

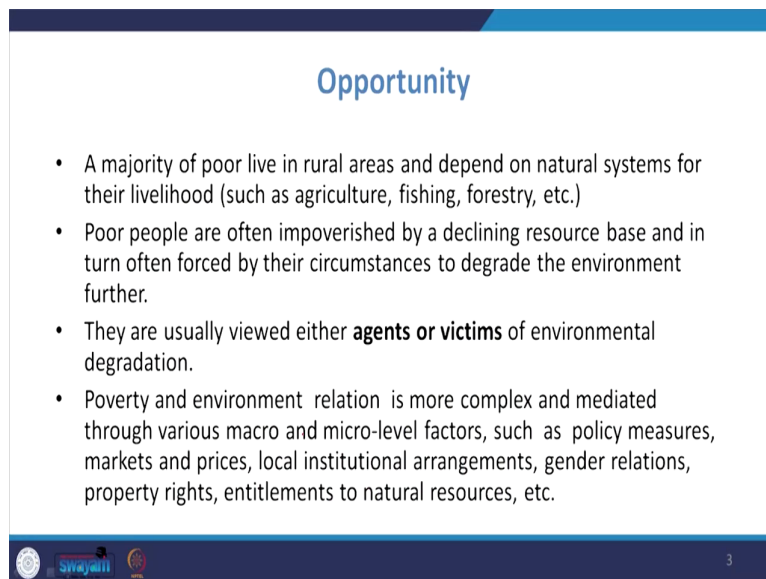
**Introduction to Environmental Economics**  
**Prof. S. P. Singh**  
**Department of Humanities and Social Sciences**  
**Indian Institute of Technology, Roorkee**

**Lecture – 17**  
**Poverty and Environment Linkages – II**

In the previous lecture, I introduced the concept of poverty and also discussed the methods to measure poverty and I also started explaining the effects of environmental change on poverty.




In this lecture you will study in detail, the effects of environmental change on poverty. As I already discussed environmental change may relate to various dimension of poverty such as opportunity, capability and security.

(Refer Slide Time: 01:29)



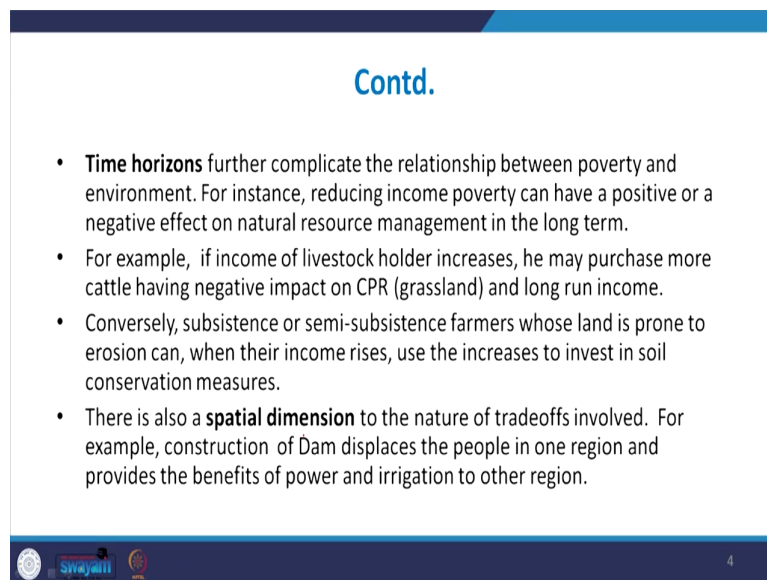
**Opportunity**

- A majority of poor live in rural areas and depend on natural systems for their livelihood (such as agriculture, fishing, forestry, etc.)
- Poor people are often impoverished by a declining resource base and in turn often forced by their circumstances to degrade the environment further.
- They are usually viewed either **agents or victims** of environmental degradation.
- Poverty and environment relation is more complex and mediated through various macro and micro-level factors, such as policy measures, markets and prices, local institutional arrangements, gender relations, property rights, entitlements to natural resources, etc.

   3



So, I started in the preceding lecture, opportunity and I also discuss here that poor's are considered as agent as well as a victim of environmental degradation.

(Refer Slide Time: 01:50)



**Contd.**

- **Time horizons** further complicate the relationship between poverty and environment. For instance, reducing income poverty can have a positive or a negative effect on natural resource management in the long term.
- For example, if income of livestock holder increases, he may purchase more cattle having negative impact on CPR (grassland) and long run income.
- Conversely, subsistence or semi-subsistence farmers whose land is prone to erosion can, when their income rises, use the increases to invest in soil conservation measures.
- There is also a **spatial dimension** to the nature of tradeoffs involved. For example, construction of Dam displaces the people in one region and provides the benefits of power and irrigation to other region.

  4

And here when we discuss the relationship between poverty and environment, then some analyst believe that poverty degrade environment because poor people also give more weight to the short term rather than to the long period.

So, time horizon further complicate the relationship between poverty and environment. For example, reducing income poverty can have a positive or negative effect on natural resource management in any country in the long run. Such as if income of livestock holders in a region increases, he may purchase more cattle having negative impact on common property resources.

So, when the income of cattle holder increases to earn more income, he can purchase more cattle's and then these cattle's will grace on the common properties, grasslands. And, then these grassland may be over grassed and that may have implication on long run income. Conversely, subsistence or semi-subsistence farmers whose land is prone to erosion can when their income rises, use the increase to invest in soil conservation measures.

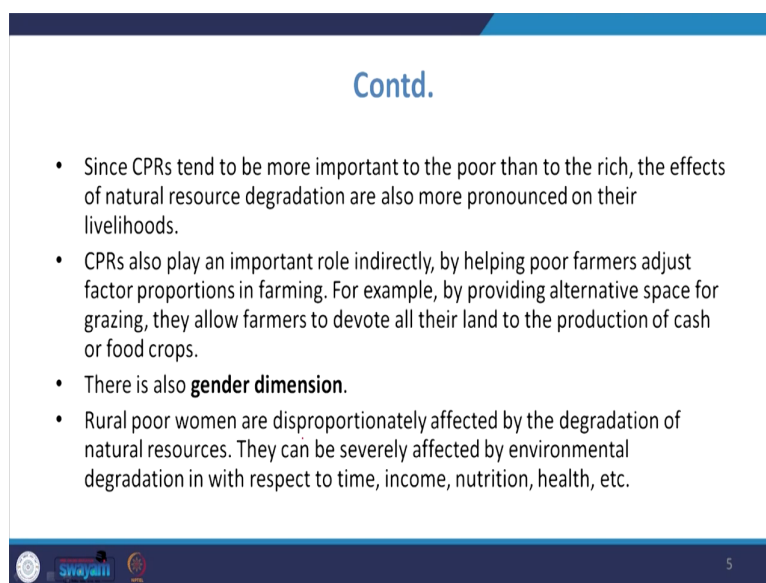
So, I can tell you that if the income poverty reduces, those households whose income poverty is reduced, they may make more investment in those activities which may degrade the environment; give an example of cattle holders. But at the same time opposite view is that when the income of a person increases say poor farmer's income increases he may invest in land conservations, land leveling and land improvement and for that environmental improvement may increase. So, there are both views; increase in income of poor people may lead to environmental degradation or also environmental improvement depending upon how the increase income is used and what kind of activity a person is practicing.

There is also a spatial dimension to the nature of tradeoff between poverty and environment. For example, if a dam is constructed in a particular region the people near to the dam may be displaced. But, the benefit of that dam may be received by those households which are far away from the region where displacement took place and they may get power and irrigation etcetera.

So, in that case the environmental degradation may occur in one place and benefit of such kind of development activities which is leading to environmental degradation may be going to another regions. So, this is also the important issue while discussing the relationship between environment and poverty.

So, opportunity actually may be received by the persons for away from the place of interventions and the degradation due to interventions may affect the people living near to the place of interventions.

(Refer Slide Time: 06:39)



The slide is titled "Contd." and contains four bullet points. At the bottom left, there are logos for a university and "swayamii". At the bottom right, the number "5" is displayed.

**Contd.**

- Since CPRs tend to be more important to the poor than to the rich, the effects of natural resource degradation are also more pronounced on their livelihoods.
- CPRs also play an important role indirectly, by helping poor farmers adjust factor proportions in farming. For example, by providing alternative space for grazing, they allow farmers to devote all their land to the production of cash or food crops.
- There is also **gender dimension**.
- Rural poor women are disproportionately affected by the degradation of natural resources. They can be severely affected by environmental degradation in with respect to time, income, nutrition, health, etc.

Since common property resources tend to be more important to the poor than the rich the effects of natural resource degradation are also more pronounced on their livelihoods. So, as I already discuss that poor people largely depend on common property resources as compared to the rich people and if there is a degradation of these common property resources, then the livelihood of this poor people will be badly affected.

Common property resource also play an important role in directly by helping the poor farmers as just factor proportion informing. This is are also the interesting things that if there is a improvement in common property resources like grassland. The farmers may use that grassland for cattle grazing and since their cattles are grazing in the common property resources, they do not need to increase area under fodder. And, they can save the land which

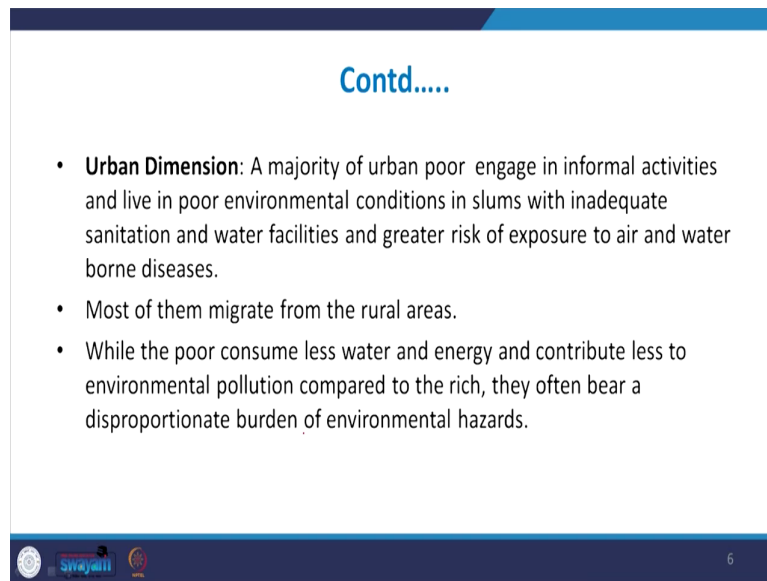
used to be under fodder and that land can be used for growing more food or commercial crops.

So, in this way if there is a improvement in environmental resources, then it is indirectly the addition of the income of the farmers. Because, farmers can commercialized their agriculture, diversified their agriculture, they may reduce area under fodder because now common property resources are improved and they can get the grassland for their cattle grazing. This is one of the important issues when we talk about opportunity.

So, environmental improvement also provide different kinds of livelihood opportunities to the poor people. But, there is also a gender dimensions related to these opportunities as we know that when environmental degradation occurs in any regions most supporters are the poor woman and they are affected due to environmental degradation because they get water, food, wood from the forest. So, if water depleted they have to go more distance to collect the water, they have to go more distance they have to devote more time to collect if will etcetera.

So, degradation in environmental resources will adversely affect the well being of the women, and if these resources improves, then well being of the female workers will improve. So, they can be severely affected by the environmental degradation in respect to the time, income, nutrition and health like air pollution, badly affected if fire would also affect the health of the female. So, many activities done by the female are closely associated with the environmental resources.

(Refer Slide Time: 10:17)



The slide is titled "Contd....." in blue text. It contains three bullet points:

- **Urban Dimension:** A majority of urban poor engage in informal activities and live in poor environmental conditions in slums with inadequate sanitation and water facilities and greater risk of exposure to air and water borne diseases.
- Most of them migrate from the rural areas.
- While the poor consume less water and energy and contribute less to environmental pollution compared to the rich, they often bear a disproportionate burden of environmental hazards.

At the bottom of the slide, there are logos for "swayam" and "6".

Urban dimension is also important when we discuss the opportunity related to livelihood that is provided by the environment. As we know a majority of urban poor are engaging in the informal activities and they also live in a very poor environmental conditions. Mostly live in slums, so, some of them are not having shelter and they have inadequate sanitation, water facilities and also have greater risk of exposure to air and water borne disease.

So, in urban areas when industrial pollution occurs, when air pollution occurs, when water pollution occurs, due to release of waste water into the water bodies, then most supporters are the poor people living in the urban areas.

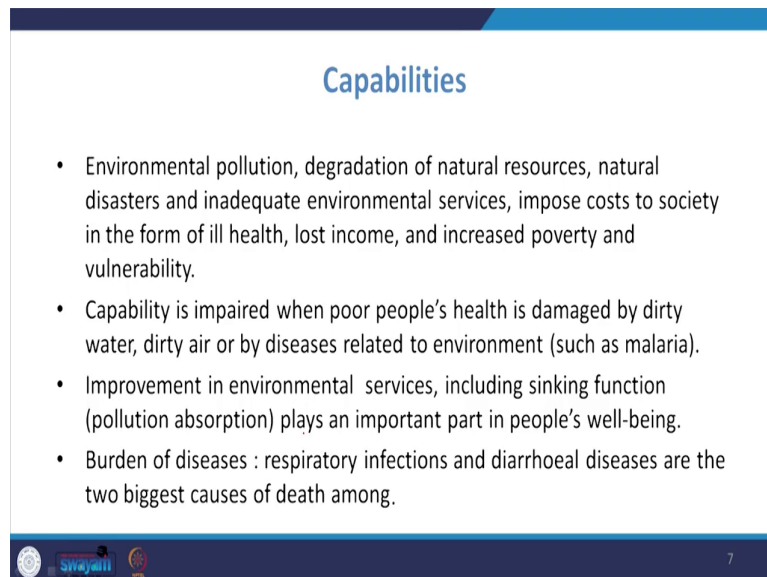
So, therefore, if the environmental conditions improves due to external interventions, government interventions then it will improve the well being of poor urban people. And these

urban people living in slums are mostly migrated from the rural area while poor consume less water and there is urban dimension of the relationship between environment and poverty.

A majority of urban poor engage in informal activities and they live in poor environmental conditions in slums with inadequate sanitation, water facilities and also have greater risk of exposure to air and water borne disease. And most all these poor urban workers or people they migrate from the rural area, if rural condition is in distress people migrate to the urban area in search of better livelihood options and they live in a poor conditions.

While poor consumes less water and energy and contribute less to the environmental pollution compared to rich people, they often bear a disproportionate burden of environmental hazards. So, it is true that poor people consume less environmental resources like water energy, but the burden of environmental pollution is high on them as compared to the rich people.

(Refer Slide Time: 13:13)



The slide is titled "Capabilities" in a blue font. It contains four bullet points discussing the impact of environmental pollution on society and health. At the bottom of the slide, there is a dark blue footer bar with logos for "swajati" and "7".

### Capabilities

- Environmental pollution, degradation of natural resources, natural disasters and inadequate environmental services, impose costs to society in the form of ill health, lost income, and increased poverty and vulnerability.
- Capability is impaired when poor people's health is damaged by dirty water, dirty air or by diseases related to environment (such as malaria).
- Improvement in environmental services, including sinking function (pollution absorption) plays an important part in people's well-being.
- Burden of diseases : respiratory infections and diarrhoeal diseases are the two biggest causes of death among.

swajati 7

Second dimension is capabilities. Environmental pollution, degradation natural resources, natural disaster and inadequate environmental services, impose costs to the society in the form of ill health, lost income and increase poverty and vulnerability. So, when environmental degradation occurs, it also adversely affect the capability of people in terms of their productivity and efficiency because health of the people badly affected due to pollution.

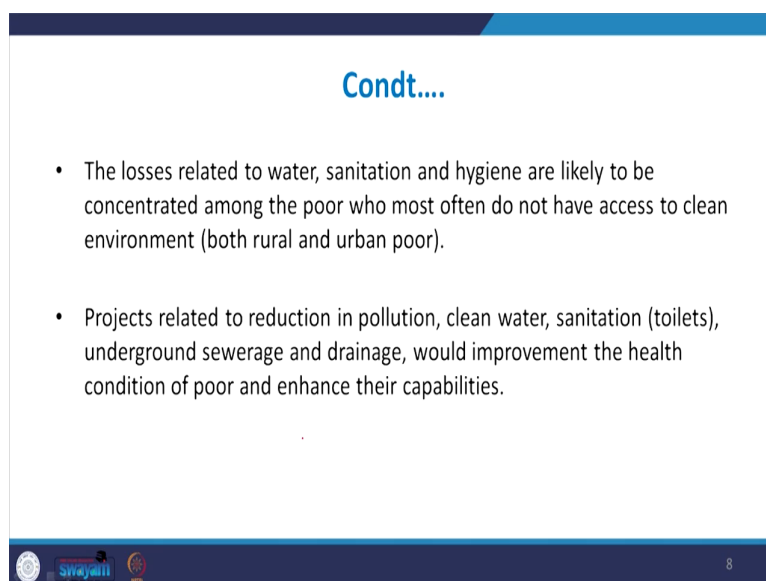
Capability of poor people is impaired when their health is damaged by dirty water, dirty air or by disease related to environment. There are many water borne disease that occurs and specially most of these disease are occurring in case of poor household because they cannot access to safe drinking water.

So, improvement in environmental services including sinking function of environment like absorption of pollution plays an important role in peoples well being. So, as discuss in the past environment provide us various kinds of services and one of the services provided by the environment is assimilate to capacity of environment or sinking function of environment. Sinking function means that environment observed the waste, whatever waste be released into that atmosphere we release into the atmosphere environment observed that waste that is known as sinking function of environment.

But if the pollution load in the environment is very high then this sinking function of environment is badly affected and due to this level of pollution in the economy, in the society; increases and that affect the poor people. And burden of disease is very high on poor people due to various environmental pollutions like diarrhea may occur due to water borne disease, then infections may be due to air pollutions. So, so various pollution related death occur in developing countries due to high intensity of different form of pollution that are generated in the economies.



(Refer Slide Time: 16:15)



**Condt....**

- The losses related to water, sanitation and hygiene are likely to be concentrated among the poor who most often do not have access to clean environment (both rural and urban poor).
- Projects related to reduction in pollution, clean water, sanitation (toilets), underground sewerage and drainage, would improvement the health condition of poor and enhance their capabilities.

swayam 8

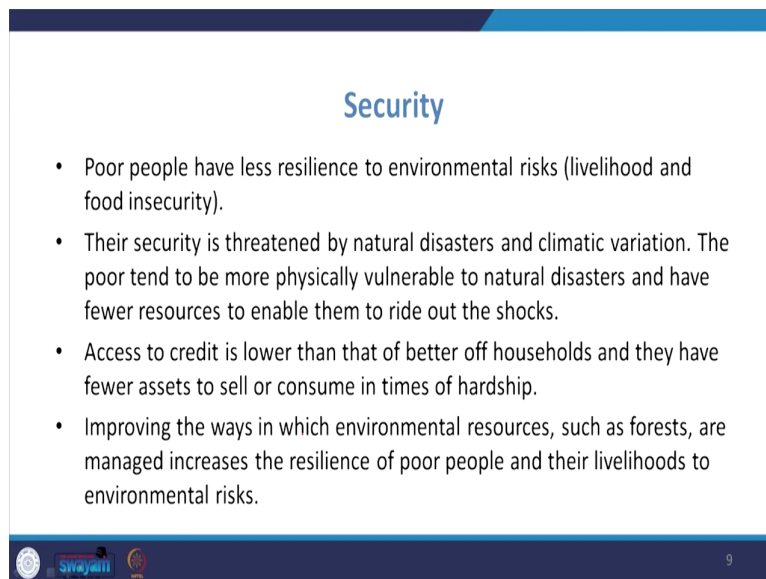
The losses related to water, sanitation, hygiene; hygiene are likely to be concentrated among the poor who are most often do not have access to the clean environment. They do not have access to the clean water, clean air, sanitation, drainage, sewerage etcetera in both rural and urban areas and due to this there is a high burden of disease on them.

In 2013 World Bank estimated for India that all form of pollution indoor, outdoor pollution, water sanitation related pollution or soil related pollution. So, all form of pollution cost around 5.7 percent of India GDP. So, pollution has high cost on societies and due to pollution, the most supporters are the poor people who cannot have better environment, better must gadgets, technologies to escape themselves from the adverse consequences of environment including change in the climate.

So, therefore, if some development projects related to improvement in environment are done and due to this projects there is a reduction in pollution, improvement in clean water, sanitation like clean India missions, underground sewerage, drainage all these kind of investments made by any government of any country would improve the health condition of poor and enhance their capability.

So, if you want to enhance the capability of our people including poor people then we have to make investment on cleaning our water bodies, cleaning the air, investing on sanitations like sanitary toilets having underground sewerage and drainage systems. All these investments will help to improve the health condition of poor people and improve their capabilities.

(Refer Slide Time: 19:09)



The slide is titled "Security" in blue text. It contains four bullet points:

- Poor people have less resilience to environmental risks (livelihood and food insecurity).
- Their security is threatened by natural disasters and climatic variation. The poor tend to be more physically vulnerable to natural disasters and have fewer resources to enable them to ride out the shocks.
- Access to credit is lower than that of better off households and they have fewer assets to sell or consume in times of hardship.
- Improving the ways in which environmental resources, such as forests, are managed increases the resilience of poor people and their livelihoods to environmental risks.

At the bottom of the slide, there are logos for "swajati" and "9".

Third dimension is security poor people have less resilience to environmental risk, they may have different kinds of risk may be associated with their livelihood or their food securities. So,

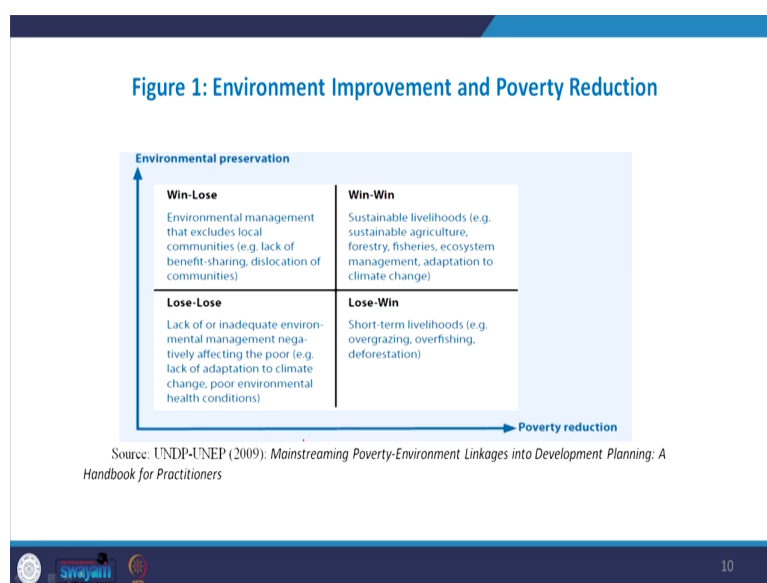
there may be food in securities or livelihood in securities due to the adverse consequences of environment like frequent floods, drought and other disasters that occur may affect the livelihood of poor people.

So, poor people are more vulnerable to the natural risk or environmental risk, their security is threatened by natural disasters and climatic variations. They tend to be more physically vulnerable to these disasters and they have few resources to enable them to get them rid of these adverse consequences of environment like they have less access to credit, they have poor housing conditions, they have less assets to sell or consume at the time of hardship.

So, poor people have less access to credit, access to the assets, access to the living condition and therefore, when there is an environmental crisis or risk they fall into the poverty trap. Improving the way in which environmental resources such as forests are managed, increasing the resilience of poor people and their livelihood to environmental risk

So, if the investments are made in protecting the environment in managing the water resources, in managing the forest resources in improving the or investing on water sets. All these investments will help to improve the resilience of poor people and also reduces the likelihood risk that are associated with environmental degradation for the poor people.

(Refer Slide Time: 21:50)



Now, after understanding these three dimension of poverty in contest of environmental change like opportunity, then capabilities, then securities now we can discuss the how the improvement in environmental conditions will affect the poverty reductions. In figure 1, you can see on vertical axis we are measuring the environmental preservation or environmental protection and on horizontal axis we are measuring poverty reduction.

There are four boxes or one is win lose. Win lose indicates that environmental management that exclude local communities, lack of benefits sharing dislocation of communities may improve the environmental conditions, but not necessarily improve the living condition of the poor people. So, poverty may not decline even if the environmental protection or environmental conservation occurs.

So, it clearly indicate that even if in any reasons there is a increase in environmental conditions better environmental management, but if people living in that area local communities or not involved in protecting that environment, sharing the benefit of that environment and if they are displaced from that environment in order to improve the environmental conditions then their poverty will not decline. So, in case of environmental preservation we win, but in case of poverty reduction we lose.

Then in second box there is a win-win situation means you can reduce the poverty and also improve the environmental condition, and here sustainable livelihood initiate is may be made like sustainable agriculture, forestry, fishery, ecosystem management, adaptation of climate change. So, if all these measures are made not only the environmental condition will improve, but also poverty decline.

Then in third there may be lose-lose situation that neither environmental condition will improve nor poverty will decline, and that occurs when there is a lake of or inadequate environmental management negatively affecting the poor, lack of adaptation to climate change, poor environmental health condition etcetera. So, due to all these things neither environment will improve nor poverty will decline.

And fourth one is lose and win. So, this is another situation where environmental conditions may not increase, but livelihood condition may improve and that is short term major actually like short term livelihood major like overgrazing, overfishing, deforestation.

So, when poor people or graze the grassland their income will increase, but environment will deteriorate, environmental condition will decline Similarly, overfishing, if there is a overfishing in a particular lake, pond or sea area then income of the fisherman may increase in the short run, but in long run the sustainability of these resources will be affected; same things related to deforestation.

So, in nutshell we can see that if you want to establish the relationship between environmental improvement and poverty reduction. Then, you have to initiate such kind of activities which

not only improve the environmental conditions, but also improve the income level of poor people and can reduce the poverty.

Let me now conclude this lecture. In this lecture you have studied about poverty environment nexus. Actually, poverty and environment nexus shows two way relation environment affects poverty situation in three distinct dimensions livelihood, health and vulnerability. Poverty also affects environment by forcing poor people to degrade environment encouraging several countries to increase economic growth leading to pollution and reduce reducing societies to downgrade environmental concerns.

Poverty and environmental relation is actually more complex and mediated through various macro-micro level factors, such as policy measures, markets, and prices local institutional arrangements, gender relations, property rights, entitlement to natural resources etcetera ah. Lack of well defined property rights, poor regulatory mechanism and weak governing institutions are rather more responsible for environmental degradation than poverty.

So, we can conclude that poverty is actually lead to the environmental degradation and when there is a environmental degradation it affects the livelihood of the people. So, poor people are agent as well as victim of environmental degradation.

Thank you.