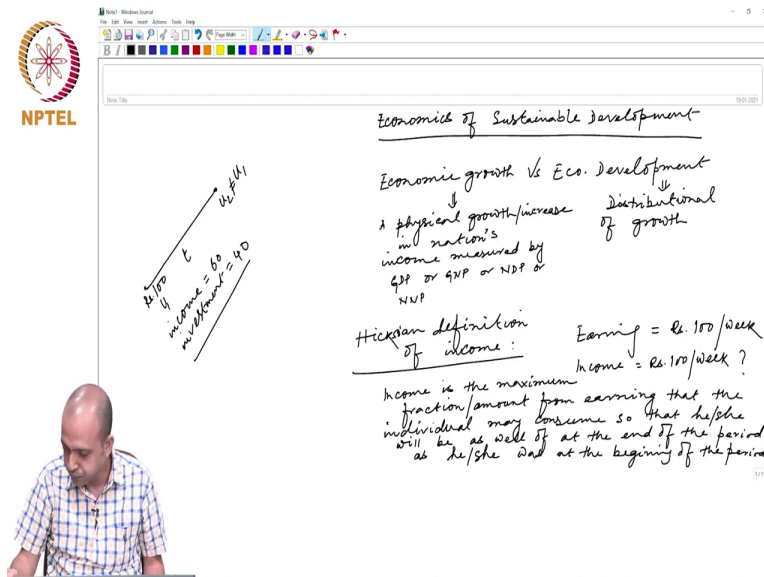


Environmental and Resource Economics
Professor. Sabuj Kumar Mandal
Department of Humanities and Social Sciences
Indian Institute of Technology Madras
Policy Implications of Environmental Kuznets Curve and Economics of Sustainable Development part – 3

Welcome once again and today as we said earlier, we are going to discuss about economics of sustainable development.

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So, this is economics of sustainable development. Now, before we discuss about sustainability, let us try to understand the difference between development and growth, because quite often you see these two words growth and development, they are used interchangeably in literature as well as when we talk in media, in newsprint, so on and so forth.

So, it would be good to have a fair amount of idea about what exactly is the difference between economic growth and economic development. So, this is growth versus development, economic growth versus economic development. Now, economic growth basically indicates a growth in physical income.

A physical growth in nation's income, a physical growth or rise or increase in nation's income measured by, how do you measure nation's income? By measured, by gross domestic product

GDP or gross national product or net domestic product NDP or net national product NNP, these are several indicators of economic growth.

So, if there is a rise or increase in GDP or GNP or NDP or NNP, then we will say that country is growing. So, it is only growth indicates only a physical increase in country's income, but what about development? Development basically indicates whether this growth that means it adds qualitative dimension to this growth. So, that means, development basically indicates distributional aspects of growth.

For example, I would say that growth is necessary, but may not be sufficient to achieve economic development, why? If the country is growing, but the benefit of growth is enjoyed only by a few of the economy that means only very few people are enjoying the fruits of economic growth, then we will say that it is not leading to the qualitative improvement of the citizens of the country.

Because the distribution aspect is not considered here, if it is not properly distributed, then this growth will lead to only inequality. So, we cannot achieve development. So, growth is necessary, but then we need to adopt appropriate policies, so that we can ensure a proper distribution of this economic growth among all the citizens, then only the standard of living quality of living will improve and then we will say that country is growing at the same time there is overall economic development.

So, development requires growth, but it also requires additional policy imperatives, so that the distribution of this growth is fair among the people. So, that is the reason these two are different things, economic growth and development, growth is measured only by physical increase, development is measured by the qualitative aspects of the individuals that means whether quality of life is improving or not and that requires distribution a fair distribution of economic growth.

Now, when we say income, then another concept we have introduced here that a physical growth or increase in nation's income and as we said in our previous class, economist's they have a specific definition of income and that is quite different from what we understand as income. So,

it was John Hicks, who first introduced the economic definition of income that is why we will spend some amount of time to understand what is Hicksian definition of income.

Now, if I ask you what is income probably you will say income is nothing but somebody's earning, what we earn that is our income, but economists they say that income and earning they are two different things, we cannot equate income with earning, let us say that somebody's earning is 100 rupees in a week, can we say that that individual's income is also 100 rupees per this is 100 rupees, let us say per week.

Somebody's earning is 100 rupees per week, can you say that income equals to is also 100 rupees per week, while all of us believe yes this is the case, if earning is 100 rupees then income will also become 100 rupees per week, but economists they say that, this is actually not the case, if earning is 100 rupees income cannot be 100 rupees, it would be less than that, why this is so?

Because Hicks defined income as, income is the maximum fraction or amount from earning that the individual may consume, so that he or she will be as well off at the end of the period as he or she was at beginning of the period. So, income is the maximum amount or maximum fraction of earning that the individual may consume, so that the individual would be as well off at the end of the period, as he was at the beginning of the period.

So, the definition looks quite involved, but it is actually a simple concept to understand, let us say that this is period t is per week, month, year or whatever, this is the starting point and this is the endpoint. So, if the individual earns rupees 100 here and derive some amount of utility, let us say U_1 can the individual consume the entire 100 rupees, if the individual consumes the entire 100 rupees, then at the beginning of the period, the utility which is U_2 is not exactly equal to U_1 .

Whatever I earned I have consumed, so at the end of the period I have nothing to consume actually, I have nothing. So, that means the entire amount of earning I cannot consume, because then at the end I have nothing and my utility or wellbeing would be quite less than what I was enjoying at the beginning.


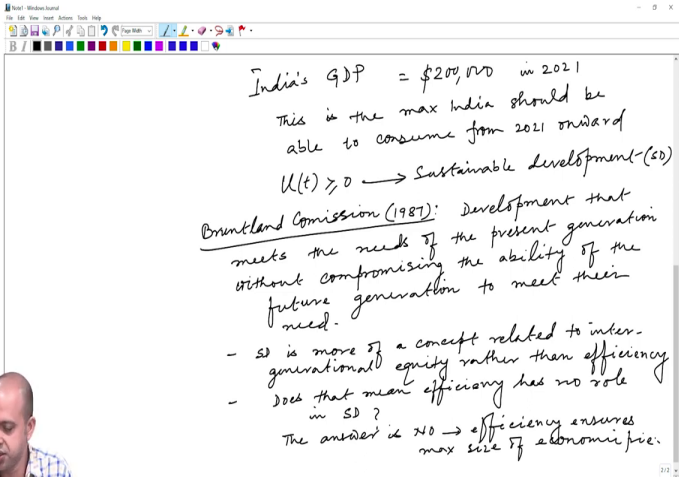
So, that means what the individual needs to do, every individual must ensure that a fraction of our earning is invested somewhere, so that, that investment generates future income, so that at the end of the period also we will enjoy that much benefit what we were use enjoying at the beginning of the period.

So, that means, if income is 100 rupees, let us say, so if earning is 100, let us say the income would be 60 and investment equals to rupees 40. These 40 rupees of investment will further generate future income, so that we will enjoy or we will ensure our future consumption. So, that means, investment is required to ensure future consumption, entire amount of earning if we consume today, if you do not invest anywhere, then we do not have any income.

You might be thinking at the end of the period or end of the week, I will again generate some amount of earning, so why do we require investment, in that case you think the period is actually your entire service life, your entire service life at the end of your service life then you have nothing, so what you have to do then, you have to invest at each and every period that will ensure your consumption after retirement, you can think in this way.

So, that means basically it says that income is actually a subset of earning and that subset is the maximum that you can consume from that period onwards, that is the maximum that you can consume from that period onwards throughout your life and how do you ensure that? You must invest somewhere. This is the difference between income and investment, income and earning. Now, if we apply the same concept in the context of a country.

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India's GDP = \$209,000 in 2021
 This is the max India should be able to consume from 2021 onward
 $U(t) > 0 \rightarrow$ Sustainable Development (SD)

Brundtland Commission (1987): Development that meets the needs of the present generation without compromising the ability of the future generation to meet their need.

- SD is more of a concept related to inter-generational equity rather than efficiency
- Does that mean efficiency has no role in SD?
 The answer is NO \rightarrow efficiency ensures max size of economic pie.

Let us say that India's income equals to 200 or 200,000 dollar in a particular period, let us assume that or let us say India's GDP, India's GDP, I would say GDP, what does it indicate? In every year the finance ministry will report some figure this year India's GDP is 200,000 billion dollar, what does it mean actually?

That means applying the Hicksian definition of income, we can say that this is the maximum India should be able to consume, let us say this is India's GDP in 2021, so the interpretation is this is the maximum, India should be able to consume from 2021 onward. But, do you think that if India consumes the entire 200,000 billion dollar in 2021 itself, then in 2022 India will have sufficient earning, sufficient income to enjoy the benefit what India was enjoying in 2021.

Actually no, because in these 200,000 US dollar, what we are actually projecting as income actually it is not income, because to generate this much of GDP, the country Indian economy has extracted many environmental resources, many minerals, many important minerals, oil, coal, so on and so forth. So, that means, contribution of those environmental resources are also included here.

And if we assume that resource talk is depleting in every period, then whatever we are earning now in 2021, the resource stock in 2022 would be such that India would not be able to produce this much of income, that means what do we require is actually a sufficient portion of this

earning should be invested. So, that at the end of the period, we are actually as well off as we were earlier.

Now, when we say that, at the end of the period our wellbeing will be as good as it was earlier, that means what we are doing, we are indirectly saying that our utility at time period t should be non-declining. So, non-declining wellbeing, so that means very particular definition of income itself is connected towards the sustainability.

Now, we will come back to the original definition of sustainable development, is this clear. So, income basically says the definition of income says that is the maximum that you can consume from that period onward, so that at the end of the period you are as well off, as you were earlier. So, that means, at the end of the period your wellbeing is equals to what you are enjoying earlier if not more.

That means you are indirectly saying that wellbeing should be non-declining over a period of time and non-declining wellbeing or non-declining utility is basically is some way or the other connected to the concept of sustainable development. So, this is basically sustainable development, we will discuss in detail now. So, this is sustainable development, non-declining utility or wellbeing. So, SD here onwards I will use the term is SD.

Now, sustainable development has nowadays become a buzzword, everybody is using the word sustainable development, we get the word in textbook, we get the word in journals, we get word in newspaper media, so on and so forth. But economist they use a specific definition for sustainable development and that we are going to understand now.

While there are many definitions of sustainable development available in the literature, the most popular one was given in 1987 by Brundtland Commission. So, this is the definition given by Brandtland commission in 1987, this is very, very important definition, what they say, development that meets the needs of the present generation without compromising the ability of the future generation to meet their need.

This definition is really appealing that means, a development that meets the need of the future, of the present generation without compromising the ability of the future generation to meet their

own needs. So, that means, in the process of development, present generations should use the resources in such a way that they keep enough for the future generation, so that they can also meet their own needs, that is the Brundtland Commission's definition of sustainable development given in 1987.

So, that means one thing is very clear from this that this particular definition of SD is more of a concept related to inter-generational equity rather than efficiency, because efficiency means that you try to maximize the present value, efficient utilization of resources basically means, that you try to maximize the present value, but sustainable development says that instead of achieving efficiency, we need to actually achieve intergenerational equity.

So, resources should be distributed on the basis of equality between present generation and the future generation. But it does not mean that efficiency does not have a role in, does that mean efficiency has no role in SD? When I say that sustainable development is more of a equity concept, it bothers more about it emphasizes more about equitable distribution of resources between present and future generation, it does not mean actually that efficiency has no role, because if the resources are efficiently use, then actually the size of the economic pie will increase.

Efficient utilization of resources, so the answer is actually no. Because, if efficiency utilization of resources, efficiency ensures maximum size of economic pie and if the size of the economic pie is maximum, then the present generation can actually keep sufficient amount for their future counterpart.

So, in that way, efficiency also has a role in ensuring sustainable development, but sustainable development the concept per say is more concerned with the equitable distribution of resources, not with the efficiency. Indirectly efficiency ensures a role by maximizing the size of the economic pie and when size of the economic pie is larger than present generation can keep sufficient amount for the future that is the role of efficiency here.