Population & Society

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Lecture No. # 35
Ecological Degradation & Environmental Protection

So, today we are going to start a new topic, this is regarding Ecological Degradation and Environmental Protection. And last time, when I was giving lecture on national population policy, I was having a feeling that we have had enough of fertility, and mortality, and family planning. So, today there is a pleasant shift to another issue, and that is the issue of environment.

Along with the fertility and mortality, this issue of ecological degradation and environmental protection, has become a very important issue, not only for demographers, actually less for demographers and more for economies policy makers, planners and NGOs. You must have heard several times about climate change issue, pollution, failure of Kyoto Protocol. This week we have a conference of ministers of energy from different countries in (()), this is an important issue. We actually, this issue is attracting much more attention of national governments, and academicians, and civil society activists today, then the issue of population control.

In population control perhaps, there is not much to be studied now, because already developed countries have gone below the replacement level, and in less developed countries also there is a trend towards that. If at all in population the issue is of migration, and migration is closely connected with climate change, and ecological degradation. And if you read papers on climate change and ecology, you find that migration is covered in most of them. Migration is both a cause of climate change or environmental degradation, a consequence of that.

Climate change leads to migration, rehabilitation to migration of refuges, which may be called environmental refuges or ecological refuges. So, we are going to discuss now, environmental degradation.

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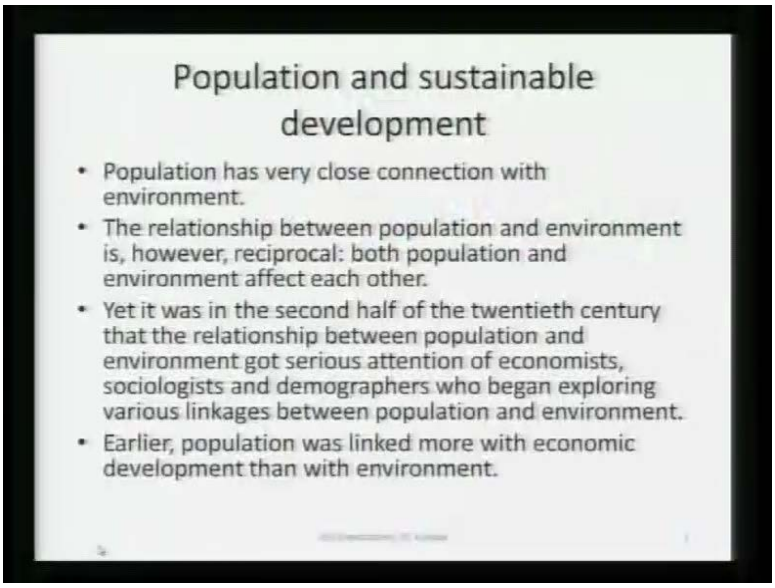

This issue of environment is closely connected with the issue of sustainable development. Originally for centuries, we talked about economic development only; economic development was defined, in terms of statistics of growth of per capita income. And sometime statistics, and diagrams of inequalities in income or wealth, Gini coefficient, Lawrence curve, were some of the majors used for is studying inequality.

Now, we are talking of sustainable development, not simple development, but sustainable development; it is said that the population has a very close connection with environment, means the quality of environment is closely connected with the size of population. And that the relationship between population and environment is however, reciprocal, its not one sided, it is not asymmetrical, it is a symmetrical relationship. Because, population size and population dynamics, affect the quality of environment and environmental changes or climatic changes, affect growth and mobility of populations, so both the variables affect each other.

Yet, it was in the second half of the 20th century, that the relationship between population and environment got serious attention of economics, mostly in 1970s, 80s. And we time now interest in these issues has become, much more visible than in the past.

So, economy, sociology, demographers began exploring various linkages between populations on the one hand, and environment on the other. Earlier, starting in 18 century, in essays writings and this is the population; population was linked more with

economic development, than with the environment. So, in writings of Malthus or post Malthus economist or sociologist; environment was not the issue to be taken seriously.

In sociology, I mentioned about (()), Kingsley Davis some post modernists, (()) and so on. Most of the time, they are linking population with developmental issues or what can be called social development, education, health, the status of women empowerment of women; maternal health and so on.

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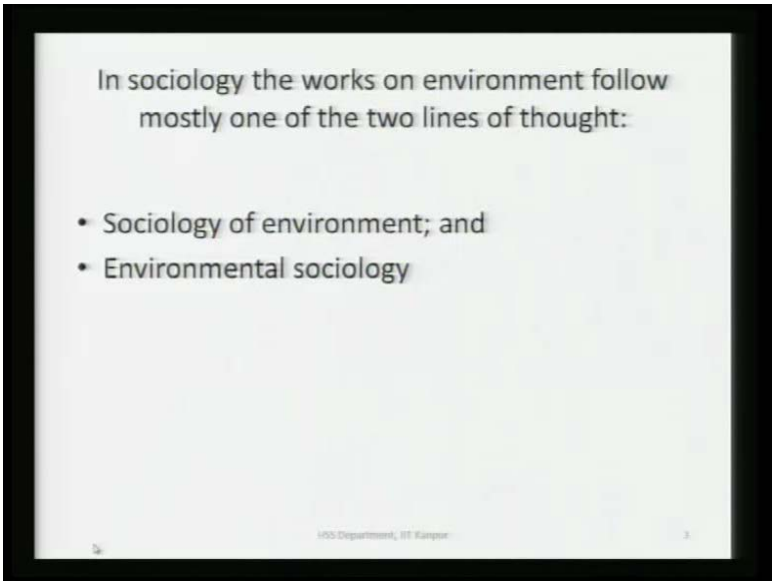

But, not with the environment, this connection between population and environment became a new issue; one can say starting in 1970s. In sociology, the works of of those who have studied environment can be divided into two broad categories. One you may call sociology of environment, and another you can call environmental sociology, sometime ago, when we started reviewing literature on environment.

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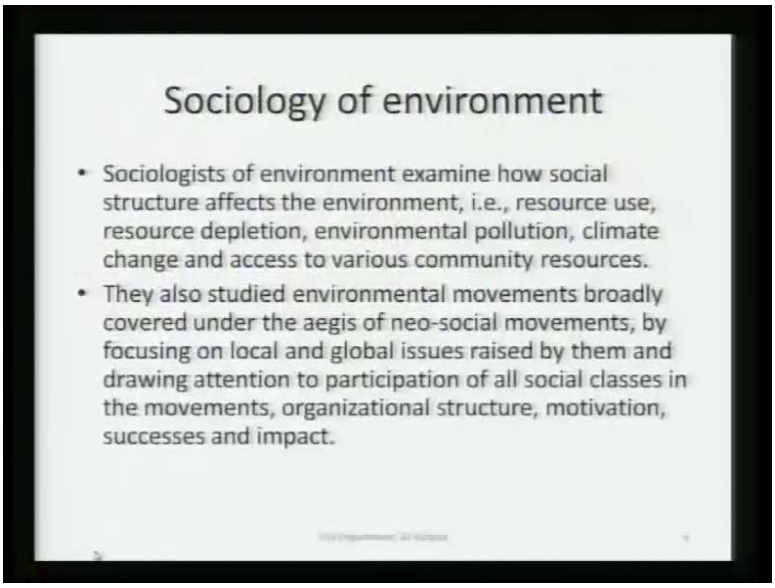

Difference between sociology of environment, and environmental sociology became very clear to us that, it is not one (()); since population and environment maintain two sided relationship, there is symmetrical relationship. So, what is to be treated as dependent variable, and what is to be treated as independent variable, determines heavily what kind of relationship we are studied, like in sociology of environment.

Sociology is an interesting discipline, you can begin with sociology of and then write something; sociology of population, sociology of religion, sociology of family, sociology of environment, sociology of furniture. The sociology of something means, how that something varies, how the degree of that or pattern in that, distribution, change in that, which becomes the dependent variable, varies according to social structure.

So, that means, sociology of environment examine, how social structure and social structure means, some total of expected relationships, norms, values, institutions, traditions, customs, loss, hierarchy, social satisfaction, they are all part of social structure. So, when sociology of environment means, sociologists whom we can put in the category of sociology of environment, they they study how social structure affects the environment. For example, resource uses, resource depletion, environmental pollution, climate change and access to various community resources.

If these are your dependant variables, resource use, resource depletion, environmental pollution, climate change, and access to various community resources. And your

independent variables are, social satisfaction or the institutions, family, joint family, nuclear family, religious beliefs, modernity, rationalization of resource use. Now, which can be put in the category of sociological variables, and then you have sociology of environment.

Now, these sociologies of environment also studied environmental movements, broadly covered under the aegis of neo-social movements, by focusing on local and global issues raised by them and drawing attention to participation of all social classes in the movement organizational structure, motivation successes and impact.

So, sociologies of environment are study relationship between, social structure and environmental issues or growth, and success or impact of environmental movements. Some of you may be familiar with this term, neo-social movements; some may not be sociologies that we studied movement, which means change, peasant movement, class struggle.

Recently, actually not so recently, some 3, 4 decades ago at the international level sociologists is realized, that there are certain mobilizations or movements, which cannot be explained so well in the traditional categories of sociology, class or economic or social status. That there are some movements, in which people belonging to all social status, participate; and these movements have arisen, not on the issue of class struggle or resource, but on the issues of identities gender, students identity, regional identity, ethnic identity, anti nuclear, anti aversion of women's movements or peace movements re ecological movements.

These are the movements, which draw participants from several socio economic classes, and in which capture of state power is not the goal, the goal is change values around certain things, act at the local level, change the values at the global level; these kinds of movements are called neo-social movements. So, for neo-social movements you require a new theorization in sociology, (()) theory, Emile Durkheim theory or Karl Marx's theory are not adequate to explain neo-social movements.

In India (()) movement, women's movement or environmental movement, Chipko movement of Bahuguna or Appiko movement of Karnataka or (()) for environmental movement; Kerala, Sastra Sahitya Parishad at these kinds of movements come under neo-social movements.

(()) tribal studies or tribal movements or they focus basically on tribal movements

Not necessarily, neo-social movement tribal, neo-social movements can arise around the identity of tribe, but there for example, women's movements are also called neo-social movement.

But, I thought basically, like this started from the tribal

Not necessarily, not necessary

These are the movements behind which you have identity politics rather than class politics that is the major difference. This identity can be identity of the tribal communities or the identity can be gender identity or it can be identity on the basis of age or linguistic divisions or religion identity of some image in community, which may actually not exist, and which is in the process of development through internet or through visual or virtual communities.

You see that, there are people like you, and you see this directly and you also see this, through magazines, radio, televisions and internet. And you identify, you start identifying this some community, like in women's movement women's movements are often confined to urban area, not tribal or rural area. But, in women's movement you have membership from lower classes, middle classes and also upper classes. And women are not access fighting, waging a war against men; we are fighting to have a dignified or empowered position or participation, in the larger society.

And the values of women's movements are not confined to any specific group or region of the country, they are of global nature. Without capturing state power, aiming at transformation of global values around something, that is the goal; so that is sociology of environment.

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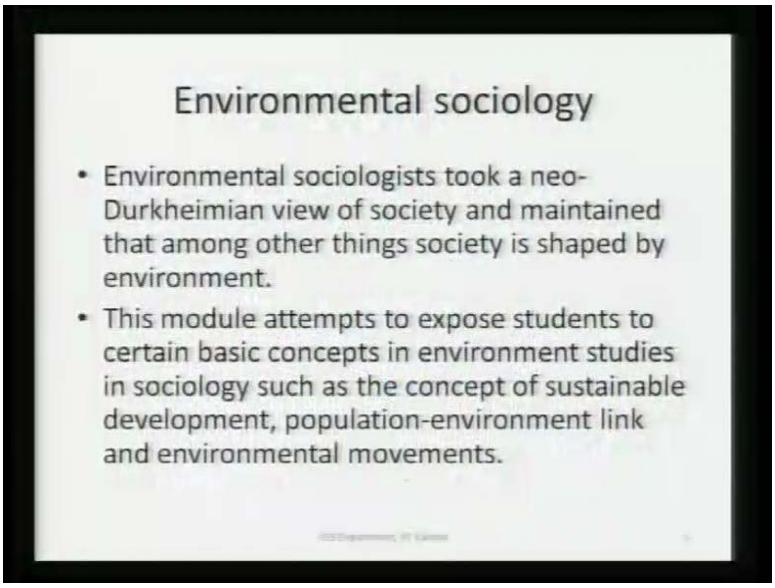

Then you have environmental sociology, environmental sociologists take a new Durkheimian view of the society, and maintained that among other things society is shaped by environment, what does it mean? Durkheim means view society stands for some kind of moral representations or collective consciousness of people, which exists outside individual egos. And somebody can take the stand, that this moral consciousness or this collective consciousness, this social ego is determined largely by the environment, in which society the people live.

People living in different environments, in different climates, in different geographical regions, in different climatic conditions, may develop entirely different social institutions, which will help them in facing the challenges of their environment. So, that kind of sociology can be called environmental sociology. In this sociology environment appears, as the independent variable; and social ideas, institutions, expectations, stratification, etcetera etcetera or religious beliefs or spiritual orientation, they appear as the dependent variable.

So, this module attempts to expose the students to certain basic concepts, in environment studies, in sociology. Such as, the concept of sustainable development, we will discuss what is the meaning of sustainable development, and what does it mean to say, that there will be link between population, and environment. What is population environment link, and what are environmental movements, so these three things, concept of sustainable

development and the linkage between population and environment, and environmental movements. So, in a way we will broadly cover sociology of environment and environmental sociology.

Now, the two approaches mentioned here, examine the same relationship in the two, the dependent and independent variables are interchange. There are also some, who do not accept separation between man and nature, as two separate logical categories. We have recently there has been, some little in sociology of environment and environmental sociology; in both of them, you are studying relationship between man and environment.

If the dependent variable is environment, we have sociology of environment, if the dependent variable is man and institutions, then we have environmental sociology. But, recently some literature has (()), which says that it is a difficult to distinguish between man and nature as two separate categories, may be 500 years ago, you could separate man from nature.

But, today when you are dealing with natural products, how much of that nature is natural, and how much of that nature is manmade, it is difficult to distinguish, in the age of genetic engineering. I was reading a study on tomatoes you know or tomato in natural may be 500 years ago, you could say that tomato is a natural product.

But, the kind of tomato, that are being produced today, with contribution from all kinds of sciences, including Biological Science, as in genetic engineering and the processes the chemical engineering and socio economic processes, which determine the nature mobility of tomato. It is difficult really to say, whether tomato is purely a natural product or its human product, everything today is both natural and human.

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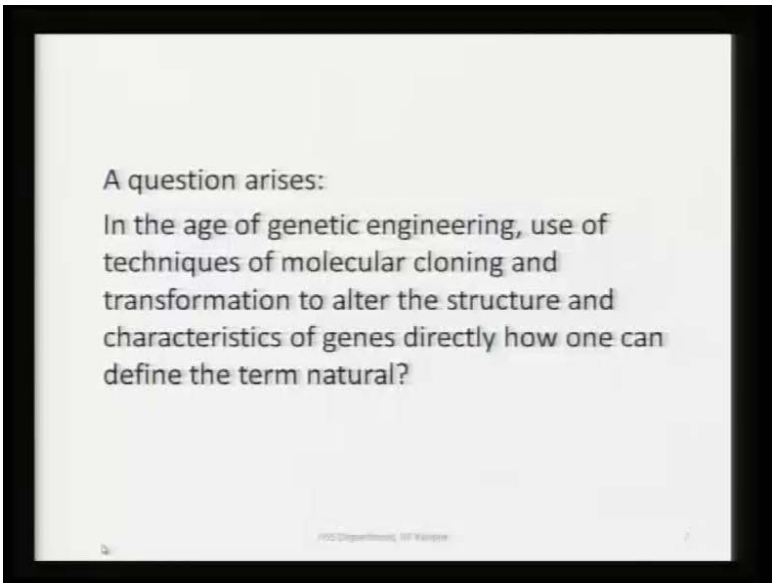

So, a question arises, that in the age of genetic engineering, use of techniques of molecular cloning and transformation to alter the structure, and characteristics of genes directly, how can one define the term natural?

So, that that adds to complexity, that man and nature or in human society and nature, they are not two dichotomous variables, actually both are shaved by each other. And therefore, today it is difficult to hold the view that you are dealing with relationship between two independent quantities.

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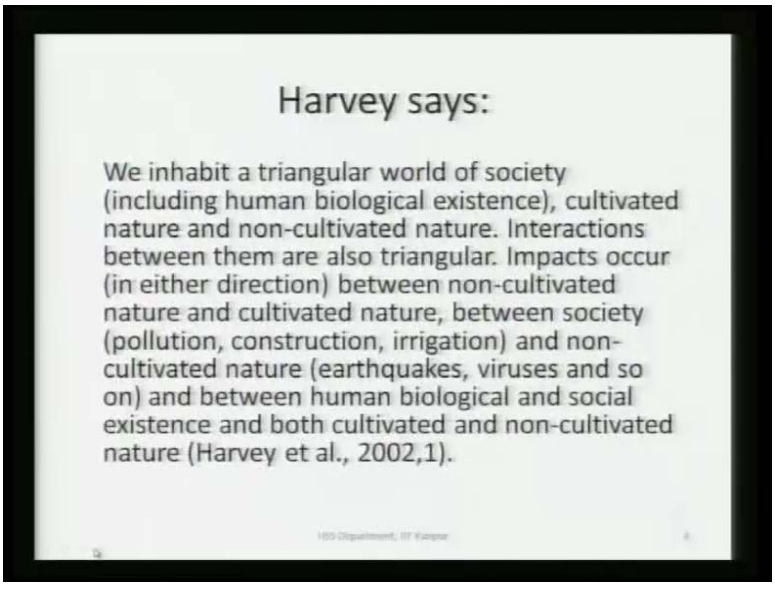

To quote Harvey, we inhabit a triangular word of society, including human biological existence, cultivated nature and non cultivated nature, interesting it distinguishes between two natures, cultivated nature and non cultivated nature. Today's tomato is part of cultivated nature, and tomato of 500 years ago was part of non cultivated nature. There has been a debate on, what was the Bt brinjal genetically modified is this, how much of these beet Bt brinjal is natural, and how much of it is cultivated; if it is part of nature, what kind of nature.

So, we in habitat triangular world, in which you have three parties, human existence, cultivated nature, and non cultivated nature; interactions between them are also triangular, impacts occur in either direction, means in both directions, between non cultivated nature and cultivated nature, between society in the form of pollution, construction, irrigation. And non cultivated nature, earthquakes, viruses and so on, and between human biological and social existence, and both cultivated and non cultivated nature.

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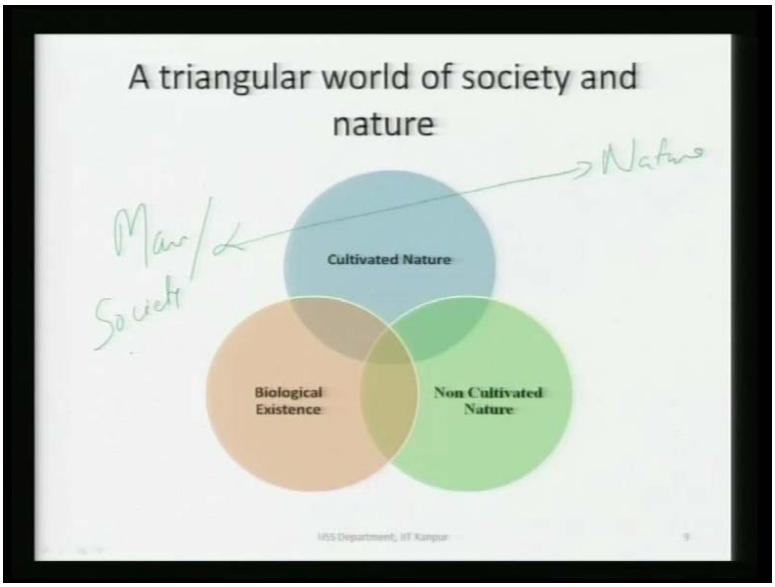

You can show them in the form of this graph, that we live in a triangular world of society and nature, and in this triangular world, it is not man or society on one side, man or society nature or climate or environment on the other. When you had man and society on one side and nature of environment on the other, then it meets as to say whether, somebody is studying sociology of environment or environmental sociology.

But, today this link becomes complex due to genetic engineering that is because it is not so clear, what is natural in nature. A large number of things a large number of things, which are part of nature are actually, the product of human interventions in nature. They are not natural products of nature; they are product of man intervention scientific, engineering, genetic, biological, social, economic, political.

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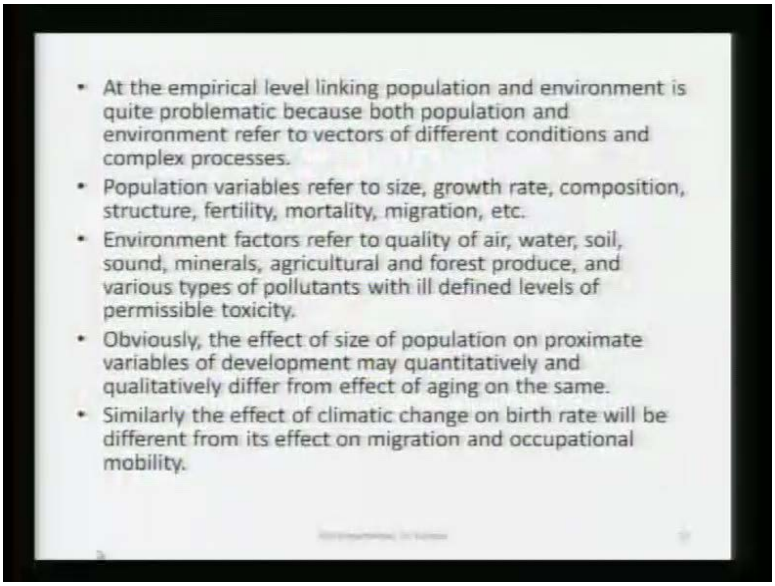

So, at the empirical level, linking population and environment is quite problematic, because both population and environment refer to vectors of different conditions and complex process, this is another issue. That when we link first of all, it becomes difficult to define what is environment or what is nature, and on the other hand, and that is also the cause of confusion in the field of population and an environment.

What are we correlating, what is population, what do you mean by population variables, and what do you mean by environmental variables. Population variables refer to size, growth rate, composition, structure, fertility, mortality, migration etcetera. The results of the study linking size to climate change, and results of the study linking growth rate to climate change may be very different, both types of scientist may claim. That they are extending relationship between, population and environment, and their findings are different, because size may affect climate change in one way, and growth rate in another way.

Similarly, environmental factors refer to a number of quality of air, water, soil, sound, minerals, agricultural and forest produce, and various types of pollutants with ill defined levels of permissible toxicity. So, in environment you have again a number of variables; and it is not necessary, that the population processes are affecting or degrading quality of all of them, at the same place and in the same direction.

Why we (()) population is and what environment is, where do we place the factor of culture?

Culture would be part of society, man and

Why we are talking in terms of population and environment, do we place society in the environment, the culture and society part in the factors of which will deal with society culture, should we pace them in environment. Because, when we are talking in layman language, then we say oh the environment was not feasible for the child to grow up in a, like in a better manner. So, we talk of culture or society in terms of environment only.

You see this culture can appear in population and and environment relationship at various places, culture as affecting population, effect of population size on environment also depends on culture, and like Hardin said, Garrett Hardin that it you can have much larger carrying capacity of this earth. If people are willing to live, at the level of say Uganda a very poor country, but the carrying capacity of this earth would be very less, if the people decide, people of the world decide to live, at the living standard of United States.

So, the impact of population on environment or climate also depends on culture, changes in environment may also lead to cultural changes. So, culture can appear in this population environment relationship, culture may appear at several places.

Or do you think it this not a triangle, but a square and the fourth point

Yes sure sure sure, we study relationship between society population population and environment, we cannot ignore the rule of culture, and you are right that in that case, in place of talking about triangle, we should talk about quadrangle, and in this quadrangle culture affects all other three variables, directly and indirectly.

So, these are the problems, if we study population environment relationship, what do you include in population, what do you include in environment. And then in environment, how do you define toxicity, what is safe best study of rich society, is all focused on this specific variable, how do you define, what is safe? Today, what is safe is determined by experts, and behind fixation of what is safe, what levels of pollutants are safe, there are lot of factors, knowledge factors, scientific factors, modernity factors, industrial factors, political decisions, business decisions.

So, we are increasingly entering a world of greater, uncertainty in which knowledge relationships are not simple or deterministic. Obviously, the effect of size of population on proximate variables of development may quantitatively and qualitatively differ from effect of aging on the same. Size of population, a population variable will affect environment in one way, and aging of population, which is currently happening in all the countries of the world will affect, the environment in another way.

Similarly, the effect of climate change on birth rate will be different from its effect on migration and occupational mobility. Suppose tomorrow, may be after 20 years imagine a situation in which birth rates have fallen in all the countries, developed as well as developing.

So, there will be no effect of climate change on birth rate at all, because birth rates by that time would have come down to a low level everywhere, but climate change would be occurring. So, at that time, there will be no effect of climate change on birth rate, but there will be effect of climate change on migration. If you a study today, you can find effect of climate change on both birth rate, as well as migration.

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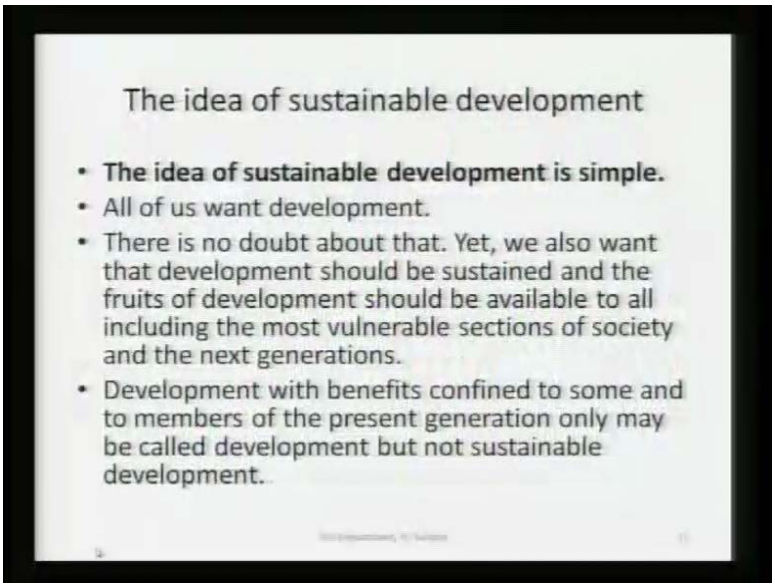

Now, what is I said that we will talk about sustainable development, we will talk about linkage between population and environment, and little bit about movements. The idea of sustainable development; the idea of sustainable development as such a simple, all of us wants development, there is no doubt; yet we also want that development, which should be sustained, and the fruits of development should be available to all including the most vulnerable sections of society. And the next generation we want development, we if the statistics of per capita income are showing improvement, we have development.

You may say that just sudden change in per capita income will not be called development; rather the potential of the economy to produce higher and higher income in the long run is development that is also accepted. But the issue is that do we want development only for one category of population or for all? By sustainable development we mean, development for all, development which occurs only for a small group of people cannot be sustained. There will be conflict, there will be violence, there will be tension, and allegations, unrest and that development cannot be sustained.

Another and a qualitatively different point, we want development, not only for all those living on this planet earth along with us, but we want that development, which can benefit people belonging to the next generation also. Suppose, we have very high level of development and we have exhausted all the resources of the world. So, that nothing is left for our next generation, do we want development of that kind certainly not, we want

that not only we are happy, our (()), our children, our sons and daughter, and their sons and daughters, and their sons and daughters are also developed, they are also happy. And once we include this notion of development, in theory of development, then we are talking of sustainable development.

So, meaning of sustainable development is, that form a development, which is benefitting all sections of society and several generations of people. Development with benefits confined to some, and to members of the present generation only, may be called development, but not sustainable development, it cannot be sustained.

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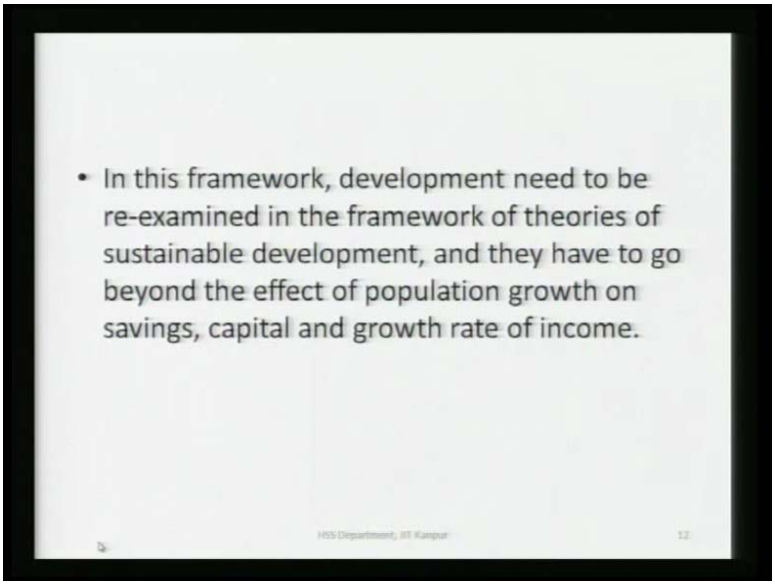

In this frame work, development need to be re-examined in the frame work of theories of sustainable development, and they have to go beyond the effect of population growth on savings, capital, and growth rate of income; which was the subject matter of economic analysis in 50s and 60s.

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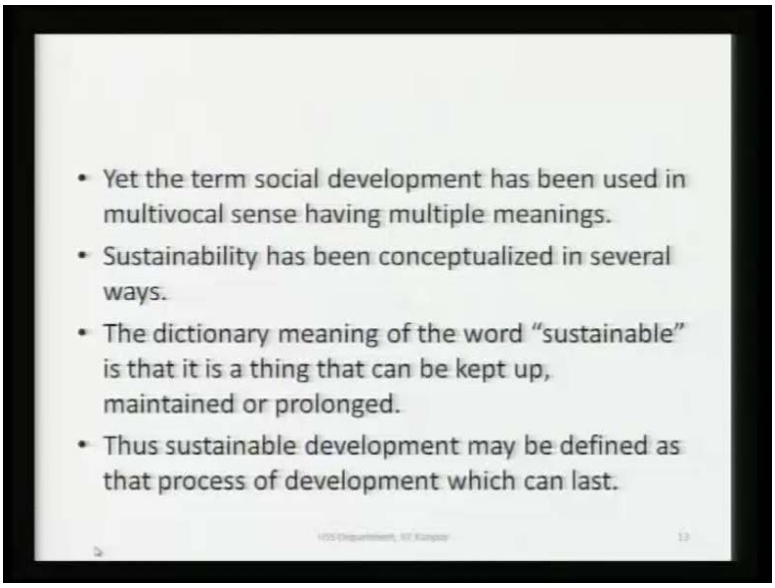

Starting with 70s and the famous study of (()), now we have another notion that is sustainable development, the term social development has been used in multivocal sense having multiple meanings. Along with economic development, and sustainable development, you have another term social development.

And sustainability has been conceptualized in several ways, what I said that by and large, the meaning of sustainable development is, development that last; and development that is benefitting all sections of society or all the countries, all regions of the world, and promises to benefit people belonging to the future generation. The dictionary meaning of the word sustainable is that, it is a thing that can be kept up, maintained or prolonged. A it is in the same sense, that we use the term, sustainable development development, which can be kept up, maintained or prolonged.

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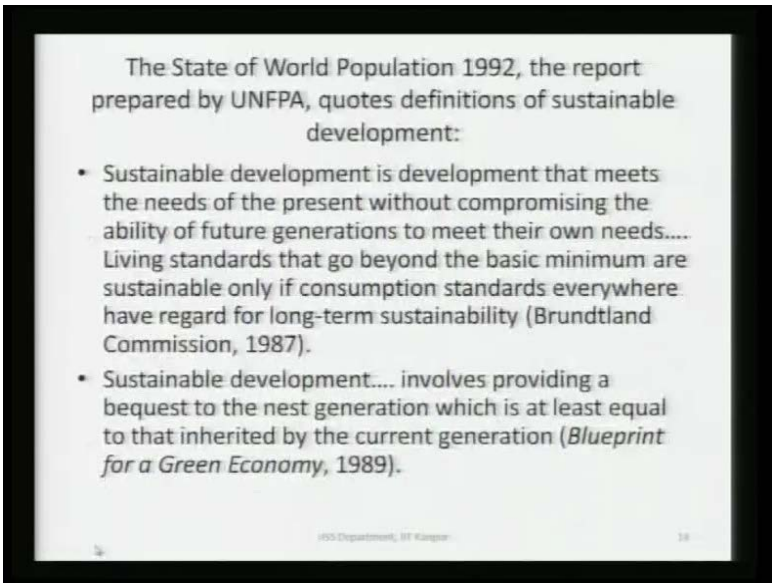

Thus sustainable development will be defined as that process of development, which last. Let us look at some of the definitions of sustainable development, and these definitions I have taken from UNFPA report of 1992, the state of world population, very old, but with regard to definition know significant change has or can occur.

According to one definition, sustainable development is development that meets the needs of the present, without compromising, the ability of future generations to meet their own needs, living standards, that go beyond the basic minimum are sustainable. Only if consumption standards everywhere, have regard for long term sustainability this is one definition, Brundtland commission, 1987 use this definition.

Another definition, which comes from blueprint for a green economy, all the definitions are given in world population report 92. That sustainable development, involves providing a bequest to the next generation, which is at least equal to that inherited by the current generation.

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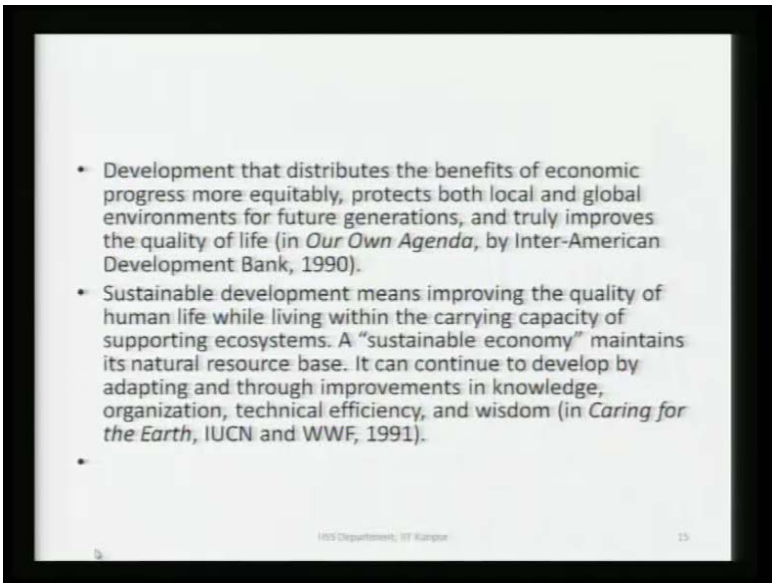

Another definition, development that distribute the benefits of economic progress more equitably, protects both local and global environments for future generations and truly improves the quality of life, that is sustainable development, truly improve the quality. Then sustainable development means, improving the quality of human life, while living within the carrying capacity of supporting economic ecosystems.

A sustainable economy maintains its natural resource base, it can continue to develop by adapting and through improvements in knowledge, organization, technical efficiency and wisdom that means, using more of renewal natural resources, in place of non renewal.

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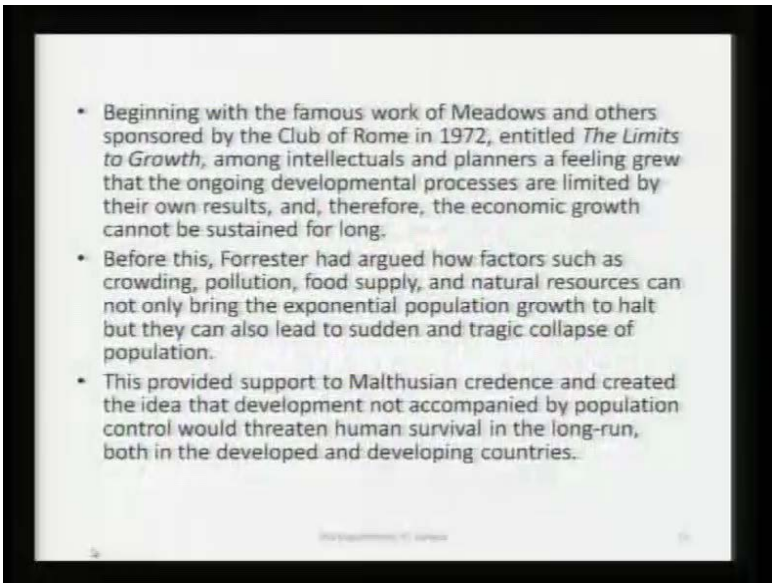

If you use of more and more of non renewable resource, then a time may come when you are not leaving anything for the next generation or less and less for the next generation. Another definition, beginning with the famous work of Meadows and others is sponsored by the Club of Rome in 1972, entitles The Limits to Growth, among intellectuals and planners, a feeling grew. That the ongoing development processes are limited by their own results and therefore, the economic growth cannot be sustained for long.

Before this, Forrester had argued how factors such as crowding, pollution, food supply, and natural resources can, not only bring the exponential population, growth to halt, but they can also lead to sudden and tragic collapse of population. This provided support to Malthusian credence, and created the idea that development not accompanied by population control, would threaten human survival in the long run; both in the developed and developing countries.

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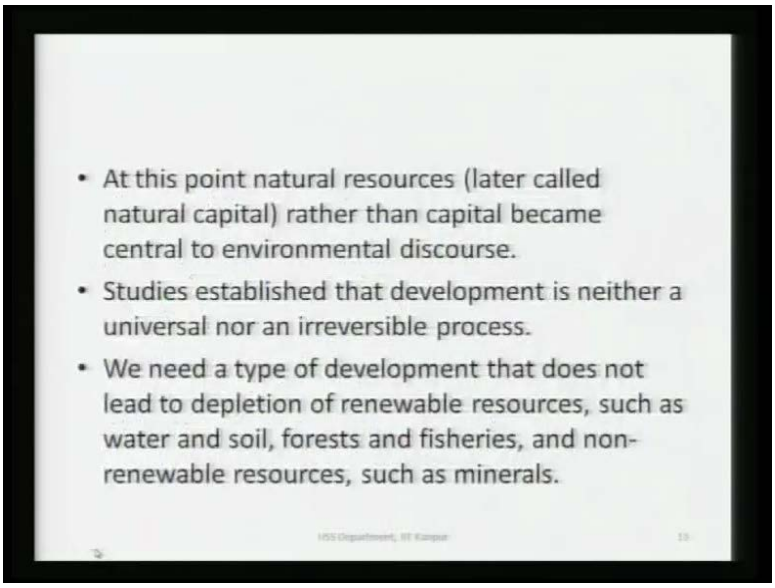

At this point natural resources, later called natural capital in addition to capital, another term was quiet natural capital, and nature became capital, natural capital rather than capital, became central to environmental discourse. Studies established that development is neither a universal, not an irreversible process its not that development has a linear growth starting from 0 and reaching 100 percent point development is a non-linear process, and it interacts with nature or natural capital.

We need a type of development that does not lead to depletion of renewable resources, such as water and soil forests and fisheries and non renewable resources, such as minerals.

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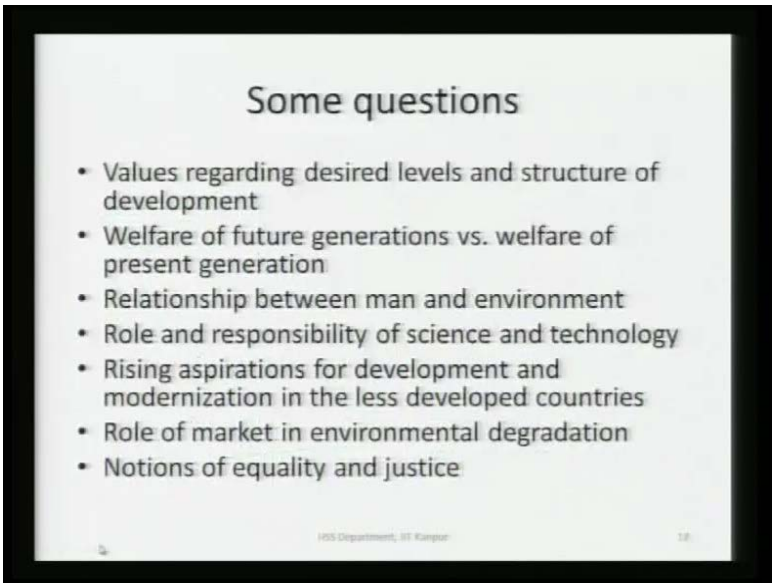

Now, some questions at this stage, which come to our mind, are regarding values regarding desired levels and structure of development. That if sustainable development, not the development is to be the goal, how much income is required, what should be the structure of development, how much of gross domestic products should come from industry, how much from agriculture, how much from service.

Then questions regarding well fare of future generation, verses welfare of present generation, what should be more important, welfare of the present generation or welfare of the future generation. Welfare of future generation is more important, than it means that the present generation will have to control itself, regarding development and consumption. The relationship between man and environment, we require study researches, biological, physical, quantum quantum physics, basic studies of relationship between living beings, and non living beings very.

We have to understand roles and responsibility of science and technology; we cannot give unlimited freedom to scientists and technologists, to engineer society or to engineer relationship between man and nature. Then questions are to be asked regarding aspirations for development, and modernization in the less developed countries, is it possible for say?

A people of India to achieve the levels of development, to gently prevailing in UK or USA or Sweden or Denmark, what will happen to nature, what will happen to crowding,

what will happen to pollution, noise, air, water, what kind of diseases will prevail at that time? If India has to have economic standard of United States and is it, will it be possible somebody can do a computer simulation exercise, and I can tell you the answer would be the same fixed answer no, its not possible; then the notions of equality and justice.

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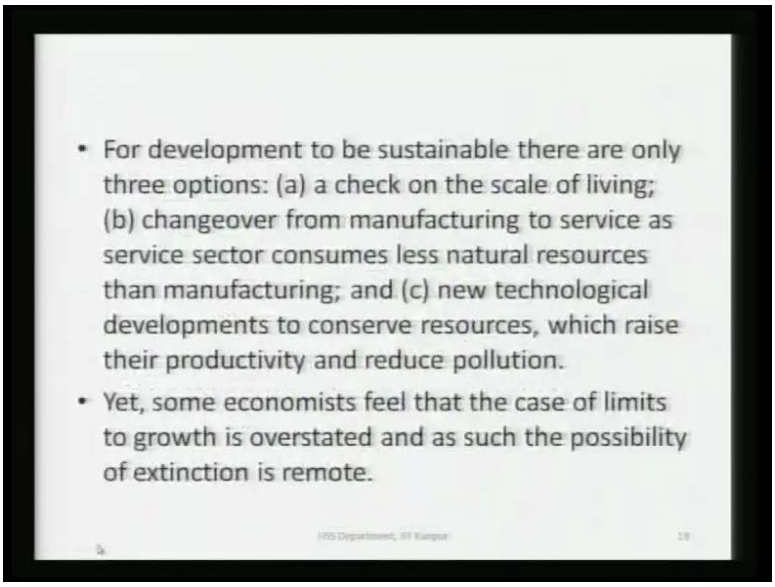

For development to be sustainable, there are only three options, a check on the scale of living, we cannot keep on increasing scale of living, b change over from manufacturing to service, because service sector consumes less natural resources, than manufacturing. So, a development which is based more on manufacturing sector is much more polluting than, a development based on service sector is software.

Software industry does not pollute environment, water, air, or even noise, so much as manufacturing industry, so sugar mill or steel plant or textile or nuclear power stations. And c new technological developments to conserve resources, that is the most important thing. We so, concerned about the quality of life of future generations, then we have to conserve resources.

And therefore, in the future scientific and technological developments must take place in that direction that they can save, more and more of resources for producing the same quantity of output. Which raise their productivity, we have to raise productivity of natural capital and reduce pollution. Yet some economists feel that the case of limits to growth is overstated, and as such the possibility of extinction is remote.

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So, there are divergent views, there are very divergent views following the general population and development, to view and I find that these days, there is not one, there is no concerns regarding relationship between population and environment. While some people will very much consistent with the position of say (()) studies say, that it is not possible to continue to grow at the same space, this will lead to disaster.

There are many others, who are more optimistic and were thinking or who produce data in support of their claim, that because of raise in productivity of natural capital, it has been possible to satisfy requirements of larger population. And while population is rising, price size of many natural products are falling, Julie immediately name of Julie and Simon comes to my mind, in this respect.

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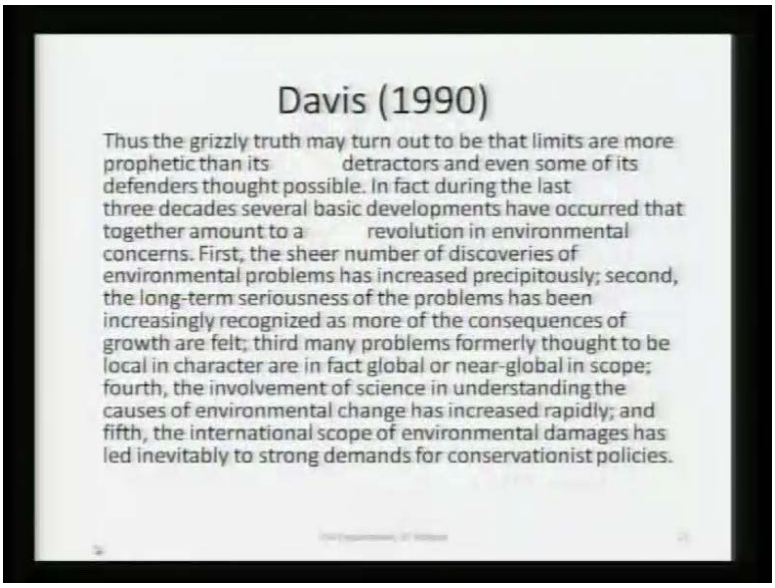

So, there are both both views and both types of economist, I have a code from Kingsley Davis in 1990, he wrote thus the grizzly truth may turn out to be the limits are more prophetic, than its detractors and even some of its defenders thought possible, they are prophetic.

In fact, during the last three decades, several basic developments have occurred, that together amount to a revolution in environmental concerns. First the sheer number of discoveries of environmental problems, has increased precipitously, second the long term seriousness of the problems, has been increasingly recognized as more of the consequences of growth are felt. And third many problems formerly thought to be local in character are in fact, global or near global in scope.

There are many countries of Europe, which are not industrial at all, but they are facing the problem of acid rain and the for the acid rain, in those agriculture based countries industries of neighboring countries are responsible. So, the problem of environment is global or near global. If India pollutes the environment, Pakistan and Bangladesh and Nepal will also suffer.

So, the problems of environment cannot be solved, within the national boundaries only. And fourth the involvement of science in understanding the causes of environmental change has increased rapidly, and fifth the international scope of environmental damages has led inevitably, to strong demands for conservationist policies.

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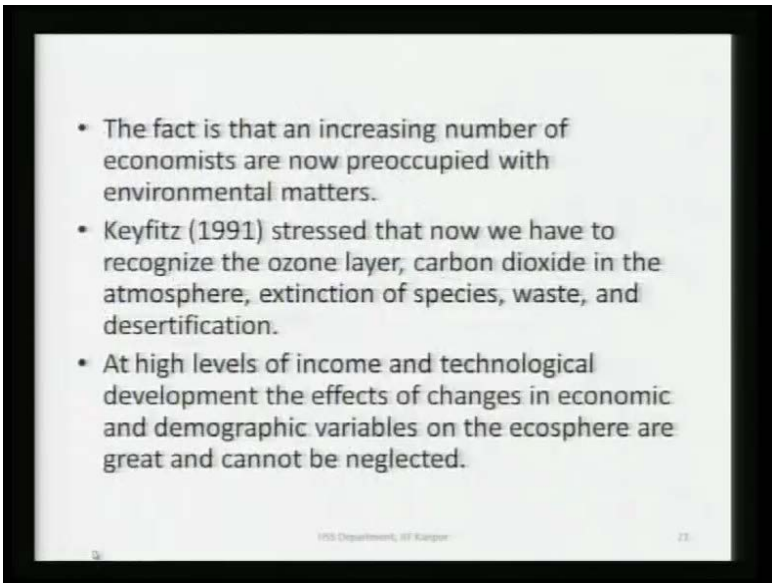

The factory that an increasing number of economists are now, preoccupied with environmental matters, Keyfitz our famous Nathan Keyfitz, he tells that now we have to recognize, the ozone layer, carbon dioxide in the atmosphere, extinction of species waste and desertification; we cannot afford to ignore these things any more. At high levels of income and technological development, the effects of changes in economic and demographic variables on the ecosphere are great and cannot be neglected.

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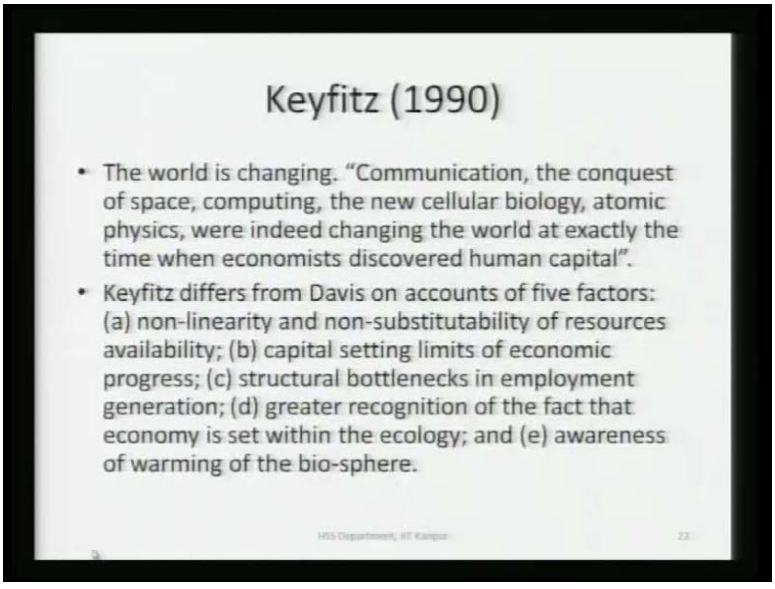

Keyfitz said the world is changing communication, the conquest of space computing, the new cellular biology, atomic physics were indeed changing, the world at exactly the time, when economists discovered human capital. Keyfitz differs from Davis on accounts of five factors, a - non-linearity and non substitutability of resources, b - capital setting limits of economic progress; c - structural bottlenecks in employment, greater d - greater recognition of the fact that economy is set within the ecology, and awareness of warming bio sphere.

Now, I am giving example of Davis and Nathan Keyfitz to show that there are two divergent views on the issue of population and environment. One view is you can call it more pessimistic, another view more optimistic, and there are all kinds of researches, all kinds of facts. It has not been possible to decide the issue of direction, in which we should grow, simply on the basis of facts, but the common sense is and what was initially, the idea behind the notion of sustainable development that there has to be a limit to grow.

Now, what that limit is cannot be very well defined, cannot be fixed, because developments in science, our knowledge, awareness in the world community, scientific attempts to solve the problem of pollution, etcetera, etcetera. Have made the matters more complex, and perhaps, I think you will know disagree with me if I say, that the limit to which I can we can take our development, without permanently damaging, the natural environment or expanding. So, it is not that, if we keep the idea of sustainable development in mind, then we will stop growing, but we will require a new type of environmental consciousness. And more and more of scientific and technological research to maintain, the present levels to provide benefits of present development processes, to all sections and regions, and to protect out environment for the benefit of future generations, that has been the idea.

Is there any question that you would like to ask at this?

Sir, just our observation that the man verses nature what is on

(())

And who is going to win

Nature

Nature, nature is same, (()) so man may be any number of attempts, but what we are like in forests sustainable.

Thank you, sir.

Thank you.