

**Education for Sustainable Development**  
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**Lecture - 55**  
**Sustainable Cities and Communities (Contd.)**

Hello viewers. Welcome back to this ESD course NPTEL ESD course on Sustainable Cities and Communities. In the last class, we were discussing about the characteristics of Sustainable Cities and Communities.

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- **7. Accessible public resources**
  - Public health buildings, economic development centers, technology hubs
- **8. Water conservation**
  - Rainwater harvesting, Green infrastructure, Waterless hardware
- **9. Public green spaces**
- **10. Waste management**

Sustainable cities aim to **reverse negative impacts of urbanization** by:

 Consuming fewer resources	 Reducing greenhouse gases
 Fighting climate change	 Creating a sense of place

So, to continue with that we have already discussed some of the characteristics features to continue with that and now the second another 7th another aspect of sustainable cities are like the accessible public resources. Public resources that mean the society not just only be the inclusive society with energy efficient amenities and the technology etcetera.

But also the all the resources would be equally available, equally accessible to all the stakeholders, that is why public health buildings like hospitals, like the hospitals, like then or in the smart cities. I can say the smart city is the sufficient number of health facilities in terms of the in terms of nursing homes, in terms of hospitals, health buildings should be available for the public you know public health access.

Economic development of the centers also you know not only just job creation and the start ups and other kinds of skill development programs.

And, the technology hubs, technology hubs like for example, for our day to day activities suppose you know internet centers some of the digital printing, internet and all kinds of the digital platform technology hubs would also be available within the reach of a all stakeholders. So, these are all this kind of resources in terms of not just in terms of the products, but also services should be accessible for the public use.

So, public health buildings, economic centers, technology hubs you can say and you know food storage, foodstuffs storage this would be available to all the all the stakeholders, all the citizens within the reach. So, water conservation, similarly water conservation not just from the you know water clean providing the drinking water through you know through the river, through the government the government or the cities or the municipalities or the water system water management system.

But, also rain wast rainwater harvesting system, infrastructure should be there, green infrastructure should be there, water less hardwares. Often in the factories that the industries also, we can use some we can minimally use the you know use the water; so, the we can explore the water less hardware. So, for the industry for the transport for the all kinds of things, how can we minimum minimize our water use or how can we minimize minimize the water usage.

Usage as well as we can harvest, we can conserve the water through rain rainwater harvesting you know and through you know um storage for the safe drinking water and all kinds of systems and infrastructure should also be developed. And, public green spaces in terms of you know in cities from within the 2 kilometers and within the colonies within the 2 to 5 kilometers, there are the city parks are there, city parks, gardens, playgrounds for the children.

So, public green space also space should also be developed, should be also be developed as a part of smart cities and the sustainable cities. So, waste management is another most important thing is in the waste management, the worst the yes definitely in the large cities and the urban cities the because of the large population, the waste creations are also lot of waste are being created.

But, how to manage it? Waste management, recycling waste management that is also we have to; that means, technologies are; that means, establish technology or you can say efficient technologies would also be available to manage the waste, then only it can take care of the pollution, minimizing the pollution.

So, here you can see as you can see from the from this thing sustainable cities to cities aim to reverse the negative impact of urbanizations. Yes, urbanization with the urbanization also it not only facility gives the facilities to us in terms of education, in terms of health, in terms of you know consumption in terms of amenities available in terms of shopping behaviour, in terms of purchasing you know the behaviour and entertainment, all kinds of things are that.

But, again at the same time it has to focus on minimizing the negative impact, that is to reverse back or you can say how to transform this negative impact into the and positive assets positive asset. So, that is why the sustainable cities city should aim to focus on the consuming the few resources, yes what are minimal that is the minimal food. So, food wastage again food wastage is a very I mean we can say big issue, this big issue is a big very big issue, very you know sensitive issue, very critical issue in our country; in our country.

Because, you know because as because we are so many so, certain percentage of the people there as they are living in the below poverty line and they are not they do not have the access to the good food, healthy foods etcetera. They do not have even if the law prescribe the right to food, but they are not getting it. So, we should not waste the water. So, food products food products of how to food minimize the food wastage and how to sustainably use the food products, that is this the source that is a that is one example.

But, consuming the few resources in terms of water in terms of energy in terms of food resource, food source resources etcetera. So, similarly fighting the climate change, fighting the climate change in terms of renewable energy in terms of sustainable energy through solar energy wind energy, hydro energy etcetera. And, reducing the greenhouse gases with the with minimizing the pollution and addressing the pollution and addressing the waste management system.

Then creating a sense of place, creating a sense of space not just like from placed place within few kilometers within the reach of small communities in the urban cities, they must have the green space.

You know space green space not just to plant, but to also, but to sit comfortably to that also promotes the social connectedness, social relationship, participation and also for the healthy living condition also. So, these are some of the you know these are some of the you know amenities and the facilities and you know activities that can be introduced to that can be introduced to the urban city planning and the communities, sustainable communities.

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**Why are Sustainable Cities important???**

- Lightning bolt icon:** Cities occupy just 3% of the Earth's land yet account for 60–80% of energy consumption
- Skull icon:** 90% of urban inhabitants are breathing in unsafe air, resulting in 4.2 million deaths annually
- Dollar sign icon:** Bold climate action could deliver at least \$26 trillion in economic benefits through 2030

**3 ways sustainable cities aim to create positive change**

- Social connection:** Represented by an icon of two people talking.
- Environmental impact:** Represented by an icon of a globe with a leaf.
- Economic solutions:** Represented by an icon of a gear with a dollar sign.

The infographic is presented in a video frame with a woman in a red and yellow sari in the bottom right corner. A city skyline is visible in the background of the slide.

So, why are the sustainable cities are important? Ok. So, why the sustainable cities are important because, nowadays more and more urban cities are getting more and more crowded because of no opportunity for economic opportunities, job opportunities, health facilities, education facilities.

So, nowadays more people from the remote areas, rural areas are coming to the cities and migrate to the cities for not just for the employment economy; that means, for earning their livelihood for also for education, higher education and the health facilities.

So, here you can say cities occupy just the 3 percent of earths land, but yet account for 60 to 80 percent of energy consumption. Yes, more populated cities and the towns will

definitely consumption energy consumption will be higher say 60 to, even though it consist of 3 percent of the earth space, but 60 to 80 percent energy consumption takes place in the cities.

Similarly, 90 percent of the urban inhabitants are breathing in unsafe air, you know with the transport with the pollution with the air poor quality of air you know with the carbon emissions all these things air. So, that is 90 percent of the people on a urban inhabitants they you know breathe a bad air, bad unsafe air including 4.2 million deaths being caused annually because of this you know that is the in case of the senior citizens the breathing problem, the lungs problem.

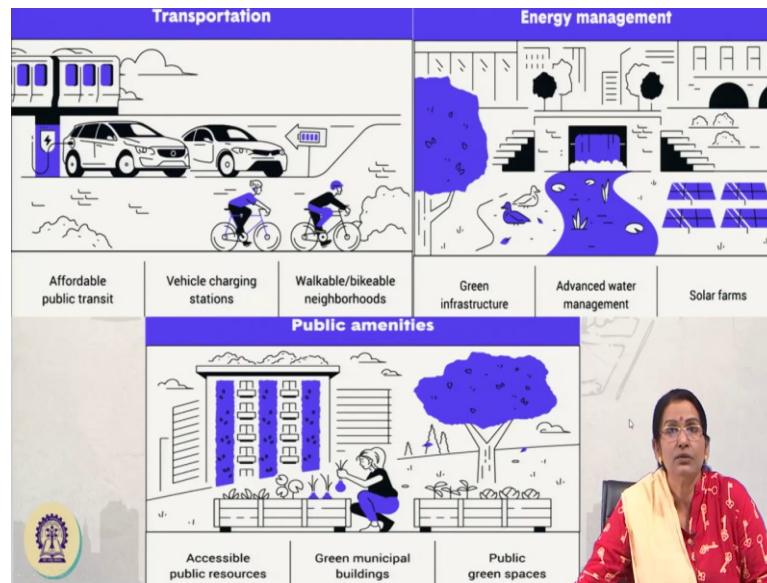
Because, of the carbons because of the carbons in the air may because of the polluted air inhalation. So, that is the major again another health issue also major threat to the life also. Similarly, bold climate action could deliver at least 26 trillion in economic benefit. Similarly, if you can take the bold action in terms of carbon zero carbon emission, carbon neutrality, addressing the waste and pollution issues, management of the pollution, management of the pollution the quality improvement in the air pollution.

Then water pollution, water treatment, water treatment, drinking water treatment, air quality and even the industrial waste is industrial waste management. If you can take the bold action climate take action; so, that definitely it is going to help us, not just in health aspects not in social aspects, but also economic benefits also. By 2030 we can address this, we can get the 26 trillion dollar benefit out of this.

So, there are 3 ways of sustainable cities aim to create the positive change, yes social connectedness, inclusive society togetherness, collective well being is one aspect. Environmental impact not just a conservation of resources, but environmental sustainability, environmental that mean protection ecosystem, sustainable ecosystem. And, neutralizing the reversing the climate change impact, minimizing the carbon etcetera that is one thing.

And, economic solutions for not just for the economic solutions in terms of growth, in terms of higher GDP, in terms of job opportunity, in terms of green jobs more green jobs. So, these will be economic solutions. So, these are the 3 main ways and a ways the sustainable cities can focus and can be developed.

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Similarly, an urban cities transform a transportation you know transportation is a major issue is a major factor. So, how can the affordable public trans transit take place transportation or the transit can take place, affordable and public. Nowadays, in a big cities also the government the you know government the government or private sector buses, the buses are going on from one place to another place, the city buses are there.

City transport buses are there where with the you know with city buses transports you can not only the you can not only commute to your workplace and a home, but also the you know other vehicles; that means, the usage of the personal vehicles the carbon emissions can be reduced. And, with the nearby areas etcetera with the cycling, with the walking etcetera that can also be minimized. So, the government can introduce the eco buses, eco buses for the public transport.

Similarly, vehicle charging stations are for their should be there for you know battery charged vehicles or the solar bike or hydrogen vehicles or wind power wind power instruments. So, vehicle charging stations should be there, walkable and bikeable neighborhood should be also be there, that in every community in every neighbourhood neighbourhood all these facilities should be developed like the you know like the food vegetable markets.

Then the medicines of medicines of and health facilities and you know for all kinds of other education institutions and the logistics and the amenities should be available. So,

that people can reach the place either by walking or cycling etcetera. So, that is one aspect of transport to take care of the transport facility. Second energy management, energy management in terms of green infrastructure with energy efficiency platform.

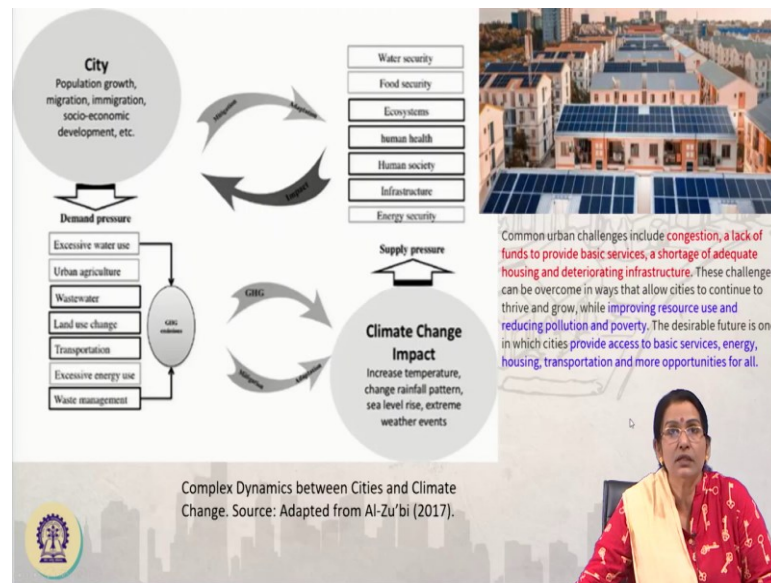
Then advanced water management, water management that is sufficient you know conservation of and of resources like water resources, water treatment, drinking water drinking water management, water management in terms of safe and drinking water, there a water quality all these things. Then the solar farms, nowadays for creating renewable and clean energy solar farms are farms and infrastructure are being installed in every city places.

So, that you know with minimum expenses with cost effectiveness how can we create more solar energy and use it utilize it in our in for our transport, for our living and for all kinds of electrical uses also uses also; so, solar energy farm. So, in the energy management system how can green infrastructure, water treatment, water management and solar farms can help in planning, designing and creating the sustainable cities.

Then another is the public amenities, public energy amenities in terms of accessible public resources, then green municipal buildings, municipal build buildings, green public green space in terms of parks, gardens, playgrounds for the children and also green space and the green space I mean in the common public areas. So, that public amenities not only just available, but also create kind of eco friendly atmosphere. So, that you know even the pedestrians can also take the help of can take some rest and the .

So, that again also with the greenery with the greenery in the cities also the public green space also can conserve, can absorb the carbon footprints, carbon gases or the emissions gas carbon gas emissions and can absorb it. And, can maintain the air quality maintain the air quality or can bring the purity, cleanliness in the air quality that is another thing.

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So, then next I can see yes this is the; however, this urban cities as because so, many factors are involved starting from climate change to air quality pollutions to air quality water then energy and health facilities, education. So, the system is a very complex system. So, complex dynamic system, dynamics between cities and the climate change as you can see cities.

Cities with the population growth with the migration more and more migration immigration, socio economic development etcetera that is the things. And, it has the activity; that means, it demands pressure from the you know excessive water use is there urban agriculture required, what waste water management, land use change, then transportation, excessive energy use, waste management all these are the key issues.

How it is going to be managed? Then again at the other end also climate change impacts are there in terms of increasing temperature whether condition is very hot you know hot weathers you know climate. Then temperature, daily temperature increasing temperature and frequent rainfall, frequent you know disasters, frequent calamities. Then you know change in the rainfall pattern or the climatic change and sea level rise, extreme weather unpredictable weather conditions all these kind it has a impact.

So, at the same time we have to restore conserve our waters that is water security, food security, energy is energy security, human health security then human society security, then infrastructure, energy security; all kinds of security how to ensure all this kind of



security of the resources and the facilities. So, that is why so, we have to take so, the common urban challenges, you know now looking at the cities and the common urban cities ah.

So, many common challenges are you know because of the overpopulation, congestion, lack of funds to provide the basic services, shortage of adequate housing. Then you know because of the migrated labours and migrated labours and the so, for their accommodation ok now. So, more and more slums are being developed and the government as its for the government it is a challenge, real challenge to give them the concrete housing.

And, the you can say how to convert this slums to into the you know permanent kind of residence for them and not only requires money, but also space, public space or the space within the city. So, this is a major these are the major challenges; not just the congestion, but also a, but also you know building the giving providing adequate housing, affordable housing and infrastructure and infra structure.

Not only that, but for also give them the opportunity for the you know working for the jobs for the jobs employment opportunities then the services and maintaining all kinds of you know discipline. So, these are the real challenges in sustainable city, in the big cities. So, that is a how can we overcome these things, how can we face this kind of hurdles, how can we mitigate this kind of challenges and the problems you know.

Not only we have to improve the resource, uses sustainable use of resources, but also reducing the pollution, reducing the poverty and you know providing them the you know providing the not the all the citizens in the rural citizens; that means, in the citizens especially the labour class or the lower socio economic people they have to provide them the job opportunity, the skill training and give them the opportunity. So, opportunity; so, provide the access to basic services, energy, housing you know housing facilities, transportation and more opportunity for all.

So, these providing them these kind of things in the city cities that is also a biggest challenge. How can we do it, because more and people because the as because the in the urban city so, many facilities are available, people are migrating from the rural areas to the cities. As you can see the best example is that during pandemic how the you know because of the closure of the factories etcetera from the Gujarat and other cities,

Maharashtra how the labours you know labours there you know they are again coming there were coming back to the hometown.

And, how much problems, financial health and the how so, many critical problems that we have had to face in this 2 years 2021. So, how to mitigate these challenges? So, these are challenges how first things that we need enough of resources, sufficient you know enough of resources to mitigate; that means, to face these challenges at the same time to restore not just to provide them the services and resource, but to restore it to restore it and give them equal opportunity to all that is also another challenge.

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► Increasing motorization not only brings problems related to congestion, travel times and fuel consumption, pollutant emissions and environmental degradation, the encroachment of residential areas and increasingly poor road safety with very high rates of injuries and deaths, but also makes it difficult for most people to have full access to the public transport system.

- Efforts to address housing informality by adopting a strategy of granting legal titles to land without the comprehensive development of settlements have not automatically guaranteed better access to public services.
- While many countries in the region have been able to reduce the quantitative housing deficit, mainly through demand-side subsidies, locating social housing in peripheral areas has driven urban sprawl and deepened socioeconomic residential segregation.
- In the region there is still the challenge of planning cities that contribute to a better and fairer use and distribution of time and to the more equal enjoyment of rights by men and women. Inclusive cities must be designed, with a spatial distribution that takes into account the complexity and diversity of the daily needs and capabilities of their inhabitants.

The diagram on the right is a circular hub-and-spoke model with 'Density' at the center. It is connected to several key urban planning concepts: 'homes' (with sub-points 'in the urban housing' and 'people management'), 'land values' (with 'enable higher productivity'), 'attractive' (with 'attract investment'), 'parks and playgrounds', 'mobility' (with 'enable people to walk and cycle'), 'public transport' (with 'increase access to services'), 'movement' (with 'enable people to walk and cycle'), 'security' (with 'enable people to walk and cycle'), and 'variety' (with 'enable people to walk and cycle').

So, here we can see the you can see the density like for example, suppose the this is a city and there is a density level. So, it also it is related to now it related to different different categories of people, like for is the more and more homes, the homes are required. So, in the cities reduces the housing shortage, housing shortage for all the citizens even for the labour labour class people also even from the you know for the migrants, migrant workers the.

So, people thus more in the so, increasing you know people in the more neighbour more people the living in the neighbourhoods. Then increase supply of the services and you know supply of the services and locally because, largest customer base, now customer base also increases. Then similarly walking in cycle distance; so, more space, more space

are also required, simple day to day lifeline with more functions more space is also required.

Similarly, public transport system has to be stand then the again then movement and more movement during the daytime and even the even in the evening times also, it also it not only just creates the crowd traffic congestion crowd etcetera, but also security requirement also. So, that is another thing. So, increased variety of culture shops and demand, public demand, public services. These are also again these are an another factor.

City life in the urban environments more and city life in terms of you know in terms of facilities, in terms in terms of shopping complex, in terms of you know opportunities, entertainment, opportunities, you know malls. And, all kinds things city life, how to lead city life for all of that you know for the for every citizen city life or in terms of not just in terms of basic amenities. But also entertainment facilities, health facilities, recreation facilities; these are anything.

Parks and play playground, how enough of better parks and greenery and playgrounds to be created, then attractive ha what is attractive is desirable, reasonable price. Then again price, the economic price the land values that is a where the urban cities in the urban cities you know cost of the build cost of the private houses. That means, cost of housing is very expensive, I being land rate of the lands and the housing rate of the housing also you know skyrocketing, skyrocketing their prices are skyrocketing.

Because, of the shortage of the space, shortage of the infrastructure and housing facilities and the more population or over population. So, how to mitigate this? So, that is a increasing motorization not only brings problems related to congestion travel you know travel times fuel consumption, pollutants, emissions etcetera, environmental degradation. It also causes other kinds of health issues like road safety is again road safety, traffic congestion.

And then the accidents, accidents, rate of injuries, death, accidents these are the some of the these are the also major critical factors that is happening in the in and around the cities. So, that is why effort to address the housing informality by adopting a strategy for strategy of granting the legal titles to the land so, draught. So, all kinds of litigation, legal complications and litigations with regard to the you now with the ownership and settle ownership of the lands and the settlements and settlements.

So, all these are the critical you know legal complications are also emerging because of the shortage of the scarcity of the land. And, the all kinds of corruptions all of the corruptions and the illegal practices are also being are also happening due to the shortage of you know lands and the infra building infrastructure. So, then that is why; so, how to reduce this quantitative housing deficit mainly through demand side subsidies.

So, it not just giving providing the subsidies in the terms of the ration in terms of the day to day goods etcetera, but also in terms of housing facility in terms of the housing. So, especially the quantitative housing deficit for the migrant workers, you know like in the in the urban slum areas how the you know it how the its again politically very sensitive issue. So, that so, they cannot be thrown out of their illegal occupation of the government land.

But, how they have to be rehabilitated, reestablished, rehabilitated in the in creation of different creation of the new colonies and residential colonies and the government how in the sharing in the partnership also, how government is also say shifting them shifting them from shifting them one location to relocate them in the constructed and the you know flats in the residential flats, housing colony for the you know migrated workers for the low socio economic people.

Who those who have actually who are the labourer, migrated labourers and the workers who have forcibly occupied this government the public space, public space or the government space in the you know in the road side in the roadside in the campus boundaries and so and so on. So, that is also again another challenge, not just a political issue, but also economical, financial and the critical issue also. So, that is another challenge.

So, inclusive there therefore, all this kind of know things should be planned properly, planned properly and managed properly with more equal opportunity, opportunity job opportunities and fair practices. It is a very complex system that is a inclusive cities must be designed carefully with the spatial distribution and take a while taking into account the complexity and diversity of the daily needs of the people. And, what the inhabitants, what the residents, what the residents, what is their background, where from they have come.

What is the their you know practices day to day practices of you know leading living their earning their livelihood. So, all these are things to be taken care of and into consider and taken into consideration and accordingly city planning and construction should be should take place.

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> The lack of access to clean energy sources, safe drinking water and improved sanitation facilities in slum dwellings also has adverse impacts on health.

> All these urban challenges are exacerbated by the difficulty of creating locally appropriate institutional and legal structures to promote sustainable urbanization. This challenge is accentuated in the financial systems of Latin America and the Caribbean, where there are large asymmetries between spending responsibilities and commitments, both at different levels of government and within cities.

> Poorly planned and managed urbanization translates into low densities, separation of land uses, a mismatch between infrastructure provision and residential concentration, as well as inadequate road networks and public spaces. It also diminishes the potential of using economies of scale and agglomeration, and generates higher emissions.

City resilience and sustainable development

Good urban governance

Urban engagement

Economic resilience

Decentralization

Social political resilience

So, these are some of the major challenges you can say. So, again city resilience and sustainable development, again city resilience because we have to make the cities more resilient towards the natural disasters. So, you can say similarly good urban governance is a factor, economic resilience is a factor, sociopolitical resilience is a factor, decentralization is a factor, then urban development and engagement that is also a factors.

All these are the key factors, these 3-5 domains are the key factors, if we can maintain all these 5 domains, then only we can make our cities more resilient and sustainable. So, these are the; these are the challenges, lack of clean energy resources, save lack of safe drinking water, sanitation these are the in the slum dwellings, these are the challenges. Similarly, difficulties in creating locally appropriate institution, legal framework, legal structures you know for imposing length this Swachh Bharat.

The Swachh Bharat introducing Swachh Bharat will not help us in such a way unless until we impose it, we enforce the people in terms of some not just in terms of advocating and propagating. But, in terms of some kind of you know legal implications

so, some kind of punishment, some kind of penalty then only we can ensure that it will be implemented. So, how to because you know how to make it a make it make it a part of the practice? The sooner we can adopt it, then we can get the benefit out of it.

Similarly, poorly plan and manage urbanization also it leads to the low densities, separation of the land use, mismatch between the infrastructure and maintenance again. Creating the infrastructure is one thing, but maintaining that infrastructure that is another challenge.

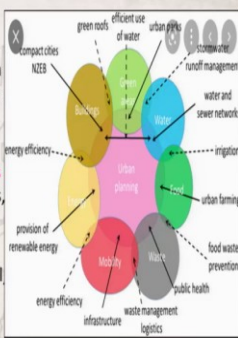
So, then they know so, there is no the proper plan; that means, residential concentration mean some areas people will be accumulated are you know slum areas in between in the middle in the center of the heart of the city, the slum areas gradually develop.

So, this also requires a you know legal monitoring, legal monitoring and resilience and all kinds of the governance issues. So, this how to how the people should not encroach the public space, how should know they should not encroach the you know public; that means, public road and network etcetera unethically or illegally. So, how to so, close monitoring system and monitoring and evaluation system, resilience system is also very much required.

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• **Opportunities**

- > **Public policies must address the problems of cities** —where economic and social power are concentrated— as well as the opportunities offered by action in this sphere to meet the challenges of sustainable development. The actions of all levels of government must be aligned to promote cohesive policies that ensure efficient patterns of spatial development.
- > **Organized and consistent urban planning should encourage dense, contiguous development on the edges of urban areas**, modernize existing urbanized areas, improve the diversity and quality of life in urban centres and minimize the adverse effects of climate change on cities.
- > Each city must be understood as part of a system of cities at the local, national, regional and global levels. This conceptualization of the city provides a **multidimensional approach based on interactions and connectivity**. Cities should be considered centers of **social, economic and cultural interaction**, **capable of fostering productive growth** and achieving sustainable development at all levels.
- > **Inclusion of time-use analysis in urban planning** makes it possible to build cities that take into account the needs of all the people who live in them and thus promote a reduction in inequality and a more equal enjoyment of rights by women and men.



So, similarly opportunities are also there, opportunities also there, like you can see urban planning and urban planning you can see the green areas are there, buildings are there,

compact cities buildings, energy efficiency centers are there. Provision of renewable energy, mobility, infrastructure, waste management, food security, water security, these are the things are there urban planning should take into consideration, all these n number of factors.

On starter starting from the green areas to water to energy to food to waste management to mobility then transport, infrastructure all kinds of things would be taken into account if in the domain of urban planning and architecture. So, opportunities are also there. So, public policies also must address the problems of the cities. Of course, the problems will vary from context to context from the different communities slightly vary, but the basic things will be common.

So, public policies must address the problems of the cities organized and consistent urban planning, monitoring, evaluation that should be also there to encourage the dense, contiguous development age of the urban areas to monitoring, monitor the impact on environment etcetera. Similarly, that is where the multi dimensional approach should be developed should be based. So, that is where the concept the city's planning urban planning should be based on multi dimensional approach, in the sense that all this how this social, economic and cultural interactions.

All these 3 drivers can be well maintained, enabling a making capable of fostering the productive growth and sustainable development all levels. How this ecological balance in terms of socioeconomic and cultural inter interact interactions can take place. Similarly inclusion, inclusion of you know time use analysis in urban planning. So, there is also ultimately they will surveys and the studies should also be carried on in terms of its time use analysis by using the time use analysis in urban planning, infrastructure and you know usage.



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- **Recommendations to achieve SDG 11 and its targets**
- **Greater investment in public transport systems and urban infrastructure is needed**, paying special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons, to improve the quality and efficiency of public transport, and to ensure the inclusiveness, safety and environmental sustainability of cities.
- The world has seen unprecedented urban growth in recent decades. Thus, **urban planning and management must be improved to ensure that urban spaces worldwide are more inclusive, safe, resilient and sustainable.**
- It is important for **urban planning to be performed with a gender approach aimed at reducing gaps and responding to the different needs of the population, as well as their different uses of time, space and services**, contributing to the transformation of the current sexual division of labour.
- **Environmental and social impacts must be considered in the design, planning and construction of infrastructure** to ensure that services are provided and that the concerns of the affected communities are addressed.

So, you can hear there here some of the recommendations are there to give this SDG, how can we achieve the SDG 11. These are the factor, some of the factors that is a these are smart city and urban planning, these are the smart city and urban planning. Nowadays, through artificial Intel is IoT platform Internet of Things platform, aggregator this is the you know this is a you can say example of example of you know how can we how the environment, economic and all kinds of things can be balanced; smart home, smart parking, weather and water system also very sustainable.

Then the traffic control, traffic control like a centralized traffic control, vertical traffic control, environmental pollution can also be minimize, noise, surveillance, surveillance then you can see smart parking; everything has been planned through the IoT monitor through the IoT platform. So, these are the design of the smart cities and the urban planning. So, how to use how to leverage the technology for urban planning and the smart cities. So, here we can say the greater investment in public transport system and infrastructure is required.

Similarly, to improve the improved ensure that urban spaces worldwide be to make it more inclusive, more safe, more resilient and sustainable. Similarly, reducing the gaps between poor and rich and poor and rich and how to address the diversity, how to address the you know needs of different populations, their different groups categories of



stakeholders and how to use at how their different uses of time space and services can be taken into account.

Similarly, the environmental social impacts must be considered in the design urban planning and design and now how to tech leverage the technology, technology in urban planning, monitoring, vigilance. And, also and also exploring the new platforms, new opportunities, new things to sustain it for the longer period.

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**11 GOALS** **GOAL 11. Make cities and human settlements inclusive, safe, resilient and sustainable**

**TARGET 11.1** By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums

**Global INDICATOR 11.1.1** Proportion of urban population living in slums, informal settlements or inadequate housing [Global Metadata](#)

**TARGET 11.2** By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons

**Regional INDICATOR C-11.2** Average time (in minutes) spent commuting

**TARGET 11.3** By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries

**Global INDICATOR 11.3.1** Ratio of land consumption rate to population growth rate [Global Metadata](#)

**TARGET 11.4** Strengthen efforts to protect and safeguard the world's cultural and natural heritage

**TARGET 11.5** By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations

So, these are some of the goals indicators as you can see these are already given there, make the cities even settlements inclusive and safe. These are the under goal 11 also there are different targets, these are the targets. As you can see 11.1, 11.2, 3, 4 and the indicators like it is a proportion of urban population living in slums, informal settlement or inadequate housing these are the indicator globally. Regional indicator can be averaged time in the minute spends in commuting like in big cities like the Mumbai's, or the Delhi's or the all metros etcetera.

Similarly, indicator 3 at the global level again ratio of the land consumption and rate of the population growth, the equation between the land available in the cities and the growth of the population. So, that is the ratio.

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**Global** **INDICATOR 11.5.2** Direct economic loss in relation to global GDP, damage to critical infrastructure and number of disruptions to basic services, attributed to disasters **Global Metadata**

**TARGET 11.6** By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management

**Global** **INDICATOR 11.6.1** Proportion of municipal solid waste collected and managed in controlled facilities out of total municipal waste generated, by cities **Global Metadata**

**Global** **INDICATOR 11.6.2** Annual mean levels of fine particulate matter (e.g. PM<sub>2.5</sub> and PM<sub>10</sub>) in cities (population weighted) **Global Metadata**

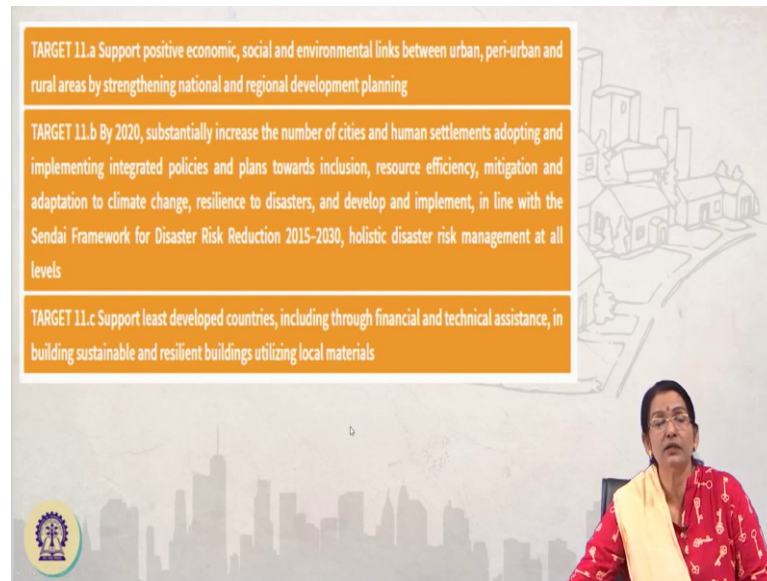
**TARGET 11.7** By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities

**Global** **INDICATOR 11.7.2** Proportion of persons victim of physical or sexual harassment, by sex, age, disability status and place of occurrence, in the previous 12 months **Global Metadata**

So, these kind of things then indicators between also economic infrastructure, critical infrastructure, promotion then promotion of the municipal solid waste management, solid waste is. Then annual main level of the fine particular matters in terms of cities like the population weight is GDP proportion of the person of the victims, accidents, sexual harassment like the safeties and health issues, disabilities status of the people.

So, these are the things available, these are the indicators which are available in the global metadata. And so, that we can along we are taking into consideration the global meta metadata as per the parami indicators. So, how this target role SDG 11s all the targets can be achieved.

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TARGET 11.a Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning

TARGET 11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels

TARGET 11.c Support least developed countries, including through financial and technical assistance, in building sustainable and resilient buildings utilizing local materials

So, similarly it also target 11 a advocates for the support positive it support positive economic, social, environmental links between the urban, urban pre peri-urban like sub peri-urban that is semi-urban rural areas by strengthening the national and the regional development planning.

Then target 11 b also advocates for how sustainability increases the number of cities and human settlements, adopting the implementing integrated policies, plans towards the inclusion, resource efficiency, mitigation, adaptation to climate change, resilience to disasters etcetera. And, then 11 target 11 c also, it advocates for support the least developed countries including through financial and technical assistance.

So, like the developing and the developed nation, how to assist the developing nations in terms of financial resources, in terms of technology, in terms of other kinds of you know infrastructure guidance. So, in building the sustainable and resilient buildings utilizing the local materials. So, this kind of guidance, technical help should also be provided to the developing nations; that means, you can say backward countries.

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So, now, these are some of the things, these are some of the things that SDG 11 and its targets advocates and the recommends for. Now, this is the some of the; some of the some of the topics and key issues in sustainable cities and communities. Now, from this knowledge at least we can every individual on our own way if we can sustainably use it like in terms of our we can take control of or we must be very much you know alert and judicious in utilizing using the resources, energy resource.

It is not that it is available because it is available in our household, that is your wasting it, that should not every because it is sustainability is a paradigm shift. Hence, all of us each and every individual should be conscious, should be aware of how to use every resources, how to conserve it, how to use a sustainably. So, that we can restore the or make our future very sustainable future and how can very soon achieve this sustainable development goals for India.

Now, thank you very much, I am I now conclude here. I hope all of you not just go through it theoretically, but also practice it and adopt it in your day-to-day life.

Thank you very much.