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Indian Smart Cities Mission

As the race for becoming smart cities intensifies in India, 99 municipalities across the country get ready to attract consultants and implementers to make their city the best. **Global Technologies** analyses the concept of smart cities.

Soon after becoming the Prime Minister Narendra Modi's one of the first initiatives was establishing smart cities - his vision to set up 100 smart cities across the country with an aim to "provide core infrastructure, a decent quality of life to its



citizens, clean and sustainable environment and application of Smart Solutions".

Initially cities across the country bid to be selected for the plan. Municipalities hired consultants to prepare their bids listing the array of activities and ideas they would implement. As of today 99 cities have been selected to be upgraded as part of the Smart Cities Mission. The first round winners were declared in January 2016. There were 20 cities and the top three cities were Bhubaneswar followed by Pune and Jaipur. The second round winners included 13 cities of which Kolkata from West Bengal has withdrawn itself from Smart Cities Mission. The third round winners included 27 cities while the fourth round winners included 30 cities. The final round winners included 8 cities.

What are smart cities?

Due to the breadth of technologies that have been implemented under the smart city label, it is difficult to distill a precise definition of a smart city. As per Wikipedia 'A smart city is an urban area that uses different types of electronic data collection sensors to supply information which is used to manage assets and resources efficiently. This includes data collected from citizens, devices, and assets that is processed and analyzed to monitor and manage traffic and transportation systems, power plants, water supply networks, waste management, law enforcement, information systems, schools, libraries, hospitals, and other community services. The smart city concept integrates information and communication technology (ICT), and various physical devices connected to the network (the Internet of things or IoT) to optimize the efficiency of city operations and services and connect to citizens. Smart city technology allows city officials to interact direct-

ly with both community and city infrastructure and to monitor what is happening in the city and how the city is evolving.'

Major technological, economic and environmental changes have generated interest in smart cities, including climate change, economic restructuring, the move to online retail and entertainment, ageing populations, urban population growth and pressures on public finances. While many countries across the globe are already in the process of making their cities smart. India jumped into the bandwagon in 2015.

Smart City Features

Several concepts of the Smart city rely heavily on the use of technology; a technological Smart City is not just one concept but there are different combinations of technological infrastructure that build a concept of smart city - Digital city, Virtual city, Intelligent city, Ubiquitous city (U-city), Cognitive Smart City.

Some typical features of comprehensive development in Smart Cities are described below.

- 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 flexibili-



ty in land use and building bye-laws to adapt to change;

- Housing and inclusiveness - expand housing opportunities for all;
- 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;
- 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;
- Promoting a variety of transport options - Transit Oriented



Development (TOD), public transport and last mile para-transport connectivity;

- 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. Forming 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;
- 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;
- Applying Smart Solutions to infrastructure and services in area-based development in order to make them better. For example, making Areas less vulnerable to disasters, using fewer resources, and providing cheaper services.

Smart City Features will include - Smart IT and Communications using Cloud / Open Data, IoT, Smart Transport, Smart Grid, Intelligent Street Lights, Home automation, Security Cameras, Video Intelligence / Data, Urban Planning, Geo-Spatial, Building Intelligence Monitoring (BIM), Green Building Solutions, Water monitoring and billing, Water ATMS, Solid Waste Management, Toilets, Pollution Monitoring, Clean Energy, Solar power garbage compactors, car recharging stations and energy saving lamps.

Global Scenario

London, Singapore and Seoul make up the top three smart cities worldwide. Eden Strategy Institute recently unveiled the rankings of the Top 50 Smart City Governments globally, from a study conducted in partnership with OXD (ONG&ONG Experience Design) that analyses the diverse approaches towards developing smart cities around the world.

"Smart Cities are taking centerstage in securing an adaptable, inclusive, productive, sustainable, and resilient future for humanity. Leading the development and re-invigoration of high-performing and loveable cities is one of the grandest challenges of our time," says Mr. Calvin Chu Yee Ming, Partner at Eden Strategy Institute.

This 2018/19 rankings studied 140 smart cities, from which the Top 50 Smart City Governments were ranked across ten vectors: Clarity of Vision; Leadership; Budget; Provision of financial incentives; Support programmes; Talent-Readiness; People-centric approach; Development of an Innovation Ecosystem; Implementation of "Smart" Policies; and Track Record of previous ini-

tiatives and projects.

Six Indian cities emerged among the Top 50 Smart City Governments with smart city plans co-created with citizens, and supported by systematically-planned and mobilized budgets from the central government since 2015. **These included New Delhi, Surat, Ahmedabad & Bhubaneswar (Tie), Jaipur and Pune.**

Large IT, telecommunication and energy management companies such as Cisco, Schneider Electric, IBM and Microsoft market initiatives for intelligent cities. Cisco, launched the Global Intelligent Urbanization initiative to help cities using the network as the fourth utility for integrated city management, better quality of life for citizens, and economic development. IBM announced its Smarter Cities to stimulate economic growth and quality of life in cities and metropolitan areas with the activation of new approaches of thinking and acting in the urban ecosystem. Sensor developers and startup companies are continually developing new smart city applications.



A Brief Report on Indian Smart Cities Mission

- A total of **99 cities** have been added to Indian Smart Cities Mission
- Top Three Cities are Bhubaneswar followed by Pune and Jaipur.
- An investment of **Rs 57,393 crore** has been proposed under smart city plans.
- Under the Smart City Mission, the Centre provides **Rs 500 crore to each city over a period of 5 years** for implementing various projects.
- The progress on smart cities has been slow as the mission is facing several implementation challenges but is expected to pick up this year.
- Each city selected will create a company **with a CEO to implement the mission.** The State and Central government will each provide the city with Rs 500 crore for the mission. So this means a total of Rs 1,000 crores in funding from both.
- The cities propose to take up various projects, including "smart" roads, rejuvenation of water bodies, cycle tracks, walking paths, smart classrooms, skill development centres, upgradation of health facilities, and pan city projects like integrated command and control centre.

1st Round winners

No.	Cities	State/UT
1	Bhubaneswar	Odisha
2	Pune	Maharashtra
3	Jaipur	Rajasthan
4	Surat	Gujarat
5	Kochi	Kerala
6	Ahmedabad	Gujarat
7	Jabalpur	Madhya Pradesh
8	Visakhapatnam	Andhra Pradesh
9	Solapur	Maharashtra
10	Davangere	Karnataka
11	Indore	Madhya Pradesh
12	New Delhi	New Delhi
13	Coimbatore	Tamil Nadu
14	Kakinada	Andhra Pradesh
15	Belgaum	Karnataka
16	Udaipur	Rajasthan
17	Guwahati	Assam
18	Chennai	Tamil Nadu
19	Ludhiana	Punjab
20	Bhopal	Madhya Pradesh

3rd round winners

No.	Cities	State/UT
1	Amritsar	Punjab
2	Kalyan	Maharashtra
3	Ujjain	Madhya Pradesh
4	Tirupati	Andhra Pradesh
5	Nagpur	Maharashtra
6	Mangalore	Karnataka
7	Vellore	Tamil Nadu
8	Thane	Maharashtra
9	Gwalior	Madhya Pradesh
10	Agra	Uttar Pradesh
11	Nashik	Maharashtra
12	Raurkela	Odisha
13	Kanpur	Uttar Pradesh
14	Madurai	Tamil Nadu
15	Tumakuru	Karnataka
16	Kota	Rajasthan
17	Thanjavur	Tamil Nadu
18	Namchi	Sikkim
19	Jalandhar	Punjab
20	Shimoga	Karnataka
21	Salem	Tamil Nadu
22	Ajmer	Rajasthan
23	Varanasi	Uttar Pradesh
24	Kohima	Nagaland
25	Hubli-Dharwad	Karnataka
26	Aurangabad	Maharashtra
27	Vadodara	Gujarat

5th round winners

No.	Cities	State/UT
1	Erode	Tamilnadu
2	Saharanpur	Uttar Pradesh
3	Moradabad	Uttar Pradesh
4	Bareilly	Uttar Pradesh

2nd Round winners

No.	Cities	State/UT
1	Lucknow	Uttar Pradesh
2	Bhagalpur	Bihar
3	Faridabad	Haryana
4	Chandigarh	Chandigarh
5	Raipur	Chhattisgarh
6	Ranchi	Jharkhand
7	Dharamasala	Himachal Pradesh
8	Warangal	Telangana
9	Panaji	Goa
10	Agartala	Tripura
11	Imphal	Manipur
12	Port Blair	Andaman & Nicobar
13	Kolkata*	West Bengal

*(withdrawn by CM West Bengal from Smart Cities Mission)

4th round winners

No.	Cities	State/UT
1	Thiruvananthapuram	Kerala
2	Naya Raipur	Chhattisgarh
3	Rajkot	Gujarat
4	Amravati	Maharashtra
5	Patna	Bihar
6	Karimnagar	Telangana
7	Muzaffarpur	Bihar
8	Puducherry	Pondicherry
9	Gandhinagar	Gujarat
10	Srinagar	Jammu and Kashmir
11	Sagar	Madhya Pradesh
12	Karnal	Haryana
13	Satna	Madhya Pradesh
14	Bangalore	Karnataka
15	Shimla	Himachal Pradesh
16	Dehradun	Uttarakhand
17	Tiruppur	Tamil Nadu
18	Pimpri Chinchwad	Maharashtra
19	Bilaspur	Chhattisgarh
20	Pasighat	Arunachal Pradesh
21	Jammu	Jammu and Kashmir
22	Dahod	Gujarat
23	Tirunelveli	Tamil Nadu
24	Thoothukudi	Tamil Nadu
25	Tiruchirappalli	Tamil Nadu
26	Jhansi	Uttar Pradesh
27	Aizawl	Mizoram
28	Allahabad	Uttar Pradesh
29	Aligarh	Uttar Pradesh
30	Gangtok	Sikkim

eSmart provides smart solutions for smart cities



When for the first time I had the pleasure of meeting Suresh Shah, I was pretty impressed by his thought process and knowledge in his numerous fields of operations. What truly surprised me was when my friend Sumit Sikdar told me his age – 74 years. What an entrepreneur – still going strong and with enthusiasm to launch a few more companies and extend support to upcoming startups. “But this is how I am been throughout my life. After doing my engineering I pursued M.S. (Indl. Engg.) in U.S.A. with a major in Operations Research and minor in Economic Analysis. Both have helped me grow up in my career,” said a smiling Suresh Shah.

Starting his career as a system analyst he soon started his own company as a consultant and had stalwarts like Peter Drucker as his clients. But it was in 1975 when he made the smallest PC capturing 80% market share that brought fame to him. By then he was also involved in helping sick units turn around earning him the nick name of The turnaround man. “It’s all a question of being systematic and doing a SWOT analysis,” said Suresh Shah.

Now this never aging youngster runs an ESCO company engaged in LED street lights. I was surprised to know that his company will make 100% project investment with zero investment from customer’s side. Also they will maintain it for 10 years with no maintenance burden to customer. “Energy conversation is ahimsa and being a true follower of this path, I think the field chosen is perfect. Smart Energy Savings is the need of the hour,

when today whole world is falling short of energy, and where lighting is one of the major contributor determining demand & supply. Looking at the social need & business perspective, we are bound to support most effective energy saving lighting products with latest trends & technology,” said Suresh Shah.

Named “eSmart Energy solutions Pvt. Ltd.” its aim is to develop technology based energy saving lighting products. They are focused at addressing the needs of the customers through rugged, efficient, reliable & economic way to supply the products ie, providing value for customer’s money.

eSmart Energy solutions is fully equipped with state of the art manufacturing setup in Nashik along with knowledgeable staff with whom we had an opportunity to interact.

What is ESCO?

ESCO is an Energy Service Company that provides integrated energy services to its customers that ensures energy efficiency improvement in electrical system. It identifies opportunity and provides technology product and finance to achieve energy efficiency. Its remuneration is directly tied to the energy saving achieved. Turnkey project are generally undertaken for 10 years duration. “We will have a 24x7 helpline to receive complaints and redress. We commit an up time above 97% and service solutions within 48 Hours. In case of for non-performance we expect the customer to put penalty charges,” said Suresh Shah.





As a part of this ESCO model eSmart Energy solutions offers outdoor public lighting as well as indoor lighting for municipal corporations as well as corporate. Under ESCO model eSmart Energy Solutions will take care of the investments and maintenance of the same for the agreement period (5years to 10years) and the ESCO will get paid through the Energy Savings. Which means the customer gets all the benefits with LED Lights such as good ambiance, great energy savings, long life, no maintenance cost and state-of-the art technology at zero investment. ESCO will undertake replacement of existing lighting fixtures with corresponding equivalent wattage of the LED and its maintenance.

eSmart is considered as the pioneer in implementing ESCO projects and the company has executed many prestigious projects. eSmart has more than 150K street light installations and this number is rapidly increasing with additional projects.

eSmart energy solutions has been in ESCO business from last 5 years and have replaced conventional fittings with their LED Street Lights Fittings. They already executed these projects in 11 different cities in India with many more in the pipeline. The company has been interacting with municipalities across India to make Indian Prime Minister Narendra Modis vision of Smart City a feasibility. They are now vying for the International market. "For the success of a smart city we will play a vital role. But our solutions are not just limited to India as I see a huge potential globally and will pursue our goal of make the world energy friendly," said Suresh Shah.



Case Study of Bhubaneswar

Street lighting infrastructure in Bhubaneswar, the capital of an Indian state - Odisha, used to be outdated, inefficient, and in poor condition. Although the main roads were well-lit, smaller streets and residential areas were lit with dim, patchy lighting or none at all.



The cause of this problem was no secret. First, street lighting infrastructure was outdated and in poor condition. Second, the entire system was operated manually and only with few personnel available, maintenance was insufficient. Only six people handled procurement, installation and

replacement of luminaries and customer complaints for a city with about 20,000 street lights. Third, no monitoring system was in place over 75% of the street lights lacked meters and inventory records existed. The city could neither monitor nor control burning hours.

Bhubaneswar Municipal Corporation (BMC), the responsible authority, understood that it did not have a technical or financial capacity to modernize and manage its street lighting system. It considered entering into performance based contract with the private sector, whereby an Energy Service Company (ESCO) would upgrade the street lighting infrastructure and improve management through metering, remote monitoring, compliance with national lighting standards, and the use of inventory records. ESCO would recover its investment by claiming a share of energy saving realized. But the track record of ESCO contracts in other Indian cities were mixed. Many failed because of poor preparation and risk allocation.

BMC asked for IFC's assistance to design and structure the transaction, and manage a public private partnership process to identify a qualified private sector partner to upgrade and manage the street lighting system.

Shah Investments, Financials, Developments, and Consultants Private Limited, an Indian Energy Services Company, was awarded the tender. It will invest in and manage Bhubaneswar's street lighting system and receive payments generated by realized energy savings.

IFC worked closely with BMC throughout the process. The team carried out technical, commercial and legal vigilance, designed and transaction structure, drafted bid documents, marketed the project, and provide the assistance throughout the bidding process. IFC also analyzed similar projects in India and interacted with several ESCOs to identify best practices and potential impediments. The findings were integrated in the project design.