Urban Governance and Development Management (UGDM)
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Lecture - 36
Managing Urban Environment – 2 (Mandates for Blue and Green Infrastructures)

Welcome to lecture 37. In the last lecture, we started discussion on the few elements of the urban environment. We had a discussion on air quality, water quality, the soil quality, the sound quality of the city or the urbanized area and how we can plan and mitigate the adverse effect of the bad quality of water, air or sound and then we discussed that there is another element which is land and land cover where basically when we urbanize, we cover a significant amount of land with built up areas, by buildings, by infrastructure.

So therefore we hamper the green environment. So green and blue cover on the surface of the land is very much important and how we can maintain a balance between that cover and we can do the better urbanization that is what we are going to discuss today. So our subject for today's discussion will be managing urban environment basically the mandates of the blue and green infrastructure.

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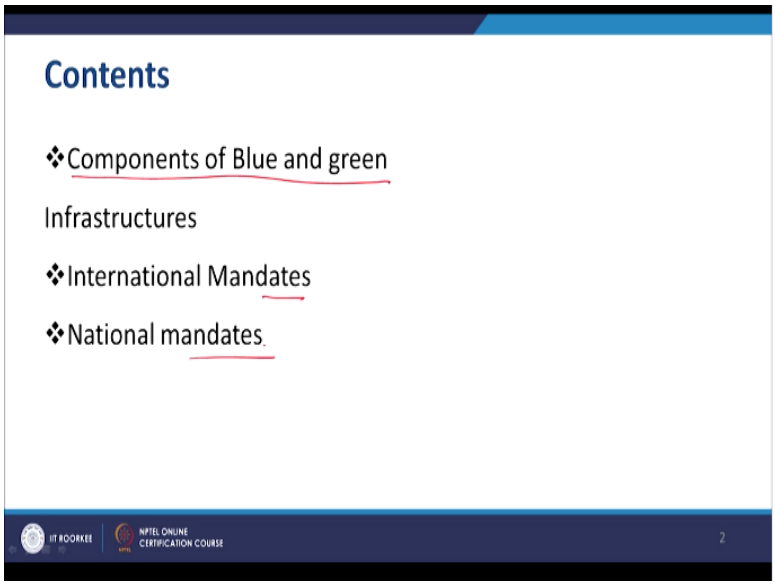

Within that we will try to discuss the component of blue and green infrastructure and out of that what are the international and national mandates and will also show some practices in further lectures but today will limit our discussion only with the mandates.

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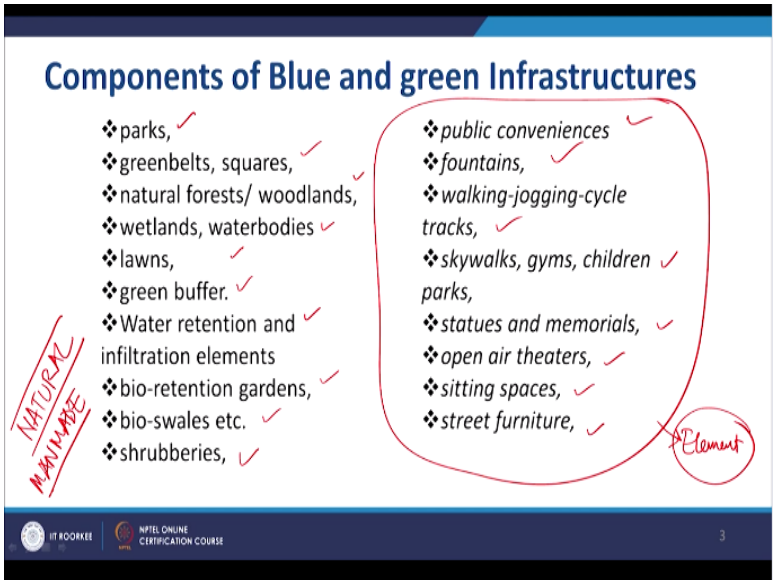

So basically blue and green infrastructures are like parks, greenbelts, squares, natural forests, wetlands and water bodies, lawns, green buffer, water retention and infiltration elements, bio-retention gardens, swales or shrubberies and also there could be some elements which we create as a public convenience or fountains, walking, jogging, cycle tracks, sidewalks, children parks, gyms, statues, open air theaters, sitting places, street furniture.

So these also can be a part of the green infrastructure as an element which can be part of the green infrastructure and if you see these elements very carefully, you will find that some elements are natural and some elements are manmade. Now out of the natural and manmade elements how we can keep a balance that is the main question for today's discussion.

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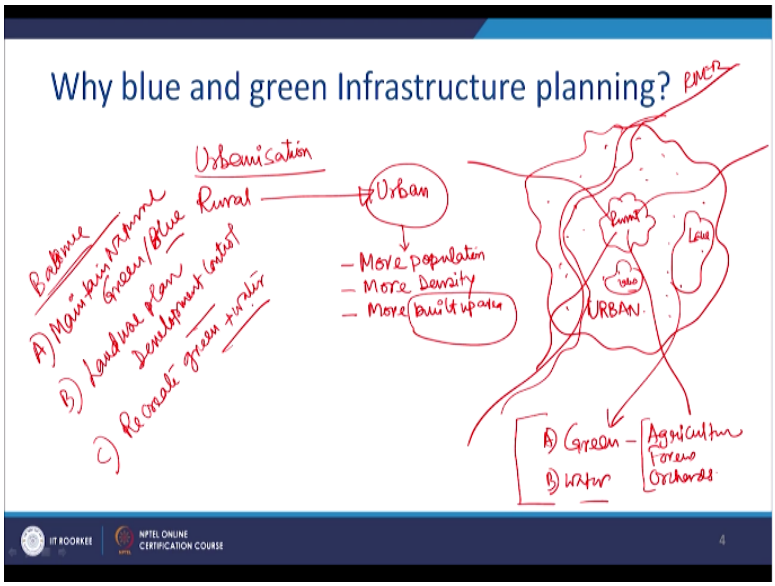

Now why we do blue and green infrastructure planning? Now when we urbanize in the beginning we have told you that urbanization is basically conversion between the rural area to urban area. Now what exactly does it mean? So urban area means the implication is basically more population, more density and also built up area. Now when you make the more built up area, suppose this is a rural settlement and after sometime it expand to an urban settlement with a larger built up areas having few transportation elements.

And this becomes an urban settlement. Now think about the spaces where I am putting few dots that these spaces earlier was either green okay in terms of either agricultural field or forest or orchards okay or it could be water bodies. Now what kind of implications or impact will be there if we cover all the green areas, all the water bodies for making this conversion from rural to urban if we cover all the areas?

The immediate impact what it will hamper is that like say water bodies, there could be lakes, there could be river, there could be canals. Now these water bodies are natural outfall of the rainfall or the run of water. Now during the rainfall, if there are excessive rainfalls now and if you cover these natural outfalls like water bodies and the immediate effect it will have that it will flood the urban areas.

That is what is exactly happening in Indian cities and in the green areas if we cover the green areas with built up areas and you do not look or do not give the attention to the green areas, definitely the balance with the air quality will be degraded. So air and water quality both are directly linked with the green cover and water cover which is basically blue cover in our context.

So here the question is how we can keep a balance? So to make a balance, the first is that we should maintain the natural green and blue areas which is not possible to be recreated. Please take, I repeat the sentence there are some areas which is natural green and blue areas which cannot be recreated. For example, if there is a natural river or canal system or natural lakes, creating that particular element is difficult in terms of the cost, in terms of the land, etc.

So that needs to be maintained, so maintaining that remaining areas we can maintain. For example, in this current example suppose there is a river like this. So this is a river and there are few lakes. Now unless we preserve these lakes and river and make a control that no

development will be allowed around the lakes or along the river up to some extend up to some buffer zone, it will be covered with the built up areas, buildings and etc.

That is what is happening in most of the Indian cities. We have forgotten to control the blue areas and green areas. So it needs a careful attention in terms of the land use plan and development control. So therefore to keep the balance, the next stage is a careful land use plan and development control is required for the remaining area so that the developed area does not camouflage the natural element.

And not only that take actions to recreate green and water and there are technologies by which we can create some amount of the green in the urban areas for example lawns, for example the roof garden, for example even in today's context there are vertical gardens also. Similarly, there could be created water bodies, created fountains, created various kinds of water retention methodologies are there.

So that can replenish some of the degradation or some of the impact of the development in the land cover which can be replenished or recovered whereas some of the green covers and the water which may not be recreated that should be maintained. So this kind of approach is required in urban planning or when we develop the city. Now based on that now why we are discussing this?

We do everything in our cities during the planning time or during the development period but most of the cases we have found that the important rivers, lakes and the green areas not given that much of the care. In some of the cities, we have found that they have given so much care for the rivers and the water bodies and they have started earning revenues from the tourist and the tourism using their riverfront development, using their canal front development.

But in India our cities, most of the cities are having riverfronts, canals, green areas, hill areas so unless we do not value these natural element and create few other natural element we cannot develop the city in a sustainable way because nothing is possible without the resources of the financial or the natural resources. So that is the crucial point what we are going to discuss.

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Now for these there are few international and national policy are mandate. I would like to share all those mandate that where people has to do this. Now European Commission in 2013, they have identified that green infrastructure as an international agenda okay. So they have started dialogue at the macro scale and the micro scale.

Now here the macro scale means at the city level and area level whereas micro scale means basically building and premises okay. Then, they have set key principles that are geographically varied across the European Union but retain an inherent ability to reflect the territorial needs. This kind of situation could be relevant for Indian case also. If you see the geographical variations in India, there is some commonality.

Or the common elements which is applicable in most of the plain land of the India but there are few geographical uniqueness or the unique entities or in terms of geographical variety that can be also taken care of. So this kind of principles is better to take as a regional level strategy. Then, evolution from the existing sustainable development rhetoric development to a holistic integrated green infrastructure management approach. That is what is taken by the European Commission at city level.

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Next, green infrastructure policy also they have taken a systems approach. What is the systems approach? In the systems approach, any planning agenda is considered to be a combination of several subsystems. For example, if you consider green as an overall system, green infrastructure is dependent on so many things, land, water, the vegetation, many elements are involved.

So every subsystem is contributing to this overall system. So that system approach is helping them to solve the problem or to create the plan in holistic manner in an integrated manner. Then, there is understanding of a horizontal and a vertical objective. Horizontal objectives are basically objectives which is covering most of the geographical areas or the cities and vertical objectives are localized and which is limited to your boundaries.

For example, for any state like say Madhya Pradesh or Uttar Pradesh they take a strategy which will be applicable across the state for all the cities and there could be some unique strategies which will be applicable for their respective cities based on their unique geographical variations. Then, the scope exists to improve the horizontal objectives like the landscape scale.

There are issues like what kind of landscape plan can be done at the premises level, at the area level, at the higher level. We have seen that riverfront developments have been very much popular in various other countries. In India also some of the cities, they have come up with better riverfront development. In Gujarat, we have seen for the city of Ahmadabad, they have done very nicely riverfront development.

In the last few lectures, we will spend we will show some better practice for the urban governance, so we will come to that point again. Then, there are cross-territorial approaches they have taken. So this type of approach also could be relevant for Indian case.

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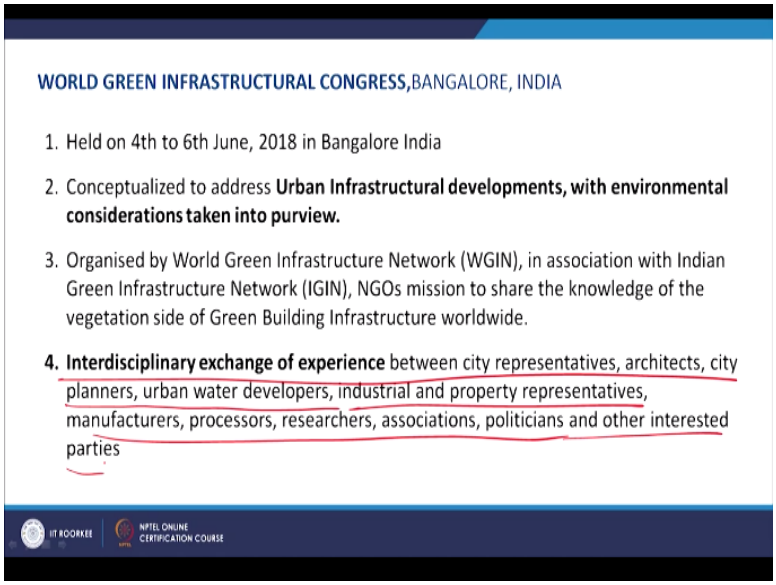

Then, there was a World Green Infrastructural Congress which happened in India recently. So in this congress, they have emphasized on interdisciplinary exchange of experience between the city representative, architects, city planners, urban water developers, industrial and property representatives, manufacturers, processors, researchers, associations, politicians and other interested parties.

Because green is something in those areas where all of these stakeholders have their own interest and everybody has their own stake. Therefore, it must be an interdisciplinary studies which is integrated in overall planning of the city.

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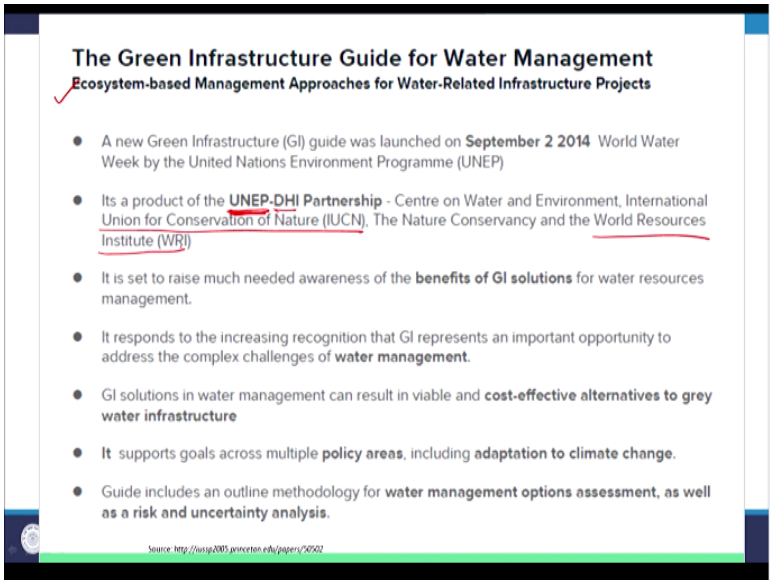

Then, there is a green infrastructure guide for water management. United Nations Environmental Project UNEP partnership with DHI they have made some kind of guidelines to make the city water management for the local organization that is what I am just showing. Just have a look. In this project, the IUCN which is International Union for Conservation of the Nature they are also involved. The World Resource Institute was involved. So this kind of discourses are there in international level.

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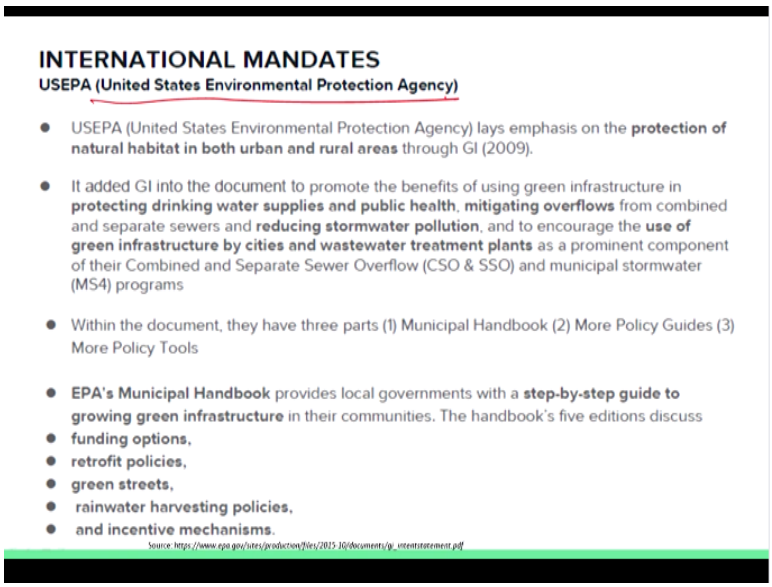

Then, international mandates are there like United States under their Environmental Protection Agency, they have taken similar guidelines or similar mandates to create and maintain the green infrastructure and the blue infrastructure okay.

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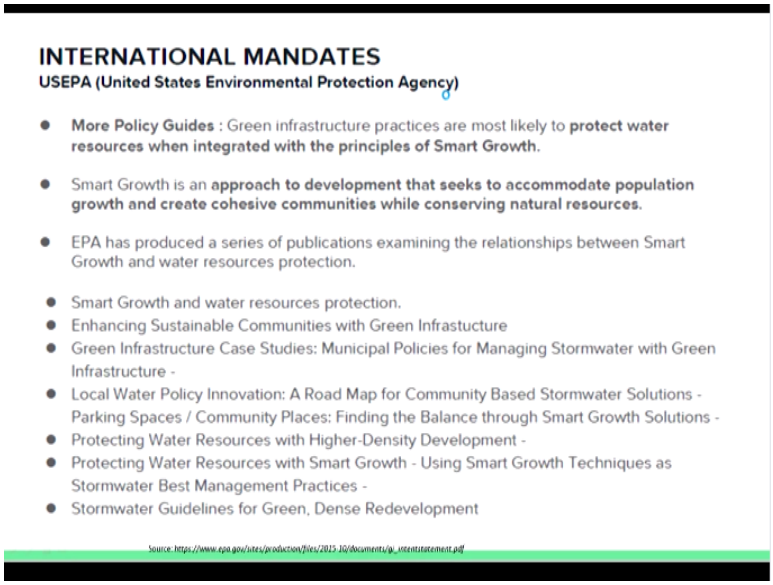

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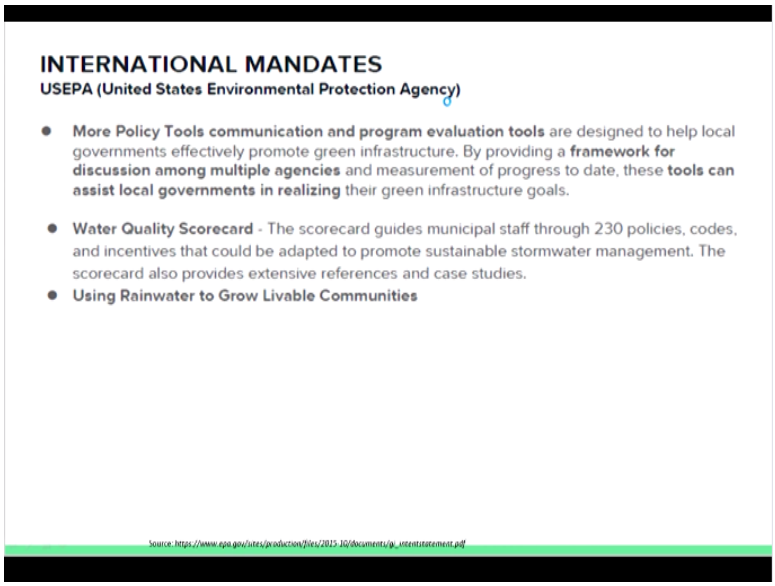

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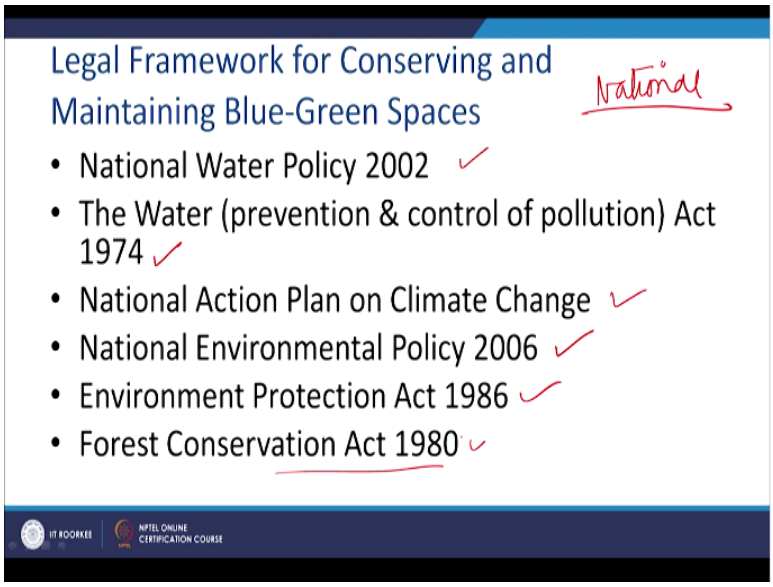

So these are few other mandates okay. So at the national level, there are National Water Policy 2002, The Water Prevention and Control of Pollution in 1974, National Action Plan on Climate Change, The Environmental Policy 2006, Environmental Protection Act 1986 and Forest Conservation Act 1980. These are the major mandates and the legal provisions which control the blue and green open space not only in the city scale also in the regional scale. So just have a look at the each of the policies.

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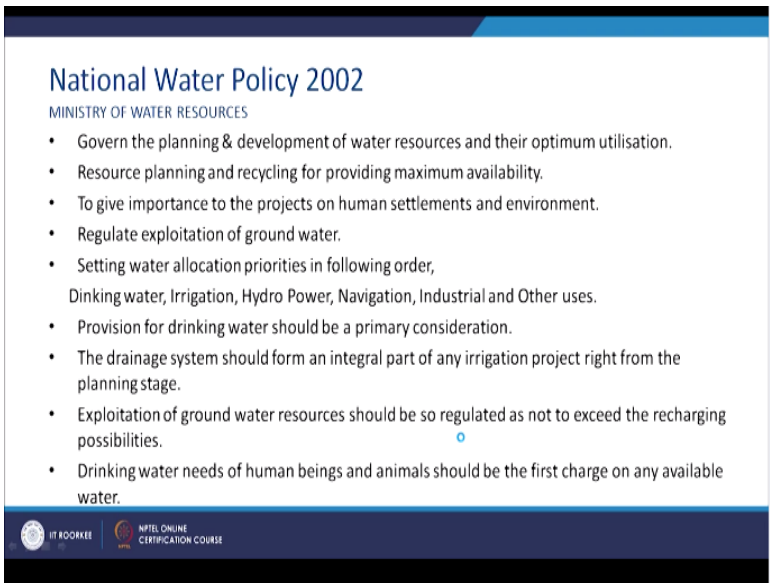

I am not going to read each and every line but you can just have a look. I will share all these documents.

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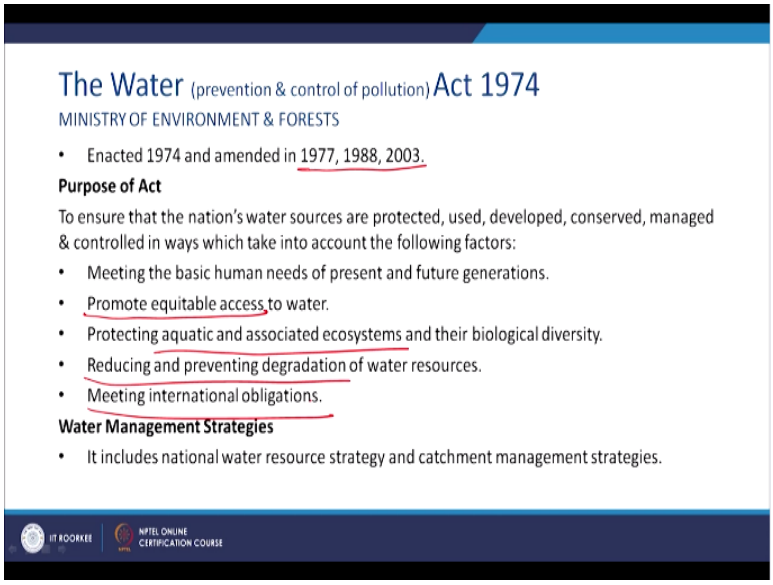

Then, The Water Prevention and Control of Pollution Act 1974. This again amended in 1977, 1988, 2003 okay so its basic objective was to promote equitable access, protecting aquatic and associated ecosystems, reducing and preventing the degradation, meeting international obligations, all these are connected provisions under this act. These are again contribution of the national level acts.

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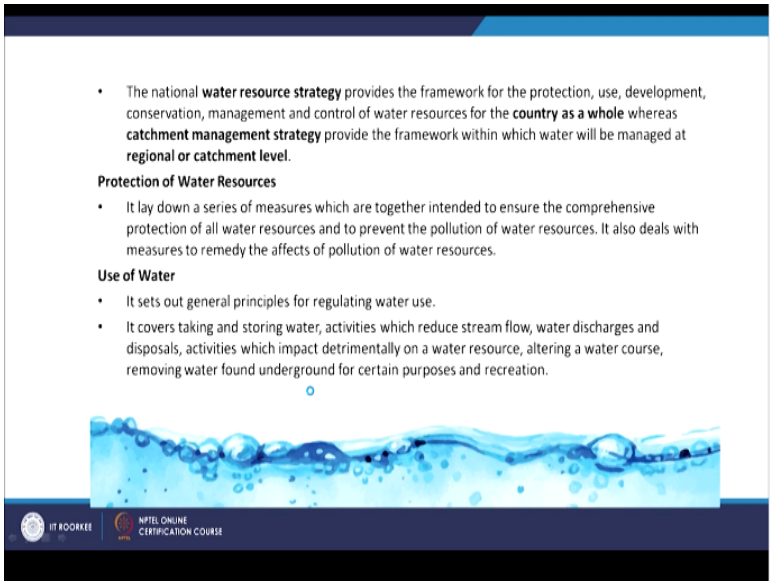

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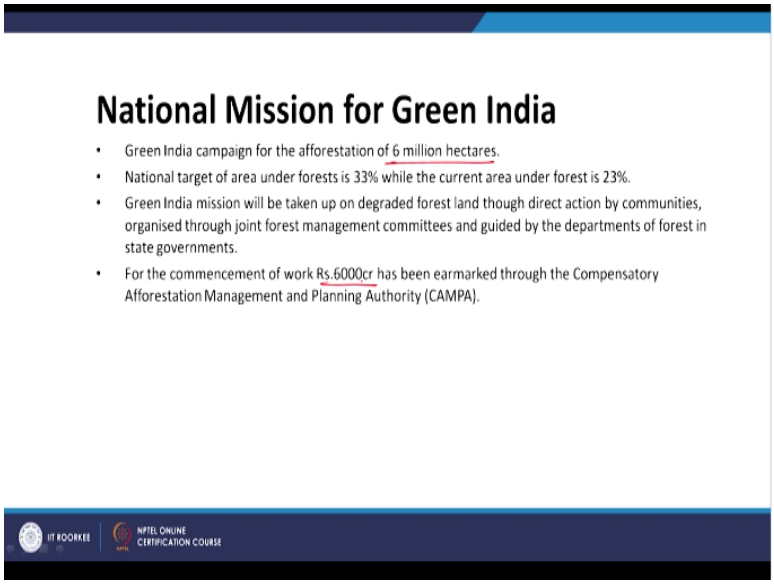

The National Mission for Green India that is another mission which is taken by the Government of India. Some of the provisions are there you can see. So Green India Campaign is basically 6 million hectares for the afforestation throughout the India not only that they are going to utilize 6000 crore for the afforestation management in the Indian cities.

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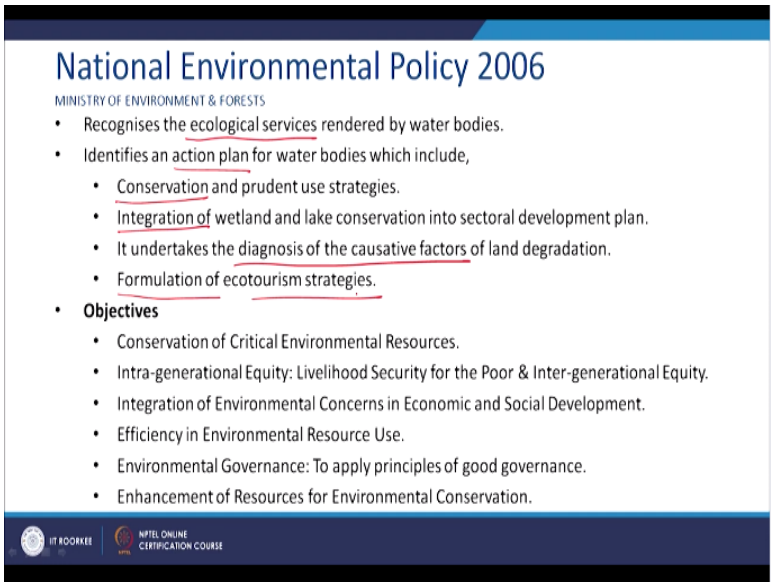

Then, there is National Environmental Policy 2006, under this policy it recognizes the ecological services, water bodies, etc. Then, action plan for water bodies including the conservation, integration, then diagnosis of the causative factors, formulation and ecotourism strategies. These all we discussed earlier but these are the mandate by the government. So there are few objectives you can see.

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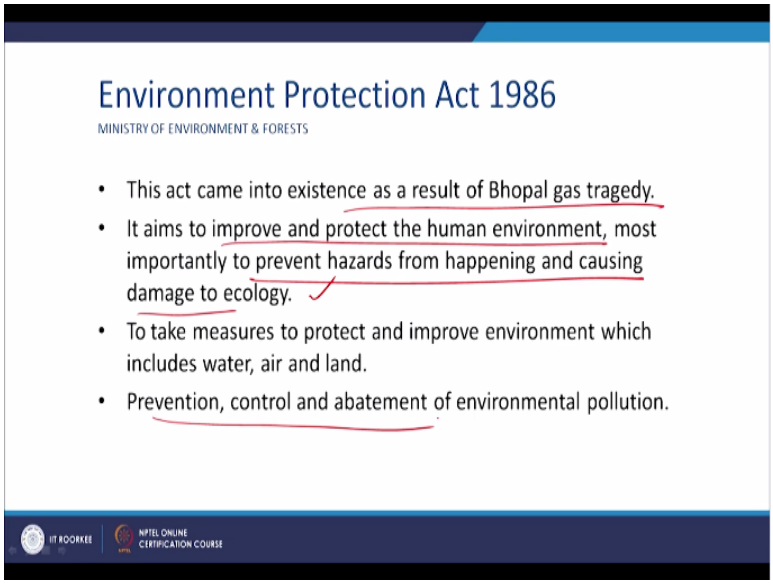

Similarly, in 1986 Environmental Protection Act, this act came after basically the Bhopal gas tragedy. So it aims to improve and protect the human environment, most importantly to prevent the hazard from the happening and the causing damage. Now there are in the cities there are manmade causes which also creates some problem. For example, the noise pollution, the chemical disasters everything.

So this Environmental Protection Act also takes care of all those kinds of manmade situation or the crisis in the cities. So prevention, control and abatement of the environmental pollution, this was discussed earlier also.

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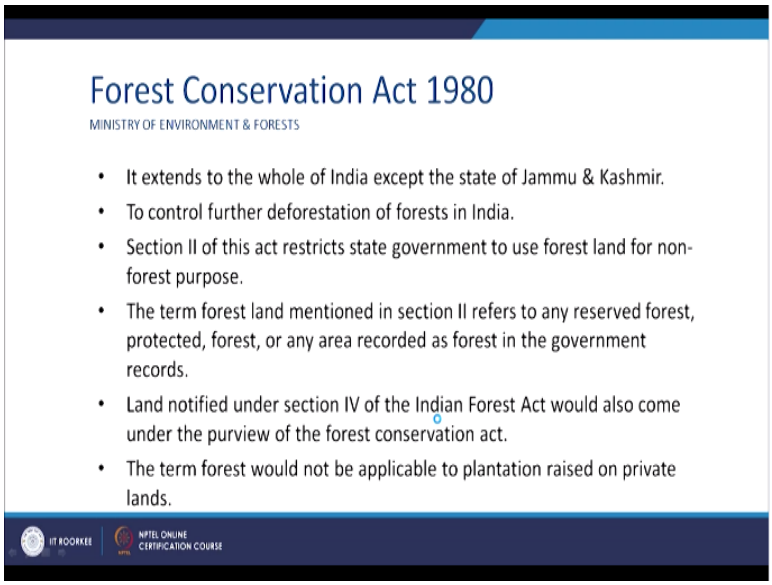

Forest Conservation Act 1980, this is another act which the main aim of this act is to preserve the forest.

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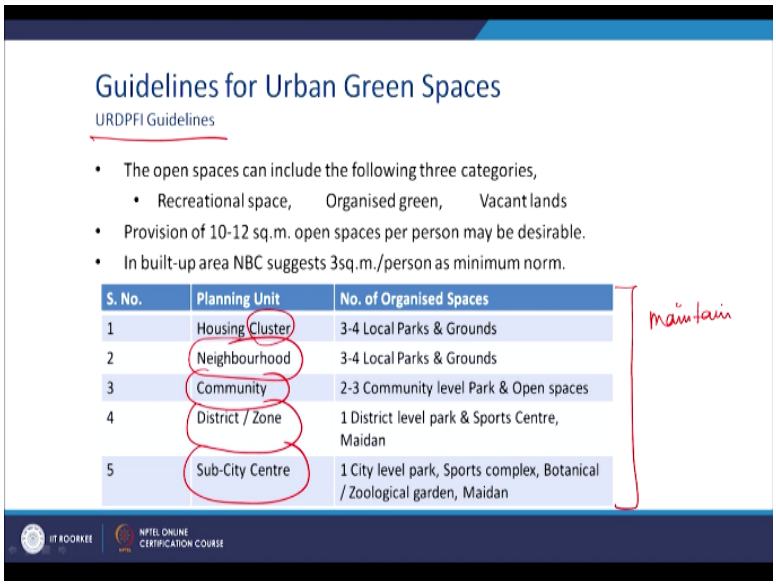

And there are few guidelines for the urban green spaces given in the URDPFI guidelines at every level like cluster, neighborhood, community, district and sub-city center. There are organized green spaces, so we should maintain these norms while making our townships.

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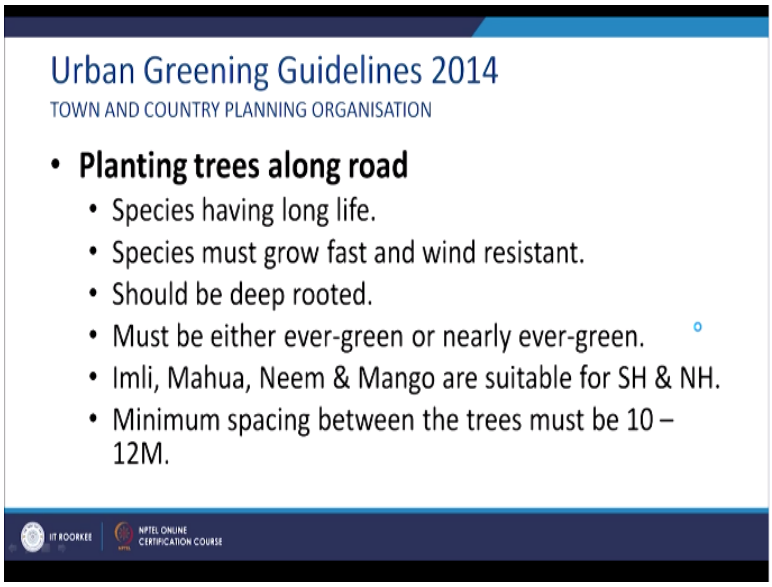

And Urban Greening Guidelines 2014, this also under town and country planning organization.

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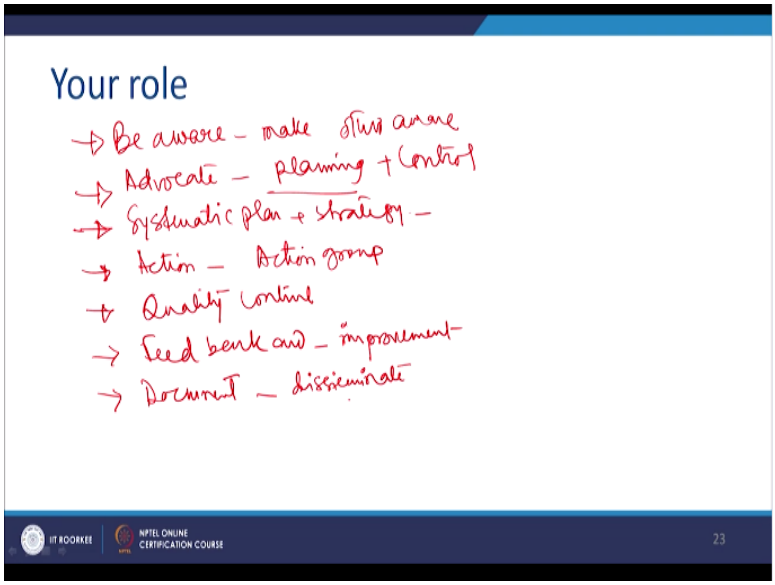

So your role under this mandate is to be aware and make others aware also and from the awareness advocate for planning and control. Now in this regard, I would like to mention that most of the time the politicians or the elected representatives they may not be much interested to make a control but if you can represent that a better controlled urban environment creates a better image.

And that image will satisfy even the politician's and the public representative's image then you can advocate in a better way about the urban environments. So advocate the planning measures and the control. Then, make a systematic plan and strategy for your city and take action, make action group, quality control, feedback and improvement. Then, also do not forget to document your practice and share with and disseminate with your colleagues.

So this is your role in terms of the green infrastructure. Now the awareness of the green infrastructure in Indian cities and the similar countries was not much even till few decades ago but now at least it is recognized at the national level to give a priority at the city level planning. So therefore it is a mandate and it is an essential job what is needed to be done at the city level, at the area level and also at the micro level at the building and the premises level where you can create some areas as a green and water and the blue spaces.

So having said that I would like to summarize today's lecture. Definitely, I will show some of the practices under green and blue infrastructure in the few last lectures along with the few other best practices in the urban governance. So today we discussed few mandates of the blue and green infrastructure. The significance or objective of discussion blue and green

infrastructure is that when you urbanize and expand the cities, we cover some of the natural green areas and blue areas.

So to compensate that loss of the nature, we do many various things. First, we maintain some of the green areas and the blue areas which is not re-creatable and some of the blue and green areas which is re-creatable we definitely cover that with the buildings or the surface areas but we recreate similar green areas or the blue areas so that the overall city does not lose its permeability to absorb the water.

It does not lose its ability to create adequate amount of oxygen and improve the air quality, so this kind of approaches are taken. For Indian cities, the States can take action, some of the common actions under the international and the national mandate, some of the common actions could be across all the cities in geographical variations and some of the actions could be there which is unique for every city.

Similarly, under the cities there could be some specific strategies for some specific zones, we have to be sensitive about the existing water bodies, existing green areas, forest and the orchard areas, small hillocks could be there and we have to create similar type of areas at the premises at the building level. We can create horizontal, vertical every surface of the building the parking areas, any areas which even roads which is permeable and which can create as a green infrastructure as well.

So there are lot of discussion and lot of reference materials available on this subject. I will share some of those along with you so that you can read and take the advantage of those materials but definitely I hope that you will do something for the green and blue infrastructure in your city.

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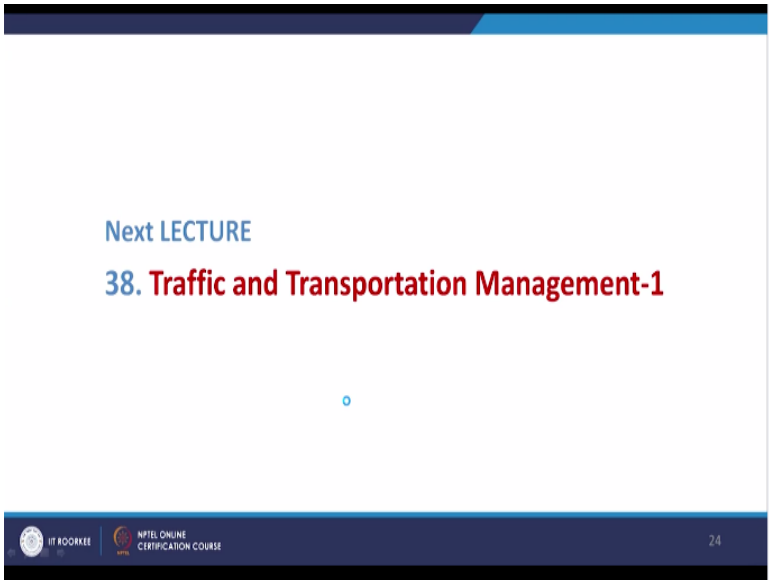

Next lecture will be focusing on the traffic and transportation management. This is another very crucial aspect in the city as far as the planning and the management is concerned. So thank you very much for your attention.