

**Natural Resources Management (NRM)**  
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**Week - 01**  
**Lecture - 04**  
**Introduction to Natural Resource Base: Part 2**

Today we will continue with the introduction of Natural Resource Bases. So, when we talk about Natural Resource Bases, we actually already discussed about what are the different kinds of natural resource bases that we need to deal in the course of Natural Resources Management. Today, we will discuss a little bit about the various factors that actually are responsible for influencing the resource availability, distribution and also uses.

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**Factors influencing resource availability, distribution and uses**

- ✓ **Human settlement and population distribution**  
People try to settle in those places where there is no shortage of natural resources. It depends upon the geographic conditions like water availability, land use land cover, soil type, climatic conditions. Also there will be good connectivity. Thus South East Asia, Europe, North America has more population compared to other parts of the world
- ✓ **Human migration**  
Large group of peoples migrates in order to find the resources from one place to other where they could find the resources they need
- ✓ **Economic activities**  
People economic status and the overall economic status of the entire geographical region is directly proportional to the resources. This include oil gas production, agriculture, mining activities, tourisms, timber processing, transportation

Navigation icons: back, forward, search, etc.

Now, first one is human settlement and population distribution; what happens here, so, people normally try to settle in those places, where you will have plenty of resources available, there is no shortage, lot of water available, good quality water, good quality soil. So, if you look back in the history, majority of the civilization has actually initiated in those areas, which used to be very rich and endowed with different kinds of natural resources like water, soil, biodiversity, so and so forth. So, it depends largely upon the geographic conditions of an area and availability of various resources.

So, whether you talk about Southeast Asia, Europe, North America, you will find that the populations are much higher compared to the other parts of the world. So, you might be thinking, why it is so, the prime reason is that availability of natural resources, so, human settlement and also the population will be much higher there.

Second point human migration. So, there will be natural tendency, the large number of people will try to migrate to search for jobs, to search for good soil, good water availability of resources in much easier manner, than where they are presently located. So, people will try to move from one place to the other, where the opportunities for resource utilization, resource availability are much higher. So, that means, that even human migration, if you see that, it takes place for the quest of natural resources.

The third economic activities once again, so, when you have resources available in certain area, of course, your livelihood on the basis of those resources availability will have much more opportunity for generating income to carry out sustainable livelihood. So, people normally for economic region and activities, they will try to go towards those areas, which are having much higher and much easier access to different natural resources. For example, like oil, coal, good soil, agricultural good areas, tourism, you have availability of timber, good road. So, you see all those things actually encourage economic activities and now, when there will be economic activities much higher in one place in comparison to the other, so certainly people will move towards that area, where the economic activities are much higher.

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**Factors influencing resource availability, distribution and uses**

✓ **Trade**

Trade enables a country to acquire the resources from places that required even the country have limited natural resources. Example: Japan is one of the richest country in Asia even if it have a limited number of natural resources

✓ **Conquest, conflict, and war**

Many present day wars, conflicts occurs due to the reasons that powerful nations try's to control resource-rich territories. This not only causes the human life destruction but also causes economic loss by the loss of the natural resources. Example: the diamond resources of Africa, the oil resources of central Asia.

✓ **Wealth and quality of life**

Natural resources are a key component of goods and services, the standard of living. It gives us an idea of how many resources the people in a place have. This measure is known as the standard of living as the The well-being and wealth of a place are determined by the quality and quantity of goods and services available to people in that place

Next trade, what happened is that, when economic activity is in place B, suppose is higher than place A, then certainly the trades also will follow there. So, people will try to move towards those areas where you have higher opportunity of trade, which actually, enables a country to acquire much more places for different places that are required, even the country have limited natural resources. Suppose, say the case of Japan, small country, but yet they are one of the best developed countries in the world, how they actually manage.

So, if one country does not have natural resources in plenty, like the way we here in India we have, so what they do is that they do a trade. So, they actually bring it from the other countries, the resources that they need. So, Japan is one of the richest country in Asia, even if it has very, very limited natural resources. So, they do trade with their required resources they get from another country and in instead of that probably they are sending some products, some technology. So, those kinds of trading takes place.

Next point conquest, conflict, and war. If you look at in the history as well as a very recent past you will find that many wars conflict among different countries are taking place just to have right on some natural resources, right now, I recall one incident probably some of you might be knowing the case of the food, what happened is that there was a kind of a civil war erupted, just to have good access to fertile soil and good land. So, on that basis, 2 countries, neighboring countries started killing each other. So, what I am trying to mean is that natural resources could be so important, because it is the basis of our human civilization survival or sustainable livelihood.

So, if one country is not having appropriate amount of natural resources, poor and if a neighboring country has that, then 2 cases can happen, the country which is definitely if they are rich in resources, they are expected to be also rich in trade, businesses, finance economy wise. So, they will try to control the territory, the territory where they have the resource utilization, suppose factory, different type of manufacturing unit. So, what happened is that, this creates a kind of a dis-balance in the area.

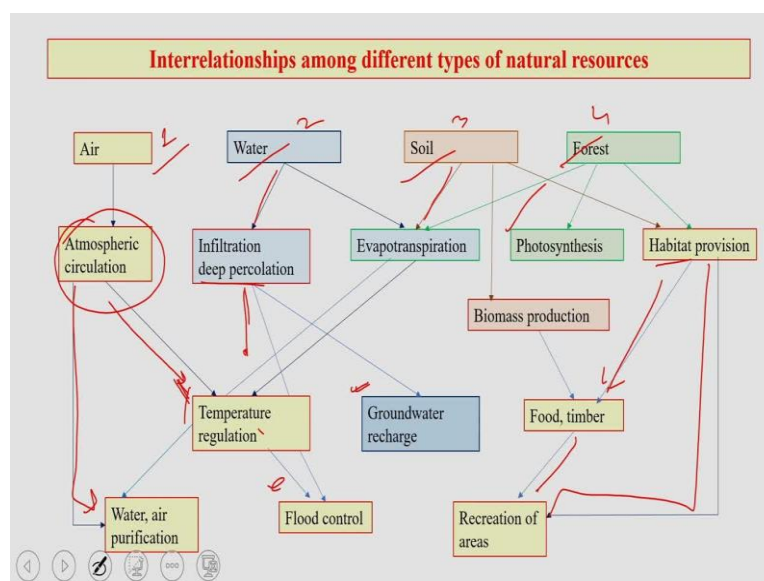
So, one country are progressing very faster, the other neighboring country is not able to do because, suppose, they are poor, so, their territory is also somehow regulated by the neighboring rich country, what happened is that, this country even though they have their natural resources, but they are not in a position to utilize the resources for their well-being for their prosperity.

So, what happened is that, the neighboring country which is much richer, stronger economically, they then try to somehow take control of that, and that starts some kind of conflict, and this is happening, since time immemorial. So, it happened, hundreds of years back, it is also happening now, probably, it will happen in future as well, but the point is here to be noted is that, that everything is surrounding the natural resources so important is for our life.

Now, the next point is wealth, and quality of life. Even wealth and quality of life is also associated with optimum amount of resources, natural resources available to mankind. Natural resources is a key component of all kinds of goods and services, standard of living, you cannot think your life without the role, important role played by natural resources.

So, it gives an idea that how many resources that people in a place, they are utilizing for their standard of living, livelihood generation. So, this is what is actually creating wealth and also enhancing your quality of life is also decided by the quality and the quantity of the resources that is available in a particular area.

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Next, this particular figure diagram, it actually tries to illustrate the interrelationship among different types of natural resources. So, you can imagine that the top resources, few resources if I take, so, air, water, soil and forest now, see the interrelationships, each one of them in one or other way is related in their dynamic fashion. If you look at the air, so air of course, it is involved into atmospheric circulation and it has a role also in regulating temperature, our environment, it also has a role to play in water air purification. So, once it plays a role here in

temperature, then this has also relation with evapotranspiration, which is having relation with soil.

Now, water also have infiltration, rainfall, which is also regulated by temperature because it creates high humidity, low humidity. Again, rainfall has also relation with ground water recharge; rainfall also has a relation with flood. And then if you have come here soil, forest of course soil and forest they are interlinked soil water is also linked and water, air is also interesting. Now, here evapotranspiration is taking place it has a role temperature, humidity and then you come down to forest.

Forest also has a lots of trees and plants of course, they are photosynthesis is taking place, then you have habitat provision, which is also again dependent on the availability of food and timber. So, food and timber also play a role in our daily life, in our house building, our recreation areas. Now, these things are also related with provision, habitat provision means where actually we recites so, in a sense, you see that, that all these major resources, natural resources, if we look at they are somehow related with each other.

So, what does this mean? This means that we cannot address any issue related to any one of the natural resources in a compartmental approach. So, the approach of natural resource management should be very integrated manner. So, if we suppose want to address the issue of water, then also we need to think about soil; if we want to address any issue associated with natural resources like forest, we cannot ignore soil, water, air.

So, this entire thing in natural resource management paradigm, it is important for us to understand that compartmental approach will not work or provide the desired outcome that we expect from the natural resources. That means, making our life sustainable. So, we need to also take care of natural resources that are available around us in a very, very integrated manner. So, as I was telling you that these interrelationships among different types of natural resources are actually key for our sustainable livelihood and also, so called survival for mankind.

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**Interrelationships among different types of natural resources**

- ❖ Land and water resources are interlinked with hydrological cycle in which water vaporises from waterbodies and moves in the atmosphere by evaporation process by air and condensed and return back to the land surface by different forms of precipitations
- ❖ Precipitation directly and the runoff from the precipitations enriches the surface water resources and part of the precipitation which moves down through the infiltration, augments the soil moisture content as well as the groundwater resources
- ❖ Both surface and groundwater resources are essential for plant and animal biota
- ❖ Forests provided shelters for biodiversity's and it provides wood, timber etc for human resources. The forests also takes part by enriching the surface and groundwater resources by the increasing the precipitation, infiltration, reducing the soil loss by erosion. More forest resources will reduces the CO<sub>2</sub> from the air and thus helps in air purifications. The wood, timber provided by soil are also used by human resources to conserve the soil and water resources
- ❖ Soil support the growth and development of the forest resources. Soil contains several minerals deposits which are most necessary for the human resources development. Erosion and uncontrolled flood can loss several minerals materials as well as organic matters from the top soil layers. This runoff and erosion are reduced by forest resources. Soil acts as a natural buffer for purification of surface and subsurface runoff water

So, whether you talk about the land or water resources, as I said that they are interlinked through hydrological cycle, they are linked to also the atmospheric cycle, precipitation directly indirectly related with ground waters, water management system, both surface and groundwater resources are essential for plant and animal biota.

So, that means forest and other plantations in agriculture area. Forest of course, as I discussed in the previous slide, that it provides shelter, habitat not only for our houses, homes, but also for recreation stuff which is also an important part of our life. Then of course, soil which supports the growth and development of the forest resources plant provide us food, but it cannot also provide anything without the help of good quality of water, soil and air.