

CREATING THE SMART CITIES OF THE FUTURE

Promoting urban development models that are
more energy efficient and sustainable



CITIES KEY FOR INDIA

Across India, cities are responding to the pressures of rapid urbanization and population growth.

By 2030, India's urban population is expected to double to more than 600 million people. Urban centers will house 40 percent of the country's population and contribute 75% of India's GDP. These trends will create a huge demand for energy and increase environmental impact. How India manages this change has huge implications for its citizens, economy and environment.

Shakti Sustainable Energy Foundation (Shakti) seeks to accelerate the transition to sustainable cities with a focus on urban planning, sustainable transport and energy efficiency in the built environment. An important area of focus for Shakti is the Smart City Mission, a flagship urban development plan launched by the Government of India. With the launch of the Mission, cities have an opportunity to pioneer and effect new, innovative blueprints for urban growth. Recognizing this, Shakti is facilitating efforts to enhance the success of the Smart Cities Mission.

The Opportunity: Smart Cities

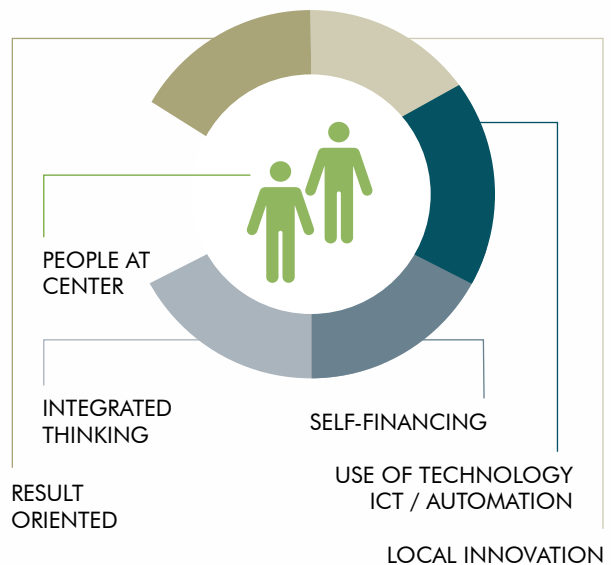
With the right policies and investments, India's cities can be much more livable and prosperous. India's Smart Cities Mission is an ambitious multi-year effort in this direction.

The Mission aims to improve the quality of life in over 100 fast growing urban centres by strengthening their core infrastructure and making them more liveable and sustainable for citizens by applying well thought out solutions. The Smart Cities Missions will support area-based developments for city improvement (retrofitting), city renewal (redevelopment) and city extension (greenfield development). Cities will implement either of these approaches along with one pan-city initiative that covers larger parts of the city and are expected to develop their vision plans to meet these goals.

Recognizing the vital importance of cities, Shakti enables efforts to enhance the success of the Smart Cities Mission. Under its Smart City initiative, Shakti is facilitating the development of urban development models that are more energy efficient and sustainable. Leveraging an expert network of organizations in urban planning, finance, policy and others areas. Leveraging an expert network of organizations in urban planning, finance, policy and others, Shakti helps to design and catalyze solutions that make the fast-growing urban environment more resilient to challenges.

48.8% of India's urban population lives in 106 of the 109 cities participating in the Smart Cities Mission.

The Smart City Concept



What we have contributed to

Knowledge and expertise to six Indian cities to shape their Smart City aspirations

A unique component of the Smart Cities Mission is that cities develop vision plans called Smart City Proposals. These proposals carry an overarching urban development vision for the city and prioritize interventions that encourage sustainable development. Based on their robustness, cities are identified to receive funding from the Mission.

Shakti supported efforts to contribute to the development of the Smart City Proposals of four cities—Visakhapatnam, Kakinada, Jaipur and Udaipur—with a specific focus on including elements of sustainable mobility and built environment into the proposals. All four cities made it to the list of the top 20 cities (out of 109 cities) that were shortlisted by the Ministry of Urban Development for the first round of funding under the Smart City Mission. Their Smart City proposals were the basis of this selection and will now shape efforts to implement a smart vision for each city.

The Smart City Proposals consisted of important recommendations for public transport, walking

and cycling solutions, car restraint measures, regulations for para-transit and green building improvements—ingredients that can help build the Smart Cities of tomorrow.

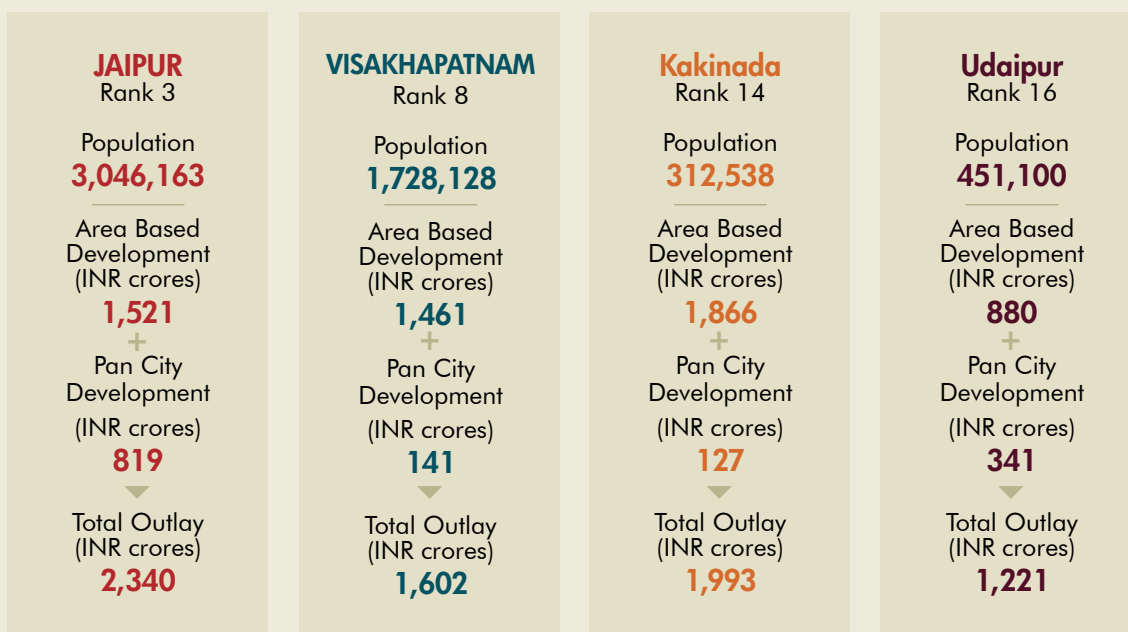
Going forward, Visakhapatnam, Kakinada, Jaipur and Udaipur, along with the other cities will get INR 100 crores each year over the next five years. Shakti is engaging with all four cities to implement their vision plans.

Expanding its work further, Shakti is facilitating technical and advisory assistance to two more cities shortlisted under the Smart City Mission—Chennai and Ludhiana.

Across all six cities, Shakti has helped to establish technical experts within their municipal corporations. These experts provide regular inputs and guidance to the city governments to shape their Smart City plans.



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Source: <https://smartnet.niua.org/>



A successful pilot: Junction improvement in Udaipur

Udaipur has proposed to retrofit its walled city under its Smart City Proposal. The walled city is of vital importance because it houses 20% of Udaipur's population and contributes significantly to its economy. Taking this forward, Shakti facilitated a project to improve street redesign, parking management and traffic circulation in the walled city area.

Shakti supported mobility and design improvements at the Suraj Pole junction, a major junction in the heart of the walled city. Because of heavy traffic and congestion, the junction, which has several intersections, often required heavy traffic regulation.

To decongest the junction, the streets and intersections along the junction were redesigned using temporary installations that defined street edges and designated spaces for pedestrians, cyclists and street vendors. The junction was made operational for a week to test the design. The results were very positive—the new design helped to decongest traffic and the junction required lesser traffic regulation than before.

Now, the design improvement is a permanent feature of the intersection. It is being tested at other junctions in the city—a critical step in scaling up this outcome.

In 2017, The Udaipur Municipal Corporation received the Volvo Sustainable Mobility Award for this project in recognition of its efforts to improve mobility in one of the most important corridors in the city.

The successful design improvement at one junction in Udaipur is now being tested in other junctions of the city – a critical step in scaling up this outcome.



The Udaipur Municipal Corporation received the Volvo Sustainable Mobility Award in recognition of its efforts to improve mobility in one of the most important corridors in the city.



The temporary design structure at the Suraj Pole junction helped ease traffic and congestion in the junction area.

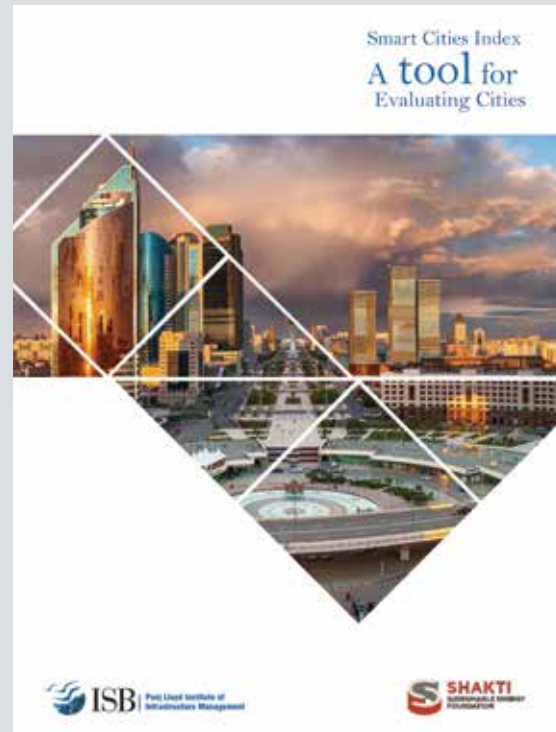
The development of a Smart City Index

With the implementation of the Smart Cities Mission gradually gaining momentum, a few important questions arise. What does it mean to be a 'Smart City'? How are cities ranked in terms of being 'smart'? How can the progress of the cities be monitored? And are cities adequately prepared to meet today's urban needs while gearing up for tomorrow?

The Smart City Index, supported by Shakti, seeks to answer these pertinent questions. The index ranks cities on important criteria such as economy, governance, environment, mobility and others to provide an indicative picture of their 'smartness'. The index allows comparisons between cities and ranks them based on how they perform. It assesses improvements over time and serves as a measure of a city's liveability and smartness.

The Smart Cities Index has ranked the 53 Indian cities with a population of more than one million across several criteria. The results of the composite Smart City Index rank Pune at the top followed by Chennai, Thiruvananthapuram and Coimbatore. Detailed findings and highlights of the analysis are presented in the form of a report, which was

launched by the CEO of the NITI Aayog at a high-profile event held in New Delhi.



Public—Private Partnerships (PPPs) to show the way for financing Smart Cities

The Smart Cities Mission will require significant amounts of capital to meet the rapidly growing requirements of cities. One way for cities to generate additional funds is Public—Private Partnerships (PPPs). The Smart Cities Mission has placed significant emphasis on the PPP model encouraging the private sector to mobilize capital, technology and other resources. Such partnerships can support government funding and lead to a more sustainable and efficient stream of public goods and services.

The PPP framework provides action-oriented recommendations for the successful implementation of each project. Backed by a robust feasibility analysis, the framework considers the financial and operational efficiency of the public and private sectors, and identifies their roles and responsibility in a clear and

coherent manner. As cities begin to identify their investment needs, the framework can provide a roadmap to mobilise financing under the PPP model.

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Shakti has commissioned the development of a PPP framework for five priority sustainable urban transport infrastructure projects: city bus operations, bus terminals, Intelligent Transport Systems, Public Bicycle Sharing (PBS) Schemes and street infrastructure.

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Passenger information systems: A prerequisite for smart cities

As India builds technology-enabled smart cities, policymakers have an opportunity to design and implement sustainable mobility strategies. Better public transport systems can cater to the transport demand as well as encourage passengers to make the shift from private vehicles to public transport - reducing emissions, pollutions and congestion in cities. Smart passenger information systems, providing reliable and updated information on public transport, can help facilitate this transition.

Based on this premise, Shakti facilitated the development of an innovative passenger information system for the city of Hyderabad. The system collects bus network data through

flock sourcing techniques using a specially developed methodology. The data is converted to the General Transit Feed Specification (GTFS) format to show data about bus operations. This information is freely available to people through a mobile app called Routemaster. Now passengers can use this app to find information about bus services in the city.

Persuading passengers to move away from personal vehicles will depend on smart moves such as these. The methodology and technology has been disseminated in the public domain and can be replicated to generate similar bus information systems in other cities.



In collaboration with:

- ICLEI – Local Governments for Sustainability South Asia
- Deloitte & Touche Consulting India Private Limited
- The Indian School of Business
- SGArchitects
- Mapunity

About:

Shakti Sustainable Energy Foundation works to strengthen the energy security of India by aiding the design and implementation of policies that encourage renewable energy, energy efficiency and sustainable transport solutions.



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