Indexed with IIJIF
Impact Factor : 1.021
ISSN: 2456 - 608X
International Journal of Legal Research and Studies
An UGC Approved Online Law Journal

AN ANALYSIS ON CHALLENGES AND OPPORTUNITIES IN BUILDING SMART CITIES IN INDIAN PERSPECTIVE

Dr. N.D. GOWDA
Assistant Professor, Saraswathi Law College, Near Akashavani, Kelagote, Chitradurga, Karnataka
gowda.nd@gmail.com

***Abstract*-- A smart city is one where people are empowered by technology to lead meaningful and fulfilled lives. A smart city is built not by government, but by all of us that is citizens, companies, agencies. The smart city is a simple label for the complex forces shaping urban life in the 21th century. It is a framing device for many of society's most important conversations about globalization, technology and the environment. The quality of life was significantly improved in the last century mainly as regards the access to services. However the heavy industrialization and the increasing population in the urban areas has been a big challenge for administrators, architects and urban planners. Each city has its own priorities in terms of social, environmental and infrastructure challenges, but each also has distinct strengths in terms of skills and resources. Successful smart city programs build on those assets to develop a distinct smart city vision that is aligned with local needs and goals. The real challenge in future years will be a huge increase in the urban population and the changes this will produce in energy and resource consumption. It is fundamental to manage this phenomenon with clever approaches in order to guarantee a better management of resources and their sustainable access to present and future generations**

Key words: Smart city, Urbanization, Governance, Challenges, Population.

INTRODUCTION

"Smart cities are those who manage their resources efficiently. Traffic, public services and disaster response should be operated intelligently in order to minimize costs, reduce carbon emissions and increase performance."

---- Eduardo Paes

The smart city is a simple label for the complex forces shaping urban life in the 21st century. It is a framing device for many of society's most important conversations about globalization, technology, and the environment. Smart City concept will be varying from person to person, as some people think that smart means a technically advance city and some may think of the city for the people by the people with social interaction. Where 8 years back the people were talking only about smart phones, through a series of parallel technological developments globally the concept of smart cities is rising. It's a city outfitted with high tech communication capabilities. It uses digital technology to enhance performance and well being, to reduce costs and resource consumption, and to engage more effectively and actively with its citizens. The idea of smart city came into formulation owing to the need to accommodate rapid urbanization of the age. Interest in smart cities continues to grow, driven by a range of socioeconomic and technological developments across the globe. It is due to the increasing number of smart cities that established suppliers from energy, transport, buildings, and government sectors are moving into the smart city market, while startups are addressing a range of emerging opportunities in the same field.

India is drawing on the development of smart cities at the global level. Prime Minister Narendra Modi's vision 'Digital India' has a plan to build 100 smart cities across the country. Modi in his speech said, "Cities in the past were built on riverbanks. They are now built along highways. But in the future, they will be built based on availability of optical fiber networks and next generation infrastructure. Cities are the main poles of human and economic activity. Cities are also the places where inequalities are stronger

Indexed with IIJIF
Impact Factor : 1.021
ISSN: 2456 - 608X
International Journal of Legal Research and Studies
An UGC Approved Online Law Journal

and, if they are not properly managed, their negative effects can surpass the positive ones. Urban areas need to manage their development, supporting economic competitiveness, while enhancing social cohesion, environmental sustainability and an increased quality of life of their citizens.

The projections made by the Indian Government indicate that through the Smart Cities Mission the government intends to achieve overhauling of all the cities. The Government aims to achieve its mission of smart cities by introducing and employing the concepts of retrofitting, redevelopment, Greenfield, and plan city development. The task in hand is humongous and needs efficient use of resources, strategic planning and strong legal framework. Announcement of the project and release of guidelines seem to be a hush affair as despite outlining various aspects of the Smart Cities Mission, there are number of issues that have been addressed and likely to pose as challenges for the mission on its way ahead.

Smart City

Smart City, a concept that has become quite famous these days. It belongs to those very rare words that become a buzzword in a very short span of time. Against the background of economic and technological changes caused by the globalization, cities everywhere face the challenge of combining competitiveness and sustainable urban development simultaneously. Very evidently, this challenge is likely to have an impact on issues of urban quality such as housing, economy, culture, social and environmental conditions. Smart Cities focus on these most pressing needs and on the greatest opportunities to improve lives for citizens. Technology is playing a bigger role in helping to make city life run more smoothly, from networks of sensors that offer information about how traffic is flowing or where water pipes are leaking to apps designed to help citizens get the most out of their city.

A Smart City is an urban region that is highly advanced in terms of overall infrastructure and communications. It is a city where the basis for providing vital services to citizens and the principal infrastructure is controlled completely by information technology. There are, off course many technological platforms involved, including but not limited to automate sensor networks and data centers. The concept of smart cities has been devised in 2008 by IBM. Ironically, it's the same year when the complete world was facing one of the worst economic crises in the history. IBM began work on a smarter cities concept as part of its Smarter Planet initiative.

Elements of Smart city are,

1. Adequate Water Supply
2. Assured Electricity Supply
3. Sanitation, including Solid Waste Management
4. Efficient Urban Mobility and Public Transport
5. Affordable Housing (especially for the poor)
6. Robust IT Connectivity and Digitization
7. Good Governance (especially e-Governance and citizen participation)
8. Sustainable Environment
9. Safety and Security of citizens (particularly women, children and the elderly)
10. Health
11. Education
12. Parking
13. Well managed lighting

With increasing urbanization and an increasing pressure on the rural land, the Indian government has now recognized the need for cities that can cope with the challenges of urban living and can also become magnets for investment. The nomination of 100 smart cities falls perfectly in line with this vision. To achieve the desired results, these cities have to aim on identifying their strengths and weaknesses. They

Indexed with IIJIF
Impact Factor : 1.021
ISSN: 2456 - 608X
International Journal of Legal Research and Studies
An UGC Approved Online Law Journal

will also have to identify their chances for positioning and ensuring and extending comparative advantages in certain key resources against other cities of the same level. The best part is this project, does not just deal with the leading Indian metropolises but also, with medium sized cities and their perspectives for development. Though this sounds too advanced and futuristic, it is now likely to become a reality as the smart cities movement has started to unfold in India. Wondering what more can be offered as part of a Smart City. Well, the horizon is wide and it's just the beginning of a new life…

SMART CITY FEATURES

Some typical features of comprehensive development in Smart Cities are,

i) Promoting mixed land use in area based developments: planning for 'unplanned areas' containing a range of compatible activities and land uses close to one another in order to make land use more efficient. The States will enable some flexibility in land use and building bye laws to adapt to change.

ii) Housing and Inclusiveness: expand housing opportunities for all.

iii) Creating walkable localities: reduce congestion, air pollution and resource depletion, boost local economy, promote interactions and ensure security. The road network is created or refurbished not only for vehicles and public transport, but also for pedestrians and cyclists, and necessary administrative services are offered within walking or cycling distance.

iv) Preserving and developing open spaces: parks, playgrounds, and recreational spaces in order to enhance the quality of life of citizens, reduce the urban heat effects in areas and generally promote eco balance.

v) Promoting a variety of transport options: Transit Oriented Development (TOD), public transport.

vi) Making governance citizen friendly and cost effective: increasingly rely on online services to bring about accountability and transparency, especially using mobiles to reduce cost of services and providing services without having to go to municipal offices, form e-groups to listen to people and obtain feedback and use online monitoring of programs and activities with the aid of cyber tour of worksites.

vii) Giving an identity to the city: based on its main economic activity, such as local cuisine, health, education, arts and craft, culture, sports goods, furniture, hosiery, textile, dairy, etc.

Smart city selection Process: There are three stages in the selection process.

Stage 1: Short listing of cities by States The State begins with short listing the potential smart cities on the basis of conditions precedent and scoring criteria and in accordance with the total number allocated to it. The first stage of the competition will be intra state, in which cities in the State will compete on the conditions precedent and the scoring criteria lay out. These conditions precedent have to be met by the potential cities to succeed in the first round of competition and the highest scoring potential smart cities will be shortlisted and recommended to participate in Stage 2 of the challenge. The information sent by the ULBs in the forms has to be evaluated by the State Mission Director and the evaluation placed before the State level High Powered Steering Committee (HPSC) for approval. The cities emerging successful in the first round of competition will be sent by the State or UT as the recommended shortlist of smart cities to MoUD by the stipulated date (to be indicated in the letter to Chief Secretaries). The State Government has to fill the form and send with the recommended list. The MoUD will thereafter announce the list of 100 smart cities.

Stage 2: The Challenge Round for Selection In the second stage of the competition, each of the potential 100 smart cities prepares their proposals for participation in the 'City Challenge'. This is a crucial stage as each city's Smart City Proposal (SCP) is expected to contain the model chosen, whether retrofitting or redevelopment or Greenfield development or a mix thereof, and additionally include a Pan City dimension with Smart Solutions. The SCP will also outline the consultations held with the city residents

Indexed with IIJIF
Impact Factor : 1.021
ISSN: 2456 - 608X
International Journal of Legal Research and Studies
An UGC Approved Online Law Journal

and other stakeholders. An evaluation criteria for the SCPs has been worked out by MoUD based on professional advice and this should act as guidance to the cities for preparing their proposal.
Stage 3: Evaluation of Proposal By a stipulated date, to be indicated by MoUD to the States or UTs, proposals will be submitted to MoUD for all these 100 cities. These will be evaluated by a Committee involving a panel of National and International experts, organizations and institutions. The winners of the first round of Challenge will be announced by MoUD. Thereafter, while the winning cities start taking action on making their city smart, those who do not get selected will start work on improving their SCPs for consideration in the second round. Depending on the nature of the SCPs and outcomes of the first round of the Challenge, the MoUD may decide to provide handholding assistance to the potential Smart Cities to upgrade their proposals before starting the second round.

ISSUES AND CHALLENGES OF SMART CITIES

Economic Drivers: Economic drivers are the key for the setting up of a smart city. A clear plan of vibrant economic growth of the city based on multiple economic drivers must be the focus area of smart city, especially if it is a Greenfield city.
Obsolescence of Technology: In the Indian context, control of infrastructure and resources is envisaging huge investments in technology. Whilst the investment is a small percentage of the overall infrastructure, all this investment is being done with a horizon of between 5-10 years and technology leapfrogs quicker than that. For example, we have quickly moved from 2G to 3G and on to 4G, from a wired world to a wireless world and from cables to optical fibers. Technology evolves faster than a city, and there must therefore be options to adapt as technology changes or gets obsolete. Technology protocols must be amenable to modification and upgradation.
Urban Mobility: A smart city encompasses many dimensions, and a reliable, affordable, and sustainable transport system is at its core. Along with public transport systems, development of last mile connectivity is necessary for optimal utilisation of mass transit systems. India's public transport has not been adequate because of the high density of population, poor urban planning and zoning, and also lack of investment. As we build new cities, public transport must be the key focus. A new city's mobility system must be integrated with the regional transport system and may need augmentation of existing regional infrastructure.
Water Management: The water cycle (water resource, production, distribution, consumption, collection, and treatment of waste water) plays an integral part of an urban system. Water and its sustainability are of key importance in new cities, which must aim to be water neutral or positive as much as possible.
Waste Management: Sustainability in solid waste management calls for a new approach to solid waste and converting it as a resource. There is a need for solid waste management through smart solutions for clean roads and a healthy environment. Unfortunately, India has just not woken up to this. Cleanliness and hygiene call for a baseline cultural change. Technology could help however, the upfront investment in some of these technologies or the minimum scale investment is high. Nevertheless, it is imperative that this be planned for.
Social Infrastructure: A city needs social infrastructure for making it habitable, and most of this social infrastructure needs a critical mass of population and consumption to be viable. This means that in the initial years, participation of private enterprises would be limited. It also means that to start a new Greenfield city, either the projects need to be funded by the promoting government or subsidized. City planners need to plan accordingly.
Funds: A new city would take a long time to develop both the requisite economic drivers and the infrastructure, only after that will it see people stepping in. By the time the city is habitable and has a

Indexed with IIJIF
Impact Factor : 1.021
ISSN: 2456 - 608X
International Journal of Legal Research and Studies
An UGC Approved Online Law Journal

basic population, the project would at least be 7 to 10 years in the making. Unfortunately, the current funds available for this sector are only for the short term of 10-15 years. Unless the development of the city is done out of funds that have a 20 to 30 year horizon, these projects are unlikely to survive. India needs a sea change in the way it looks at funding these cities, or their infrastructure.

Employment Generators: It is important to plan along with the government on job creation in these cities. A critical focus on job creation is not only on the primary economic jobs created, but on service jobs. The city has to be serviced by people working on the support infrastructure.

Rental Housing: There is considerable need to develop a rental housing market to ensure that more people can move in and work in a smart city without needing to buy properties there. The real estate laws for a smart city must be such that investors will come in and provide rental residences to people who move in to stay there.

Phasing: A Greenfield smart city must necessarily be built in phases on the basis of real demand, and demand should drive investments beyond the basics. Otherwise, we will wind up with ghost cities where infrastructure has been built, but with no takers.

Maintenance: Building a Greenfield city is relatively easy however, it is continuous maintenance which differentiates a great city from the rest. Smart Cities should be easy to maintain and be taken care of to extend, modify and accommodate the growing needs of citizens. Smart cities need to be smart for the long haul, not only at the outset.

LEGAL CHALLENGES

The Information Technology Act The Information Technology Act governs the scope of internet activity in India. The Act was implemented to provide legal recognition to electronic transactions, validate digital contracts and regulate online services. The development of smart cities will witness different entities dealing with networks, designs, software, manufacturing of devices, etc. There will also be a surge in "Big Data" i.e., enormous sets of unstructured data analyzed computationally to understand patterns relating to human behavior. Currently, the term "data" under the Act is defined as representation of information, knowledge, facts, concepts or instructions being prepared in a formal manner and processed in a computer system. Clearly, the definition does not consider the implications of Big Data which comprises of varied sets of data which will be stored and processed by governments, private organizations and individuals.

The rise in Big Data would pose new security challenges relating to personal information and privacy. Further, the term "Cyber Security", which is defined as protecting information, equipment, devices, computer resource from unauthorized access, disclosure, disruption, modification and destruction must be adaptive to the evolving nature of security risks as the advent of Smart Cities could lead to criminal activities that are beyond the scope of the current definition. This calls for a reexamination of the current provisions under the Act.

National Cyber Security Policy, 2013 To address the present lacuna of laws to tackle cyber crimes, the government introduced the National Cyber Security Policy, 2013, which recognizes cyber space as a critical sector and aims to build security mechanisms at National and sectoral levels. The Policy recommends (a) establishment of a National Critical Information Infrastructure Protection Centre responsible for mandating security practices related to design, acquisition, development and use of information, (b) a nodal agency to coordinate all matters of cyber security, (c) to designate a Chief Information Security Officer, to lead the internal security measures in organizations, (d) encourages collaboration between the government and private sector to enhance open standards for certified IT products, (e) jointly develop a cyber security framework with other countries that recognizes the applicability of International Law and the UN Charter.

Indexed with IIJIF
Impact Factor : 1.021
ISSN: 2456 - 608X
International Journal of Legal Research and Studies
An UGC Approved Online Law Journal

E-Governance and the Right to Privacy

The Act recognizes e-governance by providing legal sanctity to digital signatures, electronic service delivery and retention of electronic records. Sharing and exchange of information between government and private parties will be at the core of the mission. Presently, the Act does not address the risks associated with this and it remains a grey area.

Right to privacy is a constitutional right, yet the Act is inadequate as the provisions are confined to the protection of sensitive personal data under the Information Technology. These Rules regulate private entities and exclude the government from its ambit. The Act and Rules define "personal information" as information relating to a natural person and excludes real time data i.e., data collected and processed by different applications, to relay information without any delay in timelines. Smart Cities would involve communication among devices with little or no human intervention. Services will be delivered over networks on real time basis to be used for differing purposes. The current rules require a body corporate to obtain consent in writing to collect data from the provider of sensitive personal data. Currently, India does not have a comprehensive privacy policy governing the conduct of different stake holders engaged in the information technology chain. For example, every website has a policy on privacy incorporated in it, seeking consent of the user for collection and retention of information as well as a separate policy outlining the manner in which the information is intended to be used by the collector.

OPPORTUNITIES

The development of smart cities serves two purposes. First, smart infrastructure, such as smart water meters and electricity grids, can reduce usage and costs by raising awareness among individuals about how much they are using, but also by automatically reducing consumption at times of limited demand. For instance, in Mumbai, India, about one half of water was wasted until recently due to poor infrastructure, however, after installation of "smart" metering technology the amount of lost water decreased by one half.

Secondly, smart infrastructure can also improve a city's environmental sustainability, affordability, business climate and general "livability" as in quality of life. When asked about the main benefits in making their city smart, citizens also cited the environment, e.g. reducing vehicular emissions or increasing recycling waste (46%) as a top priority, followed by higher quality of education (41%), a safe and secure environment (39%), easier access to government services (36%) and more job opportunities (35%). We believe in the next 10-20 years 30-40% of jobs are at risk. Reflecting the sentiments of citizens, second and third priorities for a smart city are indeed quality of life and services as well as a societal need for a strong sense of a community.

About 25-30 people are expected to migrate every minute from the rural areas to the cities in search of better livelihood and lifestyles. By 2050, about 843 million people are expected to reside in the urban areas accounting for about 50 percent of the overall population.

RECOMMENDATIONS

1. Create a catalogued platform for Smart City knowledge resources: There is a vast pool of knowledge resources consisting of the different aspects of city planning and smart cities, both in India and internationally. However these need to be made available over a common platform in a way so they make for easy reference, clearly indicating their scope and which aspect of urban planning and management they provide guidance. More importantly, all these need to have necessary cross referencing to avoid confusion.

2. Bring together ongoing efforts on relevant research: There are considerable efforts and research work already initiated by various organisations related to smart cities as well as urban planning in general in

Indexed with IIJIF
Impact Factor : 1.021
ISSN: 2456 - 608X
International Journal of Legal Research and Studies
An UGC Approved Online Law Journal

India. These efforts need to be brought to a common platform from to identify convergence, deliberate and also to leverage on key findings from them. These will substantially contribute towards some of the reference guides.

3. Ensure mechanisms for convergence of programme and projects: The Mission Statement and Guidelines emphasizes on drawing convergence with various other related programmes. A national level capacity building programme is vital to scale up the plan making and implementation processes. Further, institutional and financial convergence across sectors and schemes or programmes need to happen. To avoid multiplicity of parastatal bodies that exist today and ensure coordination between different institutions, various administrative models can be explored. Moreover, it will require adequate mechanism with necessary checks and balances at various stages to ensure convergence of programmes and projects.

4. Initiate an assessment of the smart city planning and regulatory framework in India: An assessment needs to be conducted to identify the changes needed in India's urban planning acts and regulations and the provisions of different plans. The planning stages suggested in the reference framework, regardless of its relevance, cannot be implemented as a streamlined process unless supported by legal mandates. Also, technology application related domains need to be assessed with respect to the guiding principles.

5. Constitute an expert group on Smart Cities at the national level, supplemented by expert groups at the state level: These groups need to be supported further by a Smart City Working Group under the Department of Urban Development in each state. The Working Group should have representatives from all relevant departments and work as a secretariat to the national level Smart City Expert Group.

CONCLUSION

India's smart city program hopes to revolutionize city life and improve the quality of life for India's urban population. Smart City would require smart economy, bright people, smart organization, smart communication, smart engineering, smart transit, fresh environment and bright living. Nevertheless, with mass migration leading to basic problems, like water shortages and overcrowding, the rate at which these cities will be developed will be the key.

Since there are no laws governing smart cities specifically, the government will have to amend current laws to align with the objectives of the smart city program. In time to come, it may be essential to examine the feasibility of developing a comprehensive law on cyber security, privacy, data protection and standardization of equipments. This can be done through amendments in the Act or a new set of rules that address the aforesaid challenges. The success of the foregoing programme will depend on the underlying telecommunication infrastructure which is a capital intensive industry, requiring strong collaboration between governments and private entities. In this light, it is essential that the legislature and policymakers develop clarity in the present regulations to evoke investor confidence. Smartness should be both the citizen and the public administration which must build a true dialogue with people. A smart city is above all inclusive, meaning the ability and opportunity for everyone to be an active citizen.

REFERENCES

[1] Martine, G., and Marshall, A. State of world population 2007: unleashing the potential of urban growth.
[2] Davies Kingsley and Golden H.H. "Urbanization and development in pre-Industrial Areas", Economic Development and Cultural Change, 1954, Vol.3.
[3] Greenfield, A., Against the Smart City. 2013.
[4] Hans Schaffers, Nicos Komninos, "Smart Cities and the Future Internet: Towards Cooperation Frameworks for Open Innovation". 2011.
[5] Kundu, A. and Basu, S. "Informal Manufacturing Sector in Urban Areas - An Analysis of Recent Trends", Manpower Journal, 34(1), April - June 1998.
[6] Koenigsberger, O. "New towns in India" Town Planning Review.

Indexed with IIJIF
Impact Factor : 1.021
ISSN: 2456 - 608X
International Journal of Legal Research and Studies
An UGC Approved Online Law Journal

[7] Volker Buscher, Michelle Tabet. Gareth Ashley, Léan Doody, Jason McDermott, Michael Tomordy, "Smart Cities Transforming the 21st century city via the creative use of technology", Arup's IT & Communications Systems team, 2010.
[8] Sen, A. R., and Ghosh, J. Trends in rural employment and the poverty employment linkage. Asian Regional Team for Employment Promotion, International Labour Organization, 1993.
[9] Isher Judge Ahluwalia. Transforming Our Cities, Harper Collins, 2014.
[10] Komninos, Intelligent cities: innovation, knowledge systems, and digital spaces, 2002.
[11] https://www.researchgate.net/publication/Smart_City_Projects_in_India_Issues_