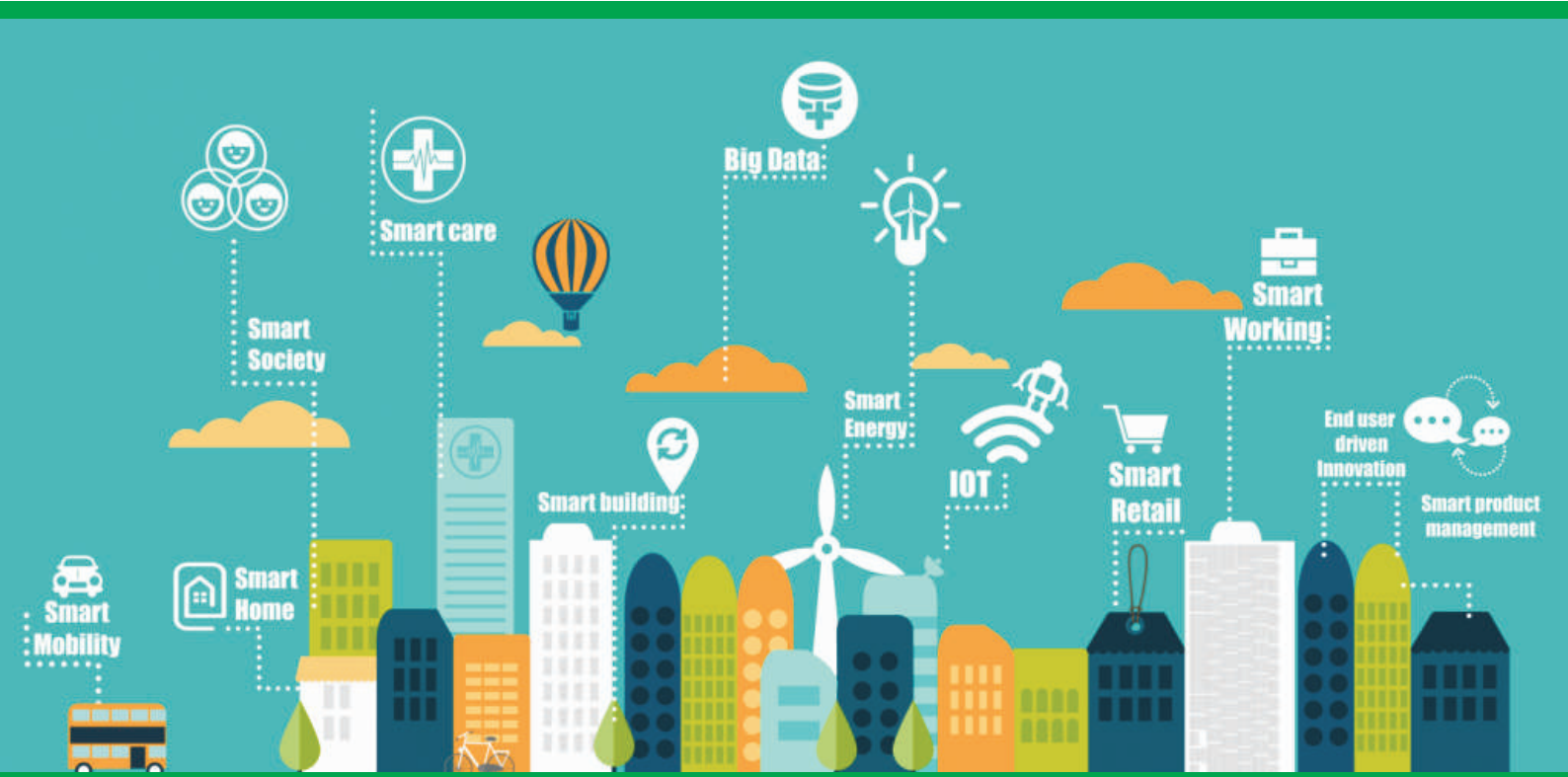




World Environment Day 2016

on 7th June, 2016



Awareness Workshop on Implementation of Sustainable Development Goals

PROCEEDINGS

Organized by
Climate Change Research Institute

Jointly with





World Environment Day – 2016

Awareness Workshop

On

Implementation of Sustainable Development Goals

Organized by

Climate Change Research Institute

On

June 7, 2016

Jointly with

Climate Change and Human Settlement Centre,

School of Planning & Architecture

&

India International Center

World Environment Day 2016

Awareness Workshop

On

Implementation of Sustainable Development Goals

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Preface



The 17 Sustainable Development Goals put forward by the United Nations have 169 Sub-goals. Goal SDG 17 aims at the means of strengthening the implementations of other SDGs, this we find quiet important because science and technology will play a greater role in developing the methods for achieving these goals, like new technologies get developed. Similarly there is a role of science and technology in developing science policy-society-interface for the benefit of all peoples and need for capacity building. We have to work on technology facilitation mechanisms, the role of innovation and look for the opportunities of converting science and technology applications as well as business prospects for achieving the goals of sustainability.

The Climate Change Research Institute (CCRI) organized the Awareness Workshop on **Implementation of Sustainable Development Goals** at the India International Centre, New Delhi on 7th June 2016 to celebrate World Environment Day. At CCRI we feel proud that Dr. S. Y. Quraishi, Former Chief Election Commissioner of India, could make it to the workshop in spite of his very busy schedule. I am personally indebted to our Chief Guest for his inspiring address. I convey my sincere thanks to Prof. D. P. Agrawal, Former Chairman, UPSC and other eminent Panelists Prof. Meenakshi Dhote and Prof. G. D. Sharma for sharing their experiences and thoughtful insights.

I thank Shri A. K. Jain, Ex-Commissioner, Planning, Delhi Development Authority (DDA), who delivered the Second 'Environment and Earth Care' (EEC) Series Lecture on **Sustainable Green and Smart Cities** and raised many pertinent issues. Presentations were made by Research Associate and Master's Student from School of Planning and Architecture. My thanks are due to Climate Change & Human Settlement Center, SPA and India International Centre for the support. We thank Ms. Premola Ghose, Chief Programme Officer, for providing the platform and IIC for excellent facilities for the workshop.

Dr. (Mrs.) Malti Goel
Climate Change Research Institute

Executive Summary

In a Social Responsibility Initiative the Climate Change Research Institute (CCRI) organized an Awareness Workshop on the theme “Implementation of Sustainable Development Goals” on **World Environment Day 2016** in collaboration with Climate Change and Human Settlement Centre, School of Planning & Architecture and India International Centre, New Delhi on June 7th 2016. It is one of the first such workshops held in India to focus on the Goal 17 of SDGs.

Dr. Malti Goel, President & CEO, CCRI introduced the theme and said that we are committed to take actions for reducing carbon footprints by application of science & technology. Sustainable Development Goals (SDGs) provide a vast canvas of activities. There are 17 SDGs proclaimed by United Nations with 169 sub-targets to be achieved by 2030. In this meeting the focus is on **SDG 17** i.e. on means to strengthen implementation of SDGs. In this context the topics Sustainable cities and Urban areas covered in SDG 11 and Waste management & Natural Resource conservation covered in SDG 12 are being deliberated.

Prof. D.P. Agarwal, Chairman of the Governing Council of CCRI chaired the event. In his special address he laid emphasis on the importance of waste reduction and management as an important SDGs strategy. Associated with urban actions are issue of education, issue of poverty alleviation, issue of water consumption and others. Urban population is growing; smart city development is gigantic task before us. Technology for solid waste management should be adopted to reduce piles of waste getting collected. Planning for cities should be sustainable and green buildings constructed. He praised that a number of Awareness workshops on Green and Sustainable Buildings since 2011 by Climate Change Research Institute has organized.

Inaugural address on this day was delivered by **Dr. S.Y. Quraishi, Former Chief Election Commissioner of India** who highlighted the needs for reducing consumption and conservation of natural resources. He said water crisis is one of biggest threat looming before us. He advocated for taking planned actions in all walks of life. He also related the untiring efforts made by him in conservation of resources and

cited examples of having regulations for reducing consumption during elections in terms of fuel consumption by reducing number of vehicles, reducing paper consumption and controlling noise pollution. Awareness has been largely missing in taking conservation measures. He cherished this initiative of the Institute on World Environment Day and released the **Climate SAR on Green Buildings**, a **Bulletin** of the Institute to disseminate scientific facts among wider strata of Society.

Shri A. K Jain, Ex-Commissioner (Planning), DDA delivered the Guest Lecture on the **Sustainable Green and Smart Cities** on this occasion, which was well appreciated. Prof. Meenakshi Dhote, Head-Environment planning Division, (SPA) delivered the lecture on “Urban & Environment Planning Strategies” for Implementation of SDGs. Dr. Dhote presented urban guidelines and how these can be converted to develop toolkits for sustainable development. Shailendra Kumar and students of Masters in School of Planning & Architecture presented “Strategies to enhance the ecosystem services of Asola-Bhatti Wildlife Sanctuary, Delhi” and “Sustainability guidelines for planning of IMT-Rohtak” as SDGs initiatives respectively.

Students and Environment Activists participated in large numbers in the interactive discussions.

Introductory Address



Dr. (Mrs.) Malti Goel, CEO, Climate Change Research Institute (CCRI)

Good morning to everybody and it's a pleasure for me to welcome all distinguished guests. We are really blessed by their presence here on the Dais and also distinguished eminent invitees and delegates' off the Dais. For the World Environment Day program, our theme this year is Sustainable Development Goals (SDGs). This is for appreciating India's commitment for SDG's and for seeing the role which science and technology can play in their achievement. The UN SDG's adopted on 15th September 2015, replacing the 8 Millennium goals which were there from 2000 onwards adopted by United Nations, are concerned with all sustainability or sphere of activities to be achieved by 2030. The Paris Agreement on Climate Change was signed during December 2015 for which the deadline is also 2030 to achieve the climate change abatement commitments. Hopefully we can expect a world as peaceful and calm in 2030 with less of disparities amongst the people. The Climate Change Research Institute is among the first in discussing Implementation of SDGs in this workshop.

I recall in 2013, we had a workshop on 'Solar Rooftop' jointly with the India International Centre and we discussed many possibilities. Despite India being a Solar rich country not much capacity had been achieved then. In 2014 the government launched new targets to have 100 GW of solar energy by 2022 and a Solar Rooftop programme of 40 GW. A number of solar projects are being launched. The prices are coming down. If we say, today we have thousands of generators of electricity in the country, there will be millions of generators of electricity through solar rooftops soon. The perspective for electricity

generation and distribution would change drastically. We had 'Smart Cities' workshop in January 2014 and you will recall and at that time some of the experts said that in their life, Delhi can never be a 'smart city' because of encroachments everywhere. It was suggested that the smaller cities and newer cities can better adopt to 'smart cities' quickly. We at CCRI discussed various possibilities and examples in India and were confident that 'smart cities' are our future. Within 6 months of this workshop a Mission on 'Smart Cities' was launched in India and the perspectives have completely changed among the people about the future cities.

In today's context, 17 Sustainable Development Goals (SDGs) put forward by the United Nations have 169 sub-goals. There are many areas which are of great concern. We proposed to discuss SDG 11 to make cities re-silent and sustainable. This is the topic of our Guest Speaker Sh. A.K. Jain, former Commissioner of Delhi Development Authority. We have Prof. Meenakshi Dhote, Head of the Environmental Planning Division of School of Planning and Architecture who is also heading the Climate Change & Human Settlements Center there, she will be also talking about the same topic of SDG 11. We know that cities no doubt will go along way to play an important role in achievement of these goals then. We shall also discuss 'SDG 12' to ensure Sustainable Consumption and Production. It has 5 sub-goals including reducing generation of waste and our Chairman's addressed will be covering on this topic. A sub-goal 12 of SDG 12 is on efficient use of natural resources, which is the theme of the *Inaugural Address*.

Goal SDG 17 aims at the means of strengthening the implementations of other SDGs, this we find quiet important because science and technology will play a greater role in developing the methods for achieving these goals, like new technologies get developed. Similarly there is a role of science and technology in developing science policy-society-interface for the benefit of all peoples and need for capacity building. We have to work on technology facilitation mechanisms, the role of innovation and look for the opportunities of converting science and technology applications as well as business prospects for achieving the goals of sustainability.

In the end, a few words about the Climate Change Research Institute. The institute has a vision to become a Center for Excellence on human resource development. It is taking sustainability initiatives for creating awareness and undertake capacity building activities for youth and for society in general and also for the researchers at all levels, about of topics related to environment and climate change. We held capacity building workshops on emerging topic of carbon sequestration, hoping that there will be a policy on CO2 sequestration very soon by the government of India. I am sure that the policy will also come like the examples set earlier about 'Smart Cities' as well as the 'Solar Rooftop'. We thank Climate Change & Human Settlement Centre, School of Planning & Architecture and India International Centre for joining hands. I now invite Chairman Prof D. P. Agrawal to give his address on Waste Management Strategies.

Chairman Address
Waste Management Strategies



Prof. D. P. Agrawal, Chairman, Governing Council, Climate Change Research Institute

Good morning, welcome to you all for the World Environment Day discourse. As already mentioned by Dr. (Mrs.) Malti Goel, we are discussing three of the UN Sustainable Development Goals (SDGs) which have some of the key elements touching all aspects of the human development. It is not easy for one person to maneuver to all of the SDGs. I am happy that the Climate Change Research Institute has been regularly organizing 'World Environment Day' campaigns and looking at some of the aspects of pollution and environmental degradation, it has also looked at the impact of solid waste generation and its management as Environment and Climate Change Lecture. I am going to delve on it in relation to SDGs and India's role.

Urbanization in India and in the World is growing rapidly. It is expected that in the next 20 years more than 50% population will be in the urban areas. An assessment indicates that by 2020, the solid waste generation could be something about 10 million tons in India. It covers all activities of human life, whether industrial activities, family activities or any such thing which generates pollution and the solid waste. Add to that is the e-waste which is piling up enormously at least in the last 15-20 years. E-Solid Waste Management is more difficult to manage. The question is that the government policy of 'smart cities' may lead to migration of people from rural areas to urban areas, because these cities would provide quality of life to people where they can live happily.

In my opinion there are two different definitions of 'smart cities'. First, smart cities are the intersection between competitiveness, capability and sustainability. Smart cities should be able to provide good infrastructure and this means sanitation, water and solid waste management systems as well as social services such as health, education and delivery of government services or utility services to the city. The focal point is life, that should become comfortable. If we look at the cities the main platform on which there cities are to work is going to be ICT platforms, 'Internet of things' is going to be most critical even if part of these objectives or the smart cities to be met. Smart cities are important, because there would also be a support system to look at how the government services and the private services which are given the task to provide some of these facilities could be utilized without being under lot of pressure. There would be green buildings, disaster management would be crucial issue and transportation & traffic planning would be critical.

The Climate Change Research Institute has organized workshops already on the subject of Green Buildings. Keeping these objectives in mind; in trying to focus on the solid waste management, I compared what was the system so far and what is going to be system in future. In my view only about 50% waste is collected and remaining 50% is not, so we see the filth all around and scattered material along the roads in these cities and remaining is dumped in Landfills. Ten years ago waste utilization by conversion of waste into energy was planned in Delhi. There are mainly three broader areas through which the solid waste collection and management processes are dealt; one could reuse some of it or recycle it, some of it can be converted into the bio-products or can be used as energy pellets and thirdly it is possible that can reduce the solid waste generation.

The focus of today is that how to reduce the waste generation, whether it is the building, human and industrial activity. Consciously we would have to design a technology in such manner that we cut down the production of the solid waste, which is going to be top agenda in the future of solid waste management. One should cut down 60% to 70% of solid waste generation, by use of appropriate technology. Selection process of technology is a major task, it will take time for new technologies to come and these technologies would have to be assimilated for adapting in our system. It requires lot of work because these technologies are from developed countries and do not match or adapt to our culture,

because many of the issues related to solid waste depends on the quality of life. For example we hardly find of the developed countries where certain festivals generate lot of solid waste like Durga Puja etc. Secondly, these technologies must be sustainable technology. It is going to take at least 10-15 years before anything which is substantial is going to happen.

Another task is to create awareness among citizens and they must realize it that their effort is going to be complementary to the agencies which are in the business of doing waste management through education, awareness, social media, web and mobile communication. All these techniques and tools are available where citizen can become partner in this movement. The trucks which carry the waste and kind of conditions of these trucks run with waste uncovered and falling everywhere require proper maintenance and coverage. Sensors can be put on the collected bins. It's a very simple system that it can tell you that how much is the waste in the bin and one can programme at what time of the day most likely the areas to dump the waste. It is not always that all 24 hours that the solid waste is being put in these bins or dumps. Therefore, it would be able to prepare map for collection of these bins which have been filled up. Proper utilization is one of the point which Dr. Malti Goel has made that one of the objective is to utilize the resources properly and it is also one of the objectives towards the Sustainable Development Goals. It is very useful in terms of managing waste, sensitizing people of their responsibility, educating children in the schools and through them involving their parents.

As a Chairman of the Governing Council of the Climate Change Research Institute, I extend a warm welcome again and wish that we will be able to meet the commitment that the country has made. I am sure that if we put all our heads together we shall be able to meet these objectives. Thank you very much.

Inaugural Address

Needs for reducing consumption and conservation of natural resources



Dr. S. Y. Quraishi, Former Chief Election Commissioner of India

Dr. S. Y. Quraishi delivered the Inaugural Address. He shared his experiences about various initiatives taken by the Haryana government on Water Conservation and Waste Management under his guidance as Secretary, Power and Irrigation. He said that while we generate so much waste, there is no utilization of it in power generation. Dr. Quraishi recalled the waste-to-energy plant in Netherlands and said that he was amazed to see a very clean plant there and very few persons in a huge building. He said, 'we could hardly find a person running the 200 MW power plant from a computer control'. When we went behind the building and found only 4 or 5 persons there. Coming from India and we found it extremely unlikely that such a big plant was being managed without many persons.

We need to have power plants for waste utilization in India. In this context, the current policy of the government likes 'Swacch Bharat Abhiyan' being promoting is important. India ranks 125 among the 132 countries and very low on 22 sustainability indicators including air and water pollution, climate change and bio-diversity etc. Switzerland is on top and even Bosnia, Libya and Cost Rica are above India. We have been hearing that next world war will be fought on water. I belonged to the State of Haryana which has a long standing dispute with Punjab on Satluj Yamuna Link. We have Western Yamuna Canal and Eastern Yamuna Canal and disputes between Haryana and Delhi & Uttar

Pradesh. 70% of rural water is below on W.H.O standard. Nearly 80-85% of all diseases are supposed to be caused by contaminated water. In sanitation, statistics indicate that 70% of houses were without access of sanitation and 82% of rural population was without toilet and 60% of world defecators live in India. Kind of urgency that is required to resolve these is not happening.

He shared some thought about Green Elections as Chief Election Commissioner of India. A conference was held on 25th Jan 2012 on National Water Day and Smt. Meera Kumar, the speaker in her speech suddenly mentioned that India has Green Elections. At that time, we were not conscious that we are doing green elections, but it was a good thing that we were doing it routinely & normally. We have started using Electric Voting Machines (EVMs) and we saved almost 11000 tons of papers every year which means we could save 2.80 Lac trees.

Then water is consumed to make paper and as we save power, water is also saved. There is saving of coal and environment. The election has become lately, noise pollution free, because of the regulation was introduced that after 10 PM no election speech will take place until 6AM. We do not allow defacement of any property and do not allow political parties and candidates to paint on buildings. The political parties have said that these restrictions have killed festival of democracy. The one news anchor wrote even an article in Hindustan Times on this. We had to counter act by writing an article that let democracy allow loud speakers 24 hours in your home, political parties will come and paint your walls and please don't complaint against the Parties.

In the elections we succeeded in getting record turnouts highest ever in history all by persuasion and awareness education. We persuaded that if you don't vote then you get the government which you deserve but if you go for vote then you will get the government you desire. We don't allow plastics at all in campaign, banners and posters, because earlier so much plastic was used in elections. Not only in elections, but in our day to day activities use of plastic bottles need to be reduced. In meetings, instead of small bottles for each person, bigger bottles can save so much plastic waste. These kinds of small things which matter individually and collectively even industry would notice it.

We find that lot of attention is being given to develop ways to reduce waste, collect waste and recycle waste in countries abroad. There are colorful bins for plastics and other waste etc. I think we need to have awareness workshops to take these things seriously and we need to work together. Dr. Quraishi recommended this initiative and complimented the Climate Change Research Institute for the work being done to create awareness and education about critical environmental issues.

Thank you very much.

Theme Address

Urban & Environment Planning Strategies



Prof. Meenakshi Dhote, Head, Department of Environmental Planning, School of Planning and Architecture, and Head, Climate Change & Human Settlements Center

Prof. Meenakshi Dhote presented Environment Policy of Govt. of India 2006 and URDPFI Guidelines were notified in 2015. It makes us arrive at something like a toolkit for achieving the Sustainable Development Goals (SDGs). She said there are two points that I wanted to emphasize upon. The sustainable development concept was first put across in black & white with the understanding that it includes almost all faces of development we come across. We have been working on lot of documents and policies that have been formulated by different departments. We have to implement these now and brought them on into focus in an integrated manner. We have 17 SDGs which starts with poverty, hunger, good health, quality education, gender equality, other social aspects and clean energy, sustainable cities, climate, production etc. But, if we want to achieve these SDGs we have to work together. Second point is, it must be understand one is not exclusive of the other. We may be emphasizing on one goal, but we need to understand how it impacts the other goals and whether it takes them forward to a better quality life.

If we look at the objectives of the national environmental policy 2006, it talks about conservation of critical environmental resources, both the natural and manmade heritage, life support, livelihood and economic growth are conceptions of human well being. Inter-

Generational Equity is the second objective of livelihood security of the poor and ensure equitable access to environmental resources in quantity and quality for all section of society. Integration of environmental concerned and economic social development, and governance because one at the SDG goals is also dealing with the governance, rationality, accountability, reduction of time & cost, participation. If we fulfill each of these terms then we develop indicators in our project scheduling and see how much we have achieved. We have to look into technology, management skills, traditional knowledge, social capital etc. and mutually beneficial multi-stake holder partnerships between local communities, public agencies, academy, research communities, investors and multi or bi-lateral development partners and we need to implement them.

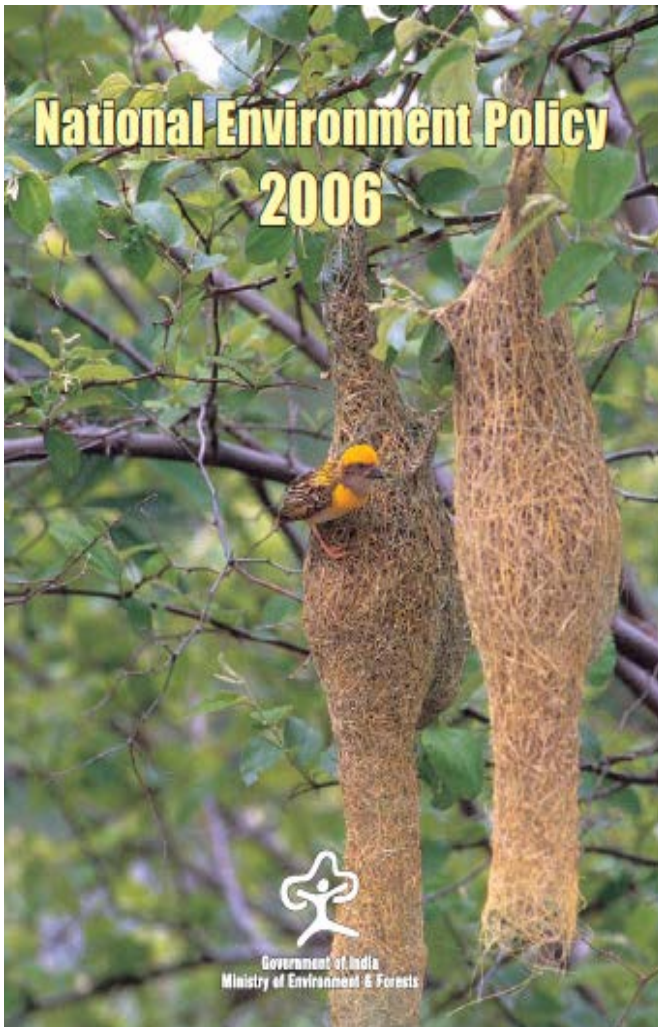
Looking at urban and regional formulation and implementation guidelines, the trends is urbanization. We had 5,000 towns in 2001, and in 2011 these are closed to 8,000. If we look at the size of various classes of the urban areas, class V which is 5,000 to 10,000, class VI which has a population of less than five thousand have been a growing. Also if we look at million plus cities, their population is going up by 48 percent, whereas class I cities as 34 percent. Urbanization is a future because urbanization is also an indicator of economic growth and there are statistics which says 50 percent will be urban. We need to see how we plan a city very carefully, because they hold the key to Sustainable Development Goals in the 2030 which is not very far.

Therefore, we need to look at our strategies about how to address the sustainability. Perhaps, we need to look at the way plans are formulated. If we want to implement SDGs, we have to have an inter-disciplinary approach. The smart city programme has developed certain benchmarks. We have a number of plans like; mobility plans, city development plan, city sanitation plan, disaster management plan, tourism master plan. These sometimes have five years vision, sometimes 20 years vision. We also need to have targets for five years, ten years and we have to set benchmarks. Unless, there is a monitoring mechanism in place, we will not be able to have successful implement action. We must make inter-disciplinary teams, in order to achieve sustainable development goals.

Tools in the field of Spatial Environmental Planning



URBAN AND REGIONAL DEVELOPMENT PLANS FORMULATION AND IMPLEMENTATION (URDPFI) GUIDELINES 2015



OBJECTIVES OF THE NATIONAL ENVIRONMENT POLICY

i. **Conservation of Critical Environmental Resources:**

To protect and conserve critical ecological systems and resources, and invaluable natural and man-made heritage, which are essential for life support, livelihoods, economic growth, and a broad conception of human well-being.

ii. **Intra-generational Equity: Livelihood Security for the Poor:**

To ensure equitable access to environmental resources and quality for all sections of society, and in particular, to ensure that poor communities, which are most dependent on environmental resources for their livelihoods, are assured secure access to these resources.

- *continued*

iii. Inter-generational Equity

To ensure judicious use of environmental resources to meet the needs and aspirations of the present and future generations.

iv. Integration of Environmental Concerns in Economic and Social

Development:

To integrate environmental concerns into policies, plans, programmes, and projects for economic and social development.

v. Efficiency in Environmental Resource Use:

To ensure efficient use of environmental resources in the sense of reduction in their use per unit of economic output, to minimize adverse environmental impacts.

vi. Environmental Governance:

To apply the principles of good governance (transparency, rationality, accountability, reduction in time and costs, participation, and regulatory independence) to the management and regulation of use of environmental resources.

vii. Enhancement of Resources for Environmental Conservation:

To ensure higher resource flows, comprising finance, technology, management skills, traditional knowledge, and social capital, for environmental conservation through mutually beneficial multi-stakeholder partnerships between local communities, public agencies, the academic and research community, investors, and multilateral and bilateral development partners.

Framework for a Renewed Planning System

The framework of effective Spatial Planning needs to incorporate certain major issues, which, subject to local variations, can be listed and categorized as follows

- Current principles, practices and issues in preparation and implementation of plans at National, Regional and Local levels so as to harmonize the same drawing on the best practices.
- Analysis of the latest trend in the Urban Development scenario.
- Address relevant issues related to peri-urban planning regions.
- Compilation and analysis of the relevant data available from Census and other sources.
- Urban development issues, especially in newly formed states and backward areas.
- Need for uniformity in planning system in the country.
- Streamlining of planning practices.
- Requirement of coordinated efforts between Department/Authorities.
- Legal, funding and decision making aspects in implementation of plans and projects.
- Promoting rapid urbanization and responding to the impact of climate change.
- Economic aspects of plan implementation while preparing land use development plans.
- Promotion of sustainable development with focus on planning for people, Environment and Financial viability principles.
- Inclusive planning, people's participation and specific issues relating to the elderly, women, the differently abled and the weaker sections of the society.
- Attention to Transit Oriented Development (TOD).
- Planning for and integration of Peri-urban areas in the planning process.
- Influence of industrial areas, such as SEZs, on spatial and urban development.
- CRZ policy and Coastal management in case of coastal cities.
- Special issues of urban development in hill areas.
- Provisions for Affordable housing.
- Safe disposal, mainly by way of recycling and reuse, of solid and other wastes.
- Adoption of geo-spatial data and technology in the planning process.
- Defining measurable benchmarks and milestones for the plan.
- Arrangements for periodic monitoring and evaluation of the implementation of the plan.
- Integration of sector specific plans among each other and in overall spatial planning.

Growing trends in population in cities

Class	Definition (Population)	Census 2001			Census 2011			Decade Growth Rate 2001 - 2011	
		No. of Towns	Population	% of Urban Population	No. of Towns	Population	% of Urban Population	No. of Towns	Population
Class I	>1 lakh	394	196.3	68.7	468	264.9	70.2	18.8	34.9
Of which,-									
Below Mn+	1 to 10 lakh	359	88.0	30.8	415	104.2	27.6	15.6	18.4
Million Plus cities	>10 lakh	35	108.3	37.9	53	160.7	42.6	51.4	48.4
Of which,-									
Mega cities@	>1 crore	3	42.5	14.9	3	48.8	12.9	0.0	14.8
Class II	50k to <100k	496	27.8	9.7	605	41.3	11.0	22.0	48.7
Class III	20K to <50k	1388	35.2	12.2	1905	58.2	15.4	37.2	65.5
Class IV	10k to <20k	1561	19.5	6.8	2233	31.9	8.5	43.0	63.8
Class V	5k to <10k	1041	6.7	2.4	2187	15.9	4.2	110.1	138.7
Class VI	<5k	234	0.7	0.2	498	2.0	0.5	112.8	180.1
Total		5161	286.1	100.0	7933	377.1	109.8	53.7	31.8
Statutory Towns		3799	265.1	92.7	4041	318.5	84.5	6.4	20.2
Non-Statutory Census Towns & UAs		1362	21.0	7.3	3892	58.6	15.5	185.8	179.0
Total Urban Population		5161	286.1	100.0	7933	377.1	100	53.7	31.8

Source: Census of India.

Planning System Framework

Planning system	Scope and purpose of the plan	Time frame [†]	Various plans; indicative list							
Core area of planning										
Prospective Plan	To develop vision and provide a policy framework for urban & regional development and further detailing	20-30 years	Long Term Perspective Vision document	Concept plan	Mission statement	..	..	..	..	..
Regional Plan	To identify the region and regional resources for development within which settlement (urban and rural) plan to be prepared and regulated by DPC.	20 years	Regional Plan (Mobility 1)	Sub-regional plan	..	..	..	..	..	..
Development Plan	To prepare a comprehensive Development Plan for urban areas, Peri-urban areas under control of Development authority/ Metropolitan Planning Committee.	20-30 years (Review every 5 years)	District Development Plan (Mobility 1)	City/ Metropolitan Development Plan (Mobility 2)	Master Plan (30 years)	Revised City Utility Development Plan	..	..	..	..
Local Area Plan	To detail the sub-city landuse plan and integration with urban infrastructure, mobility and services.	5-20 year (Review every 5 yrs)	Town Planning Schemes	Zonal Plan / Sub-city plan	Ward Committee Plan	Coastal Zone Mgmt Plan	Urban Redevelopment Plan	..	..	..
Specific and investment planning										
Special Purpose Plan	To identify the needs of the special areas which require special plan within the framework of the development plan.	5-20 year (within city utilities 30 year plan)	City Development Plan (as per InNURM)	Comprehensive Mobility Plan (as per InNURM)	City Sanitation Plan (as per InNURM)	Disaster Management Plan (as per NDMA)	Slum Redevelopment Plan (as per RAY)	Tourism Master Plan	Environmental Conservation Plan	Heritage Conservation Plan
Annual plan	To translate Development Plan in the context of annual physical & fiscal resource requirement. To monitor plan implementation with performance milestones.	1 year	Investment plan	Audit and monitoring plan	..	..	..	..	..	..
Project/ Research	To focus on project related investments, costing and returns & for the studies required prior to or post plan formulation. This should be a continuous process to support planning and implementation at all stages and promotes innovation in practice.	5-20 year	Pre-feasibility & feasibility study	Detailed Project Report	Schemes & Sub-projects	Surveys & Studies	Project such as: Riverfront development projects	..	..	..

Note: Consultative meetings and the regional workshops during URDFI formulation have pointed out the need to review the plan period of 20 years and extend the same to 30 years. However general consensus was in the favour of 20 years. Intermittent review in 5 year gap would be required.

Guest Lecture in Environment and Earth Care Series -2016

Sustainable Green and Smart Cities



Shri A. K. Jain, Ex-Commissioner, Planning, Delhi Development Authority (DDA)

Shri A. K. Jain spoke on sustainable development goals, green and smart cities. India is committed to achieve the UN Sustainable Development Goals by 2030. But, we need to make a review of Millennium Development Goals which were started around 2001 with 2015 as target year. It was said that the poverty shall be halved, education, healthcare for all will be achieved. Yet we are almost at the bottom of Millennium Development Goals. Then, how we can achieve Sustainable Development Goals? We have not been able to relate these Millennium Development Goals with the cities, human settlements, neighborhoods in which we live and missing dimension of space & time.

India is the third largest energy consumer in the world and cities are using 40% of the energy, 30% of the raw materials, 20% of water, 20% of the land. Construction uses enormous natural resources and energy. Unless, we focus on the cities, the buildings and urban dynamics of India, we are not going to achieve sustainable development. We have an urban population of 377 million living in 7,936 cities and towns. They are also contributing 60 percent of the GDP and 70 percent of the jobs, which is very important. Another thing we have to understand that the youth population in India is growing very fast, which is 30 percent; old people are 7.4 percent. There are different statistics of population below poverty line; as 12.8 percent & 21.8 percent. Housing and slums, transport, water supply,

jobs all this kind of problems are coming up because of the indiscriminate growth of the cities and we are seeing that the human being is just in the centre. This poses a huge challenge of infrastructure. Vendors, in a way are sustaining the city and they are contributing to at least 10 percent of the GDP of the city and using hardly 1 percent of the resources.

Problems of infrastructure services which have been become very common in every city in India, whether, it is mega city, metro city, small city. We face traffic jams, parking issues, energy and problems of water-shortage, waste management, drainage etc. About 50 percent of water bodies have been lost by urbanization, there have been indiscriminate colonies built over these, real-estate companies have been built on the flood zones and this is also resulting into climate change, pollution problems of infrastructure services, air and water quality, loss of natural resources and greenery.

We are talking about climate change. The sources of carbon dioxide emissions and other greenhouse gases are, energy which is contributing about 26 percent, transport which is contributing 18 percent, the buildings about 10 percent. The industries are not contributing that much as it used to be.

Recently the government has initiated smart city programme which aims to develop 100 smart cities in India, 98 have already been shortlisted. What is a smart city? Smart city can be basically, if you take the first letter as may S-Synergy of Space and Services, M-Mobility, A-Action, R-Real Time Information and Infrastructure, T-Technology. These are the basic attributes of a smart city.

We have 'Swachh Bharat Abhiyan' which was started on 2th October, 2014. Everything can be recycled and there is nothing like waste. The fundamental issue is waste recycling and this has to replace the old landfill. Landfill should be banned because this is unscientific anti-ecological and we have to make waste to energy plant, which is already happening in some industrial townships near Mumbai etc. Newmatic solid waste management in Makka, where millions of pilgrim comes during Ramzan and they leave lot of garbage of mud, stuff, packages, glass. They cannot transport the waste in normal way so

what they did was creation of underground newmatic that flow and by vacuum all this waste was taken out, recycled and retreated.

Karkardooma transit oriented development project of the DDA was started recently. We have to promote non-motorized vehicles, cycle, rickshaws and pedestrians to provide better last mile connectivity. Scattered parking clusters and the parking on the footpaths has to be totally stopped. Another programme is urban transformation with targets to benefit small cities more than middle class cities, mega cities and this basically in resonance with the brown field development of the existing cities and the making the best use of the land and providing better infrastructure and development to improve environment. As we know we have also Pradhan Mantri Awas Yojna Housing for All by August, 2022 that means in 6 years we needed to built two million houses which will need at an estimated development of 22.5 lakh crores. Then, we have the heritage city development, use of the HRIDYA, for conservation of our cultural centers, pilgrims centers, like Tirupati, Amritsar, Amravati, Ajmer etc.

We have to focus upon the environment, which is basically the open spaces and the ecological spaces. The programmes are there offering many opportunities, many chances but they have to be taken together and we have to complete this puzzle, without affecting the overall integrity of the urban development. This is a concept of 'Smart and Green City'.

There can be several suggestions. Why does the Metro run on overground? It should be all underground and there has to be public transit system rather than private vehicles system getting, overcrowded, increasing leap and bounds. The solar energy has to be mandatory energy, water recycling, no waste generation and landfill sites, all these should integrate. A city which is not a whole urban matrix and which is inter-connected with the energy, water supply, sewerage, sanitation, rapid transport, buildings and sustainability is very important. The way forward is, we have to think beyond the levels of smart, sustainable, green to world class, iconic, holistic and innovative. We have to relate our planning to the power quality and local climate and culture.

What are the Disruptive Technologies? These are ICT, intelligent and smart systems, land information system, digitized planning, online approvals, broadband development and

green and smart buildings, all these fall into the category of disruptive technologies, which have to replace the technologies currently in use. We have to understand the concept of decoupling that means 'less is more'.

Geo-portal which can bring a paradigm shift in urban planning and urban governance and even implementation of technology as well as infrastructure planning (as a combination of cost, time-management, citizen engagement, virtual township). Geo-portal was started by the Delhi government but, has not gone much forward. These are the concept, which bring all the departments on a common platform through geo-portal unlike present system of education department, health-department, planning department, everyone working in isolation.

Automated building production, which consumes much less energy, resources and time, we have to do away with conventional building construction, to have rotating solar energy building. Eco-technology is friendly to the environment. Negative carbon emissions, use of cement and concretes which doesn't consume much energy, are some of the examples, biometric sensor glass, smart windows, where the windows get our energy with the sunlight. This is already available in India of course a little expensive.

Smart city and our all missions can become an illusion for our sustainable goals, if we do not change our planning. What has happened with MDGs should not do the same thing with SDGs. We have to have a change in the mindset, as Einstein said that "the problem cannot be solved by the same mind, which created it". So, we have to think a little differently and we have to start from the fundamentals again. Thank you very much!

Sustainable Development



Millennium Development Goals

- India's Poor Performance (2000-2015)
- Financial, Legal, Administrative Approach, Missing Dimension of Space
- Warns us to develop new Paradigm- People and Planning Centric

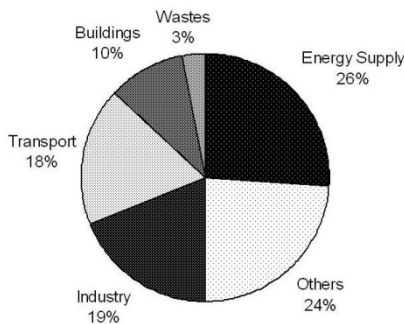


Sustainable Development Goals vis-à-vis Resource Consumption in urban India

- India is the world's 3rd largest energy consumer, using 462 million tonnes of oil equivalent
- Use resources 70% above our bio-capacity
- Cities use 40% of energy, 30% raw materials, 20% water and 20% land
- Construction uses 40-45% of steel; 85% of paint and 65-70% of glass

56% of cities are dependent on groundwater either fully or partially

Sources of GHG/ Carbon Emissions Energy Transport Buildings Industry



Global doubling of Carbon Emission (10 years)

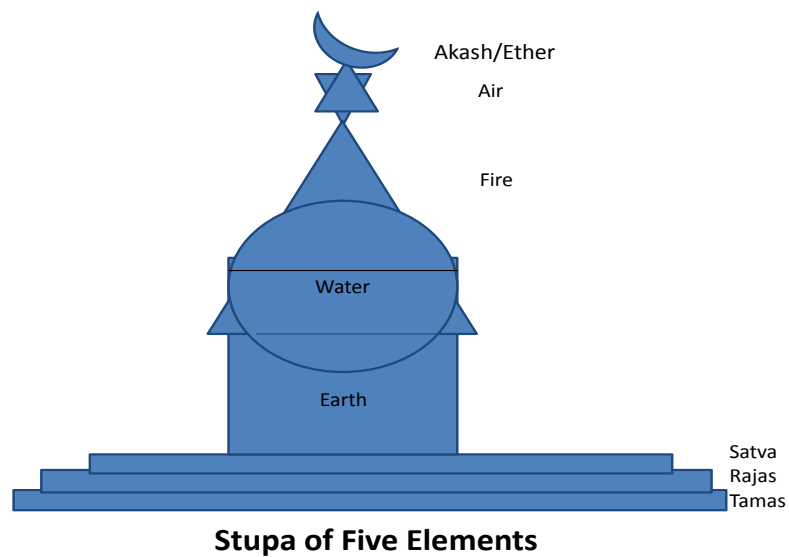
Urban Dynamics of India

	2011	2031
Population	1210 million	1440 million
Urban population	377 million (31.16%)	600 million
Cities and Towns	7936	-
Million + Cities	47	68
5 million + Cities	6	10
Housing Shortage	18.78 million units	40 million units
Slum Population	65.50 million	100 million
GDP Urban	60 %	70%
Jobs	65-70 %	75-80%
Youth (20 to 34) 30% Old (above 60) 7.4% Below Poverty Line 12.8 to 21.8%		

What is a City?

A synergy of people in:

- Space
- Environment
- Infrastructure/Water/Transport/Energy Systems
- Jobs/ Economy
- Cultural and Social context



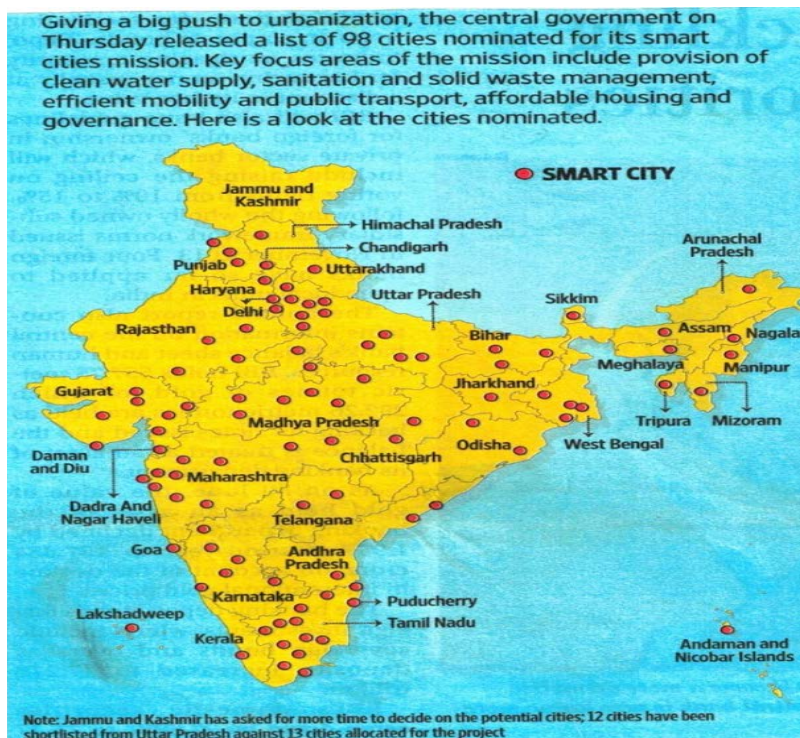
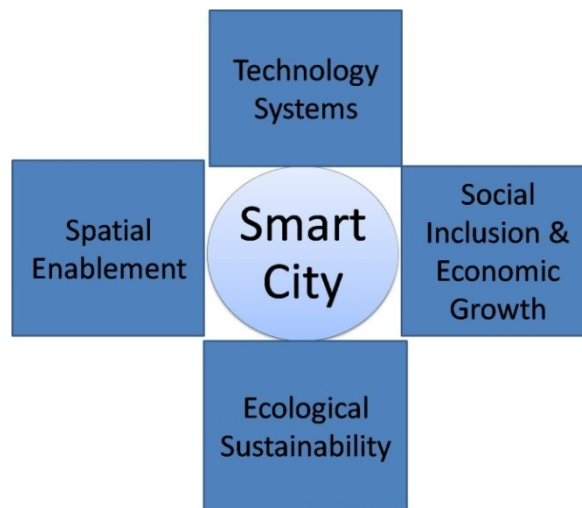
Symbiosis of Five Elements and Five Senses

Panchbhuta/Prakriti	Symbiotic Form	Function
Earth	Body	Nose/Smell
Water	Prana	Tongue/Taste
Fire	Mind	Eyes/Energy
Air	Touch/Form	Skin/Interaction
Ether	Motion/ Communication	Ear/Sound

What is a Smart City?

Smart city is

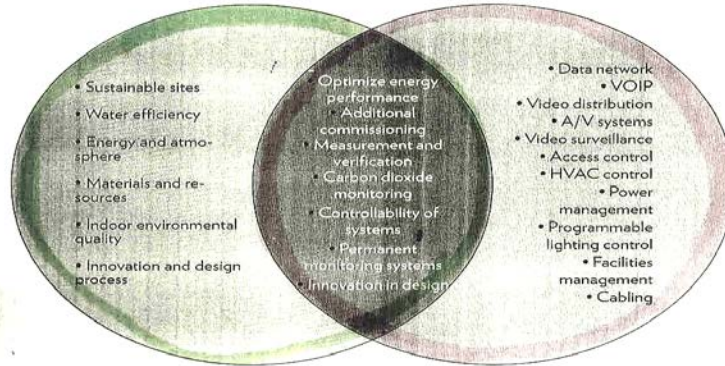
- S Synergy of Space and Services
- M Mobility
- A Action
- R Real Time Information and Infrastructure
- T Technology



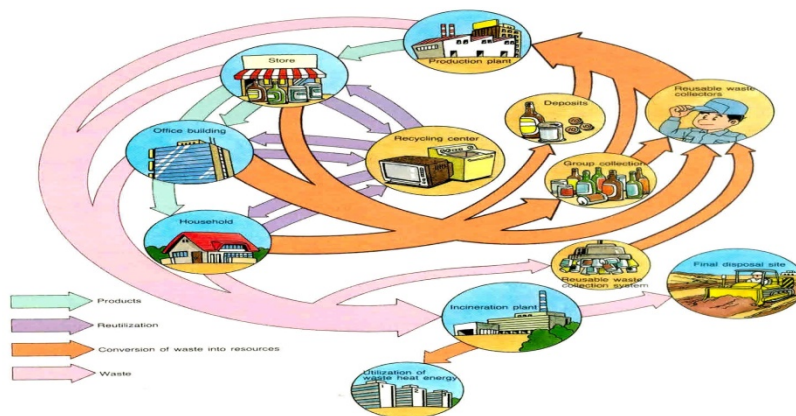
Smart Cities in India (98)

Interfacing Green and Smart

GREEN BUILDINGS

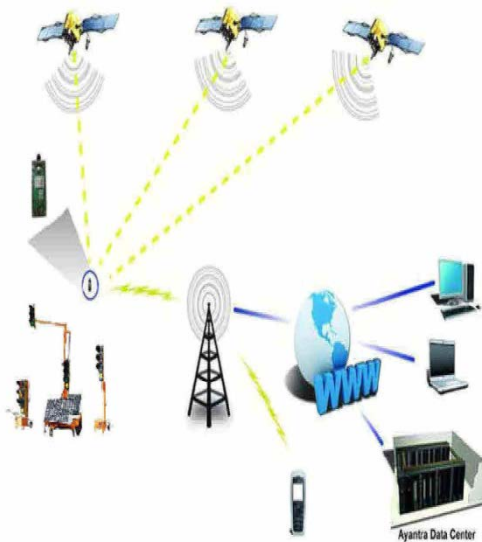


SMART BUILDINGS



Waste Recycling

Disruptive Technologies



ICT, Intelligent, Smart Systems

Land Information System, Digitized mapping, SDI, Geo-spatial, GIS, on line approvals,

Broadband development, Automation & internet access, Public Security System, Mobile based governance

Green and Smart Buildings

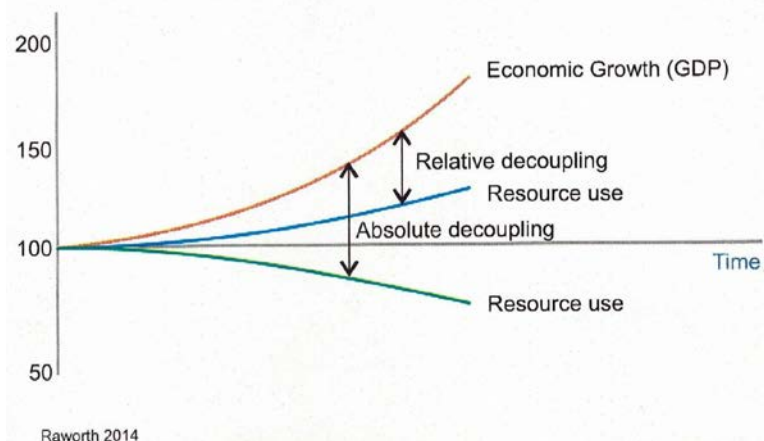
Way Forward

- Think beyond labels-smart, sustainable, green, world class. Iconic, holistic and innovative
- Address local issues, livelihood, services, shelter and transport
- Relate to poverty, local climate and culture
- Engage community, women, children, business and politicians
- Shift from logic to magic, focus to chaos, uniformity to diversity and from linear to exponential
- Turn a chance into a plan
- Strive for inclusion, intuition, innovation, values, disruption, aspirations and emotions
- Go for subtraction, unification, multiplication and division
- Disruptive Technologies and Decoupling

Concept of Decoupling

'Less is more'

Reduce of Natural Resources and Ecological Footprint
Decoupling Economic Growth and Environmental Sustainability



Geo-Portal- A Paradigm Shift

- Brings together various line departments on a platform
- E-service delivery
- Mobile & internet based, dynamically scalable
- Technology enabled land and infrastructure, planning, development and management
- Better co-ordination and exchange of information
- Cost and time management
- Citizen engagement, virtual Town Hall

Address



Prof. G. D. Sharma, Former Secretary, UGC

Good morning to everybody and it's a pleasure for me to address all of you and make some remarks on environment and development. We have never thought about environment and development in the rural areas, after Mahatma Gandhi worked for it for long, and then we have forgotten about it. Our model is Western development model, which is either Japanese or American model. If we go 10-15 km away from any urban center to villages; road, water system, electric connections etc., all are not there. I was travelling with one foreigner about 20-25 years ago. Bombay is very a crowded city and we seen one of the indicators of development is more number of cars in cities. The pollution from the cars, and how much longer it took reach the airport became main concern? I spent two hour for reaching to the airport where one takes half an hour only.

In our higher education it is compulsory for all of colleges, universities to introduce environmental course. We have to also think of alternative model of development than the model of development, and then we have to adopt it. We have to think that how do we response to the need of 60-70 percent of the population which is still rural. Our research battle is how we make our rural centre rich and comfortable because it will help to reduce the migration to cities.

I was in Vietnam and there rural centre are much better than the urban centers. We have not gone into that direction of thinking and having the decentralized process of industrial development, decentralized processes of services management etc. We should spend some research and timing on this aspect that how do we generate less waste? There

are planned approaches in most parts of the world for waste collection and removal. Even gardens are cleaned three times a day (morning, afternoon and night). Our investment is much less in sanitation. If we look at investment budget on the sanitation of any other country, we would find that we are much lower in the world. We have not created facilities to manage waste in proper place or made investment in garbage collection, disaggregation etc. These are some of the issues I wished to raise.

Thank you very much

Students' Presentations

Strategies to enhance the ecosystem services of Asola-Bhatti Wildlife Sanctuary, Delhi



Mr. Shailendra Kumar, Student of Master, SPA

We have to set 2020 agenda to be achieved like conservation, restoration and sustainable use of the services, to restore degraded forest, action to reduce degradation and the measures which need to be taken to reduce the impact on the invasive species, to integrate the ecosystem and the bio-diversity values. The Sanctuary is located near the Tughlaqabad Fort, on the Southern range.

I have taken the 6 villages based on the eco-sensitive zoo region. The villages falling around that area have been taken. Primary Survey, Secondary Survey data has been collected. Various recommendations are made based on the surveys which have been analyzed. Two areas are identified first is for restoration purpose, where high dense settlements are there and the least interference area which need to be developed as a habitat core zones.

Sustainability guidelines for planning of IMT-Rohtak



Mr. Sumeet, Student of Master, SPA

I have done my environmental planning in the year 2016 for implementation of SDGs for preparing strategic guidelines for sustainable developments of IMT-Rohtak. So, my vision starts with sustainable industrialization and sustainable development goals at global level. We should act locally on the basis of resources available and technology we have available at local level. So the aims revolve around strategic guidelines for sustainable development goals of IMT fulfilling the sustainable development agenda's as per SDGs for this I have first of all identified some of the key indicators of Sustainable Development Goals. Then on the basis of key indicators I have analyze a performance of IMT-Rohtak and then on the basis of this analysis some gaps and issues I have been identified and to resolve these issues I have framed the sustainability guidelines were IMT-Rohtak.



Ms. Karishma Vohra, M.Sc. TERI University compered the programme

Presentation of ECC 2015 Awards



Ms. Maya Gupta, Principal, Universal Public School receiving the ECC 2015 Award

1. Change Climate Research Institute (CCRI) held 'Environment & Climate Change (ECC)' Lecture Series to fulfill the society's mission to impart environment education and create awareness among youth about current challenges in relation to climate change. Participants were invited from different institutions, Schools, Universities & Colleges. Different awareness competitions were also held among schools students during the lecture series.
2. About hundred children participated from a dozen schools in these competitions. ECC 2015 Awards has been instituted by the Institute to the Principals of the Schools of highest prize winners in the competitions held among children on environment campaigns in support of Environment and Climate Change.
3. These Awards are being given on World Environment Day 2016 event organized by the CCRI on 7th June 2016 to

- i) **Mrs. Maya Gupta, Principal, Universal Public School, Preet Vihar**
- ii) **Mrs. Hemlatha Jagannathan, Principal, Navyug School, Moti Bagh**

The award on 'World Environment Day 2016' was presented to **Ms. Maya Gupta**. Mrs. Hemlatha Jagannathan could not attend,



Ms. Vandana Maurya, M. Phil, JNU reading the Citation



World Environment Day - 2016

Awareness Workshop

Theme

Implementation of Sustainable Development Goals

Organized by

Climate Change Research Institute

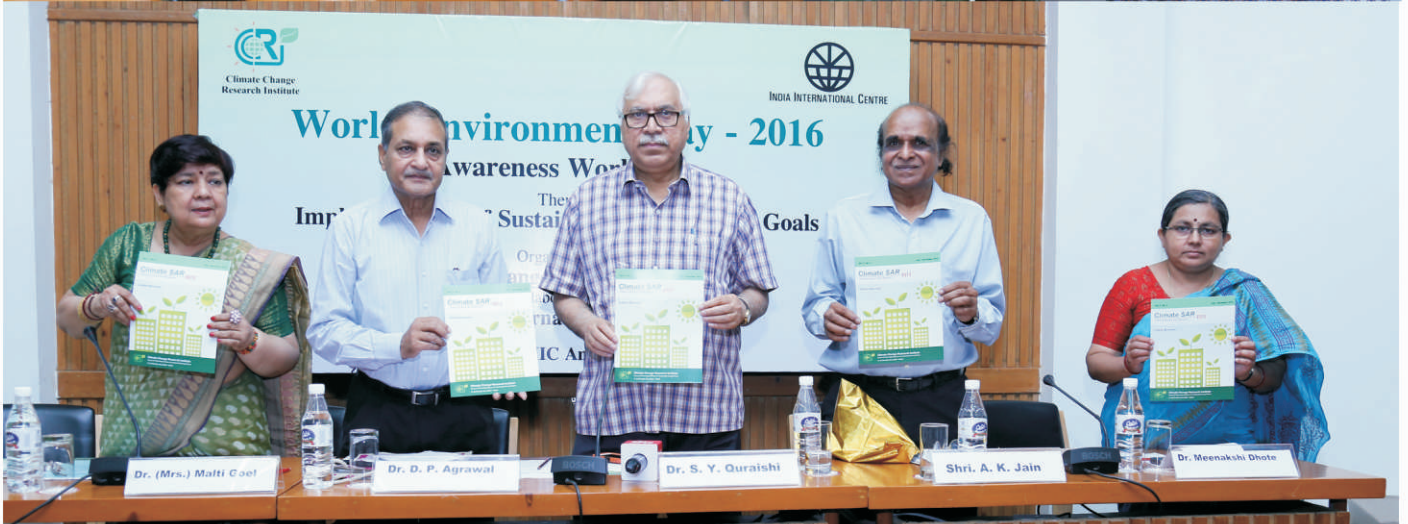
In collaboration with

India International Center

On June 7, 2016 at IIC Annexe, New Delhi

PROGRAMME

09:30 Hrs.	Registration
10:00 Hrs.	Welcome
10:05 Hrs.	Introduction to Theme by Prof. Malti Goel , President & CEO, CCRI
10:20 Hrs.	Special Address by Prof. D. P. Agrawal , Chairman. GC, CCRI
10:35 Hrs.	Address by Prof. Meenakshi Dhote , Head-EPD, SPA
10:50 Hrs.	Inaugural Address by Chief Guest – Dr. S. Y. Quraishi , Former Chief-Election Commissioner of India
11:15 Hrs.	Guest Lecture ‘ Sustainable Cities ’ by Sh. A. K. Jain , Ex-Commissioner – (Planning), DDA
12:00 Hrs.	Q & A
12:15 Hrs.	Release of Climate SAR , Vol 2, S. No. 2 Presentation of ‘ ECC 2015 Awards ’
12:30 Hrs.	Presentation on ‘Strategies to enhance the ecosystem services of Asola’ by Mr.Sumeet, Student of Master, SPA
12:35 Hrs.	Presentation on ‘Sustainability guidelines for planning of Rohtak’ by Mr.Shailendra Singh, Student of Master, SPA
12:45 Hrs.	Concluding followed by Lunch



Vision & Mission

To become a Centre for Excellence in developing human resources and technical capacity building in the area of climate change adaptation and mitigation

Organizers

Climate Change Research Institute is founded with a mission to promote environment education, innovation and teachings. It aims to address wide strata of society about the consequences of climate change on our lives and taking control measures. Institute is taking initiative to create awareness on energy security and sustainability through lectures in schools and college, workshops and internet reach. Its future work plan would include development of educational tools on topics of scientific and societal interest; such as energy, health and water in the climate change context. Research and studies would be undertaken on science & technology measures aimed at climate change mitigation and ways of reducing the emission of Co₂.