

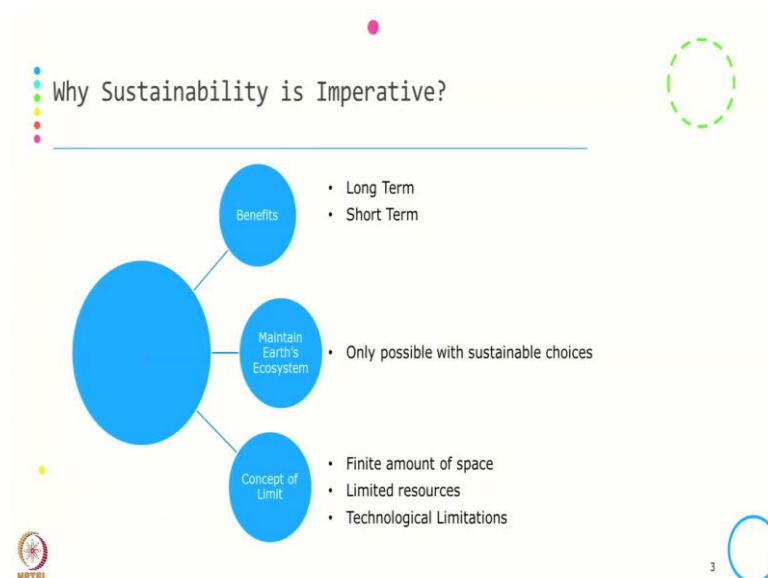
Business and Sustainable Development
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Lecture - 03
Importance of Sustainability

Hi, welcome to the session on understanding why Sustainability is Important for us. So, in the last two session we are trying to understand what is sustainability, what is sustainable development, how do we define this, how do we operationalize this and also understanding little bit on the limitation associated in operationalizing the sustainability.

So, in this session what we will try to do, we will try to see why sustainability is imperative. And, mostly whatever the issues, whatever the factors responsible for or whatever the changes that has happened over a period of time. And, those makes the sustainability is imperative we will try to understand them or we will try to explore them further.

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Now, why sustainability is imperative? We know that sustainability gives us benefit. Sometimes it gives us long term benefit and sometimes it gives us the short term benefit. When I say that it is long term benefit, why I say long term benefit is that even, if for few of the sustainability initiative possibly we do not get the immediate return; in fact, in

most of the cases, because whatever the benefits we get out of it it takes some time period or over a period of time we get those benefits.

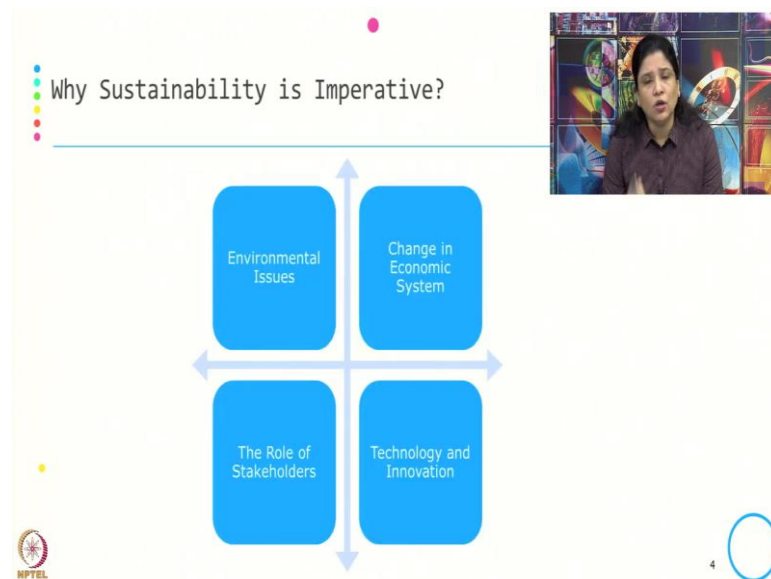
But, few of the initiative we get the short term benefit. So, sustainability is important from that point of view, because it gives us the short term and the long term benefit. Then, the second point or the second factor possibly, why sustainability makes imperative is the concept of limit.

What is the concept of limit? Whatever the resources available to us it is limited, it is not unlimited. And, this is what the basic economics says also that, whatever the resources available to us those are always limited and human wants are unlimited. So, explaining that further in the context of sustainability, we operate with a concept of limit. And, what is the concept of limit? Like for example; there is finite amount of space available to us.

There are limited resources to produce different types of goods and services those are available to us and also there are limitation in term of the technology. So, the concept of limit makes us think that, we need to we need to include the sustainability initiative, we need to include the sustainability practices, in their day to day activities and also in the business activity.

Then, the third point is that to maintain the earth's ecosystem the only possibility, what we left with us is to sustainable choices. We have to make the sustainable choices in our production, consumption, then only we can maintain the earth ecosystem.

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So, there are a lot of views, lot of opinion, lot of studies associated with the fact that, why sustainability is imperative. So, in this session what we have try to do is that, whatever the points makes the sustainability important or whatever the points makes the sustainability imperative, we have categorized them into this 4 broad cluster.

Few of them comes under environmental issues, few of them comes under change in the economic system, few of them we have summarized into the role of stakeholders, and the last one is technology and innovation. So, what we will do now is that, we will try to see how this let us say broadly this environmental issues making the sustainability imperative.

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1. Environmental Issue
(Changing Climate: The warning sign and evidence of climate change)

- Frequent and Intense Natural disaster:
 - Cyclone, cloudburst, tsunami, droughts
 - Loss and damage to life and property
- Threat to the survival of many SIDS (small island states) due to Global warming and rising sea levels
 - Maldives, Kiribati, Tuvalu and other low lying Island
- It has been estimated that by the year 2050:
 - one in every seven people in Bangladesh will be displaced by climate change
 - Up to 18 million people may have to move because of sea level rise alone – (Environmental Justice Foundation)
- Rising Sea may put 36 million Indian at risk by 2050 – (TOI, Oct 30, 2019)

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Now the first thing what comes in environmental issue is that changing climate. So, although the debate was there at some point of time regarding the evidence of climate change, but now it is pretty clear that there is warning sign and evidence of climate change. So, let me give a small example to talk about the evidence.

So, possibly if you look at the cyclone or super cyclone, possibly the biggest cyclone happened in the near future is in 1999, when the super cyclone happened in the east coast right. But, after that if you see just looking at the history in last 10 years every year we get 1 or 2 cyclone.

Some mostly in the east coast and in the last cyclone tauktae, that came also in the west coast. So, the trend shows over here is that we get frequent disaster, typically the example what I have given here for the cyclone, but there are also other example like, cloudburst, tsunami and the associated with the like hit prone area that is drought. Now, the second point over here is that whatever the disaster whatever the extreme we were we get those are intense also.

Because, it every time you must have seen, the damage it creates to the life and property. Typically in this jargon we say that, this loss and damage to life and property. So, one thing is that, what is the sign what we are getting is that, the rich frequent and intense natural disaster. Now, coming to the second point.

So, you must be hearing the negotiation what is going on in the global scale that is the global negotiation and the climate change. And there is one of the issues, which is very urgent is that, if we are not reducing our temperature, if we are not reducing our contribution to the global so, global climate and the reduction in the whatever the effect of the global climate change, possibly we will find that few of the island nation they will submerge into the water.

There is a threat to the survival of many small island states due to the global warming and the rising sea level. Few examples are Maldives or Kiribati Tuvalu or other low lying islands. So, there is a recent newspaper article which says that, now Maldives is planning for a floating city, because they know that, possibly at some point of time this is going to be submerge, if we are not doing anything for the to reduce the effect of the climate change.

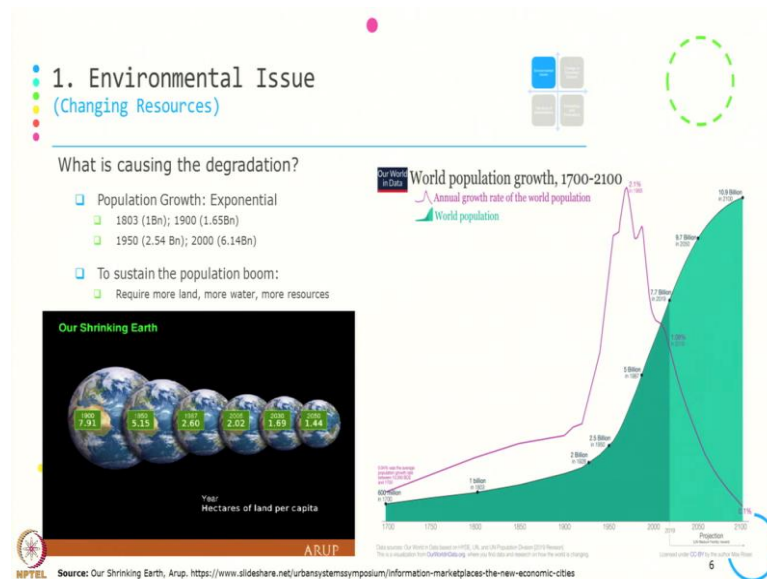
Now, another few of the evidence what we get for this climate change is that, it has been estimated by the year 2050, that every 7 people in the people in Bangladesh will be displaced by climate change. And, also we know what is the effect on the rice production of the Bangladesh, because of this rising sea level.

And, this environmental justice foundation there is a report which says that, up to 18 million of people may have move because of the sea level rise alone. And, this gives the fact about that the so, called climate refugee over a period of time, because since this is these are going to be submerge, their area is going to be submerge, they will migrate to other place and this is what the we use the word climate refugee.

And, the recent points about India is that also 2 weeks back there was a report which came from IPC which is which says that, the coastal cities are more vulnerable to the climate change. And, this is a report from times of India October 30 2019, which gives the fact that rising sea may have put 36 million, India at risk by 2050.

I think these facts are good enough to understand to also adopt, that sustainable practices, because at least in that context we will try to say, that how much the we can reduce in term of the human contribution to the climate change.

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Now, the second point what comes under environmental issue is the changing resources. So, if you look at the graph on the right side of the slide, it gives the world population growth from 1700 to 2100. So, see the numbers over here. So, possibly in a so, far in 1800, if you see the population is just 1 billion. 1900 it increased from 1 billion to 1.65 billion. And, from 1800 from 1900, if you look at in 2000 the 2100 the predicted growth is 10.9 billion. Now, look at the growth rate.

So, from 1800 to 1900, it is just from 1 to 1.65, but from 1900 to 2000, it is 1.65 to 6.14 and from 2000 if we take the projected population growth in 2100, then it becomes 6.14 to 10. So, there is a growth; there is a growth in the absolute sense, but there is a if you look at the annual growth, then annual growth has already reached the peak and it is going to decrease in 2100.

If, we just take the figure of the absolute growth in population, we know that more population, more demand. We require more land, more water, more resources, and that makes the earth, shrink, into the land per capita, but if you look at in 1900 the land per capita is 7.91 and in 2050 the land per capita is going into 1.44.

So, the first factor what is changing, making the change in the resources is that population growth, which is shrinking our earth in term of the land per hectare of land per capita available to the population.

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1. Environmental Issue
(Changing Resources)

What is causing the degradation?

- ❑ Forests have almost disappeared:
 - ❑ Cleared to plant more crops
 - ❑ For grazing animals
 - ❑ For supply of wood and other raw materials
- ❑ Technology and Industry can be blamed too
 - ❑ Vehicle emissions, toxic waste, carbon emissions - causing air pollution
 - ❑ These are all by-products of our inventions and ingenuity - causing Global Warming
- ❑ Earth's supply of resources is finite
- ❑ Our consumption of natural resources is faster than our planet can replenish them

Source: <https://www.theworldcounts.com/stories/environmental-degradation-facts>

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Now, going further let us see what is happening to the other resources right. What is causing the degradation? So, you must have seen forest have almost disappeared. Why forest have disappeared? Because, the human population has clear those forests to plant more crops for grazing animal, for supply of wood and raw material, the typical forest based economies right.

Then, the second point is technology and the industry or so, called businesses and how we blame them for this resource, changing resources, in one way we use resources to produce also the byproduct what we do in the production process is vehicle emission, toxic waste, carbon emission, which gives rise to the air pollutants.

These are all byproduct, because of our invention into the different types of goods and also the way we are using the resources leading to the cause in the global warming. But, the fact is earth supply of resources is finite. And, our consumption of natural resources is faster than our planet that can replenish them. So, that creates a pressure in the resource available to us.

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1. Environmental Issue
(Changing Resources)

Resource degradation/depletion:

- ❑ Every hour, 1,692 acres of productive dry land become desert
- ❑ 27% of our coral reefs have been destroyed. If the rate continues, remaining 60% will be gone in 30 years
- ❑ We have a garbage island floating in our ocean, mostly comprised of plastics - the size of India, Europe and Mexico combined!
- ❑ We are using up 50% more natural resources than the Earth can provide. At our current population, we need 1.5 Earths, which we do not have.

Source: <https://www.theworldcounts.com/stories/environmental-degradation-facts>

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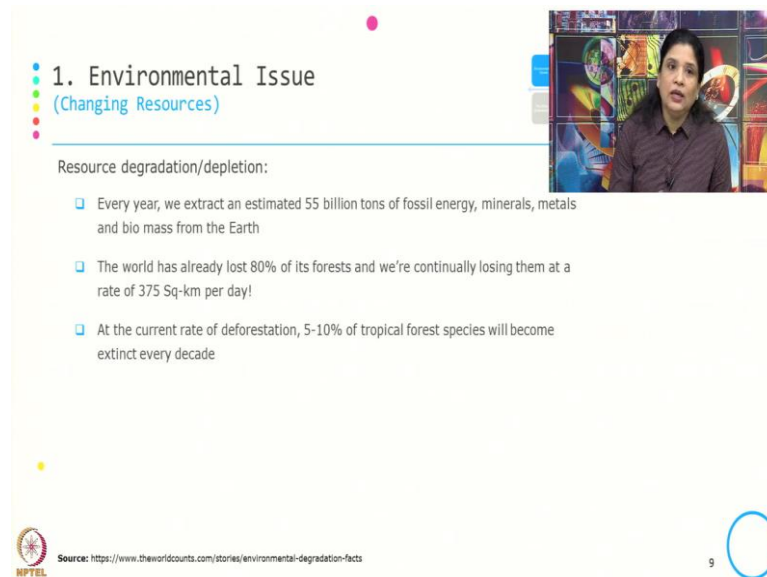
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Now, if you look at the slide, this gives some facts about the resource degradation and depletion. So, every hour 16.92 acres of productive dryland become desert, 27 percent of our coral reef have been destroyed and if the rate continues remaining 60 percent will go in 30 years. And, the what is more worrisome over here is that, although there is lot of rules, there is lot of policy, lot of restriction associated with this, waste a solid waste typically plastic waste, if you look at the facts.

We have a garbage island floating in our ocean, mostly comprised of plastic. And, you know, what is the size of that? The size of that is that equivalent to India, Europe and Mexico combined. And, in a micro scale we can give the example is that look at the coastal city. The moment there is a high tide, the moment there is a cyclone, interestingly sea gives back all the things what we have thrown to them and that comes back to the beach.

So, this is the amount of waste what we are dumping in the water bodies, dumping in the water resources. We are as I was saying in the previous slide also we are using of 50 percent more natural resources than the earth can provide and at our current population, we need 1.5 earth which we do not have.

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1. Environmental Issue (Changing Resources)

Resource degradation/depletion:

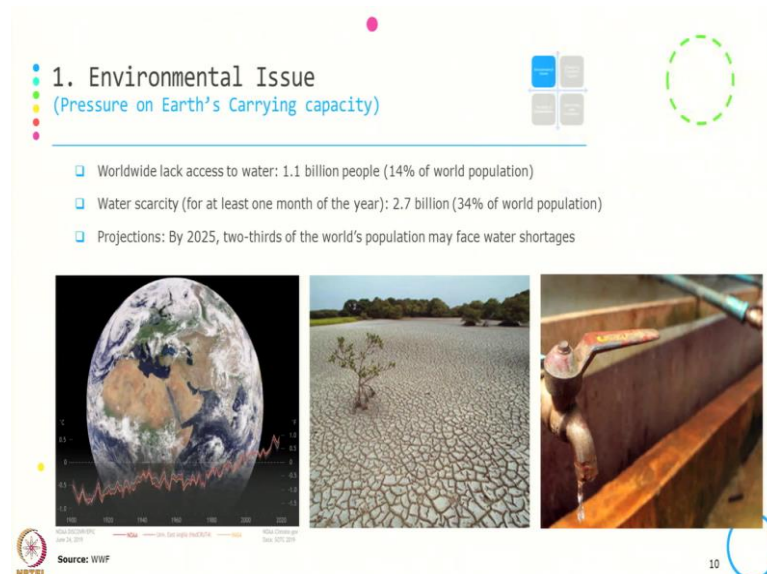
- Every year, we extract an estimated 55 billion tons of fossil energy, minerals, metals and bio mass from the Earth
- The world has already lost 80% of its forests and we're continually losing them at a rate of 375 Sq-km per day!
- At the current rate of deforestation, 5-10% of tropical forest species will become extinct every decade

Source: <https://www.theworldcounts.com/stories/environmental-degradation-facts>

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Then, few more facts we extract almost 55 billion tons of fossil energy, minerals, metal and biomass from the earth, the world has already lost 80 percent of it forest and we are continually losing them at the rate of 375 square kilometer per day. And, at the current rate of deforestation 5 to 10 percent tropical forests species become extinct every decade.

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1. Environmental Issue (Pressure on Earth's Carrying capacity)

- Worldwide lack access to water: 1.1 billion people (14% of world population)
- Water scarcity (for at least one month of the year): 2.7 billion (34% of world population)
- Projections: By 2025, two-thirds of the world's population may face water shortages

Source: WWF

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Now, this the facts gives that, we should why we should think of a sustainability, why we should think of the sustainable development process or practices? Then, the third factors

what we consider under environmental issue is the pressure on the earth carrying capacity.

So, there are many more example I have just picked two examples that how it creates on the earth's carrying capacity. The first figure if you look at this gives us the increase in the temperature from 1900 to 2020. And, if you look at the growth the weight is happening, if you look at the trend the temperature is going on increasing. And, one small fact about is that, the highest temperature what we get in summer in India possibly that has increase in last 10 years at least more than 9 to 10 degree.

And, the second two the second and the third pictures talks about the water scarcity. This is beautifully summarized in a blog in WWF and which the picture speaks itself, that how the water scarcity, what kind of impact or what kind of effect we have got because of the water scarcity.

Few facts about the water, the worldwide lack access to water is 1.1 billion, that is 14 percent of the world population. Water scarcity for at least 1 month of the year, 2.7 billion, that is 34 percent of the world population and projection is by 2025 two-third of the world population may face water shortage. And, the let me bring a typical example over here is that, possibly we are all buying mineral water, there may be many more reason why we buy mineral water.

But, somewhere the fact also is that at some point of time buying water in water land managing with that would be reality, if you are not taking any action over it. And this talks about the imbalance in earth carrying capacity, overusing and that makes there is a imbalance or there is a pressure in the earth carrying capacity.

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2. Changing Economic System
(Economic System Based on Growth)

Economic System Based on Growth:

- Industrial Revolution
 - Growth leads to:
 - Affluence and consumption
 - Income inequality
 - Confronted with limitation
 - limit to growth
 - limit to consumption
 - limit to resources
 - limit to environment
- Globalization
 - Unique local and global linkages:
 - Global Supply Chain
 - Kiwi fruit availability in India
 - Global Impact
- Urbanization

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Now, getting into the second cluster, that is changing economic system and we have summarized few issues which comes under this and those make sustainability is imperative or sustainability is important. Now, after industrial revolution, if you say the economic system is based on growth. I think possibly the first way we got the growth is through industrialization, more activities, more industrial activity, more income, more growth.

So, after industrial revolution there is the economic system is based on growth. Then, few more intervention like, globalization, urbanization, those model also leads to the economic system based on the growth. Now, when there is a growth, that leads to one positive thing, that is there is a affluence in the system, there is a consumption in the system.

More affluence, more consumption, this we will try to see again we will talk about IPAT model that, how do we link our activity and our impact into the environment. Also at the same point of time, this leads to inequality in the income. Now, the growth leads to affluence and consumption leads to inequality of income, but it confronted with the limitation. What are those limits?

Limit to growth, limit to consumption, limit to resources and limit to environment. There is a affluence there is a limit, this gives us the impact. Then, the second event happened,

that is globalization; globalization creates a unique local and global linkages. So, the entire supply chain of the product or the services that has become global.

So, you will find that the locally produce crop, become in the grocery store across the globe. Typical example is that when I get the kiwi fruit next to the my next to my home that is in the grocery store in the shelf of the grocery store shelf. So, the local produce becomes global and globalization creates a unique local and global linkage, but the fact is that since it has become global the impact is also has become global.

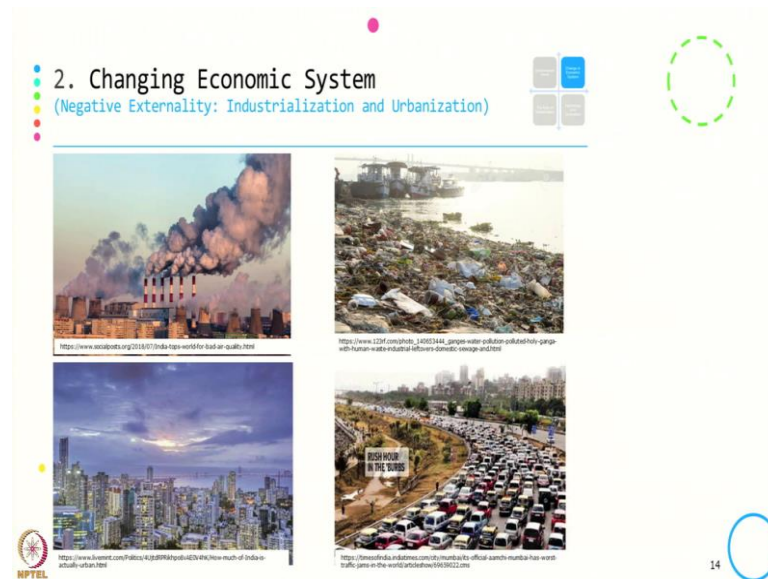
So, if the impact is happening in locally it is not only limited to that particular area, that particular segment most of it spreads also to the global impact. So, it is not that if you are using sustainable practices, but the other player in the value chain, other player in the product supply chain if they are not creating sustainable practices, you will be able to manage the sustainable way of production or sustainable product, because the local impact becomes the global impact.

And, that needs that in the entire supply chain we need to adopt the sustainable practices. Then, the trend which has happened in last over a period of let us say 2025 years at least in the Indian context, people they have moved from rural to urban right. And, what is the reason for that? The reason for that is that, you there is a opportunity to available in the urban, that is economic opportunity available in the urban.

So, you will find the migration happens at different scale, possibly at the very high sophisticate level and possibility it also happens in the delivery level. Urbanization it has increase the income, it has income increase growth because there is an opportunity available, but also it creates the impact.

Now, let us see this all these 3 points what we have discussed, that the economic system whether it is based on growth, whether it is industrial revolution, whether it is globalization, whether it is urbanization, what is the negative impact or the negative externality associated with that.

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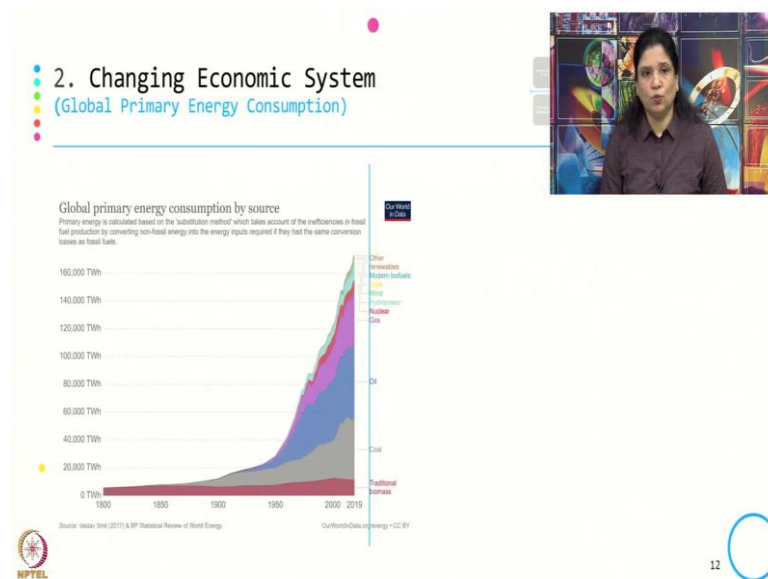


So, this is what the negative externality right. So, the first picture talks about air pollution, second pictures talk about the water pollution and the plastic pollution, the third one talks about the gives a picture of urbanization. It is up to us that how do we read or how do we, how do we decipher this story associated with this urbanization.

More buildings more affluence and also if you look at that possibly there is no land available in this entire picture, except there is a water body available next to this. The moment there is a any impact over the water body, that is going to affect the entire population residing over there. And, the last one is that it again talks about two things the affluence and also what is the impact.

The number of cars on the roads shows the affluence, we have our disposable income has become more we are able to earn more and that is why we are able to spend more. But, the impact over here is that possibly there is no space that one more extra car can also move. And, they stuck over this because whatever the resources available and how are we using it there is a gap and this is what the outcome that we get into the traffic.

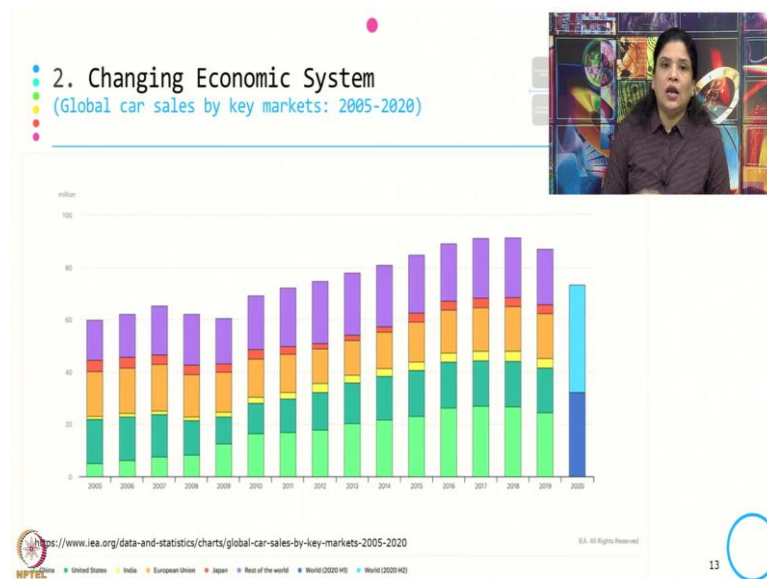
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Now, let me show you a few more trend this trend gives us the global primary energy consumption by source. Still it is dominated by coal, oil and gas and whatever the renewable sources still it is not able to take a bigger share in this global energy consumption. So, here energy consumption is growing, because we are producing, we are consuming more, we are producing more and also we have a capability to produce more.

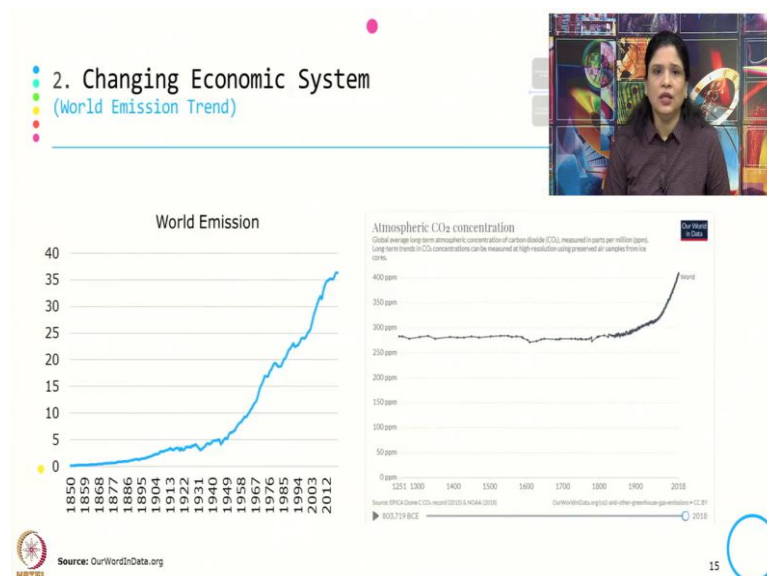
And, in that process we are using more energy and most of with this if you look at the biggest share from the non renewable resources till now.

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Now, this is what the typical picture of changing economic system, which gives a trend of global car sales, by the key market in 50 last 15 year that is from 2005 to 2020. And, if you look at the number of car sales is going on increasing which talks about the again the affluence and the change in the consumption pattern.

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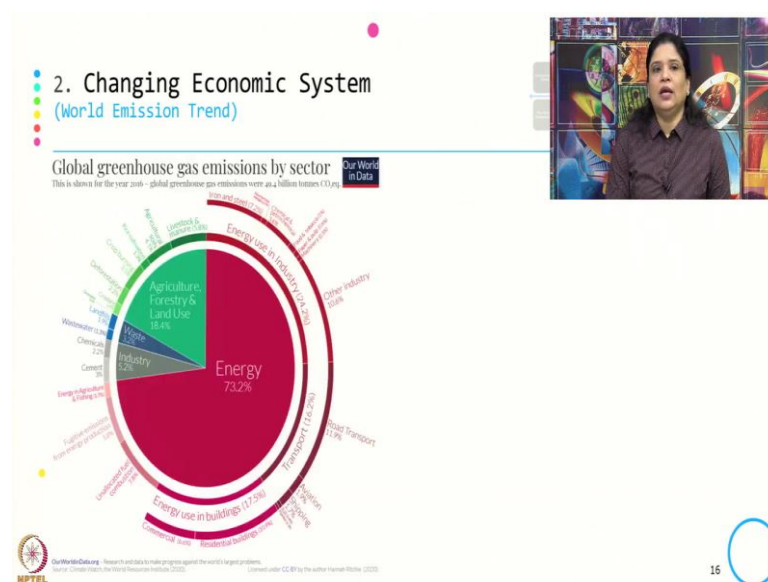


Now, this is what again the emission the byproduct of our, so called consumption, so called income, so called production and there is an increasing trend in the world emission. And, in the second part of the slide if you see this gives us the trend of

atmospheric CO₂ concentration from last say from 1300 to 2018. And, if you look at this long-term atmospheric concentration of carbon dioxide, this is measured through this PPM, that it is part per million.

So, if you look it up to 1800, 1900 it is kind of remain constant not much changes, but from mostly after between mid 1850 and 1900, the peak started going up and from 1900 to 2018, we moved from less than 300 PPM to more than 400 PPM. And, that says that how much is the impact; we are creating through our activity.

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Now this is the global greenhouse gas emission by sectors. It is a clear one again, more energy, more is the emission. So, most of the emission is coming from energy used that is energy used in industry, energy used in buildings, and energy used in the transport. And, also there is a share of other sector like, waste agriculture forestry and land use.

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3. The Role of Stakeholders

- Increasing expectation
 - Investors
 - Evaluation of Capital Market Performance through ESG
 - Consumers
 - Increasing pro-environmental behaviour
 - Revenue from sustainable product is increasing
 - Willing to pay higher price for sustainable products
 - Industry Peers
 - Integrating sustainability in corporate strategy
 - Financial potential of sustainable opportunity
 - Government
 - Environmental Acts and Disclosures
 - Civil Society
 - Increasing role of NGO and Pressure groups
- Increasing Transparency
 - Well connected communication and culture of connectivity
 - Social networking platforms
 - Mandatory Disclosures

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Now, coming to the third cluster, where we have try to summarize that the role of stakeholders making the sustainability imperative. Mostly it is role or we may say also the increasing role of the stakeholders. Now, there is a increasing expectation of the stakeholder. Now, what was the increasing expectation? In one way we have investor, then let us say consumers, industry peers, government civil society.

Now, how they are increasing their expectation? They if you look at the case of your investor, they do the evaluation of capital market performance through ESG. It means how you do the performance in your capital market, that is through the investment in your environment, social and governance.

So, you will find that many top investor typically they access the performance through the investment in ESG. Then, the increase in the expectation by consumer playing their role there is a increasing in the pro environmental behavior, revenue from the sustainable product is increasing. And, also consumer they are willing to pay higher price for the sustainable product.

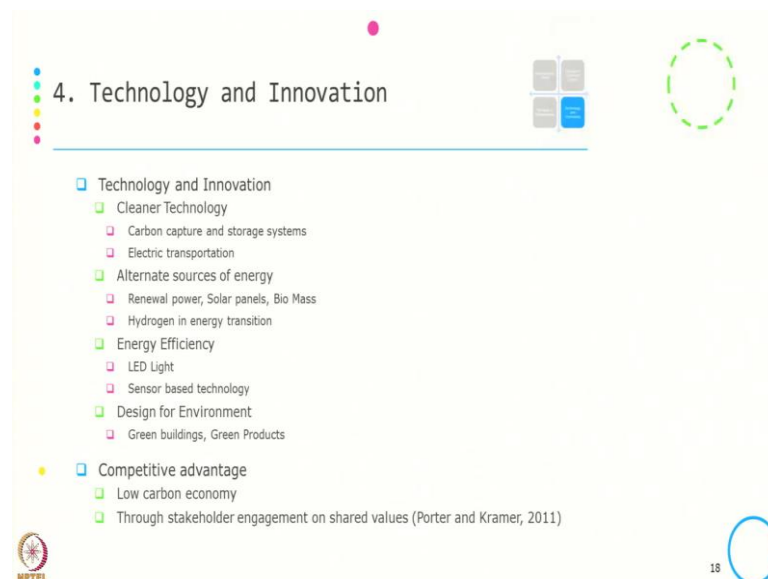
So, if it is sustainable product you will find that, consumer they are ready to pay more. And, there is a significant increase in the pro environmental behaviour of the consumer. Then, the industry peers the peers get influenced when they find that one of them has integrate sustainability into the corporate strategy.

That at some point of time works as a informal benchmark. We will see this when we say that how the industry integrate the sustainability into their day to day practices. Then government there are lot of acts, disclosure, awareness, that is coming from the government that, how we why we should take the, or how we should use the sustainable practices in our activity. And, civil society is also playing their role, because of increasing role of NGO and pressure group.

The second factor which is working well for the stakeholder is that, there is an increase in the transparency. And, why there is a increase in the transparency? Because, there is a well connected communication, there is a culture of connectivity, there is a and why this connected communication and culture of connectivity? Because of whatever the evolution that has happened, because of the information technology.

And, also this different social networking platform, that brings more transparency because the information is public in this case. And, also the mandatory disclosure by the company, because the other stakeholder they know about the fact, that increase in the transparency. So, the role of stakeholder changing there is a increase in transparency, that creates a pressure on the system that they need to adopt the sustainability practices.

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The last factors, what we consider over here, why sustainability is imperative is that, the technology and innovation. Now, let us list out whatever the technology and innovation

those have been there in the field of sustainability or in the field of climate in last few years. So, we get access to cleaner technology.

We have developed cleaner technology, the typical example is we are talking about electric transportation; we are talking about carbon capture and storage system. Similarly, we have developed alternate source of energy that is renewal power solar panel and biomass. And, the recent one is that when we are; when we are developing the hydrogen as the substitute in the energy transition to the more to the decarbonization pathway or the low carbon transition.

Then we have energy efficiency technology like LED light, sensor based technology and also the typical design for environment is being planned in to the product. Like your green buildings, green products, when designed for environment is being added from the conceptualization of the product or the whatever the system we are building on. All this creates a competitive advantage for the businesses.

And, that gives whatever the competitive advantages the firms or the industry they are getting, that gives them a role to enter into the low carbon economy, because that is what the new platform, when we are making a transition from the existing one to the climate economy or the low carbon economy. And, here Porter and Kramer they have put it nicely there that, it is increasing the share values like, in the last slide we are talking about the role of the stakeholder.

How they are engaged, and through this, typically there is an increase in the share value for all the stakeholder. So, what we have try to do in this session is that, we have summarized all those let us say factor, let us say issues or let us say changes, those have been making the sustainability as the imperative.

In the next session we will try to see mostly taking two readings that, why some of them or how sustainability also fits to be a mega trend.

Thank you.