

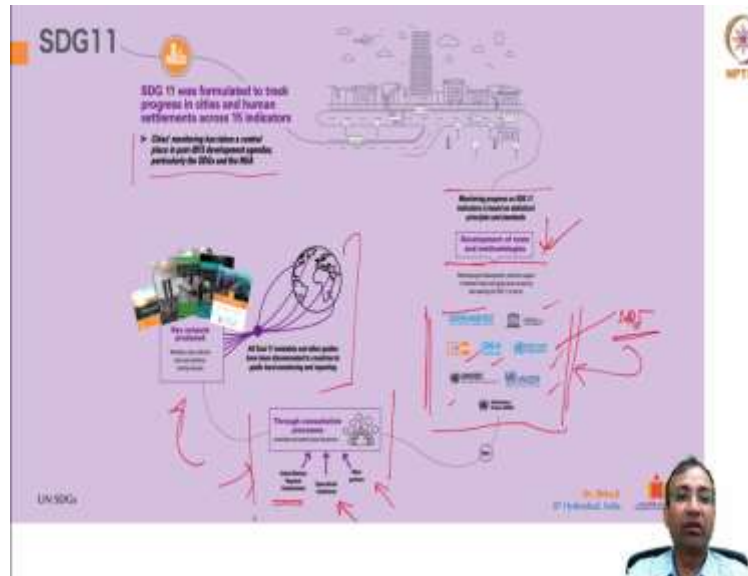
## United Nations Sustainable Development Goals (UN SDGs)

Professor Dr. Shiva Ji

Indian Institute of Technology, Hyderabad

### SDG 11: Sustainable Cities and Communities Part 3

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SDG 11 was formulated to track progress in cities and human settlements across 15 indicators and cities monitoring has taken a central place in post 2015 development agendas particularly SDGs and the NUA, monitoring progress, development of tools and methodologies for progress and these are the sets of agencies you can see over here, who are working for developing these tools and methodologies.

So, UN habitat UNESCO is there, UN environment is there, UNFPA, WHO, UNISDR, UNODC, UNSD together they are contributing for multiple things WHO decides for air quality index and they created guidelines what should be the minimal acceptable level and all of those kind of things and similarly all of these agencies and many others not just this is not an exhaustive list.

You know, many other agencies they are contributing in their own ways through consultative processes you see over here. So, there are UN regional commissions, specialized institutions, research institutions, other NGO, civic agencies they are all contributing other partners to creating these frameworks, these methods and reports and everything so that collective and wholesome approach of SDG 11 can be taken forward.

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The slide is titled "SDG11" and contains the following text:

**Goal 11 requires use of alternative methods of data generation**

Goal 11 indicators require collection at the city level and require alternative measurement and/or indicators to household surveys. Some of the indicators are: 11.1.1, 11.1.2, 11.1.3, 11.1.4, 11.1.5, 11.1.6, 11.1.7, 11.1.8, 11.1.9, 11.1.10, 11.1.11, 11.1.12, 11.1.13, 11.1.14, 11.1.15, 11.1.16, 11.1.17, 11.1.18, 11.1.19, 11.1.20, 11.1.21, 11.1.22, 11.1.23, 11.1.24, 11.1.25, 11.1.26, 11.1.27, 11.1.28, 11.1.29, 11.1.30, 11.1.31, 11.1.32, 11.1.33, 11.1.34, 11.1.35, 11.1.36, 11.1.37, 11.1.38, 11.1.39, 11.1.40, 11.1.41, 11.1.42, 11.1.43, 11.1.44, 11.1.45, 11.1.46, 11.1.47, 11.1.48, 11.1.49, 11.1.50, 11.1.51, 11.1.52, 11.1.53, 11.1.54, 11.1.55, 11.1.56, 11.1.57, 11.1.58, 11.1.59, 11.1.60, 11.1.61, 11.1.62, 11.1.63, 11.1.64, 11.1.65, 11.1.66, 11.1.67, 11.1.68, 11.1.69, 11.1.70, 11.1.71, 11.1.72, 11.1.73, 11.1.74, 11.1.75, 11.1.76, 11.1.77, 11.1.78, 11.1.79, 11.1.80, 11.1.81, 11.1.82, 11.1.83, 11.1.84, 11.1.85, 11.1.86, 11.1.87, 11.1.88, 11.1.89, 11.1.90, 11.1.91, 11.1.92, 11.1.93, 11.1.94, 11.1.95, 11.1.96, 11.1.97, 11.1.98, 11.1.99, 11.1.100.

The slide also includes a small diagram on the right side showing a flow from a box labeled "Data" to a box labeled "Policy".

At the bottom right, there is a video inset of a man in a blue shirt, with the text "Dr. Binay K. Choudhury" and "LIV SDGs" below him.

It requires use of alternative methods of data generation also so that you have sources for credible data. So, many goal 11 indicators require collection at city level we have discussed earlier how do you frame your policies, how do you make decisions, how many of quantum of effort is needed at what place how do you know. For that definitely you need that feedback that data collection.

So, unless and until that data comes to you, you may not be the rightful position to frame your policies. So, that is why this data is very crucial for creating policies and framework. So, routine data collection mechanism such as consensus household surveys examples including indicators on public transport so multiple depending upon what do you want to check.

You can create your own methods, tools and methodologies to gather the data census if you see is decadal exercise where Pan Indian data is collected for anything and everything. So, whatever is going on in the country you get that information through data and then you make your policies and frameworks and decisions based on this.

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**SDG11**

**Box 3. Earth observations for human settlements monitoring**

Earth observations (EO) refer to monitoring the planet using sensors in, on or around the Earth. The Group on Earth Observations (GEO) is an intergovernmental partnership that provides open access to more than 400 million open EO data and information resources that are relevant for SDGs monitoring, research, policy and decision-making.

The GEO Work Programme supports global SDG monitoring through the Earth Observations in Service of the 2030 Agenda for Sustainable Development. Specific work on SDG 11 includes: assessing land-use efficiency, public space, climate mitigation and adaptation, and disaster risk reduction. For example, GEO Data Access for Risk-Management is allowing greater use of freely available satellite imagery across each phase of the disaster cycle for preparedness and prevention, as well as response and recovery.

Other activities include community efforts around the GEO Human Planet Initiative, GEO Land Degradation Neutrality, GEO Vision for Energy, and GEO Wetlands.

<https://www.earthobservations.org/infocenter/EO>

UN SDGs

Dr. Binu G  
IT Infrastructure India

Earth observations for human settlements monitoring. So, this is also one of methods where observations related to the whole Earth is actually made. So, earth observations for human settlement monitoring, so how do you do that? How do you monitor how much of land, how much of human settlements on habitat is connected with the electrical supplies and has good network.

And all of this, this is very (03:56) job monitor from faraway places across the whole world. So, there are means and methods through which one can observe it. So, Earth observation actually refers to monitoring the planet using sensors in and around the globe, in and around the Earth. The group of Earth observation GEO is an intergovernmental partnership that provide open access to more than 400 million open EO data.

And information resources that are relevant for SDGs monitoring research policy decision making etcetera because we are emphasizing on data collection so how do you go for it because if you start monitoring it manually and it is next to impossible job to measure each and every aspect to its full accuracy. It may take a very long time plus there is lot of errors, there may be some limitations that the reporting agencies could not reach to this place that place etcetera.

So, there will be lot of errors and loopholes and gaps. So, you do not want that. So, this is where this comes to the rescue. The GEO work programme supports global SDG monitoring through the Earth observation in service of 2030 agenda of sustainable developments.

Specific work from SDG 11 includes assessing land use efficiency, monitoring public spaces, climate mitigation and adaption, disaster risk reduction.

So, if you see often offering greater use of freely available satellite imagery across each phase of the disaster cycle for preparedness and prevention as well as response and recovery because if something goes wrong like, for example, earthquake or maybe wildfire or maybe flooding etcetera, etcetera. How do exact these things. So, from satellite you can definitely zoom to any place you want and gather real time data.

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**SDG11**

**Box 4. Spatial Microsimulation Urban Metabolism (SMUM) Tool for modelling policy impacts**

Urban Metabolism is a way of looking at cities and all the resources that flow within their complex networks ("material flows") of interlocked social and physical infrastructure. It conceptualizes the city as living super-organism in which there are continuous flows of inputs and outputs and helps in the study of the patterns of movements of matter and energy. This supports cities in identifying opportunities for sustainable resource management and can be linked with infrastructure to find alternative ways of using resources sustainably.

One of the tools that UN Environment developed to address issues in cities challenged by data scarcity is the Spatial Microsimulation Urban Metabolism (SMUM) tool\*. SMUM contains two powerful approaches – spatial microsimulation (SM) and urban metabolism (UM) – to model the impact of policy around any number of resources, including water, electricity, construction materials, food, waste and others. The system can be fully adapted to suit the local requirements and policy priorities.

Using SMUM, a synthetic population may be constructed for a city-system. It can allocate consumption values to the individual groups allowing cities – including those in data scarce environments – to monitor the distribution of resource flows (where and what). This same information can be used as a scenario building tool to simulate the potential impact a policy change can have on the resource flow distribution.

\* <https://www.unep.org/urbanmetabolism>

UN SDGs

Dr. Vikas B  
IC Hyderabad India

Spatial microsimulation urban metabolism SMUM tool for modeling policy impacts well what is it urban metabolism is a way of looking at cities and all resources that flow within your complex network material flows of interlocked social and physical infrastructure. It conceptualizes the city as living super organism we have been discussing city as an organism in which there are continuous flows of inputs and outputs.

And helps in study of the patterns of movement as matter and energy. This supports cities in identifying opportunities for sustainable resource management and can be linked with infrastructure to find the alternative ways of using resources sustainably. One of the tools UN environment develop to address issues in cities challenged by data scarcity is spatial microsimulation urban metabolism SMUM tool.

It combines two powerful approaches spatial microsimulation and urban metabolism. The model to impact of policy around any number of resources including water, electricity,

construction materials, food, waste and others. The system can be fully adapted to suit the local requirements and policy priorities. Using SMUM a synthetic population may be constructed for a city system.

It can allocate consumption values to the individual groups allowing cities includes those in the data scarce environment to monitor the distribution of resource flow how the place is going to look how much inputs it needed, how much of output it will generate and all other. You can just simulate, you can understand it in that way and it can show you tentative picture.

It can be used to build that tool to simulate the potential impact and our policy change that can help manage that resource flow. So, it is an interesting and useful tool maybe you can look for it separately.

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Linkages between CPI, city prosperity and initiative this is the CPI and SDG 11 targets. So, these are the CPI sets, CPI sub dimension and CPI dimensions for dimensions productivity, infrastructure, quality of life, equity and inclusion, environmental sustainability, governance and legislation in that also you can see these sub dimensions local economic development, employment, municipal finance etcetera.

So, you can see 11 targets are here goal 11 targets 11.1 it is linked to infrastructure. So, sub dimension 4, 5 and 6 are related to 11.1 and similarly 11.2 is connected to urban mobility here in infrastructure, 11.3 is connected to urban land that is inclusive and sustainable

urbanization and so on. So, it is interesting mix what is there in this tool and what do we need for assessing the cities prosperity initiative.

And urban based targets from other SDGs you can see those are also linked over here 8, 9, 3, 6, 17, 15, 16, 1, 5, 8, 10, 3, 6, 7, 12, 9, 16, 17 etcetera. So, overall it gives you a comprehensive interconnection and linkages between goal 11 targets overall targets from all SDGs and the parameters of CPI. This will be helpful for your projects or assignment or maybe your further research and studies.

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So, let us see some interesting facts slum improvements. The proportion of the global urban population living in slums declined by 20 percent between 2000 to 2014. So, there was some degrees with the persistent and constant help from agencies towards creating decent living spaces, living you know buildings. So, some improvements that means it can be done even in the Indian cities also you may be seeing some positive changes.

So, what do we mean by affordable housing because one of the targets that is mentioned the first one itself how to provide affordable housing to everyone so that there are no slums that is the ultimate target. So for no slums you need affordable housing.

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**Box 4: Definition of Affordable Housing**

Affordable housing is generally defined as that which is adequate in quality and location and is not so expensive that it prohibits its occupants from meeting other basic living costs or threatens their enjoyment of basic human rights. Housing affordability is affected by many factors including capital variables such as land, infrastructure and building materials and occupational variables such as land leases, service costs and interest rates. However, when it comes to measuring affordability there are three common measures which fall into two components; housing cost and household income. These measures are basic price-to-income ratio, which is considered by dividing the median house price by the median household income. This measure shows the number of annual median salaries it takes to buy a median priced house. Countries with high land prices and construction costs tend to have high house price-to-income ratios, but other low-income countries with high housing market distortions.

The second measure under this category is calculated by dividing the median annual rent by the median annual wage household income. The World Bank and UN Habitat have defined a cutoff point at which rent-to-income or rental housing is deemed unaffordable, which has been used for tracking housing affordability over time as part of the agency's State of the Indian Programme. Housing is generally deemed affordable when a household spends less than 30 per cent of their income on housing-related expenses, such as mortgage payments, owners, rent, depreciation, and other operational expenses such as taxes, insurance and service payments.

**Table 3: Criteria for defining slums, informal settlements and inadequate housing**

Criterion	Slum	Informal Settlement	Inadequate Housing
Access to water	0	1, 2	0
Access to sanitation	0	1, 2	0
Structural quality	0	1, 2	0
Location	0	1, 2	0
Security of tenure	0	1, 2	0
Affordability	0	1, 2	0
Accessibility	0	1, 2	0
Cultural adequacy	0	1, 2	0

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Dr. Ravi K. of Habitat for Humanity

So, how do you define affordable housing I think that is given over here. So, first understand what is a slum? So, this is the criteria for defining slums, informal settlements and inadequate housing. So, slums if there is no access to water, no access to sanitation or no sufficient living area overcrowding. If no structural quality, durability or location and if no security of tenure or living.

If all of these are there that is a slum and how do you call it informal settlements if these four are kind of if you are able to check them access to water, access to sanitation, structural quality and tenure. So, only minus sufficient living over here that becomes informal settlement. Here inadequate housing if all of these are problematic are not getting solved that is inadequate housing not fit for housing.

So, no affordability, no accessibility, no cultural adequacy along with all of this it is totally inadequate housing. So, affordable housing is generally defined as that which is adequate in quality and location and is not so expensive that it prohibits its occupants from meeting other basic living cost or threatens their enjoyment of basic human rights that is an affordable housing.

So, this is the definition of affordability in the housing. Housing affordability is affected by many factors including capital variable such as land, infrastructure and building materials and occupational variables such as land leases, service cost, interest rates etcetera. However, when it comes to measuring affordability there are three common measures which fall into two components; housing cost and household income.



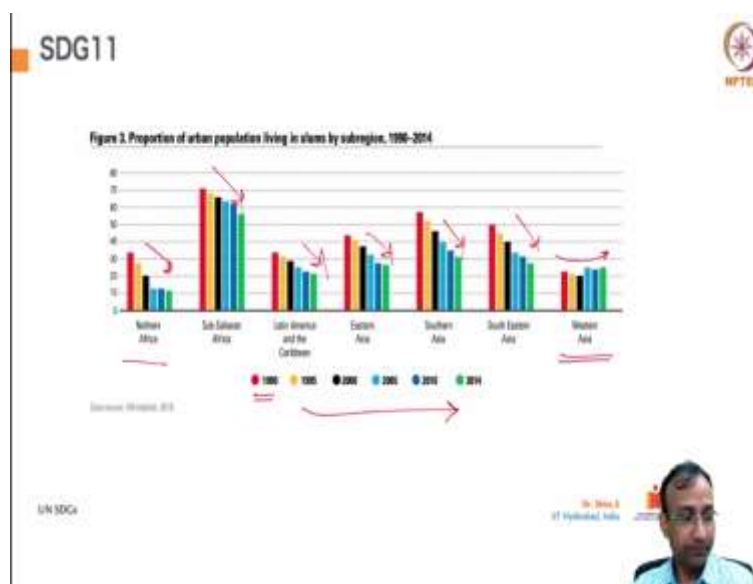
These measure are house price-to-income ratio which is calculated by dividing the median house price by median household income. This measures shows the number of annual median salaries it takes to buy up median price house, countries with high land prices and construction cost tend to have high house price-to-income ratio, but also low income countries with high housing market distortions.

So, what is your affordability and what is cost of kind of living unit. So, that is this median-to-median co-relationship. So, is getting actually established defined this affordability. The second measure under this categories calculated by dividing the median annual rent by median annual rent or household income. So, this was in the ownership, this is in the renting.

The World Bank and UN habitat have defined a cutoff point at which owner occupied a renter housing is deemed unaffordable which has been used for tracking housing affordability overtime as part of the agencies urban indicators program. Housing is generally deemed affordable when a household spends less than 30 percent of their income on housing related expenses.

So, if you are earning x 30 percent of x maximum should go towards your habitation cost. If it is going above this than there are issues such as mortgage repayments, rent payments direct operational expenses such as taxes, insurance, service payments. So, that is that bar, that is the threshold given. This is from UN habitat actually.

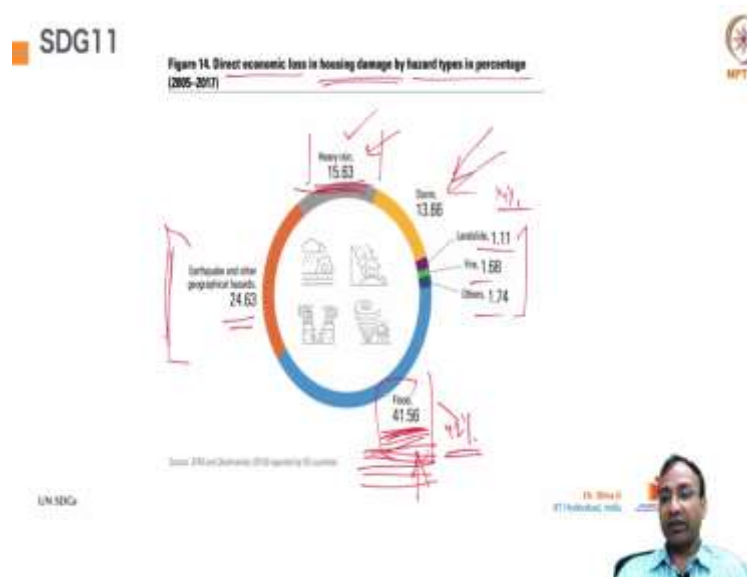
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Proportion of urban population living in slums by sub region I think we have seen it before, but yeah one more time. Northern Africa so if you see this represents the years and everywhere it is a good thing to see that it is declining with exception to Western Asia Middle East countries Gulf countries this has gradually actually is going up it looks that rest everywhere it is falling down. So, the population living in slums is slowly declining in an overall this thing overall world's average is not given over here.

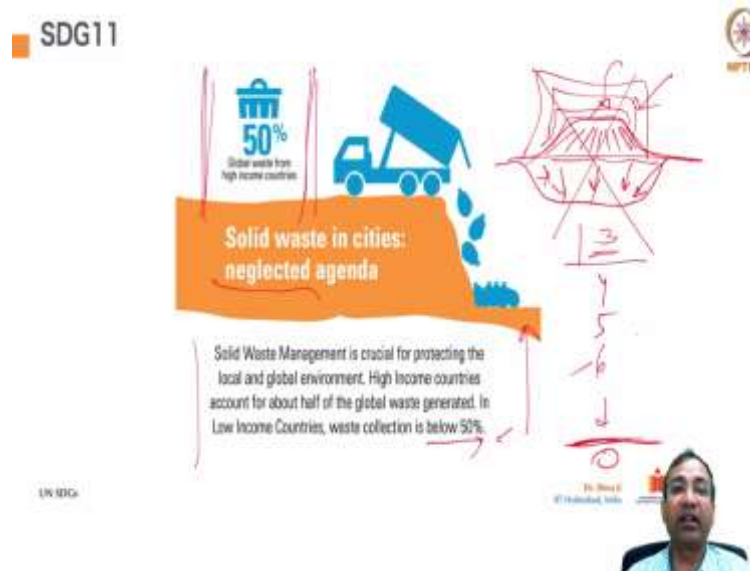
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Direct economic loss in housing damage by hazard type in percentage. So, hazard natural disaster and things. So, you can see the highest is by floods, 41.56 percent close to 42 percent housing damages is caused by flooding and then second highest by Earthquakes and other geographical hazards almost a quarter, heavy rains. So, the flooding and heavy rains if you just see these are two different categories types given over here.

So, heavy rains actually caused 15.63 percentage damages, storms almost 14 percent then landslides, fires and others in small ratios 1 percent, 2 percent under that. So, the major cause of concern is actually water related either in the form of flood or in a heavy rain and then comes the earthquakes. So, these are the two, three major types which are posing challenges with the fourth one storm at 14 percent.

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Solid waste in cities well another kind of not so properly address if I do not call it neglected, but not so efficiently managed also. So, many of the big cities if you see there are new hills have come up in those cities New Delhi or Bombay if you see what are those hills? Those are actually heap waste which is getting accumulated overtime, it was not just lying on the ground itself.

Previously also the land was dug off to fill the waste, it got finally filled up and now it is rising hill. So, there are several I think in Delhi as far as I know there are three locations where such sides have come up in the recent decade and in the Bombay also there are few places in many other cities. So, in nutshell if you see the effort should be to avoid these because there is no end to it.

You keep on adding, you keep on adding and you keep on adding numbers also maybe currently there are three locations you go for four locations, fifth locations, sixth location so there is no end to it. So, there must come end to it that there is zero of such sides. 50 percent of global waste from high income countries comes. So, you see how much they consume and how much they create waste.

Solid waste management crucial for protecting the local and global environment, high income countries accounts for about half of the global waste generated in low income countries where collection is below 50 percent. So, the rest of the 50 percent goes to informal disposal also rivers, lakes and just anywhere in any piece of land you find free and all of that.

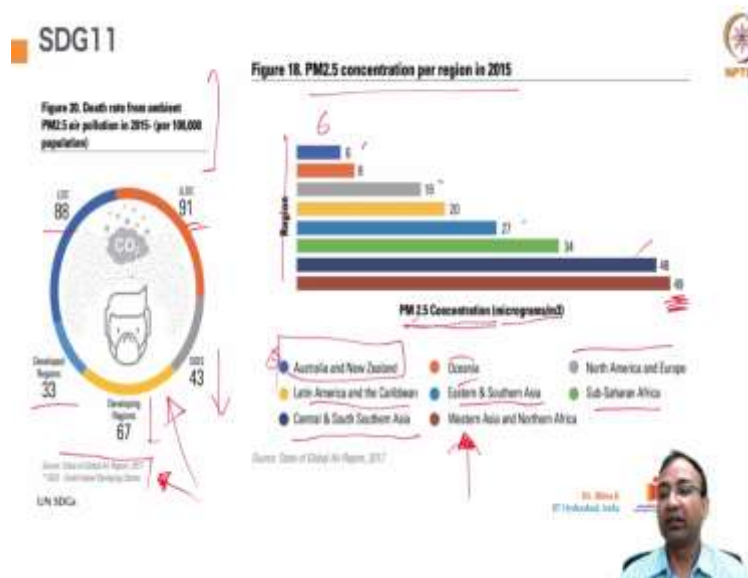
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On air quality 97 percent developing countries cities not meeting air quality standards. Only 3 percent are kind of okay zone such a dangerous level, 49 percent developed countries, cities not meeting air quality so close to half close to 50 percent. So, this is a very severe situation right now, majority of the year if you check any of these size who actually track of air quality you will mostly see bad air quality index prevailing in the cities and towns.

And it is really alarming if this is the percentage definitely it is alarming what can be more alarming than this, it is almost reaching 100 percent, timely an inclusive action by public authorities based on a multisectoral approach is required to address air quality the rapidly industrializing countries with large urban population, air quality is worse in developing countries than in developed countries. 97 percent of cities in developing countries do not meet air quality standards.

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Death rate from ambient PM 2.5 air pollution in 2015 per 1 lakh people you see this is the report source from this link state of global air report 2017 maybe you can refer for latest data. So, here CO2 LLDC 91, LDC 88, developed regions 33, developing regions 67, SIDS 43 and here we have PM 2.5 concentration per region in 2.5. Region specific Australia and New Zealand with the least at 6 to the highest from Western Asia.

And Northern Africa that Middle East region that region is the worst one 2.5 concentration if you see micrograms per cubic meter 49 to 48 in Central and South Southern Asia and then 34 Sub Saharan Africa, 27 in Eastern and Southern Asia, 20 in Latin America and Caribbean then we have North America and Europe at 16 then we have Oceania and then 6 on Australia and New Zealand so this is this distribution.

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SDG11

Public space including streets in cities is noticeably reducing

Public Spaces including streets have economic and health benefits. Streets as public spaces can be less than half in some areas compared to the rest of the cities. Streets are the heart of the city, yet they have reduced by 4% in the last 20 years. A third of cities are not planned. 30% of cities are not laid out at all.

breath: Open

UN SDGs

Dr. Binay K. Ghosh  
NPTEL

And even public spaces in a open spaces, free spaces are also reducing since the density is increasing. So, one of them major concern where is the building space some breathing space, some open space where one can go and sit comfortably and there maybe some good percentage of maybe trees, grass lands an open space. Those are the lengths you can call of the city that is also reducing.

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SDG11

National Urban Policies

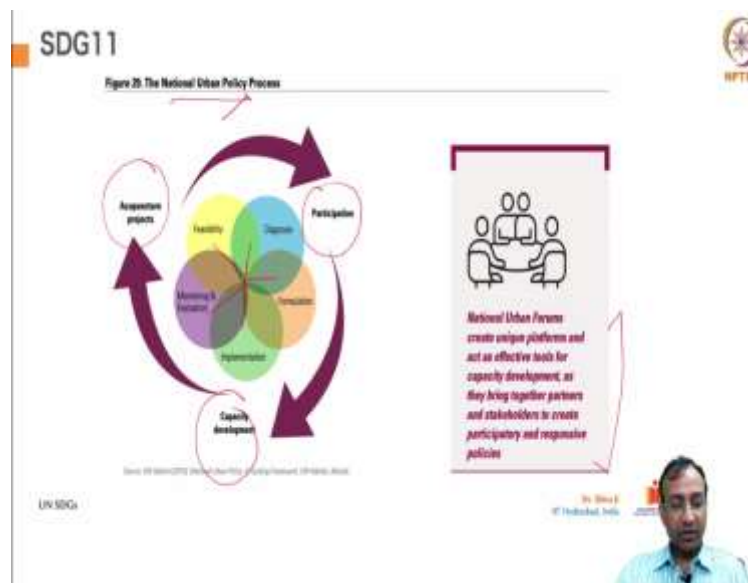
Since Habitat III, there is a one third increase in countries with National Urban Policies. Up to 180 countries are implementing National Urban policies. The spatial structure and economic development of cities are the most prominent components of these national urban policies.

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Dr. Binay K. Ghosh  
NPTEL

National urban policies NUPs. Since habitat 3, there is a one third increase in countries in national urban policies up to 180 countries are implementing NUPs. The spatial structure and economic development of cities are the most prominent components of these NUPs.

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So, what is this process of NUPs? We can see from here. Participation to capacity development to accupuncture projects then again participation then again capacity building and that. So, it is a cyclic in process and in this these are the steps diagnosis, formulation, implementation, monetary evaluation, feasibility etcetera. So, it gives interesting and unique platform to sit and discuss and derive this is from UN habitat.

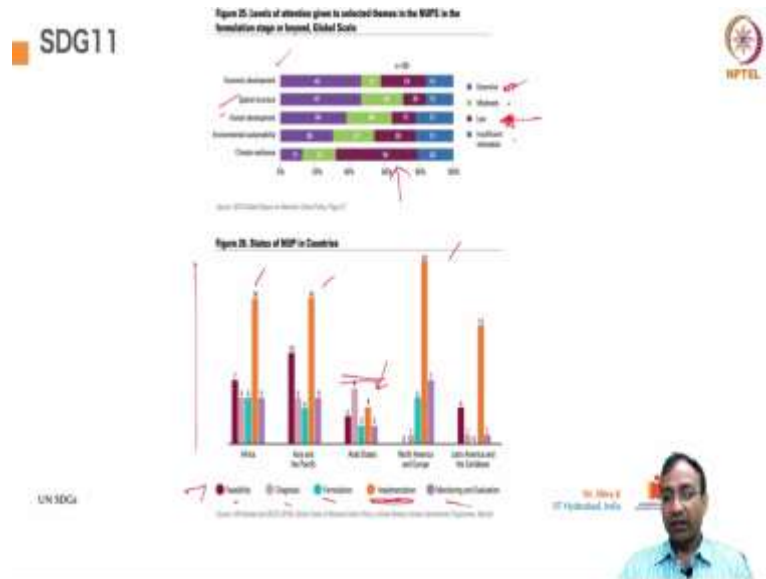
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Countries supported by UN habitat and NUPs policies you can see over here. Majority of the countries from global south these are part of these NUPs. So, a lot from African, many from Southern America, some from Central America and then South Asia, Sri Lanka, India,

Bangladesh, Afghanistan, Myanmar, Vietnam etcetera and then a few from Europe only two I see Sweden and Serbia.

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Levels of attention given to selected themes in NUPS in the formulation stage or beyond global scale. So, extensive, moderate, low insufficient. So, extensive if you see is given for economic development, spatial structure, human development, climate resilience I think focus is more on low on this 56 percentage. So, this is this distribution status of NUPs.

So, you can see the (( ))(23:46) over here feasibility, diagnosis, formulation, implementation, monitoring. So, mostly I see implementation is on the higher scale 16, 16 only here Arab states it is very less. I think all are at very low level and Northern America and Europe also it is high 20 and 13 over here.



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**SDG 11**

**Sustainable and Resilient buildings**

Construction and use of local materials contribute to sustainability development. Local materials provide efficient ways for energy conservation and protection from disasters. In developing economies between 7 and 10% of the labour force are involved in residential construction.

UN SDG

Dr. Bhaik  
IIT Hyderabad, India

Coming down to buildings. So, construction and use of local material one of the features we discussed strategies for sustainable design. Local material provides efficient ways for energy conservation in protection from disaster and developing economies between 7 percent and 10 percent of labor force are involved in residential construction.

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**SDG 11**

**Placing housing at the centre**

Investment

Innovation

Adoption of the POST 2015 AGENDA

There is need to invest in cities to address socio-economic inequalities, social exclusion, extreme poverty, high unemployment, poor environmental conditions, and drivers of climate change.

Housing can play a central role in ensuring sustainable development of cities and communities. This requires adoption of policies, strategies and legislation.

UN SDG

Dr. Bhaik  
IIT Hyderabad, India

So, innovation been one of them major disruptive potential initiatives should come up more and more because if we keep on moving on the same gradual pace and it is very slow and steady. We need the same exponential intervention rates also to bringing big changes. Placing

housing at the center, housing can play a central role because is one of them is the biggest consumers and emitters. So, it carries the largest potential also.

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You may be aware India has started more than 100 smart city projects and these smart city projects are driven by technology. So, in any and all of those fields smart city may be you can search for this separately what are the features of smart city? So, most of them you will find are coming through technology that is why this name this smart it comes from technology utilization not just transportation many other things.

And not forgetting the culture even with this fast phase of growth and development. One should not forget their culture, the culture of this land, culture of this place which is coming down from last thousands of years that is very essential for your own identity of people the communicates and you must work for preserving culture and heritage also which has been part of this as in native identity.

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**SDG11**

**Waste management makes economic sense**

When local authorities develop solid waste management systems, they not only improve the environment, but promote youth and women employment, contribute to energy saving, and reduce CO<sub>2</sub> emissions.

**Improvement in data collection mechanisms have helped capture levels of air pollution**

and its adverse effects on human health worldwide, although there is need for increased investments in collection of high resolution data on air quality in cities including use of earth observation techniques.

UN SDGs

Dr. Manoj K. J. Hyderabad, India

NPTEL

Waste management makes economic sense. How to manage our waste we saw how landfills (( ))(26:31) huge production of waste is happening. So, managing this thing, improvement and data collection mechanisms. So, if we work towards capturing this real time data will be able to tackle it.

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**SDG11**

**Public spaces are the heart of the city**

Cities function in an efficient, equitable and sustainable manner only when private and public spaces work in a symbiotic relation to enhance each other. Public space generates equality, sense of belonging and identity. Local authorities should plan in advance sufficient public space well distributed in the city. Streets are a key factor in the quality of life, the most important and immediate type of public space.

**Security and safety**

With city growth comes increase in crime and safety concerns due to concentrated populations. Urban centres that demonstrate robust safety and security strategies and adopt appropriate technologies will be better able to leverage new investments and improve quality of life.

UN SDGs

Dr. Manoj K. J. Hyderabad, India

NPTEL

Public spaces, we discuss are the heart of the cities any cities open spaces, free spaces if you remember you have been, a lot of people actually gather that in the free time in the evenings or on Sundays and they enjoy. So, both are breathable spaces where you can go for relaxing

yourself. So, it has not just direct physical benefits such as fresh air and water and all, but it has psychological relieving abilities also. Overall, maintaining security and safety.

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**SDG11**

### Strengthening local and global partnerships

Partnerships need to be established with UN Agencies, space agencies, universities, private sector, civil society with the aim of enhancing the reach and possibilities of scaling up implementation and global monitoring efforts for SDG 11 targets and indicators.

UN SDG

NPTEL

Strengthening local and global partnerships. So, not sitting in isolation, but engaging ourselves with the different organizations or different workabilities and exchanges.

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### Sustainable cities and communities

#### Challenges

- The rapid and often unplanned organization and often unplanned organization is getting witnessed worldwide has led to increase pressure on the environment
- Due to the rapid increase in population, housing and economic activities, cities are particularly vulnerable to climate change-related hazards
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#### Solutions

- The SDG 11 target is to make cities and human settlements inclusive, safe, resilient and sustainable
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NPTEL

So, finally we have come to the last slide. So, some challenges and solutions listed by human environment. So, we saw very rapid organization and often unplanned organization is getting witnessed worldwide has led to increase pressure on the environment. So, what can be done

very simple promote sound urban planning. So, control planning manage planning is the I think way to deal with this (( ))(28:14) to going for such type of buildings.

Low cost transportation system, green spaces, sustainable lifestyles. Lastly, our cities accounts for up to 80 percent of energy consumption as well as 75 percent of global waste. So, definitely wherever the problem you fix that problem I think it will give you the solution. So, directly invest in renewable energy, waste management, sustainable and green infrastructure so that these things are taken care off.

Due to high concentration of people infrastructure, housing and economic activities, cities are particularly vulnerable to climate change and natural disasters. So, the more concentration and more haphazard development, the more changes of getting it impacted in any risk or disaster scenarios. So, protecting cities which are important for social cultural economic benefits from environmental and climate threats and planning and going for disaster risk reduction, resilience and all of those things.

So, that it can be taken as that curve the city has its own capacity to deal with any or all eventualities which might happen in a corrective and wholesome manner. So, we saw under SDG 11 there are huge number of things and tasks to handle and this is one of the futuristic targets areas also of cities since cities are growing everywhere. So, wholesome and attentive efforts are needed to deal with this. So, with this we have come to the end of you know this module. So, thank you all for joining see you in the next one.