



Energy Planning for Cities and Smart Cities in India

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SAARC Member States – Energy Scenario

S. No	SAARC Country	Total Installed Capacity (GW)			Electricity Consumption (BU)		Primary Energy Consumption (MTOE)		RE Installed Capacity (MW)
		2020	2030	2040	2020	2030	2020	2030	2020
1	Afghanistan	1.1	6.0	7.0	1.1	7.5	4.9	9.3	3.2
2	Bangladesh	27.2	48.7	67.8	65	123.9	44	85.3	519.6
3	Bhutan	6.9	14.7	14.8	2.2	6.6	0.8	1.55	1.5
4	India	387.2	586.5	783.9	1290	2040	909	1,392	87,027
5	Maldives	1.4	3.2	NA	1.4	3.2	0.65	1.11	6
6	Nepal	3.4	7.9	9.3	5.6	15.8	15	21.2	32
7	Pakistan	57.5	108.7	173	7.9	27.9	90	147	1,465
8	Sri Lanka	5.8	9.1	11.7	15.3	28.2	11	16	564
Total		490.5	784.8	1068	1388.5				89618.3



SAARC Member States – Population Growth

S. No	SAARC Country	Population (Crores)			%Urban Area			% Rural Area		
		2020	2030	2050	2020	2030	2050	2020	2030	2050
1	Afghanistan	3.72	4.8	6.46	25.4	28.7	39.4	76.3	71.3	60.6
2	Bangladesh	16.44	17.89	19.25	39.4	47.3	61.2	63.4	52.7	38.8
3	Bhutan	0.075	0.084	0.09	45.8	52.7	63.4	59.1	47.3	36.6
4	India	135.26	150.36	163.9	35	40.4	53.5	66	59.6	46.5
5	Maldives	0.051	0.059	0.058	34.5	44.4	53	60.2	55.6	47
6	Nepal	2.81	3.33	3.53	21.4	25.2	38.2	80.3	74.8	61.8
7	Pakistan	21.22	26.29	33.80	35.1	37.8	47.4	63.3	62.2	52.6
8	Sri Lanka	2.17	2.2	2.22	18.4	20.6	30.1	81.5	79.4	69.9
Total		181.75	205	229.3						



Energy Savings in India (2018-19)

Name of the Scheme	Energy Savings		Total Savings (MTOE)	Monetary Savings (INR Crore)
	Thermal (MTOE)	Electrical (BU)		
PAT	11.093	30.279	13.698	34405
MSME	0.022		0.022	40
Standards and Labeling		55.693	4.790	27,846
UJALA		44.645	3.839	22,323
ECBC – Commercial Buildings Programme		0.040	0.003	20
BEE Star Rating Buildings		0.083	0.007	41
Building Energy Efficiency		0.110	0.009	55
Other Green Building Programmes		0.070	0.006	35
Street Lighting		5.647	0.486	2,824
Star Rated Pumps		0.18	0.015	90
Corporate Average Fuel Economy	0.848		0.848	1,560
FAME-I Scheme	0.038		0.038	70
Total	12	136.374	151.741	89,122



Smart City Mission - India

Total Smart Cities:
100

**Total Urban
Population
Impacted:**
9,96,30,069

**Total Cost of
Projects (Rs. Cr):**
2,05,018

**Total Area Based
Development Cost
(Rs. Cr): 1,64,204**

**Total Pan-City
Solution Cost (Rs.
Cr): 38,914**



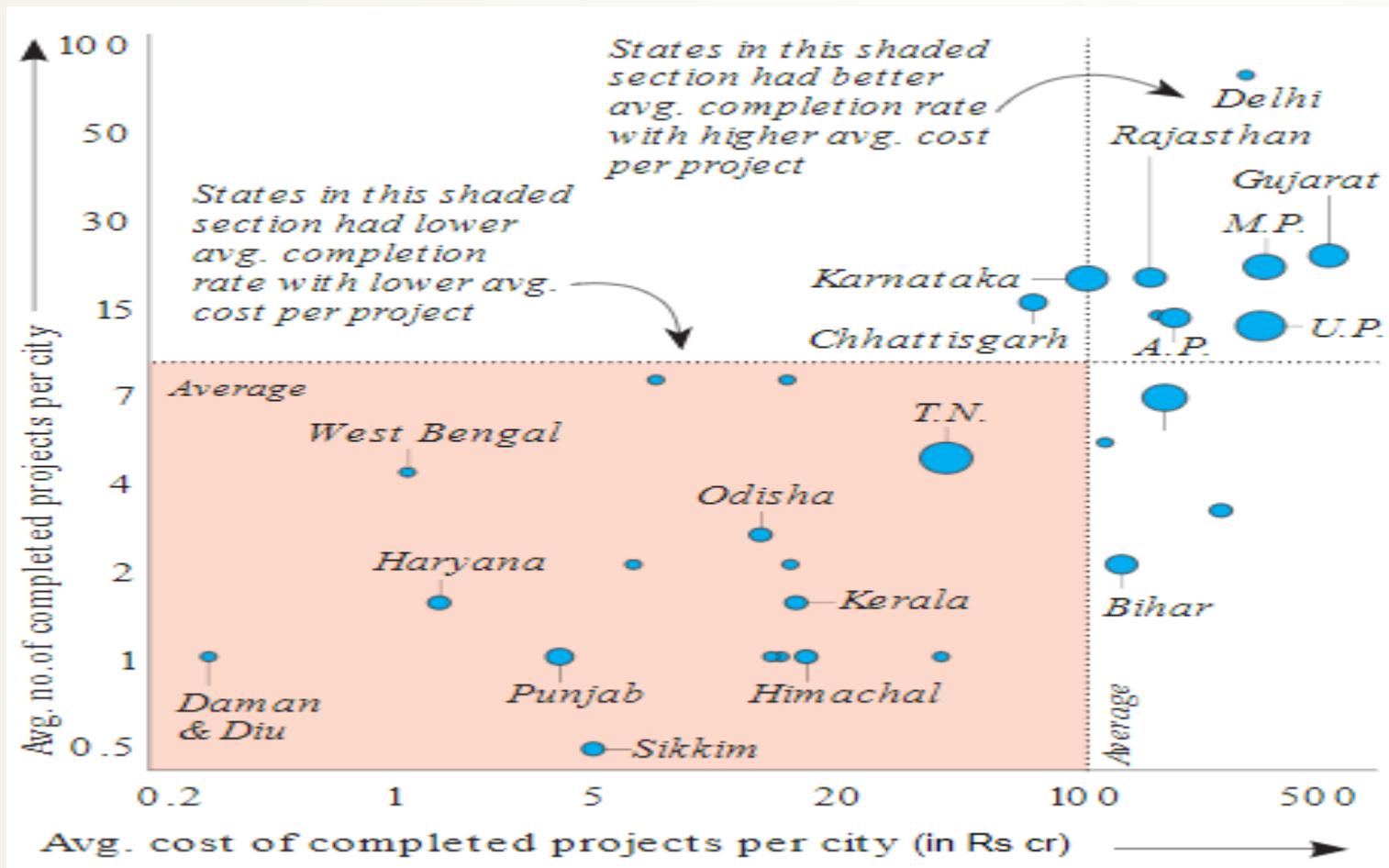


List of Smart Cities

S. No	State/UT	No. of Cities Allocated	S. No	State/UT	No. of Cities Allocated	S. No	State/UT	No. of Cities Allocated
1	Andaman & Nicobar Islands	1	13	Haryana	2	25	Nagaland	1
2	Andhra Pradesh	3	14	Himachal Pradesh	1	26	Odisha	2
3	Arunachal Pradesh	1	15	Jammu & Kashmir		27	Puducherry	1
4	Assam	1	16	Jharkhand	1	28	Punjab	3
5	Bihar	3	17	Karnataka	6	29	Rajasthan	4
6	Chandigarh	1	18	Kerala	1	30	Sikkim	1
7	Chhattisgarh	2	19	Lakshadweep	1	31	Tamil Nadu	12
8	Daman & Diu	1	20	Madhya Pradesh	7	32	Telangana	2
9	Dadra & Nagar Haveli	1	21	Maharashtra	10	33	Tripura	1
10	Delhi	1	22	Manipur	1	34	Uttar Pradesh	13
11	Goa	1	23	Meghalaya	1	35	Uttarakhand	1
12	Gujarat	6	24	Mizoram	1	36	West Bengal	4
Total								100

Smart City Progress - India

Of the 5,151 projects initially proposed, only 3,629 have been actively pursued. Of these, about 25% of the projects have been completed. But in value terms, the share of work completed amounts to just 11% of the total amount



- 5,151 projects worth more than 30.76 billion USD at different stage of implementation in 100 cities
- 4,154 Smart City Mission (SCM) Projects worth 22.92 billion USD tendered (72% of total)
- 1,290 SCM Projects worth 3.53 billion USD completed and operational



Smart City - Solutions

Waste Management

1. Waste to Energy Audit
2. Waste to Compost
3. Waste water treatment
4. Recycling and Reduction of C&D Waste

Water Management

1. Smart Meters & Management
2. Leakage Identification, Preventive Management
3. Water Quality Monitoring

Others

1. Tele-medicine & tele-Education
2. Incubation/Training Facilitation Centres
3. Skill Development Centres



E-Governance and Citizen Services

1. Public Information, Grievance Redressal
2. Electronic Service Delivery
3. Citizen Engagement
4. Video Crime Monitoring

Energy Management

1. Smart Meters & Management
2. Renewable Sources of Energy
3. Energy Efficient & Green Buildings

Urban Mobility

1. Smart Parking
2. Intelligent Traffic Management
3. Integrated Multi-Modal Transport



Smart Solutions in Use

Centralised
Command and
Control Centre

Transit
Operations
System

Smart Parking
System

Common Card
(Payment &
Operations)

Smart Metering
– Water, Gas &
Electricity

Data Analytics
Centre

LED Street
Lighting

E-Healthcare

Air Quality
Monitoring
Sensors

CCTV
Surveillance

Public
Information
System

Emergency
Response





Smart City Development - Barriers

Governance

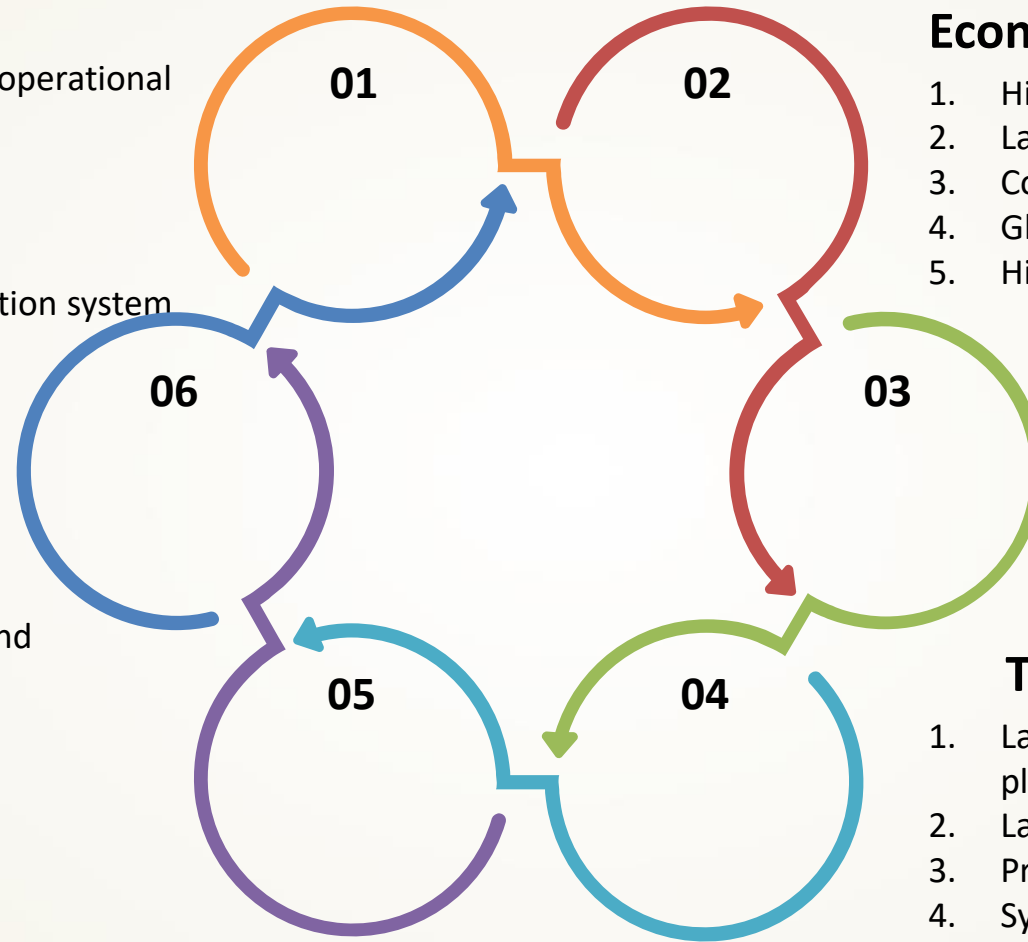
1. Lack of Coordination between city's operational networks
2. Unclear IT management vision
3. Political Instability
4. Poor private-public participation
5. Lack of developing a common information system model

Legal & Ethical

1. Cultural Issues
2. Lack of Standardization
3. Issues of Openness of Data
4. Lack of Transparency and Liability
5. Lack of Regulatory norms, policies and directions

Environmental

1. Lacking ecological view in behaviour
2. Growing Population problems
3. Lack of sustainability considerations
4. Carbon Emissions Effect
5. Degradation of Resources



Economic

1. High IT infrastructure and intelligence deficit
2. Lack of Competitiveness
3. Cost of IT training and skills development
4. Global economy volatility
5. Higher operational and maintenance cost

Social

1. Lack of involvement of citizens
2. Low awareness level of community
3. Geographical diversification problems
4. Degree of inequality

Technology

1. Lacking technological knowledge among the planners
2. Lack of access to technology
3. Privacy and security issues
4. System failures issues
5. Integration and convergence
6. Issues across IT networks



Thank you very much for your kind attention



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