Strategies for Sustainable Design
Professor Dr. Shiva Ji
Indian Institute of Technology, Hyderabad
Lecture – 8
Economic Sustainability

Hello everyone, today we will discuss about Economic Sustainability.

(Refer Slide Time: 00:19)

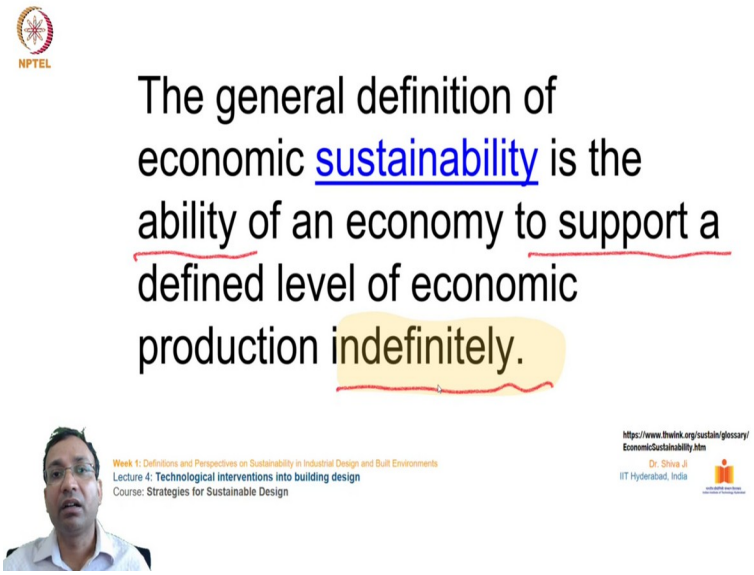
So, when we observe the global trends how things are happening across the world. Economy and population are the driving forces; that is leading to increased energy consumption and as a resultant pollution. That is leading to challenges on ESE fronts economic, environmental and social. And that is leading to the threat to sustainability at overall livelihood, overall existence of the different species; and the ecology of this planet is also threat.

(Refer Slide Time: 00:59)

So, what is this economic sustainability? It is the philosophy which talks about conserving resources for future, for long term. So, we must live on the "returns" of the earth's natural resources rather than consuming them. So, we must keep this as capital, as a capital investment and we keep on living on the interest which it generates. We should not eat the capital itself; because the moment capital is decreased or is kind of is going to go away or gets depleted we will be going for starvation. That will be crisis of every resources everything possible, whichever earth is currently able to provide us.

So, economic sustainability talks about a long term sustainability concerns in the present as well as future. Considering the valuable natural resources such as water, such as air, such as the earth itself, such as the other living things; such as this entire combination of this biosphere, which is making this life under this beautiful environment, not possible.

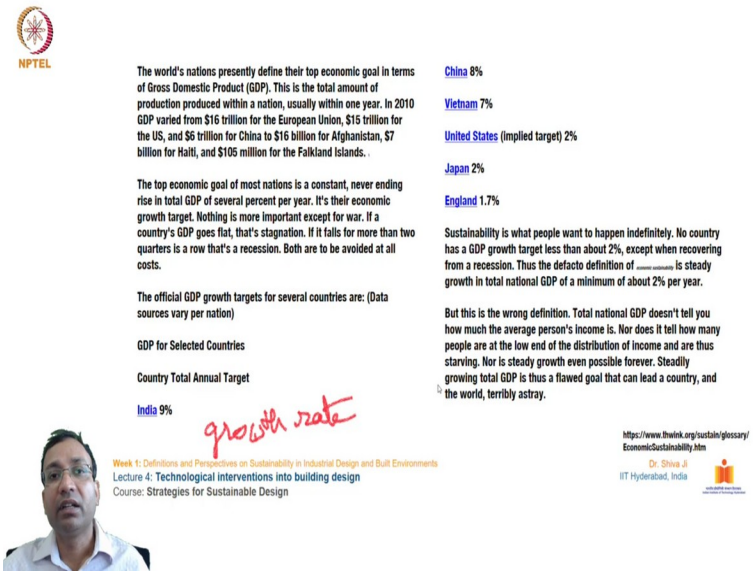
(Refer Slide Time: 02:16)



So, the general definition if we see of economic sustainability is the ability of an economy to support a defined level of economic production indefinitely. So, this indefinitely word here is of at most important. We have to survive for a longer period of time (())(2:36) as human species; we have to be here for an extension amount of time. And our future generations, our children who are going to inhabit this planet in the coming years. This should not be in such a position that they are not left with any these natural resources; this should not be left in the mess of pollution.

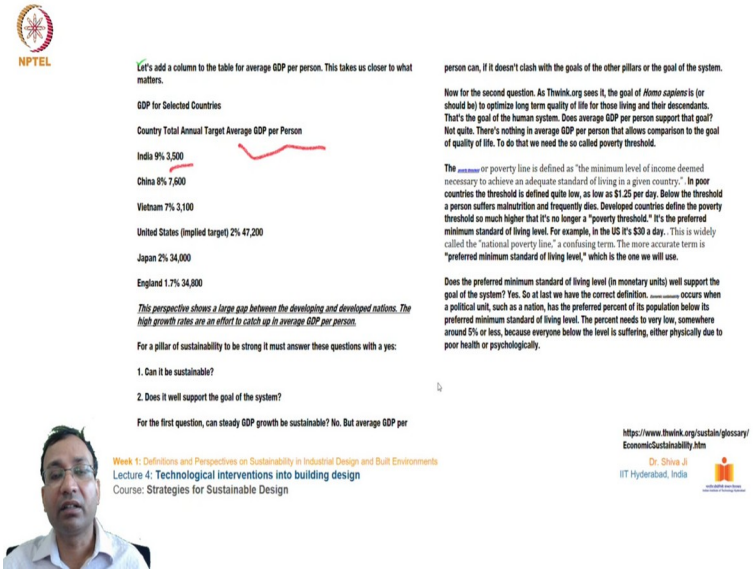
So, we must rework our sustainability, we must rework our economic model; and we consumed these resources in such a way that we always have the balance of the capital of this resource maintained with us.

(Refer Slide Time: 03:15)



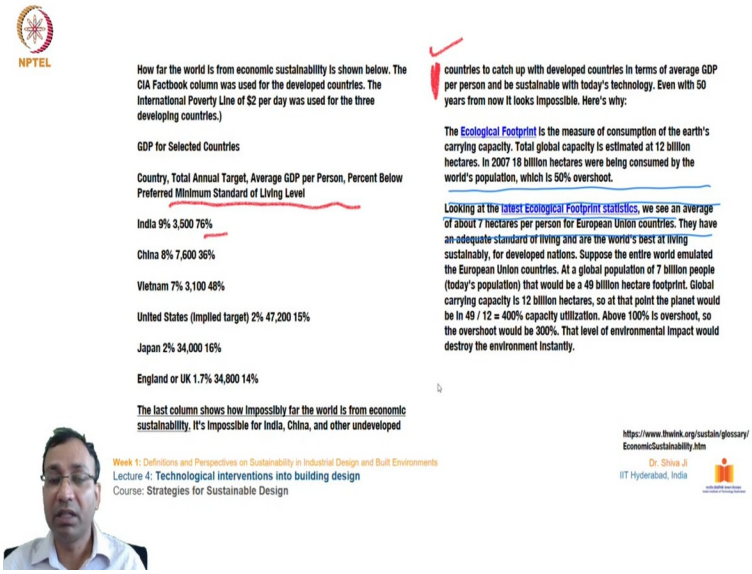
So, there is one example, one analogy given by this researcher team over here you can see the link. It talks about how the GDP is growing across different countries; and how the growth rate is happening, how the per capita GDP is increasing and what is disparity which is being observed right now in the different countries. So, if you see this slide it talks about the growth rate of the GDP of India is increasing almost at 9 percent; this is the data from last year 2019. The China's economy is growing at 8 percent, Vietnam 7, US 2 percent, Japan 2 and England 1.7 percent.

(Refer Slide Time: 04:00)



So, in the next slide if you see what is the average GDP per person; so this is drawn over here. India's growth rate was 9 percent, so this India is GDP per person is 3500. Chine is 7600, United States 47200 and Japan 34000. So, with this perspective if we see there is a huge disparity; even if economy of India and China is growing faster than the other Western countries. But, the overall per capita contribution the per capita value of this GDP is very lesser than the other counter parts. Let us see the next slide.

(Refer Slide Time: 04:41)



So, this one here compares the minimum standard of livings. If you see 76 percent of the population requires supports; so that they come up the level of the minimum standard of living. And in case of China this population is 36 percent; Vietnam 48 percent, United States they are still 15 percent; people can used to be brought up, this is minimum standard of living.

So, if we compare between these different economies from Japan, England and United States. The countries such as India, China and Vietnam they have a long way to go, long way to go to match this disparity which is there, in the volume of the population; and the population of these countries also very high.

So, overall the number of people if we see who are behind, who are below this minimum standard of living is immense. So, how this disparity is going to be filled up? So, we must escalate our economic development, we must escalate overall gross domestic product of these countries.

But, what is going to happen if we escalate our these processes; they are going to escalate the ecological footprint also. So, the moment ecological footprinting increases the overall exertion, the overall impact on the ecosystem will be immense; because there is a huge number of people we are talking about.

We are talking about a huge requirement of the resources, requirement of the energy and the huge amount of emissions and other things also. So, overall if we see India or other countries together, this entire, all other countries together in this world; they have already crossed this ecological footprint and the bio-capacity of this planet.

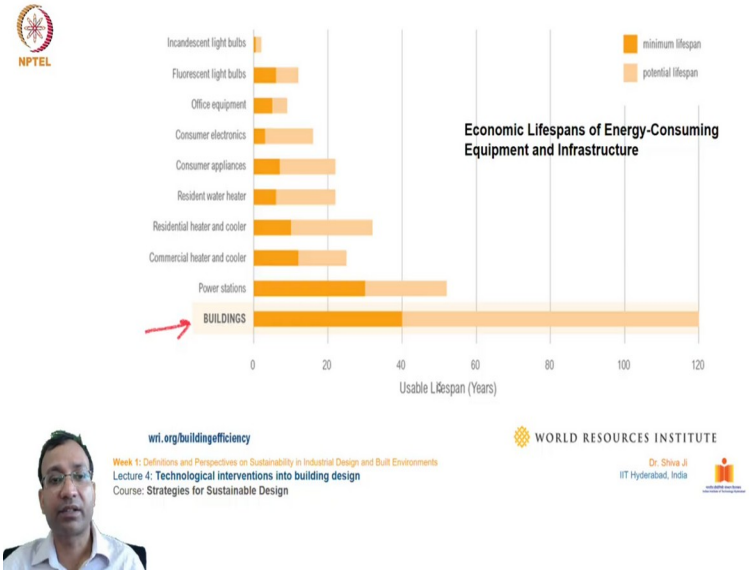
And if we are going to maintain the taste to bring these many people on the parity of the other countries; it requires at least 300 percent of growth in terms of overshoot. So, that is going to completely destabilize the economic system. So, what is the way out in this scenario?

(Refer Slide Time: 07:05)

So, I am leaving it to you for your understanding and discussion. Here, if you see in the economic mitigation potential if we see by a sector; it is a projected figure for year 2030; this is given by world resources institute. So, it talks about buildings or the largest they share the largest share low cost emission reductions; which is given by this orange colour. Blue colour represents medium cost emission reduction and the dark blue talks about high cost emission reductions. So, building as a sector has the largest share, if you see on the extreme left of the this graph.

And other sectors such as agricultural, industry, energy supply, forestry, transport and waste; they all come after this. So, it means this building sector itself has a largest potential for the improvement also.

(Refer Slide Time: 08:05)



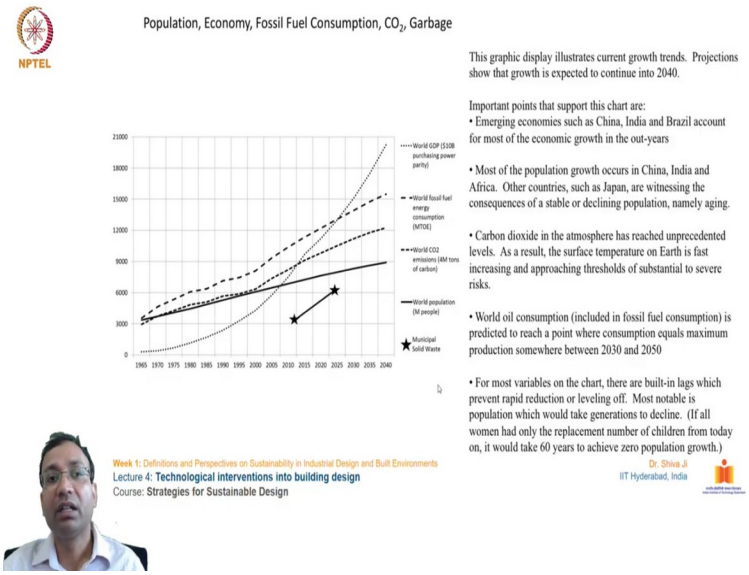
In terms of if you see economic lifespan of energy consuming equipment and infrastructure; so that wise also the buildings are the, they consume the longest lifespan. So, ranging from if you see there minimum lifespan to the potential lifespan which can take place; so from 40 to 120 number of years compared to any other sector. If you see power stations, commercial heater and cooler, so including any of these buildings lasts for long period of time. So, the amount of energy what they are going to consume will also be very high.

(Refer Slide Time: 08:47)

Here, on this slide if you see, it is a combination of the triangle work to be have been studying in initial portions of this lecture, like people, planet and products; so between these three there are four united these UNSDGs, SDGs are kept over here. The first one talks about the thirteenth climate action, and eighth one talks about dissent work and economic growth. So, it happens between people and with the economic sustainability; and then the ninth one which is industry innovation and infrastructure. That has place of, it is the occurrence in between the economic sustainability to our community.

So, how the infrastructure, how the innovative place to develop the infrastructure are going to come around that. And the seventh if you see even SDGs affordable and clean energy to exist between economic activity with the environmental activity. So, this is a common these three UN SDGs, we can see are falling on the overlapping the common area of these respective triangles over here. Except the thirteenth one this climate action; it overshadows all of them put together.

(Refer Slide Time: 10:11)



So, here if you see population, economy, fossil fuel consumption, CO2 and garbage; so all these things in terms impact they are rising over the years. If you see this is gap of, this chart shows this data at the gap of a five years. So, between 2010 to 15 to 20 to 25; so we can see from starting from the 1965, this data table till the projected the figures from year 2040. Most of these emissions, whether it is energy consumption, whether it is world's GDP and purchasing power parity; so, all of those things are increasing. Well, overall livelihood and occupational facilities are increasing also; but overall impact is also increasing.

So, the challenge as far as economic sustainability is concerned over here is to establish that balance; where we can keep on improving on the economic wellbeing, on the economic welfare of the society, community and household, while maintaining the ecological balance.

(Refer Slide Time: 11:20)

So, if you see in a nutshell; what is economic sustainability? So, decoupling is economic growth from environment is very crucial nature over here, so that we can see among the environmental impact; and we can still improve on economic aspects. Incorporating eco-efficient measures at the manufacturing and production stage; this we have discussed in detail in the previous lectures. This is very important to improve on the measures of manufacturing, the measures of resource consumption and measures of energy consumption. Advocating green economy, which nourishes the balance of the three ESEs aspects of the sustainability; while maintaining its growth.

And expediting enforcement of environmental concerns into organizational management and strategizing. Encouraging evolvement of regulatory institutions in tandem with cognitive ones; so these are the some advices for improvement of the economic sustainability in the world right now, while maintaining the ecological balance.

(Refer Slide Time: 12:22)

So, here if you see this economic growth, so economic growth involves the combination of different factors to produce goods and services. So, we have discussed in earlier slides, so the production capital which includes machineries, buildings, roads. They at the next level, they go to the human capital education, knowledge, skills, techniques or labor; so improvement in these are very necessary to maintain that balance. And the balance is also needed to be maintained at the natural capital level. The term I was talking about in the initial of this lecture, so that capital of the resources which can be there; we must keep it.

And we should only read the benefit part of it, we should only (())(13:12) interest part of it; we should never go for consuming the capital part itself. Because the moment the capital is lost, we will be in a deep trouble; the entire planet will be in a deep negative balance of these resources and energetic systems. So, maintaining that natural capital system of raw materials, forest services and carbon balance, et-cetera in the atmosphere. And while maintaining the social capital also of institutions, government, community and its people all together.

So, in an overall sense if you see what we need to mean by maintaining this sustainable growth is to maintain the capital of several types; which is production capital, human capital, natural capital, social capital. So, on all of these together we have to maintain the balance of it; so this is what economic sustainability is all about. Thank you very much.