

Urban Governance and Development Management (UGDM)
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Lecture – 09
Urban Environment and Ecology

Welcome to lecture 9, in this week we have been discussing various aspects, essential aspects of the urban governance, which is acting as a pillar, we have discussed about the land as a basic resource and other elements today, we are going to discuss another very important aspect, the urban environment and ecology.

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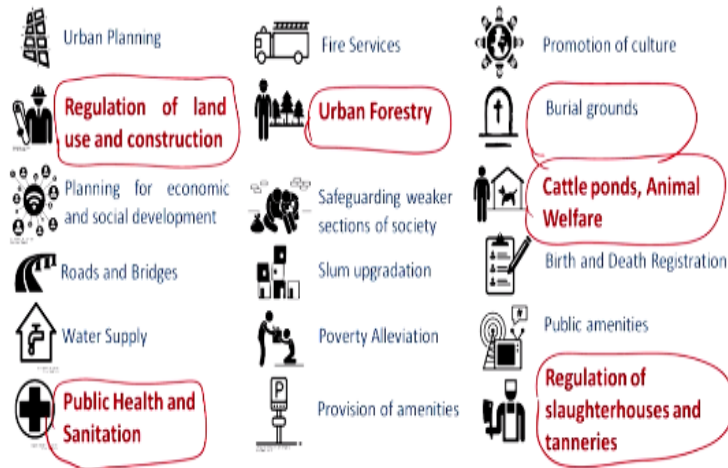
Contents

- Environment, Ecosystems & ecology — *relationship*
- Urban ecosystem ✓
- Mandates ✓

So, today in this lecture the element what we are going to discuss is basically, the environment, ecosystems and ecology and their relations; relationship and then what is urban ecosystem and how it affects our urban areas and what are the mandates. So, definitely today's lecture will be an overview of the; this subject environment and ecology definitely with the better information and cases, we have to come back in the later stage.

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FUNCTIONS OF ULB (12th Schedule)

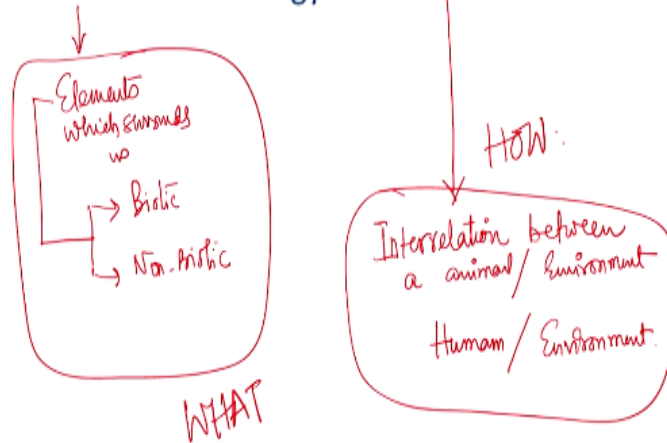


So, let us start, so this picture you have seen already, we discussed earlier, I start with the functions of urban local bodies which is 12th schedule, under 12th schedule, you might have seen the elements like say the points which I have coloured in red like regulation of urban land use and construction, public health and sanitation, urban forestry, cattle ponds, animal welfare and regulation of slaughterhouses and tanneries.

So, if you follow this elements and also burial grounds, so these are directly associated with the environment; the natural environment and the ecological aspect of the urban areas which matters a lot? Now, if we want to work in urban area and want to implement some project for the long term, we need to understand the essence of the environment ecosystem and ecology, differentiate between them and understand how it is related with our mandate like 74th Amendment act and also not only that what is the actual provision of the rules, act, procedure etc.

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Environment and Ecology

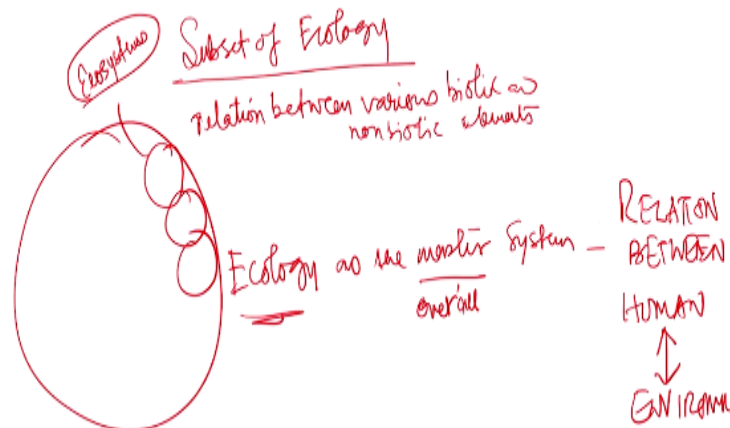


So that you can act accordingly, so let us see, now what is an environment and ecology? Basically, environment is the basically the elements which surrounds us, so in this element there are 2 types of element; one is biotic and non-biotic. An ecology is the basically the interrelation between animal or and the environment, especially it is the interrelation between the human being and the other aspect of the environment.

So, the environment is basically that what surrounds us and ecology is basically, how it is related but there is one more term you should also know that the ecosystem.

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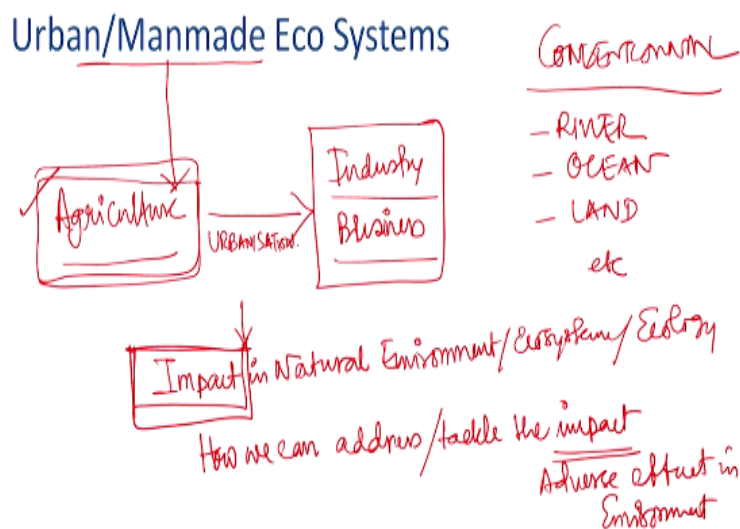
Eco systems



Ecosystem is the basically subset of ecology which gives a this the relation between various biotic and non-biotic elements so basically, ecosystem, so if you; if we see the subset like if this is the ecology as the master system or the overall system which shows the relation between human and environment, so this ecology consists various ecosystems, so various ecosystem like there could be water ecosystem, there could be land ecosystem and within water and land, there could be various types of sub ecosystem.

So in short, the environment is the elements which surrounds at us, it can be biotic element, non-biotic element and the ecosystem is the relation between various kinds of animals and the human being and the environmental element and cumulative as a whole, the ecology is the overall system or the master or the mother system, where every environmental and ecosystem element is there and it shows the relation between the human being and the environmental elements.

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So, now with this our subject is the urban area now, urban or the manmade ecosystems are different from the other ecosystem now, in the conventional case like in the conventional meaning, they are like; meaning there are river ecosystem, there are ocean ecosystem, there are land based ecosystem etc., but when you say urban; urban means it is a manmade feature, so basically in the beginning we discuss that from an agricultural set up to an industry or business, this transformation is called as urbanisation in the first lecture we discussed.

So, this transformation is called urbanisation, so the moment we disturb the agriculture as a subject and we bring industry and business definitely the consequence is that there will be some amount of impact in natural environment, ecosystem and also ecology now, this impact word is very important because we are disturbing the natural setting of agriculture and the man; the natural features, so therefore impact is inevitable.

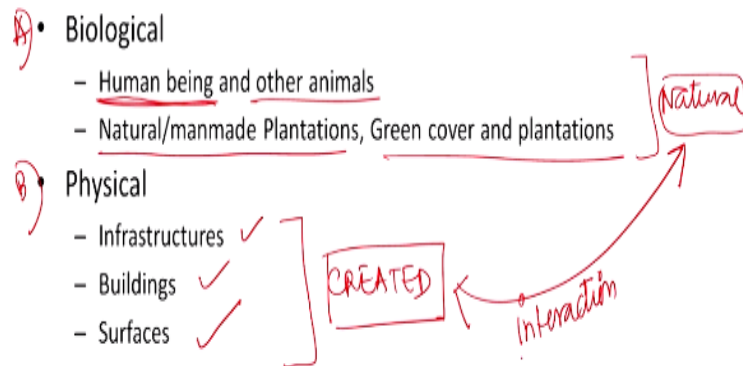
Because industry and business is also inevitable because of the population increase, some moment the impact is there, the question is how we can address or we can tackle impact, tackle the impact, so that it does not make an adverse effect in environment but it is something very easy to say but it is very difficult and challenging to do because most of the cases we have seen that the urban ecosystems and the urban ecology is disturbed because of the wrong treatment of the urbanisation or the urban planning.

So, there may be people have intentionally or unintentionally could not measure the impact and could not address or tackle the adverse impact due to the change from the agricultural set up to the industry and the business set up that means because of the urbanisation, they could not address the possible changes by the manmade feature, so it is the transition from the natural setup to a manmade and the urban systems.

Now, the moment you are changing from the natural and the agricultural system to a manmade system or urban system, some new systems need to be created and how those new systems will replace the original natural system and whether those new systems will be able to serve the purpose of the environment and human being and other animal that is the question. The more efficient the new system in terms of the functioning and the performance of the human being and the overall environment better the impact assessment and impact is better at this.

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Elements of Urban Eco Systems



So, this is the essence of the urban or the manmade ecosystems in urban area now, what are the elements in the urban ecosystem? Basically, there are 2 types of element when we create a new system, one is biological, second is the physical, within the biological ecosystem basically you know that human being is the first category with the biological element then other animals, then there are natural or the manmade plantations, green cover and plantation etc.

So, basically these are natural feature and there are few physical features like infrastructure, like roads, transport, water supply network, bus stands, buildings and also services, you are creating the parking areas, you are creating the pedestrian areas, so surfaces, buildings, infrastructure even terrace, I mean you are when you creating a raised terrace for the pedestrian, or the podium those all are basically created feature in an urban environment.

So, one is a natural feature, another is a created feature and the main question is that how they interact with each other and how we can visualise, we can understand the interaction and we can design some definitive system, so that this interaction is possible to be done in the urban areas okay, so that is the elements of the urban ecosystem.

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I will give you example, before they let me show you some of the examples that if the urban ecosystem is not taking care, if the impact is not accessed and plan is not done accordingly, what can happen? So, these are some of the examples, some random screenshots from the news; news items I just show that in some area it is because of the some ill treatment of the environment, they decline in the biodiversity.

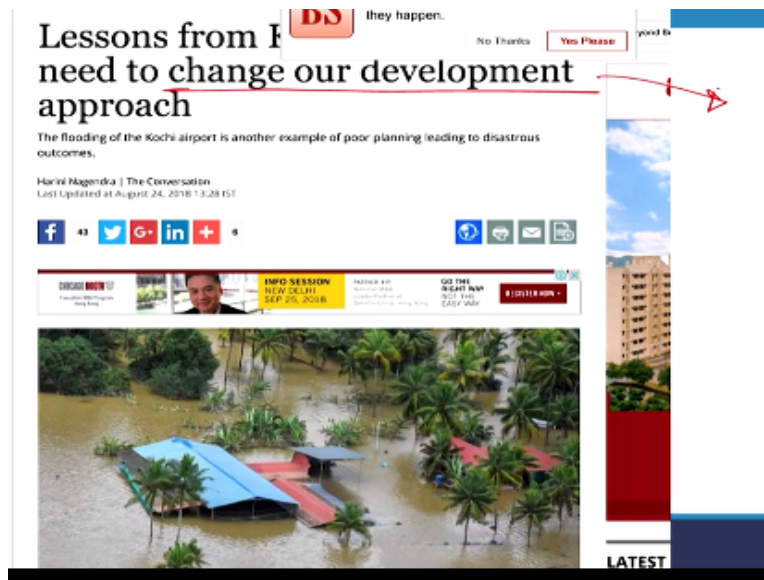
Biodiversity is the share of the flora and fauna that means, animal and plant material that is being hampered in some areas.

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Recently you have gone through the situation of the Kerala floods, so there were the forecast of the Kerala floods because of the deforestation and so much disturbance in the environment and ecological aspect, this was another reason to for the Kerala floods and this is not the only isolated area, this happens in most of the cities in our country and other areas, so this is another impact or another consequences if we do not address the environment and ecology before the development.

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Then you can see another news clippings from the Kerala again, so this news says that it is basically the change of our development which is required, so here in the development, somewhere we might have done some mistakes to understand the how the nature and the eco; natural ecosystem works and we maybe we fail to replace that ecosystem in our urban areas, so result is disastrous.

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You can see this in 2015, there was flood in Chennai, so reason was mostly the same, you can see the wrong practice by the city population and it is not an isolated fact again, most of the cities; industrial base cities and other cities, they have this practice that they have dump the garbage everywhere, so garbage is a created problem, created element, how it interacts with the biotic or the animal that has to be assessed and that has to be given proper treatment in urban areas if we want to stop this kind of flooding and clogging and the contamination in the urban area.

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Consequences of distorted urban ecosystems

laws

- Ignoring ecological and environmental systems during development
- Lack of sensitivity and awareness ~~→~~
- Deliberate exploitation of environment
- Ignorance of environment related mandates, laws

So, this consequences of distorted urban ecosystems are many fold, for example, ignoring ecological and environmental system during development that is what we showed that if you ignore ecological system, then it will come to us in terms of the disaster and the undesired

consequences, lack of sensitivity and awareness, this is the another consequences and the reason also.

Deliberate exploitation of environment sometimes, the exploitations are deliberate, people knowingly they make exploitation on the environment recently due to this Kerala flood, the High Court gave a judgement that those who have encroach the river area or riverbank, they will not be given the immediate relief, the reason being that they have exploited the environment, they have exploited the natural drainage basin as a result the water is going through the other urban areas and people are suffering, so this is deliberate sometimes.

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Intent of Environmental Protections

- Using minimum natural resources for maximum gains
- Assess the impact and loss of environment → New Development
- Conserve the fundamental natural systems
- To reduce the carbon foot prints
- To reduce the urban heat island effects

Then ignorance of the environment related mandates and laws and so basically, these are consequences and the causes also and intent of the environmental protection now, because of all these unintended consequences or the results, we want to avoid all those kind of consequences and we want to create such urban or created manmade environment which is sustainable in terms of the environment, which is sustainable in terms of the economics.

And the meaning of the sustainability here is that it will give the adequate amount of air, water, land and all the required natural resources to our future generation, so in terms of that we want to protect environment to in order to create those kind of sustainability, so our intent of the

environmental protection will be by using minimum natural resources for maximum gains, assess the impact and loss of environment.

When we say impact here, it is impact for the new development, right new development and conserve the fundamental natural systems, if you find that there is a river system in your region in the river system basically, river system is the drainage systems, it take the surface run water for the whole region, so do not disturb that river system, if you disturb the river system, river will come to your house.

So, therefore the conserving the fundamental natural system, river system, the forest system, the undersea water system, so this kind of system should not be disturbed and should be conserved, then to reduce the carbon footprint, we should not make development which invites the more emissions for example, we should make urban areas and cities in such a way, so that you can promote the pedestrianisation, reduce the vehicle use, reduce the emissions in the urban areas which must you promote.

We must encourage to use so those kind of materials which takes less amount of carbon footprint, less amount of the emissions, so that is the essence which is required not only in the planning but also in the practice, to reduce the urban heat island effect, when you are creating a major urban areas, built up areas so it gains maximum heat from the sun and during the summer especially for a country like India, it gains maximum temperature and then the normal temperature in the surrounding areas.

So, because of this enhanced temperature because of the hot surfaces and the built up areas, this phenomenon is called the urban heat islands, so within some region or zone, it creates a very hot zone as a result of that during summer season in the month of May, June and July, we will find that most of the Indian cities they are facing excessive heat and because of that this extreme difficulty and the sufferings and the even sometimes deaths are according.

So, how to reduce the urban heat island effect by using the environmental protection schemes, by using ecologically tested mechanism, there are standards, norms and procedures that will discuss over the period, over the time in this course also, so to reduce the urban heat island effect.

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Mandates for Environment and ecological protections

- Acts
- No.29 of 1986, [23/5/1986] - The Environment (Protection) Act, 1986, amended 1991
- Rules
- S.O.844(E), [19/11/1986] - The Environment (Protection) Rules, 1986
- The power conferred by the Environment Protection Act are followed under the following heads:
 - ✓ Amendments to Principal Rules
 - ✓ Coastal Regulation Zone
 - Delegation of Powers
- Eco-marks Scheme ✓
- Eco-sensitive Zone ✓
- Environmental Clearance - General ✓
- Environmental Labs ✓
- Environmental Standards ✓
- Hazardous Substances Management ✓
- Loss Of Ecology ✓
- Noise Pollution ✓
- Ozone Layer Depletion ✓
- Water Pollution ✓
- 2-T Oil ✓

Now, how to do it; now it is not that we are going to do for the first time, Government of India they have time to time come up with the policy and the acts. The first policy and the act which came in 1986, the name was environmental protection act, 1986 then in 1991, it was amended. Under the act, they made several rules like 86 and they made some amendments.

They made several rules like coastal regulation zone, delegation of the power, Eco-mark mark scheme, Eco-sensitive zones, environmental clearance scheme, environmental labs, environmental standards, hazardous substance management, loss of ecology, noise pollution, ozone layer depletion, oil pollution and also oil management. So, these kind of acts, rules and regulations are already set in India to take care of the development especially in the urban areas and the industrial areas.

So we need to study this and whenever you are going to design a project; executive project we have to follow this mandates and accordingly, you have to make the project, so that the end outcome or the impact in the environment is minimum and you can replace the original natural

system with the new system in such a way, so that sustainability is not disturbed, right. So, with this overview I would like to conclude but definitely in later in this course.

We will come up with the more description and more cases how you can utilise this mandates like acts, rules and regulation and what are at the possibilities and the consequences of violations of these rules and regulation with specific case that will discuss later on.

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Next LECTURE

10. Distinctive Features of NMUs and NPs

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And the next election will be with the distinctive features of the non-municipal and municipal urban local bodies and other panchayats before I conclude, I just make a quick summary, today we discussed very important aspect of the urban environment or urbanisation that is the environment and the ecology, we told that in urbanisation, we transfer or we change the natural setting, agricultural setting to a manmade setting where industrial and the business set up is expected.

And because of that we disturb some amount; we disturb the environment; environment is basically any elements which surrounds us and ecology in the overall system were the relation between the human being and the other animals and the other environmental features are there and ecosystem is the subsystem; is a subset of the ecology which also brings the local relationship with the human being and the other elements of the environmental; environment.

And this environment and ecosystem and ecology for the urban areas need to be studied properly and we have seen today that if these aspects are not addressed or not assess properly specially the impacts in the urban areas for the new projects, then there could be disastrous situation like urban flooding or the chemical disasters or there could be various kinds of undesired happenings and that can take lot of human lives.

To avoid that there are lot of policies, mandates and your role is to follow those mandates and policies and rules and regulation, so that the urban areas become as good as a natural phenomenon in our country also. So, with this I would like to thank you very much for attending this lecture.