

**Environmental and Resource Economics**  
**Professor Sabuj Kumar Mandal**  
**Department of Humanities and Social Sciences**  
**Indian Institute of Technology Madras**  
**Introduction to Environmental Economics and**  
**Environmental Kuznets Curve Hypothesis**  
**Part - 1**

Welcome to the course Environmental and Resource Economics. And, before we start discussing about this course, firstly, what we need to do is to understand, why there is a need to study Environmental and Resource Economics.

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Environmental & Resource Economics

- What is the justification of studying Environmental & Resource Economics?

What is the environment?

Geosphere, Biosphere, Atmosphere

Environment = Geosphere + Biosphere + Atmosphere

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So, the course title as I said, this is Environmental and Resource Economics, Environmental and Resource Economics. So, 1st question what do we need to understand is, why there is a need to study this course Environmental and Resource Economics that means, what is the justification of studying Environmental and Resource Economics, this is what we need to understand first.

Now, the justification would be very clear to you, if you understand first, what is environment and then what is the rule of economics in dealing with the environmental issues. If you recall from our discussion of even Principles of Economics, that economics is a discipline which helps us understanding how to allocate scarce resources efficiently, so that we can get the maximum utility or satisfaction out of it.

So, that means in short economics role is to help us understand efficient allocation of scarce resources that means, we can justify studying Environmental and Resource Economics, if at all we make sure that yes, environment is also a scarce resource and there is, that is why economics can play a role even in the context of environmental management or dealing with environmental issues.

So, what we will do? We will first try to understand, what is the environment. What is the environment? Can you think of? What do you understand by environment? Take a minute, and think about it. When I say environment, what type of picture comes to your mind. Many people, when this question is asked, they think that environment is our surrounding that means, what do we see around us, the blue sky, the sea, the river, the trees, the birds, the cows, the human beings, so on and so forth. That is the general understanding of environment.

But in this course, we will be dealing a particular definition and particular concept of environment, which probably you have not thought about so far. And the entire discussion of environmental economics is based on this particular concept. Please try to understand and concentrate on the concept of environment, the environment.

So, let us assume that this is our earth. Let us say that this is our earth and there is an inner layer around this earth, this is a layer inner layer, where you will get all the valuable minerals like coal, oil, several other minerals, this is the inner layer of the earth. Do you remember what is this inner layer called? Probably in your 8th or 9th standard environmental studies in your school, all of you, I am sure all of you have studied environmental studies. What is this layer called, the inner layer of the earth, where we get the deposits of all valuable minerals? This is called geosphere, the inner layer of the earth, it is called geosphere.

And then, the outer skin of the earth, there is the outer skin of the earth where actually we the human beings and all the flora and fauna, they reside, this is the outer skin of the earth. What is this outer skin called? Where all of us we the human being all other living animals, living creatures, flora and fauna, we all reside we all live in this outer skin of the earth which is called biosphere, this is called biosphere.

And then, above the biosphere there is another layer where all the valuable gases belong to this outer most layer which is called atmosphere. That means, our idea our conceptualization

of environment is the summation of all these three spheres; geosphere, biosphere and atmosphere. So, that means when I say environment, you will understand it is basically the summation of geosphere, biosphere and the atmosphere. So, this is the idea of environment.

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The whiteboard contains the following handwritten text:

- Economy: Economic Agents (Ex. individuals, firms etc.)
- = Economic agents + Institution + market
- ↑ market
- Institution: A set of rules that shape the behaviour of economic agents.
- Ex. The Govt.
- Interlinkages between the environment and economy.

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The whiteboard contains the following handwritten text:

- Environmental & Resource Economics
- What is the justification of studying Environmental & Resource Economics?
- What is the environment?
- Environment = Geosphere + Biosphere + Atmosphere
- Diagram: A circle labeled 'ENVIRONMENT' with three concentric regions: 'Geosphere' (outer), 'Biosphere' (middle), and 'Atmosphere' (inner).

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And then we will try to understand, what is basically the economy? By economy, we understand that it is a summation of economic agents. Who are the economic agents? Economic agents are those entities, who actually take economic decisions. Like for example, economic agents are individuals, firms, etcetera. We all are economic agents, if you think of because in our life, we all take economic decisions. For example; what to eat, how much to

we eat, what to buy, how much to buy, knowingly or unknowingly, all of us we take economic decisions.

Similarly, a firm is also an economic agent, because firm also take economic decisions like; what to produce, how much to produce, all this decision, how much capital to employee, how many labors to hire. So, these are all economic decisions taken by these economic agents.

Then we have institution. What is institution? Institution is a set of rules that shape the behavior of economic agents. So, institution is a set of rules that shape the behavior of economic agents. Can you think of then, what is institution in reality? We all are, all of us, we have seen, we all of us experienced institution and the most common form of institution is the government.

What is government? Because government is nothing but a set of rules, government will tell us what you will eat, what I will buy, our behavior, how much tax to pay, in our society we cannot behave according to our own wishes, there are certain rules and regulations, we need to follow in a civilized, to live in a civilized society and who decides these rules, this is the government, that is why we call government is an institution and then the economic agents and institution there is an inter linkages between these two, who interlinks these economic agents with institution that is the market.

So, market helps interacting these two economic agents and institution. Is this clear? So, that means, when I say economy, economy is a summation of economic agents, the institution they form, the market. So, this is called economy. Economic agents, institution and market, they form the economy, any economy, it might be Indian economy, it might be Bangladesian economy, U.S. economy. Wherever you go, by economy, we mean economic agents institution and market.

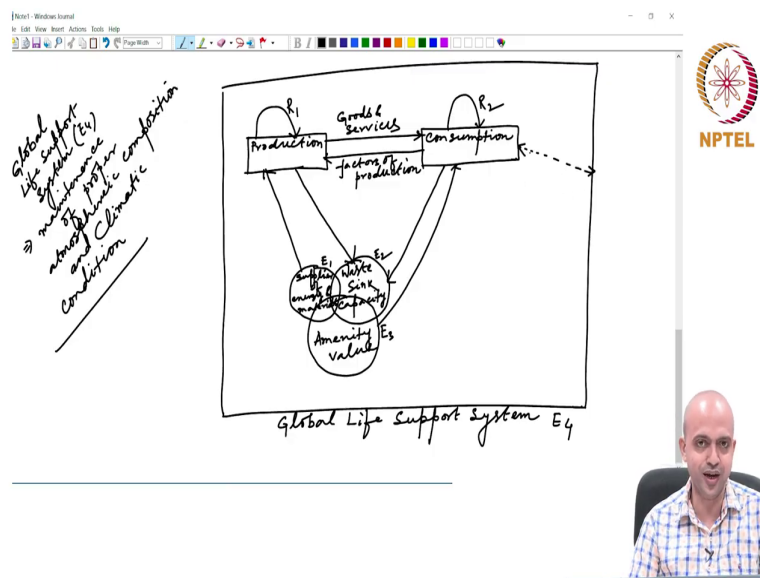
Now, the environment and the economy, there is some kind of interlinkages, what I was saying that we will justify the importance of studying environmental economics that means, we are now trying to understand the marriage between economics and environment and to understand that marriage, we will try to understand the interlinkages between the environment and economy.

Now, look at here, I am saying the environment, but I am not using any the before economy. Why? Because there is only one environment that all of us are facing, but there might be

many economies in this world it might, as I said it might be Indian economy, Chinese economy, Bangladesian economy, U.S., U.K. or Singaporean economy, but all of us, all these economies are interacting with only one environment, that is why this is called the environment. And, what is that environment?

This is the environment we are talking about, this is the environment. So, we are trying to understand the internal linkages between the economy and the environment. So, that means, how the economic agents decision making affect the environment and how environment in turns give a feedback which will again shape the behavior of the economic agents that we are trying to understand.

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So, if you think of, we the economic agents while making our economic decisions while taking decisions, we derive three important services from the environment. What are those, can you think of? What are the three important services that we derive from that environment? So, the 1st type of service is this, this is called E1, from the environment we derive the materials for our production. So, environment acts as a supplier of energy and materials.

For any type of production, what do we need? We need energy and material and that energy and material from where we are deriving? We are deriving this from the environment, then secondly, in the process of production and consumption, we derive, we produce a lot of garbages, lot of garbages we produce. And, what do we what with those garbages? We throw,

some amount we recycle and remaining which, we cannot recycle, we simply throw it to the environment. So, that means the environment acts as a dustbin, as a dustbin all the garbage is in the process of production and consumption, we are throwing to the dustbin.

So, then the 2nd important service that we derive from the environment, is the waste sink capacity, which is let us say E2, waste sink capacity. And then thirdly, there is one more service that we derive from the environment. Can you think of? When you go to the river, or when you go to the mountain, when you go to the sea. What, why do you go to the sea? Why do you go to the river side? Why do you go to a forest? Why do you go to the hilly areas? Because you want to enjoy the beauty of the nature and when you enjoy the beauty of the nature that is called the amenity value of the environment. So, what is it called? The amenity value.

Now, from this E1, E2, E3 these services they either enter into the production side of the economy or in the consumption side of the economy. Let us say that this is the production side, this is production and this is consumption. So, from the production side what comes to the consumption side? Goods and services. And, what comes from consumption side to the production side? That is the factors of production.

Now, from this E1 circle, the energy and material they go directly to the production. This amenity value directly go to the consumption and then whatever energy and material go to the production side you all of us, we use some amount of energy and materials in the process of production and then we create garbage, some amount of garbage is also recycled this R1 indicates recycling, this is called R2, this is called R2 and then what we cannot recycle, that we throw here from both the production side as well as the consumption side whatever we cannot recycle we simply throw it to the environment that means the waste sink capacity, we are using.

And these, all these activities; production, consumption, E1, E2, E3 all these activities are encapsulated under a bigger umbrella which is called E4. This is called E4, which is called the global life support system E4.

What is this global life support system? This global life support system is, so apart from E1, E2 and E3, what is this E4, then? This is also another important service that we derive from

the environment. Environment also maintains the appropriate atmospheric composition and climatic condition.

Atmospheric composition means for our living we need a proper combination of nitrogen, oxygen and carbon dioxide and who maintains that the environment. If this balance, if the composition of these gases gets disturbed, then we cannot survive, when there is too much of carbon dioxide accumulation in the environment, as you all know, that will create, that has been actually creating and we are experiencing global warming and climate change.

So, our survival in this earth is getting destroyed. For our living, we also need a proper climatic condition, temperature, if the temperature is too low or too high, then these human beings and all other creatures, we cannot survive. So, that means the E4 indicates maintenance of proper atmospheric composition and climatic condition, this is E4.

So, what we do in the process of production and consumption, we disturb the environment that means we throw garbage to the environment and environment in turn also gives feedback. From the production and consumption side, we disturb the environment and they also give feedback.