United Nations Sustainable Development Goals (UN SDGs)
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Lecture 16
SDG 15: Life on Land Part 1

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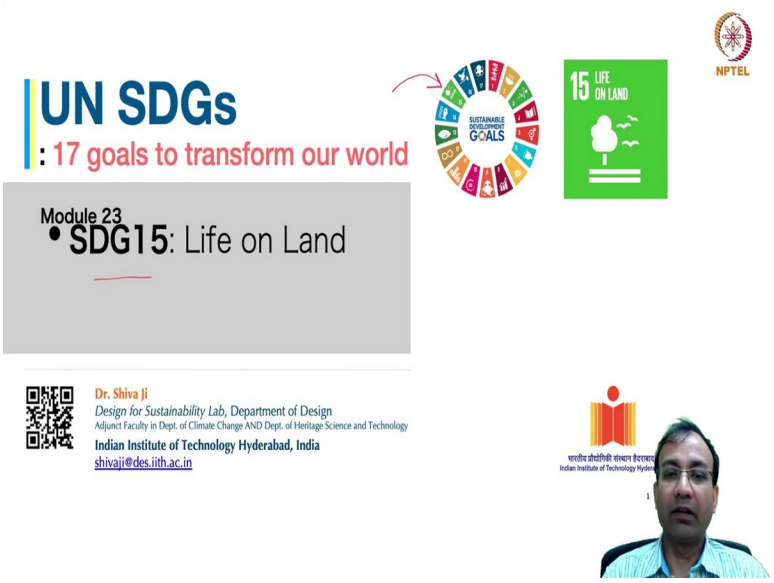

Hello, everyone. I welcome you all to Module 23 of the course of UN SDGs. In this, we are going to cover SDG 15, Life on Land.

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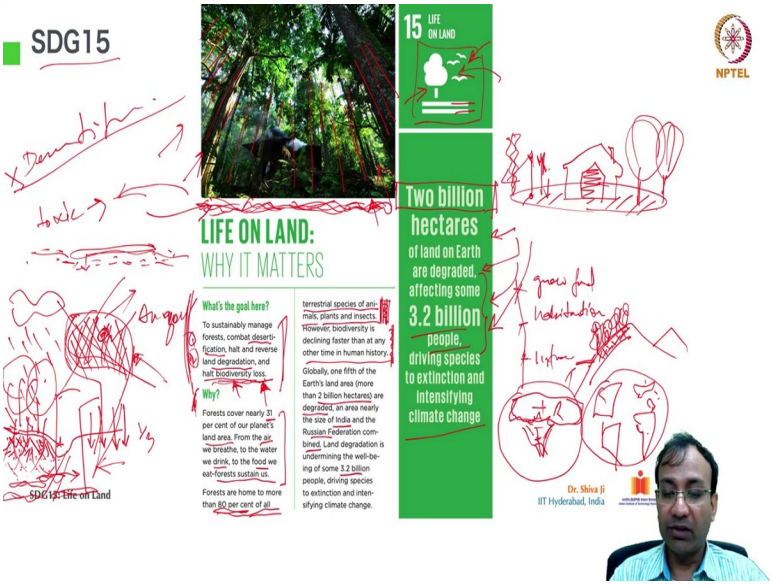

So, some facts and figures. 2 billion hectares of land on Earth are degraded, affecting some 3.2 billion people, driving species to extinction and intensifying climate change. So, if you see, this huge swath of land, this is an uncomprehensible swath of land on the face of Earth, is degraded by some activity, some, maybe anthropogenic activity or something which in turn is affecting 3.2 billion people, because well Earth, we need for several reasons.

First of all, to grow our food. Then, to build our houses, habitation and Earth is actually essential for setting up any infrastructure project any new work, like roads or factories all of those things. We need to land for schools, colleges, hospitals all of those things. So, all of our commerce, if you see, are based on a piece of land somewhere on which they build our houses and we comfortably make our living.

So, if this land is not available, where are we going to grow our crops, where are we going to grow our food, and all of those challenges actually arise. So, overall, what is the goal over here to sustainably manage forests, combat desertification, halt and reverse land degradation and halt biodiversity loss. So, if you see, there are a few a major factors inside, combat desertification.

What is desertification? Desertification is a process in which a normal fertile land, you can see this forested place, well this forest place is possible in a land where there is plenty

of water, organic material, humus, all of those things which makes this land fertile to grow these many trees and vegetation et cetera.

When it loses those properties and starts moving towards a kind of a hostile state of condition which is not supportive for sustaining these trees or any kind of vegetation. It starts becoming slowly dead and more like sand. If the humus content that moisture container starts degrading, if suddenly starts changing, if there is acidification and all of those in processes or maybe chemicals or some other pollutants, it starts losing slowly its, that capacity, that property. That is desertification.

So, desertification is that process in which it slowly deserts form, the area of the dessert increases. That is desertification. Because a dessert is a place, piece of land which is of very little use. Well there are some uses for that also, but since there is a need to grow food, live and make other uses, plus plant trees and have forest which will in turn give us oxygen supply and all of those things. So, we need land for that.

So, we cannot allow desertification to extend and increase its catchment. So, that is the point, first point. Then second point, halt and reverse land degradation. So, what is land degradation? Another process in which the land actually, if it is not getting in desertified, but still it is loading losing its quality and it is degrading, because soil is in mean for several purposes which I just mentioned. If the soil is not fit enough, it is not good enough to sustain life and do all of those things, that is a degradation.

For example, if there are toxic affluence discharged in a piece of land, so that actually kills the living forms, plus it makes the whole soil and its surrounding areas very toxic. For human habitation also it becomes inhabitable and all of those things. So, that is degradation. Halt biodiversity loss.

So, biodiversity, if you see, this picture, I am sure there is no doubt in this that this kind of a place where there is a plenty of trees, vegetation, water and all of these things, it harbors more number of flora and fauna, all sorts of species of different animals, microbes and reptiles and birds all of them, because it is an interdependent system.

If you see this sketch, this land is supporting this tree, which in turn is supporting some species of life. So, it is an interdependent system. So, if this comes, rest of the species will also automatically start flourishing, coming and living over there, making it their new habitat. So, it is an interdependent system which notices this biodiversity factor.

So, we have to prevent this loss of biodiversity by maintaining these forests and the extent of these forest. Gradually, if you see, there are some reports which suggest even in the southern American continent, this whole swath which is an amazing forest, is gradually decreasing. There is a huge aforestation, again cutting off trees, infrastructure project there are the highways passing through the, this forest area.

New town settlements, they are coming up, they are expanding their periphery slowly. So, all of those things, if you see, are the causes of reduction in the forest footprint which in turn will kind of become a region for the biodiversity loss. So, all of these things are actually being discussed under this SDG 15. That is why we are discussing it here.

Well, why is it needed? Forests cover nearly 31 percent of our planet's land area, 31 percent, close to 33, you may call it close to one-third. From the air we breathe to the water we drink to the food we eat, forest give us. Well, how do they give water, you may ask, because forest is just vegetation and water is stored in the rivers or ponds and lakes et cetera.

But if you see, whenever there is a rain, so there is a huge rain and water actually drops down to the surface and it goes to the runoff and in the rivers and it is just runs off. But the water which we consume from the ground water, actually for that, you need this, recharge to this ground surface.

How that happens, how the forest actually help, they retain this water in their roots because here they have these thick the roots, spread roots, and holding your moisture, holding water or holding nutrients, the soil and all of it. So, this is a huge concentration of water in these roots. And since forests are covering in the huge surface of the land, there is a huge amount of water retained in the roots often these trees.

Slowly and gradually, this water actually keeps moving here and there depending upon the water table and the water pressure in the soil. And that actually helps recharging those aquifers which are running underground. And these are the aquifers from which we are drawing water and we are making use. So, this is how actually forests, trees actually help in giving us water also, potable water, fresh water.

If you visit mountains and hill areas you can see even in the an off rainy seasons, you can see there is water stream flowing and maybe from a root of a tree, there is a bamboo kind of structure kept and there is fresh water and falling and all of that. That is possible because of this forest which is there at the top of this land which is holding a lot of water in its root systems. So, this is how this system works.

Forests are home to more than 80 percent of all terrestrial species of animals, plants and insects. So, you see. If forests are getting lost, all of this, 80 percent of all sorts of species will be directly threatened, their existence is going to get threatened. However, biodiversity is declining faster than at any other time in human history. Well, it is all declining if we see in a sense, biodiversity loss is also happening. Forest cover is also reducing, pollution is increasing. So, all of those negativity level of factors are actually present as of now, but we need to revise this situation and bring it to its original condition.

Globally, the 1 5^{th} of the earth's land area, more than 2 billion hectares are degraded. So, one-fifth, 20 percent, that is around 2 billion hectares, this fact what we saw. An area nearly the size of India as big as our country and the Russian Federation combined, that is a huge, on the world map if you see both of these spheres. In one side, India is here, and then Russia is at top spreading from Europe till this portion. This is a huge swath of land compared to North America and South America over here and Africa, coming down over here and in this part, Middle East et cetera.

So, these 2 countries, Russia and India, that much of land, almost 20 percent, that 2 billion hectares we are talking about. Land degradation is undermining the well-being of some 3.2 billion people, driving species to extinction and intensifying climate change.

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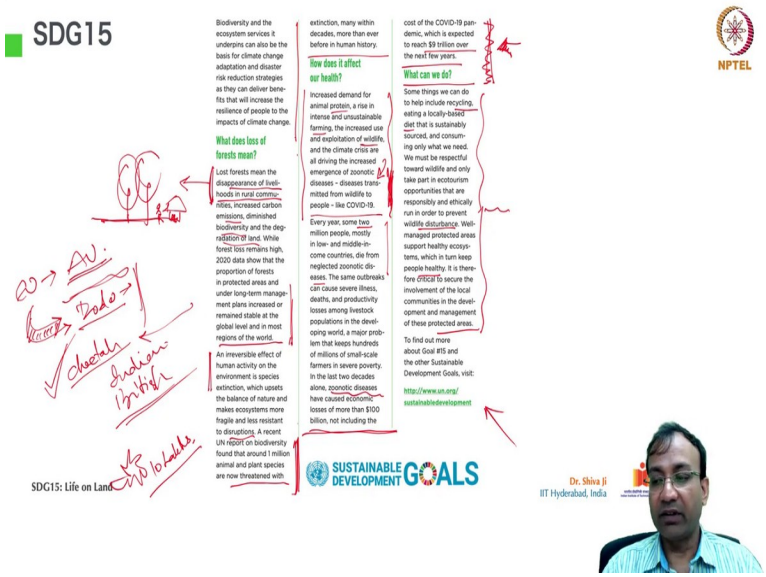

Biodiversity and the ecosystem services it underpins can also be the basis for climate change adaptation and disaster risk reduction strategies as they can deliver benefits that will increase the resilience of people to the impacts of climate change. What does loss of forest mean? Lost forests mean the disappearance of livelihoods in rural communities, increased carbon emissions, diminished biodiversity and the degradation of land.

So, if you see, disappearance of livelihood and rural communities, they are directly and in a greater extent dependent on the forests. So, it is a direct impacting thing for these societies the places the people who are dependent on these. Increased carbon emissions, diminished biodiversity and degradation of land.

While forest loss remains high, 2020 data shows that the proportion of forest in protected areas and under long term management plans increased or remained stable at the global level and in most regions of the world. So, there is some hope that it has at least remained at the similar level even if there is some loss in some place but there is new forest or New Plantation coming at some other place. So, overall balanced and irreversible effect of human activity on the environment is species extinction.

You may have known that bird Dodo. So, this bird actually, Dodo, met extinction because of some, when, I think a long back, I think a few hundred years back when Europeans arrived in the Aboriginal Australia. So, that time it was a kind of new finding

for these people, these bird Dodo. And this used to be an unsuspecting very kind of bird and it was kind of hunted by these Europeans in huge numbers to its extension. They hunted it so much that this whole species actually got extinct.

So, you see there is a direct impact of group of people or a community of people impacting certain species at certain place, and this is not just one example. There are many other examples from parts of the different parts of the world where different, other species of animals, they have gone extinct.

Even another example of this is cheetahs. They used to be abundantly available in Indian subcontinent but during British rule, they were hunted so much by British and other European rulers, invaders of that time that this species also got extinct and recently government of India has tried bringing them back by getting a few from African continent so that their population still flourishes and start rising in our subcontinent. So, those are the some examples but there are many other unknown species running in thousands which have gone extinct because of deliberate or even indeliberate impacts of human activities.

So, it upsets the balance of nature and makes ecosystem more fragile and less resistant to disruptions. A recent UN report on biodiversity found that around 1 million animal and plant species are now threatened with extension many within decades, more than ever before in human history. So, 1 million. So, now you have the number. In just few decades, 1 million, that means 10 lakh species of plants and animals insects and all combined are going to get extinct.

How does it affect our health? Increase demand for animal protein, rise in intense and unsustainable farming, increased use in exploitation of wildlife and the climate crisis are all driving the increased emergence of zoonotic diseases, diseases transmitted from wildlife to people like COVID-19.

So it is kind of said that this COVID-19 virus actually came from wild animals, some species and got mingled with the humans and then from humans, it spread to the whole world and almost every country got it and there is a huge loss of life health and economy everywhere.

So, the problem mentioned over here is the since there is a loss of forest and biodiversity, now human society is directly exposed to those wildlife farms with which we have not been conventionally exposed or in direct touch. So, this may open another round of unknown sort of diseases. We are not even aware of what kind of viruses and bacterias and other microbes are harboring in those wildlife animals, and different plant species.

If it starts happening, then it may be a new swath of invasion for the entire humanity and other life forms. So, again direct impact is because of loss of the forest and loss of biodiversity. Every year, some 2 million people, mostly in low and middle income countries, die from neglected zoonotic diseases. This is the number, 2 million, low and middle income countries.

The same outbreaks can cause severe illness, deaths and productivity losses among livestock populations in developing world, a major problem that keeps hundreds of millions of small-scale farmers in severe poverty. In the last 2 decades alone, zoonotic diseases have caused economic losses of more than 100 billion US dollars, not including the cost of COVID-19 pandemic which is expected to reach 9 trillion US dollars over the next few years.

That is a humongous figure we are looking at in the form of damages caused by such zoonotic diseases. So, this is the extent we are talking about. What can be done about this? Some things can we do to help include recycling, eating a locally based diet that is sustainably sourced and consuming only what we need. We must be respectful toward wildlife and only take part in ecotourism opportunities that are responsibly and ethically run in order to prevent wildlife disturbances.

Well-managed protected areas support healthy ecosystems which in turn keep people healthy. It is therefore critical to secure the environment of the local communities in the developing and management of these protected areas. So, protection of these areas is the essential and bottom line thing for maintaining this, all of these things, whether the loss of biodiversity, the loss different species, degradation of land, desertification and all of those things. For more difficult details, refer here.

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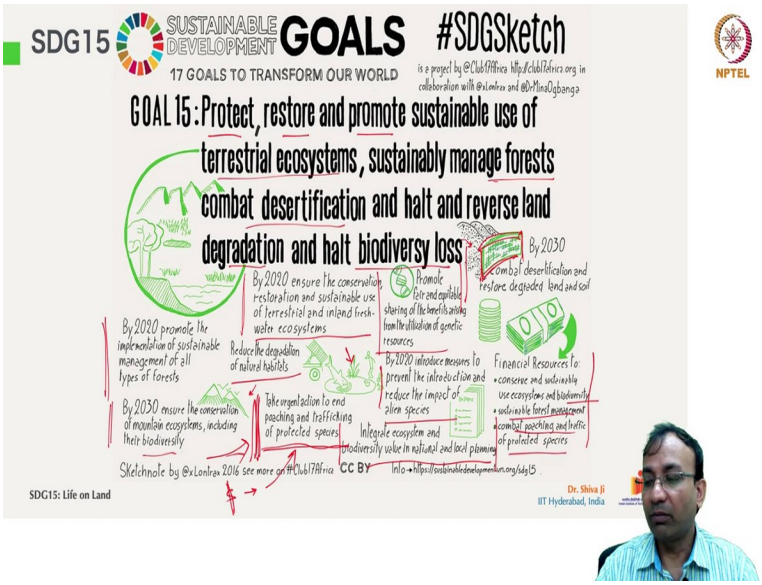

So, what do we see as goals and targets in this? Protect, restore and promote sustainable use of terrestrial ecosystems. Sustainably manage forests, combat desertification and halt and reverse land degradation and halt biodiversity loss, the points which we saw earlier. Inside that, by 2020, promote the implementation of sustainable management of all type of forests. 2030, ensure the conservation of mountain ecosystems including their biodiversity.

By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inline freshwater ecosystems. Reduce the degradation of natural habitat, take urgent action to end poaching and trafficking of protected species. You may be aware, there are number of instances from every country that wild animals are hunted for some weird unique kind of purposes, whether for cosmetics, whether for luxury related things, whether for some pre-assumed, maybe assumed medicinal properties and things like that, which has actually driven those species to the extinction.

Many of them have already gone extinct, and many of them are on the verge of extinction because of this kind of exploitation. So, what is a weird kind of taste some people have in the society that they are not even care about whether the whole of that species is going to get you extinct. So, this is the very irresponsible way of handling things or having some weird kind of taste of things and et cetera.

So, controlling those kind of things is a major challenge because unless and until the people's habit actually change, in some way or the other, they will keep on driving, because in many of these cases they are ready to pay whatever dollars are needed for sourcing these things which in turn becomes the biggest driver to such conditions. Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources.

By 2020, introduce measures to prevent the introduction and reduce the impact of alien species, integrate ecosystem and biodiversity value in national and local planning. So, at all levels, not just at national level, at local level also this must be considered and brought into the books for greater control. By 2030, combat desertification and restore degraded land and soil. So, you see this is the dessert, it is rising and there is a full stop being proposed over here. Financial resources to conserve and sustainably use ecosystem and biodiversity, sustainable forest management, combat poaching and trafficking of protected specie.