Sustainable River Basin Management

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Module – 01

Lecture – 03

Part - 03

Hello everybody to Sustainable River Basin Management module 1, part 3. We were last time looking at economic growth models and we will be continuing on this topic a little bit more.

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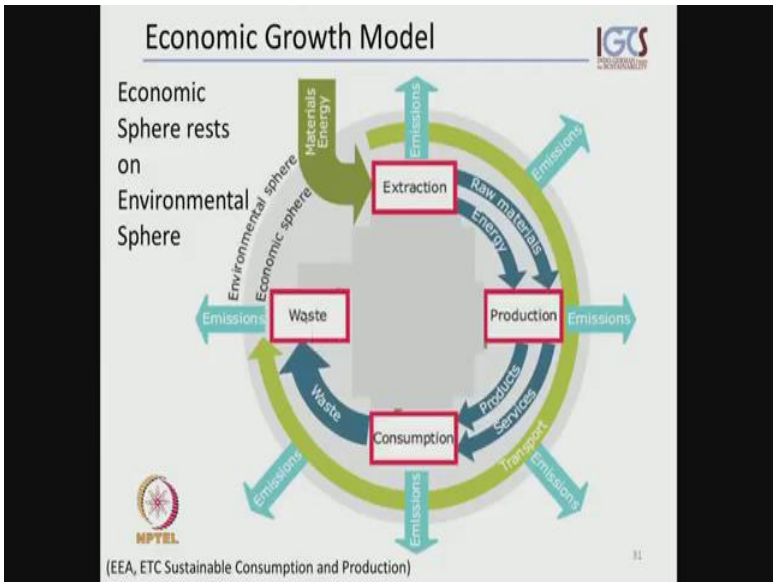

Our canon model, it tells an extraction, production, consumption and a waste cycle. It always requires an input of materials that have to be extracted from somewhere and an energy input. You can imagine, the similar cycle cyst on top of this an extraction, production, consumption, waste cycle. And this goes from a production cycle where emission's takes place, where waste has been produced to a consumption cycle and at each stage, we have emissions and emissions to the air.

We have waste seems to the soil and to water bodies, this means that our economics sphere is entirely resting on our environmental sphere and it is interconnected with

circles, which work in a similar way. So, what is our way out right now to such economic growth models?

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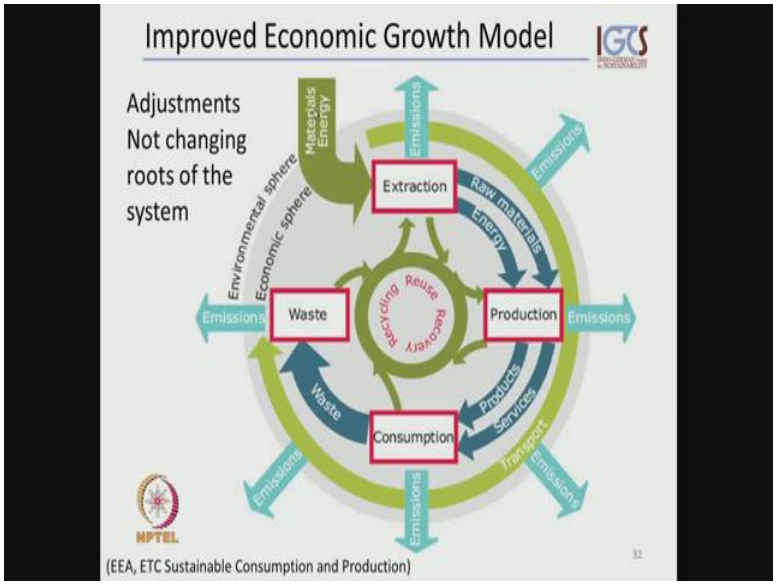

Let us call it improved economic growth model. So, we have same cycle, it is so resting our economic resting on our environmental resources and resource availability is still need a material and energy input to keep our circle moving from an extraction, production, consumption to waste. But, if added another circle where we try to do reuse, recovery and recycling, we reduce the amount of emissions, we reduce the amount of phase and we try to make this waste available as a resource again.

This is as you can see the overall concept has not changed, it is something that has been considered as an adjustment, but it does not change the rules of the entire system. So, this is something that still will not be a sustainable at a long time.

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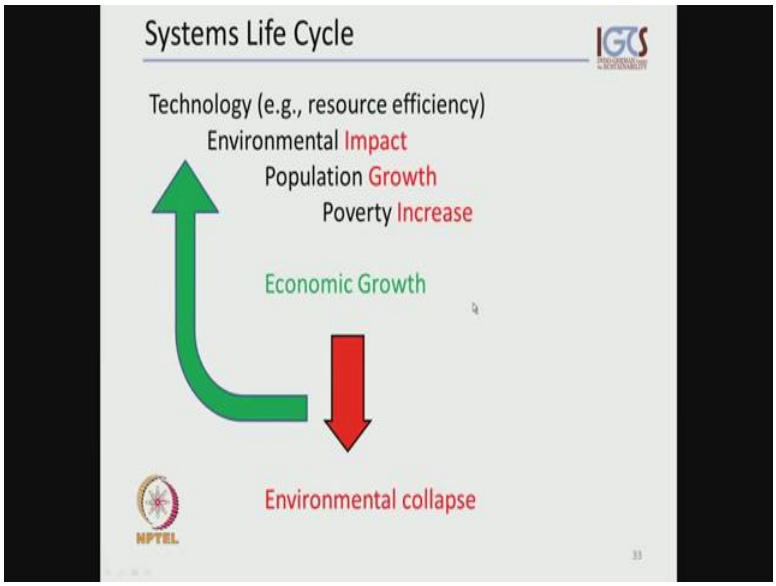

Looking at the systems life cycle from what we have just seen now, it entails a technology inputs, where we can drive changes, we can opt for resource efficiency, we can (refer time: 03:17) measurement, we can improve our technologies and change this influences. It always goes along with an environmental impact and that environmental impact in many of the cases will be a negative impact.

It also results in population codes, it influences our population number in a positive way, by increasing numbers and by increasing population numbers we also increase poverty. So, this is for, what we see as economic growth by now in our system, in which we live right now. But, taking all this together, any type of growths in all these components will eventually lead to an environmental collapse, because all of them thought from the environmental resource space. So, this is what we have changes have to take place, major changes in systems and this is what we would be briefly in touch upon right now.

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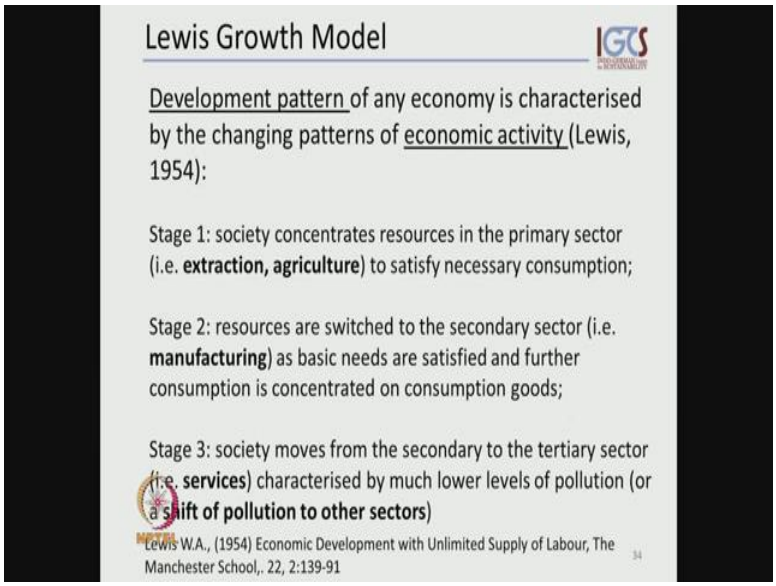

Let us look at systems at (refer time: 04:32) theories and one of them was produced by Lewis in 1954. You should read this article yourself, where development pattern of economies are characterized by changing patterns of economic activities. And what is meant by this is, is briefly listed here that in a first stage of development, societies would concentrate resources and primary sectors. And primary sectors would be the extraction in this space mining and agriculture, it could be (refer time: 05:15), it could be some wide life phase extinction.

And this is to essentially satisfy necessary consumption and whenever be a second stage following this first one, which would be a switch of the economy to secondary sectors and secondary sector would be any type of processing, value adding, manufacturing. This is to satisfy basic needs and this is based on the concentration of consumption goods so, there is shift or varying. And then we see, in more developed civilizations societies, they moved from secondary to tertiary sectors. And what is meant by tertiary sectors or services. those are usually characterized by much lower levels of pollution and this can take place in proofing technologies again or by simply shifting pollution to other sectors or shifting pollution to other continents or other countries. So, those are the way to make (refer time: 06:37) until we can look at this, see that development pattern in water use also.

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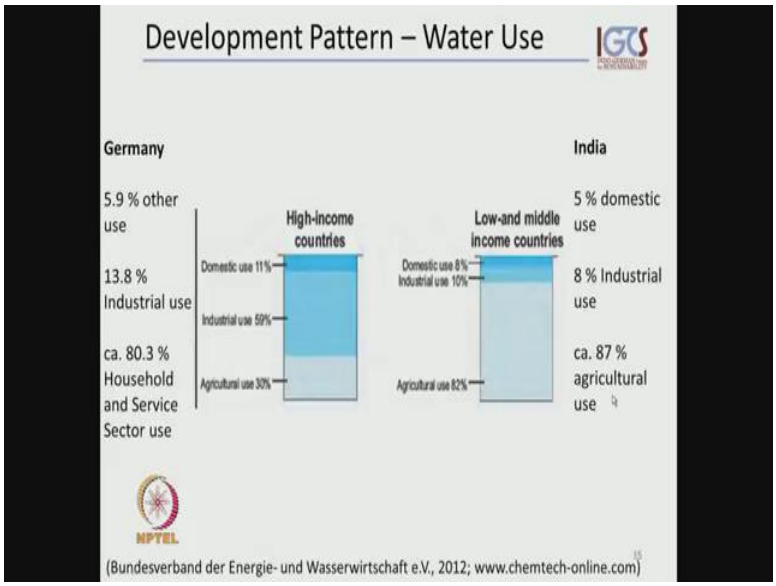

And it is what I want to show you here, a typical high income country, this is a typical low and middle income country, showing here and the major water use categories. So, we have in a high income country, usually about 59 percent water use for an industry, we have about 30 percent for agriculture and we have about 11 percent for domestic use. In a low and middle income country, agriculture would be dominating by around 82 percent and followed by industries around 10 percent and domestic at around 8 percent.

So, this is generic across the globe, now let us look at two extremes. On one end side of India, where we have about 87 percent of water use in agriculture, concentrated about 8 percent in industry and 5 percent present in domestic use. And the other extreme Germany, where we have about 80 percent of water use concentrated in services, about 13 percent or 14 percent in industries and about 6 percent in other uses and other uses would be agriculture (refer time: 08:17).

So, in this space of almost service sectors have become the major the use of water here. So, that is the typical stage sphere contain whereas the case of in general we could call, let say a continent could be a stage 1 or 2, if you follow this growth, economic growth model of use.

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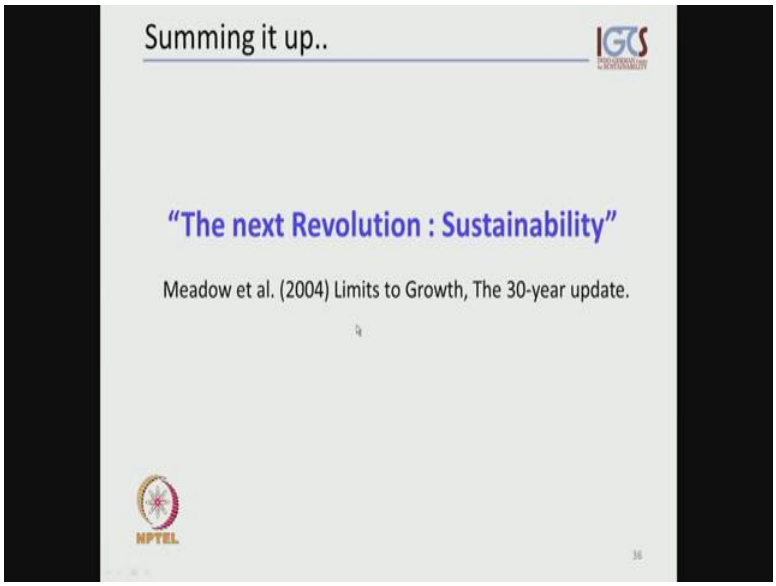

Now, just summing up what we have been listening to from the beginning, what is probably a phase quite appropriate is stated in Meadow et al, Limits to Growth, the next revolution will be sustainability. So, they really require a major change in systems, so that we could call a revolution, let us keep this in mind.

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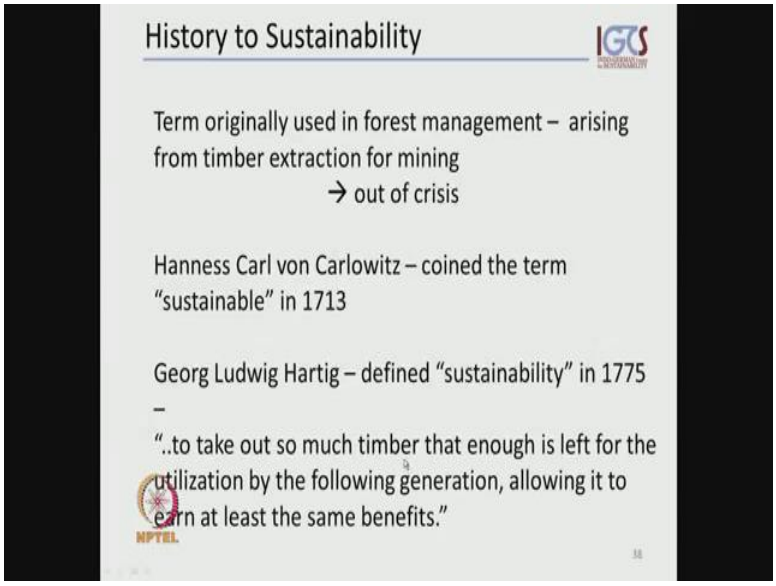

Now, let us just go back to the history of sustainability, where does it come from, why did we end up in such a course and why do we talk about sustainability. The term originated in Europe in forest management, because at the time a mining was taking up

almost all timber, all the forest were gone at a time and which created a crisis situation. And at that point the term sustainability or sustainable use was termed, this was around 1713 and the first finishing frequent caller like this of a sustainability was spelled out and documented at a time, which is essentially corresponds to what we have referred from the Brundtland report earlier.

So, this we have already looks at not just giving somebody a benefit today, making allowing that personal or society make perfect today, but allow future generations to earn at least the same benefits from it. So, this was we have got to timber production and growth management at that time.

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Now, we can look at the development of the sustainability concept and this starts around the beginning of the 20th century conservation movement and there is so called place based preservation. At that time many protected years were created first (refer time: 11:19) this was when people started realizing that time to tame wilderness, actually caused destruction. This was later followed in the 1950's only by the development of environmental laws and institutions and this was special remember the 1950's. The beginning of all extraction change of our economy to column based economy the population course and does a revolution taking place; this was at realization that chemical and physical agents from these industrial developments would be released into the environmental potential harmful for us. And only the 1970's something it can be

already called sustainability movement took shape or was to took shape and this was, when we started realize that ability of earth's ecosystems to provide for future generations will be compromised due to population growths and consumption.

In some disgenerated many discussions on global warming's in around 2010's discussion took shape on the growth and decoupling of human prosperity from environmental resource degradation. So, this is a movement that started at a time and is now taking off and would be influencing also is, already influencing critical decisions and will influence also approaches to how economics will recover educational systems, where transmits findings and so we will come back to this in a while.

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So, what are alternative to our current economic models and we would briefly dive to term green economy here, just to get a sense of what is meant by this. The prevailing model of economic course is based on consumption of natural resources and to the machine of pollutants of our waste into so called sinks. And we have realized that this cannot be sustained in anyway in a world that has an infinite resource and has only a finite ecosystem capacity.

So, that is something we have realized, now what can be done. First of all there are two things, targets that can be changed. One is the economy has to find ways to increase prosperity without increasing resource use and environmental impacts. So, now that

changes focus from consumption as it is right now to prosperity and we will be coming back to this term waste times later.

So, economy and economical development should not be linked to increase consumption but to improvement and prosperity and living quality. And the second target is to adjust our use our interaction by environment to the existence ecosystem resilience and all the carrying capacity and we should know what the trends and limits of this natural system are.

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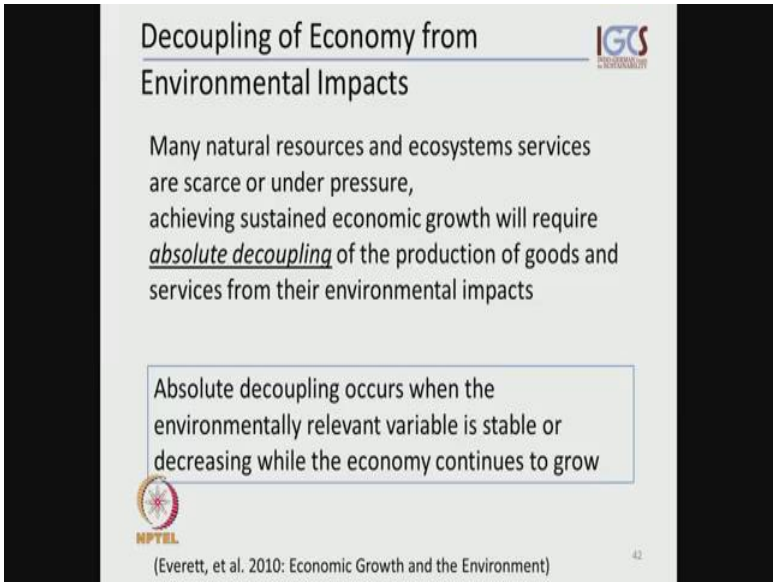

Now, what we mean by decoupling of the economy of formed by the environmental impacts and they are very good articles, which you can see yourself in a site at here. It essentially means that we have to decouple entirely the economic course from the production of goods and from environmental impacts. So, this is the nature challenge and needs a lot of research in material science and politics, political science and social economic science not only in engineering and technologies.

So, what you mean by absolute decoupling that occurs when environmentally relevant variables are stable and decreasing while the economy may stabilize or economy may continue to grow. So, this sounds fancy but system changes, we have already discussed and analyzed in centrifugal forum and also being, is of feeding into political ((Refer Time: 17:17)).

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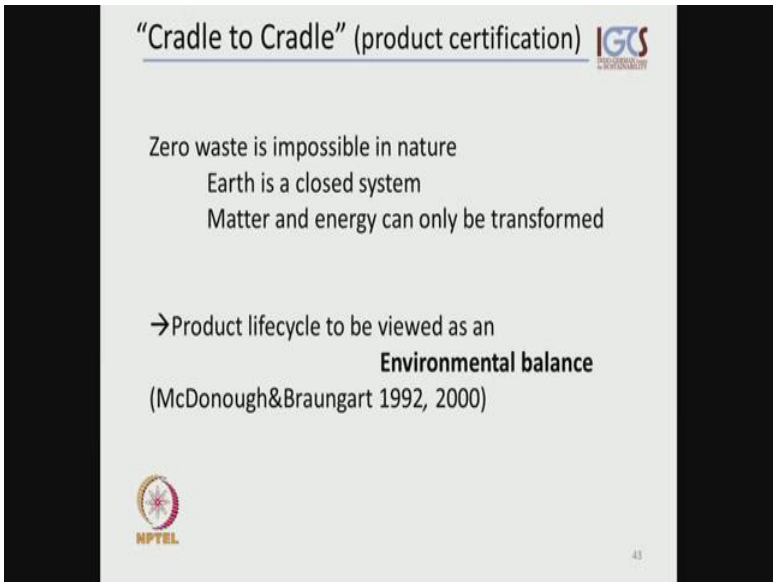

Now, one other concepts which have taken shape of ideas is called cradle to cradle concept. It is actually a same time product certification, which says essentially that there is no zero waste by nature, this is not possible, because our earth is a closed system and any matter, any materials, and energy can simplify only be transformed. We cannot create new material or new energy, additional energy out of our system. So, as a confirmation on what is waste to one becomes an inputs or source of food for the other. So, what we have to understand is that product life cycles have to be viewed as an environmental balance. So, it should not a (refer time: 18:25) source to sink relationship but the balance that should be equal on both sides.

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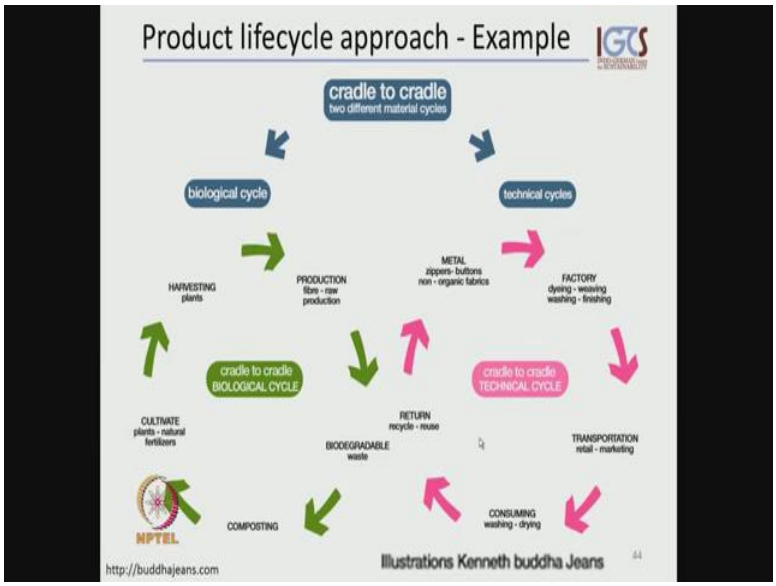

Now, let us look at an example and we take this example from this cradle to cradle. Company that expressed its first time, but that is something that has been, try to be in a process of being implemented at policy level right now. So, what we see here is we can differentiate our relationship in natural resources in two ways, either the biological cycle or technical cycle. But, in any way both, touching each other, or interconnected with each other, so we can analysis those cycles independently or we can analysis jointly and can work on each of these steps influence them.

In a way, we conduct an environmental, we produce and environmental balance and we make sure that resources are captured and waste is captured as a resource and made available for different production processes or different biological processes at a later stage. So, this is what is being attempted in textile industry for instance in this specific case, but also in another technologies another in production cases.

We will stop here and see, again next time.