

## ROLE OF MULTI - DISCIPLINARY PROFESSIONALS IN DEVELOPING SUSTAINABLE SMART CITIES IN INDIA

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### ABSTRACT

*The concept of Smart Cities has been defined in a number of ways. But all these definitions have some common elements. They include smart governance, smart infrastructure, smart basic facilities for the citizens, and above all, a truly interconnected system with seamless communication between sources. This concept has become all the more important with rapid urbanization, as a concomitant to rapid economic growth. Climate Change will affect urban areas by increased risks for people, assets, ecosystems, etc. These risks are all the more great for those lacking essential infrastructure and services. Those possible problems would mean that the concept of smart city is not a static one, but a process. The steps that are taken should improve liveability in the cities and should enable them to respond quickly to new challenges. Smart Cities should essentially help optimum use of existing infrastructure, apart from fillers in the infrastructure gaps, and should facilitate economic growth. Without this, the sustainability of a city becomes suspect. Another important aspect of the Smart City is a common ICT infrastructure pool by which sharing of relevant information and data helps evolution of appropriate policy. In India, data and information are generated by a myriad of sources and there is hardly any system of correlating them together. The cover story in "Sustainable Smart Cities" brings out various aspects related to the development of Smart Cities. The hazards of climate change are particularly felt in coastal cities and preparedness has mitigated the adverse effects of cyclone disasters. We must try to prepare ourselves as much as possible in the context of the grim prognosis. As cities are economic growth drivers in most of the nations, urbanisation is projected to increase further in the near future. This, in turn, will drive the depletion of non-renewable resources as well as add to the extent of carbon dioxide emissions. To cope with rising urbanisation and climate change issues, innovation and digital technology must be leveraged to minimise energy consumption and improve quality of life. Innovation must be combined with energy, digital technology and information and communications technology to address urbanisation challenges and ensure sustainability. Sustainability covers not just the environmental aspect but also social equity and the economy.*

The globe is witnessing a shift in economic corridors of power, as China and India are seen as the most powerful economies to watch out for. These emerging economies too need to take pre-emptive steps so as to avoid the devastating consequences of climate change. The Indian government has undertaken concrete steps for making smart cities a reality with the recent announcement of 98 aspirants. The Prime Minister of India has a vision of developing "100 Smart Cities" and modernizing the existing mid-sized cities. This is a very encouraging and timely move. Several Ministries have come to realize the huge potential and it is expected that concrete plans are developed urgently. These smart cities will compete with each other to come up with holistic plans for becoming model cities. The government has incorporated sustainability as one of the key components of smart cities. With the increasing frequency of natural disasters, abnormal weather patterns and the looming threat of global warming, the concept of a smart city must be merged with sustainability for the welfare of people and our planet as a whole. The marriage of innovation with technology will go a long way in optimising the management of infrastructure and resources and, at the same time, focussing on inclusiveness and a greener environment. Sustainable smart cities will lay the foundations for a better future—a future where cities care for people, the earth, air, water and the environment. And, this objective of "Developing Sustainable Smart Cities in India" can only be achieved if, all the multi-disciplinary professionals like Urban Planners, Architects, Civil Engineers, Geographers, Economists, Sociologists, Statisticians, Doctors, Politicians, Public Administrators participate together actively for the welfare of public and future generations.

### ROLE OF MULTI- DISCIPLINARY PROFESSIONALS:

All the multi-disciplinary professionals like Urban Planners, Architects, Civil Engineers, Geographers, Economists, Sociologists, Statisticians, Doctors, Politicians, Public Administrators have their own role in development of sustainable smart cities, as described:

**(I) TOWN PLANNERS:**

The Town Planners are responsibly working on the Town's future. The effective and creative planning of major projects will benefit residents by providing them environmental protection along with economic development. The planner has a role in evaluating issues in achieving responsible for regulating the subdivision of land through the use of local subdivision regulations, effective decision making using tools such as GIS. A town planner is trained to prepare town plans or Master Plans. These are statutory documents which give the broad direction for the spatial growth of a city. Most states in India have Town Planning Acts which empower the state town planning departments to prepare plans for all of its towns and cities. After the town plans are prepared, they need to be implemented. Town planners also play a role there in terms of validating land uses, approving land subdivisions, projects, etc. Town planners, in addition to preparing Master Plans, also have to prepare zonal plans for the city.

There is a huge scope for town planners in India. Whilst we have as many as 5,161 towns and cities in the country only a few hundred of them have plans prepared. Also, with a 100 smart cities being planned across the country, the demand for town planners will be humongous. There are around 600 districts and 5,000 towns in the country. Most cities do not even have zonal plans in place and many states have also only recently initiated the process of town planning. Rapid urbanisation across the country will therefore ensure that town planners are always in great demand. A smart city demands an understanding of public purposes and public interests to define a better and planned city which supports creation of livelihoods, and enhancement of economic growth. The India's economic growth also depends on harnessing renewable natural resources. The central, state and local level government officials should work with infrastructure developers in public and private space along with the thought leaders in framing the policy, regulatory incentives, and effective compliance mechanisms to make changes in Indian infrastructure market. The town planner plays a role in formulating a plan and they should appraise from time to time the progress of the plan. They should proactively make recommendation on policy and measures to balance the utilization of the country's resources. The priorities define the stages in which the propose of the plan should come out for allocating resources for the completion of project which indicate the factors for economic development, and determine the conditions of the current social and political situation.

**(II) ARCHITECTS:**

As the range of global challenges grows and intensifies, the role of proper architecture, planning and designing becomes the need of the hour, feel experts. At the same time, the convenience and betterment of public at large cannot be neglected. To make the city "smart", architects should be consulted by the government so that the present and future generations feel privileged to be a part of the "Smart-City". If the country wants to meet the challenges at the global level, then proper planning of development is must. We cannot just start doing things in a haphazard manner. Architects are there to assist you everywhere, starting from putting a brick till the completion of the project. Architecture is not only about buildings, but the art we live in. From individual houses, apartments and condos to the broader urban context, skyscrapers and parks of the cities around us. We see countries such as Dubai, America, Canada and England having beautiful pieces of architecture and such architecture is only possible if citizens here take keen interest in architecture and learn to respect the profession to much extent so that we can produce the best possible results. The focus should be on providing quality life to residents by coming up with development, which they need. Efforts should be made to improve pedestrian walkways, indulge people in using renewable energy resources, correct disposal of wastes etc. The benefit of designers is that they are usually better versed in engaging society and walking the tightrope between what could be perceived as either intrusion or improvement. They bring a different, often more human-focused understanding of technology which may complement the technology driven strategy of current Smart City advocates. This is not the only reason architects should be involved in the Smart Cities movement: as many have learned when dealing with the issue of sustainability, it is much easier to design a building with new technology already in place than it is to retrofit a pre-existing building. If we are really going to develop a ubiquitous 'internet of things', new buildings already ought to be designed with this in mind.

**(III) GEOGRAPHERS:**

Geographical location of a city plays an important role for its physical and spatial infrastructure development. Geography gives us the knowledge about resources, opportunities and constraints of development. Since the 1990s, new economic geography has received a lot of attention as mainstream

economists such as Krugman and others began to focus on where economic activity occurs and why. Coincidentally, international trade, location theory, and urban economics all appear to be asking the same question: where is economic activity located and why? The challenge is to explain the economic concentration or agglomeration of a large number of activities in certain geographical space. So, geographers should actively participate in sustainable smart city initiative and put their thoughts in the lime light to the governing authorities about the scope and future opportunities of physical geographical & spatial development along with human geography of the particular city.

#### **(IV) CIVIL ENGINEERS:**

The civil engineering is not only related to the construction of buildings that may be used for several purposes like Residential, Industrial of any other in similar way but also as we know it is also related to the infrastructural development which includes the development of transportation systems, sanitary and water supply system or various infrastructural facilities which are required to every human being in day to day activities. Before considering the role of every professional body which are required for the successful development of smart city, we as an reviewer of it has to consider, various essential parameters which are crucial and important for development of any city as smart. There are many parameters, on which smart cities are based on, like development of each and every human being in the social, environmental, infrastructural and educational aspect of life that truly means the development of any city in smarter way is not to develop only infrastructural needs, or just the construction of various facilities in the surroundings, but as an reviewer we need to consider all above stated aspects of life. Infrastructural development of city can be a first step towards development of smart city. The civil engineering or civil engineers role is not only limited to the infrastructural development of city but also other aspects like social, educational and environmental are also taken care of by civil engineers, as civil engineering or civil engineers are more faced by the people. So it is a foremost and important duty of civil engineers to take care of all aspects of development of smart cities.

#### **(V) INFORMATION TECHNOLOGY EXPERTS:**

Urbanization is an inevitable progression. Businesses and governments are starting to recognize the role of technology in meeting the goals of urban infrastructure provisioning both today and in the long term. The smart city transformation would be fuelled by advance technology and the deployment of intelligence & information management systems. Dream of Smart cities can be achieved at accelerated pace with higher reliance on ICT (information and communications technology) Digital disruptions including social media, mobility, Machine-to-Machine (M2M), Internet of Things (IoT), Big Data, and Cloud Computing will become the backbone of next generation smart cities.

#### **(VI) ECONOMISTS:**

Emerging patterns of urbanization world shows differing scenarios in different continents, requiring diverse approaches, policies, and strategies. Amazing democratization of ICT around the world leads to a discussion on sustainable, resource-conserving, and resilient smart cities, and smart city economic development appropriate to different cities, countries, and continents. It can be possible that each city in a particular country and continent may possess differing challenges to smart city economic development. When ancient rural economy gives way to urban economy, which contributes a major share of national domestic product, the emerging question is what constitutes smart city economic development. How is it different from conventional urban economy? Is the theory and practice of conventional urban economy valid in a smart city economy or is it necessary to investigate newer theory and practice of smart city economic development? What is a food shed in a smart city economy in smart cities? What a smart city industry looks like? What constitutes smart city commerce services, transportation, and communication, and how they impact on smart city economy? How do smart cities fit into the urban dynamism and policy dialogue at the global, regional, and national levels? Can smart cities and smart economy be socially inclusive? How to strategize social inclusion in smart city development? What sort of governance and institutional support would smart cities require to fulfil their role with regard to smart economy? What may constitute a Sustainable Model of smart city's economic development, and what may be Smart Cities Standards? All these questions can better be answered by the economists for sustainable smart city development. So, the need of the hour is to keep the economists on a single platform for discussing about

the economic growth players, industrial developments and co-relating the primary, secondary and tertiary activity partners in the development of the nation.

### **(VII) SOCIOLOGISTS:**

Contemporary images of the future such as those associated with 'smart cities' overwhelmingly emphasise technology and tend to downplay the uncertainties of technological innovation. A focus on expectations can reveal the co-evolution of complex socio-technical relations. Cities around the globe are not well prepared to become Smart Cities. Many of the challenges associated with getting Smart City projects going is currently related to traditional planning methodologies that make use of top-down master planning. Since Smart Cities are a relatively new and broad concept, it is necessary to engage the community at large and its entrepreneurial resources, to develop many of the aspects of community collaboration, business models, revenue and expense sharing agreements, and technologies that can be used to create real socioeconomic impact. As government observes the success of projects, it then becomes possible to plan on a larger scale across an entire metropolitan area. Sociologists have a well understanding of the cultural, behavioural, moral and ethnic values of the various communities of the society. So, they are the best resourced professionals to discuss about the smart city programmes, as the cities are always planned for the public not for the aliens.

### **(VIII) STATISTICIANS:**

Effective utilization of data is going to be a key factor for success in the smart cities initiative, by making the data available in one place through a framework. With the evolution of technology changing the way we live and work, it is only a matter of time before governments around the world upgrade their infrastructure to offer citizens efficient services through smart cities, where enormous amounts of data moves within complex information supply chains. Yet, smart cities are not about constantly introducing new technologies. Data sources are everywhere around us, ranging from smart phones and computers, to Global Positioning System (GPS) and social media sites. Effective analysis and utilization of this data is going to be a key factor for success in the smart cities initiative, by making the data available in one place through a framework that is clean, well labelled and allows better processing and consumption. This global trend of rapid urbanization that makes a strong case for smart cities is also reflected in India. The government's Make in India initiative states that investments of approximately \$1.2 trillion will be required over the next 20 years across transportation, energy, and public security to build smart infrastructure. Besides the government and industry, participation of start-ups and citizens is cardinal in closing the last mile and feedback loop in this process, morphing the 3Ps of Public Private Partnership into the 4Ps (Participative PPP). This necessitates the involvement of statisticians, enabling smart decisions on deploying solutions, implementing reforms, and designing post-project structures that make smart city developments sustainable.

### **(IX) DOCTORS/ HEALTHCARE SPECIALISTS:**

The use of digital and mobile technology is creating smart healthcare solutions for people residing in urban centres. The IOT revolution which has spread itself in energy, transport, security and infrastructure segment will have sweeping results in health care. A unified healthcare system, collecting and sharing of data, analysis and research practices will usher a new era in tackling modern day health problems. A society is build up by its people. A healthy society creates right balance in every sphere of life. Over the years, advancement in medical sciences created effective diagnosis and solutions for many ill-fated diseases. But the increasing population and urban lifestyle demands a smart healthcare network which can look after its people in a more quick and efficient manner. Smart Healthcare involves latest digital and mobile devices. They are smart in the sense they are not only curing a disease but also confronting it at the right time. These are Internet of Things (IOT) in healthcare which work through sensors and collect patient's data remotely. This data can be stored and analyzed by doctors, researchers and health care professionals for better diagnosis and solutions. These digital records are saving cost and time of both patients and hospitals as they are not only offering personalized treatments and medications but giving preventive measures through real time data collection. Considering this to be a future of healthcare, many companies are investing in IOT healthcare and wearable devices which collect data and build them into a structured form. They are also using Artificial Intelligence (AI) for the assessment and possible outcome of these data for prompt solutions. Many times, when specialized doctors are located elsewhere, help of robots

is also taken for communicating, diagnosing and treating the patients. Doctors also play an important role in development of sustainable smart cities. A disease free city is automatically a smart city in a way, it maintains people healthy, physically fit and smarter. Doctors should participate in the development of sustainable smart cities by describing their views about various healthcare innovations.

### **(X) POLITICIANS:**

In India, most of the politicians used to favour their own constituency, district or state whenever it comes to the launching/ release of any government scheme, policy/ yojana of public interest in terms of development. But, as the Smart City Mission has its own criteria of selection of cities for development as a smart city, none of them can favour their own area. As, each state is given a restricted quota of cities to be nominated for smart city mission and that also depends only upon the score, each city performs in survey. So, no politician can use their own will power to develop a particular city. Politicians should come forward to participate in development of sustainable smart cities, as they are representatives of public. They should ensure complete dedication to give their full commitment in the mission to make dream come true.

### **(XI) PUBLIC ADMINISTRATORS:**

Today's public administrator needs a new skill set to innovate and manage in the 21st century. These skills include: cross-sector relations; business and finance modelling for technology; digital infrastructure planning; cyber security and threat analysis; data privacy; and ethics training. Public administration's role has changed and will be evolving to match the innovation cycles of technology. This means administrators must be agile to meet digital infrastructure needs and create opportunities for jobs and contracting to grow community and economic development versus volunteer, non-paid opportunities, hackathons, pitches and challenges that do not provide a real pathway forward to solving serious pain points for government and residents. This is also aiding in our lack of diversity and inclusion as these ways of sourcing innovation and problem solving require substantial economic investment and networks to attend and/or to carry to implementation within a municipality. Instead of investing in moon shots, public administrators need to get grounded on what matters in public good and access to civic engagement, affordable housing, transportation and city services. Smart cities need smart public administration with administrators that are knowledgeable and mindful of technology pitfalls in access, affordability, connectivity, cyber threats, privacy, jobs and contracting opportunities. Public sector helps to reshape the culture of technology first and apologize later in technology deployments. This erodes democracy when the very platforms and digital services are not accessible to all in society. This is not civic engagement; this is a marginalization underserved residents.

### **CONCLUSION:**

Sustainable smart cities will lay the foundations for a better future—a future where cities care for people, the earth, air, water and the environment. And, this objective of “Developing Sustainable Smart Cities in India” can only be achieved if, all the multi-disciplinary professionals like Urban Planners, Architects, Civil Engineers, Geographers, Economists, Sociologists, Statisticians, Doctors, Politicians, Public Administrators participate together actively for the welfare of public and future generations. It is the need of the hour for all the multi- disciplinary professionals to actively participate in the mission and incorporate their views, opinions and suggestions to help the nation grow in a smarter way and innovate some new ideas and creations for the purpose.

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