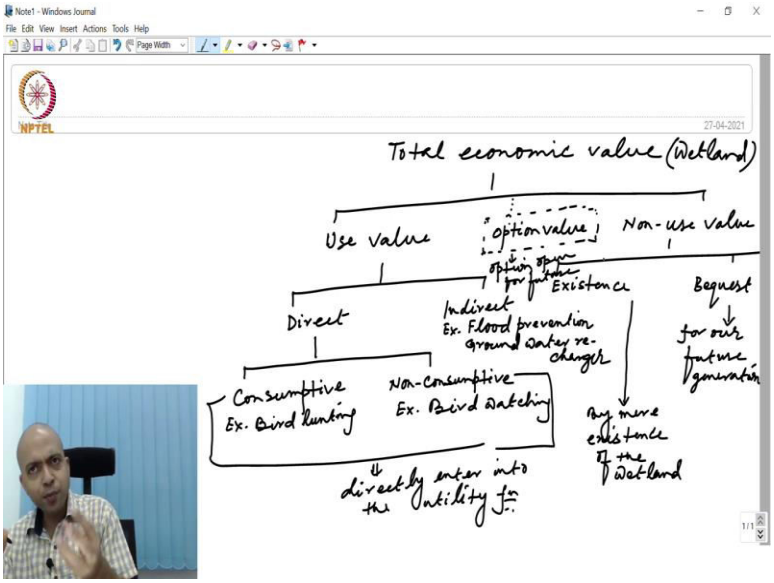

So, total economic value if you take then this is total economic value total economic value which is first categorized into two use value and non-use value.

So, total economic value is first categorized into two use value and non-use value then use value is again categorized into two direct use value and indirect use value direct and indirect and non use value is categorized again into two which is existence and second one is bequest value existence and bequest value. Some other economists they say that apart from use value and non-use value we have another category of value which is called option value.

So, I am just keeping these into dotted line with to make it clearer that this is not supported by everyone there are only a few economists who believe that apart from use value or non-use value there is one more category which is option value then directives value is again categorized into two first one is called consumptive and non-consumptive.

So, now, I will give you an example. So, that all these categories of economic advantage become very clear to you, let us say that we are trying to find out total economic value and wetland of an wetland. You all know what is wetland? Wetland is basically a large water body full of flora and fauna and wetland provides many services for which we need to understand the total economic value of this wetland before actually we use this wetland for some other developmental activities.

So, first of all, when I say use value of wetland and there is direct use value and indirect use value then we said that consumptive and non-consumptive. What is consumptive use value? Consumptive use value of an wetland is that that type of services which the which we directly consume. For example, wetland in an wetland you see there are many birds and if you use those birds for consumptive purpose that means you are actually going for a bird hunting.

So, for example, I will say that this is bird hunting and if you do not want to use the birds for consumptive purpose, then what you will do in non-consumptive use value this is called bird watching. So, that means, I can simply watch those words and derive some amount of utility. So, that means, whatever we can consider whether it is consumptive or non consumptive see these type of values we are calling it direct, because they directly enter into the integrity function.

We as a as an individuals, we as the users have the resources, what we do these type of services, they directly enter into our utility function. When we go for bird hunting, we hunt the birds and use them and eat them and consume them directly and enjoy. So, from that also we get we derive some amount of utility, if you do not use the birds for consumptive purpose, then also simply by watching the birds playing on the water body, we derive some amount of infinity and that is called non consumptive.

So, that means both consumptive and non consumptive they directly so I can say that directly enter the utility function. But indirect use value when we talk about indirect use value. That means in this case, there are certain services provided by the wetland, which do not they do not directly enter the utility function.

For example, can you think of some services some important services provided by the wetland, but they do not directly enter the utility function. For example, wetland acts as a preventer of flood, so, that means prevention of flood or flood prevention. Secondly, the wetland is or wetland also acts as a groundwater recharge. So, groundwater recharger.

So, these are all important services, but they do not directly enter into our utility function like these two categories consumptive and non consumptive use values they are direct, these are indirect we derive some benefit from the wetland, but they do not directly enter into our utility function. Then we come to non-use that what is the first category first category is existence

value. That means, as an individual we we get some kind of benefit or satisfaction simply by knowing that there is a wetland existing in some other places.

For example, let us say there is a wetland in Pallikaranai marsh in Chennai, I have never been there, but I have never been to that Pallikaranai marsh and in future also there is no guarantee that I will visit that wetland in some way or the other, but simply by the fact that there is a wetland exist in such a place I get some kind of satisfaction I get some kind of satisfaction from near existence of the wetland.

So, existence value is then by mere existence of the wetland. This happens in case of other environmental resources as well. For example, let us say we all know about Amazon forest and then we have let us we have never went to the Amazon. In future also, there is no guarantee that you will visit Amazon but when you see in the news that there is a fire in the Amazon forest do not you feel very bad. Yes, we feel bad. Why we are feeling that because neither directly or we are not going to use the resource directly neither for consumptive nor non consumptive purposes.

But then why we are filling bad because from the very fact that Amazon exists, we derive some amount of satisfaction, some amount of utility that is called existence value. So, that is also some kind of value, because of the mere existence of environmental resources, we derive some kind of satisfaction then, what is bequest value? Bequest value is for our future generation.

So, that means, I am not visiting the wetland or I am not visiting Amazon forest but who knows my son or daughter may visit that is why I want to preserve the resource for my future generation and for that, I am ready to pay some amount of premium for preserving the resource. So, this is called bequest value.

So, that means there is the environmental resource provides me some amount of satisfaction thinking that in future, my son and daughter, my future generation would be able to enjoy the resources in some way or the other that is called the bequest value and when you talk about option value that means, I am not using the resources now, but I am keeping my options open for future use. So, this is option open for futures.

Now, there is a difference between option value and bequest value bequest value is the value for my future generation. This is also future value but my for myself, I am only thinking today I am not using the resource but I am interested in preserving the resource for tomorrow because I want

to use that tomorrow. So, that means I am keeping the option open for myself that is why it is called option value while bequest value is I am interested in preserving the resource for my future generation.

So, this this particular framework gives an idea what exactly is total economic value. Now, there are different approaches there are different approaches to estimate the total economic value and there is no guarantee that all the approaches what we are going to talk about, they will capture the entire economic value, some approaches they captures the entire economic value while the other approaches they may capture only a part of this total economic value.