Biodiversity Protection, Farmers and Breeders Right

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Lecture 10 : Biodiversity and Climate Change

Welcome to the lecture 10 on Biodiversity and Climate Change. In this lecture, we will take up the following concepts. The definition of climate change, what are the causes, the work of the intergovernmental panel on climate change and the most recent report, what are the activities in relation to climate change adaptation within the framework of the Convention on Biological Diversity and the UN Framework Convention on Climate Change. How the global biodiversity framework is important from the understanding of the integration of biodiversity and climate change activities, the Paris Agreement and its relevance, the role of indigenous people in better understanding of the climate change adaptation and the UN RED and the REDD+ program. These are the keywords of the lecture. So, we begin with the basic understanding of what is climate change.

I refer to you the article 1, 2 of the UNFCCC which defines climate change as a means in terms of the change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to the natural climate variability observed over comparable time periods. In this context is also important to understand the climate system which means the totality of atmosphere, hydrosphere, biosphere and geosphere and their interactions. Let us understand what are the causes of climate change. There are two types of climate change, one is the natural climate change and the other which is because of human activities.

Natural climate change is because of natural changes in the axial rotation of the earth, the variation in ocean cooling and warming cycles, volcanic activity. Anthropogenic climate change is the human induced climate change. Together they contribute to the entire notion of climate change. And today as we see the effects of climate change are lasting for longer periods of time. From the point of view of understanding what are the drivers of climate change, it is relevant to note industry emissions, changes in land use patterns, deforestation, greenhouse gases, contribute to the overall increase in the warming of the earth.

Effects of carbon dioxide emissions methane, nitrous oxide and fluorinated gases is to be looked at from the perspective of various studies that have been conducted world over. In terms of the long term shifts of climate change, the serious concerns have been in relation to the rise in temperature and also changes in weather patterns. How does biodiversity positively contribute to the mitigation of climate change can be understood

well from the fact that changes in weather in the local, regional or at the global scale can affect the number of species where in certain cases mass mortality of plants and animals have been noticed. An increased incidence of diseases, changes to the marine, freshwater, terrestrial ecosystems across the world have been noticed. The UN climate change action provides these following statistics in terms of when the variation of temperature is seen, what is the kind of effect that is going to be noticed in relation to species is very astounding and hence the need for climate change mitigation has become adequately important.

The consequences of climate change today are understood generally from the point of view of rise in water level, severe fires, scarcity of water, intense drought, melting of the polar ice, greater flooding of different regions, catastrophic storms and declining biodiversity. So, as you can see complex set of consequences all in all pose a serious threat to the subsistence of life on earth. Natural climate changes have been also studied from the point of view of naturally occurring changes and how that can affect the earth's atmosphere. The greater attention is today on anthropogenic climate change and the individual contribution as well as the collective contribution of the factors that are listed in this illustration have become relevant in different assessment reports. What emerges is that there is a serious need to keep the global temperatures well within the commitments listed out.

For that there is a requirement of understanding how certain ecosystems can serve as sinks and at the same time it is also necessary to understand the source sink relation to better understand how climate change can be managed and in future we have a better atmosphere to deal with in terms of subsistence. The IPCC clearly indicates that the warming of the climate system today is no longer a theory it is a fact that anthropogenic activities have hastened the entire global warming. There are several contributing factors that are listed in this particular illustration and how those can impact the various aspects of the ecosystem on one end, the how the northern hemisphere is going to be affected, how the arctic regions and the Himalayas as a whole are affected, how do we see the rise of temperature affecting biodiversity. These are important statistics to work on to look at how at the regional level and at the local level activities can be taken up in order to mitigate climate change. Therefore, climate action has become central to not only the objectives of various conventions particularly in relation to certain conventions the UNFCC and the CBD together are working now towards looking at how adaptive measures can also be understood in the context of climate change.

It is relevant to discuss the IPCC which forms a very important basis of looking at the assessment of climate change. The IPCC comes up with regular reports and the assessment report AR 6, sixth report provides a very clear understanding where several

stakeholders participate in the process of creation of the report, it is reviewed by government and other stakeholders and finally, it is laid open as a technical and separately there is also a summary of the policy document. This forms a very important basis of international negotiations on climate change at the UNFCCC. Originally it was set up in 1988 by the World Meteorological Organization and the United Nations Environment Programme. So, combining the context of science and climate policy is the thrust when we come to the IPCC reports.

There are several working groups, three working groups one working on the physical basis, the other working on adaptation and vulnerability, the third working group looking at the mitigation of climate change. In 1988 a separate task force on national greenhouse gas inventories was set up which looked at the reporting on national greenhouse gas emissions and the removals. So, the assessments of the IPCC are relevant in terms of the implications for policy and also provide an opinion that will move the policy mandate. The sixth assessment report of the IPCC clearly indicates ecosystem based adaptation measures, social programs that are required and how new technologies and infrastructure can be looked at from the point of view of implementation of climate policies. This is the summary for the policymakers which gives the current status of the climate, possible climate future, how the information on climate for risk assessment and regional adaptation is relevant and what could be the requirements to limit future climate change.

In relation to the CBD, a joint liaison group was set up in 2001 between the secretariats of the Convention on Biological Diversity, the Framework Convention on Climate Change and the UN-CET. The objective was to look at coordination between these three for the cooperation on understanding of climate change adaptation. Several reports emerged out of it, this understanding and the ad hoc technical expert group on biodiversity and climate change has been set up which routinely reviews the interrelationship between biodiversity and climate change. The understanding of global biodiversity framework is relevant from the point of view of looking at how to address the loss of biodiversity, restoration of ecosystems and protection of indigenous rights. 23 targets which need to be achieved by 2030 have been identified and in many of those instances the relevance of climate change has been clearly identified.

So, if one looks at the target 8, 11 and 18, the need to minimize the impact of climate change, how the monitoring and regulation of air, water and climate, soil health under target 11, the need to look at building synergy in relation to the activities in relation to biodiversity and climate to understand climate crisis under target 18 are relevant and they provide guidance in terms of the implementation. This is an illustration just to give you a view into a gamut of decisions under the conference of party meetings under the CBD which are focused on the understanding of the linkage between biodiversity and

climate change. This gives you the importance of how greater in incorporation of climate change activities has become relevant to understand adaptation as well. It is important to also keep in mind the Paris agreement which came with the objective of limiting the global average temperature to below 2 degrees and to limit the temperature increase to 1.5 above the pre-industrial levels.

For this nationally determined contributions have been identified and submissions come under the national climate action plans. The relevance of building a enhanced transparency framework has been identified. In 2024 submissions will be made by countries and this will help us understand how the climate change mitigation adaptation measures have been taken up and what kind of support has been received and provided. Indigenous people have a big role in relation to climate action activities. The IPCC report recognizes this and today at the local, at the regional levels or at the national levels the relevance of indigenous people have been acknowledged in order to scale up climate activities.

I would like to emphasize on how indigenous people practice can be very important to understand not only climate change, but climate change adaptation. The role of indigenous people has been also recognized by several countries at the national level where the indigenous community members are also members to committees dealing with this aspect. Some of the activities have been taken up in several countries. Native tree plantation in Nepal is one example where forest stewardship has been encouraged to help store carbon and promote cultural values. In the Bangladesh there are several community managed natural forests and the conservation of forest biodiversity is taken up by community members.

The area of natural resource management has gained importance world over. In the Pacific one of the key strategies for climate change that has been identified is the revitalization of traditional technologies that are relevant for agriculture, aquaculture and also resource management. In the native Hawaiian community the practices of sustainable fishpond system are very unique To look at the understanding of how annually production is managed, how to mitigate coral reef breaching, how to address the imbalances in the marine ecosystem. So, the indigenous people possess the know how through time as they live very close to the ecosystem and have an understanding of how changes happen in the ecosystem. This understanding can be very useful in looking at climate adaptive measures as well.

In the African Kalahari desert where temperatures are very high understanding survival in the time of dune expansion, increased wind spins which impact traditional practices in terms of cattle and goat farming practices. These have been helpful wherein the

government has interacts with the indigenous people to understand how measures can be taken up to enhance the survival. Glacial melts in the Himalayas have affected several people who are the rural dwellers there. In the context of the loss of glaciers and snow cover, the shrinking of the snow cover, climate adaptive measures have been understood by not only the studies done in the Himalayan region, but also the practices associated with the local people who dwell in the region. Amazon as you are aware is one of the very important places for several studies and in this case how the forest fragmentation occurs, droughts as a result of fires in the Amazon region, how their livelihoods of the indigenous people have been affected and how restoration of ecosystem activities have been taken up by communities dwelling in those forests, helping the understanding of climate measures in relation to adaptation.

Similarly, in the Arctic region how the hunting practices have changed, what are the different local cultural and social aspects, how do communities cope up with changes in the availability of traditional food sources, changes in weather conditions, these have become very important to look at livelihood sustenance in those regions. The massive loss of reindeers which are vital to the subsistence culture and economy of the Sami communities have been studied in Finland and many other countries. Understanding of the measures would help in building long term livelihood sustenance in relation to climate activities. So, the incorporation of indigenous people in climate activity climate action activities is imperative to look at how their ecosystems and their role in ecosystem restoration can be taken up. From the point of view of forest biodiversity which can be a very important positive measure, the greater the increase of forest biodiversity the greater is the ability to tackle climate change.

It is from that perspective that the UN RED and REDD plus are relevant, REDD standing for reduced emissions from deforestation and forest degradation in developing countries. Established in 2008, it serves as a knowledge and advisory platform to provide for forest solutions to climate crisis. There are several activities that have been identified and key areas for work. The REDD plus goes beyond the context of not just addressing the conservation, but also looking at the sustainable management and how one can enhance carbon stocks. The Paris agreement recognizes the REDD plus measures under article 5.

In conclusion, climate change is significantly impacted by anthropologic factors, it is no longer a hypothesis, but a reality. There are several consequences to climate change and certain ecosystems are more vulnerable than others. Unless there is an integrated effort to understand climate change assessment and adaptation, addressing solutions are going to be not easy. Biodiversity forms a very important linkage and therefore, the understanding of biodiversity and climate change interconnection serves as a very important measure to take forward the activities in terms of climate change.

Understanding the relevance of the synergy between several conventions which deal made the primarily with climate change and deal with the aspects of biological diversity are important to understand climate change action.

Today, the area of climate change has severely impacted the studies going forward. When we look at the assessment reports on climate change, one can clearly understand how the changes to biodiversity have happened in different ecosystems. These are the few references for the lecture. Thank you.