Credits:

VIP model road, Surat:

Redevelopment of around 5Km road length into a user friendly model road that enhances pedestrian access and safety besides merging the blue and green infrastructure

Smart Cities Mission, MoHUA

2

ClimateSmart Cities Assessment Framework 2.0

ClimateSmart Cities Assessment Framework 2.0

India's GHG emissions have doubled between 1990 and 2015 and is expected to continue the trend.[1] CO_2 emissions from the energy sector is the largest driver of the overall GHG emissions and the country is one of the top energy consumers in the world (ibid). With the projected urbanization and GDP growth, the energy demand will increase significantly and with it the GHG emissions as well. The majority of emissions from Indian cities comes from industries followed by the energy consumed by the built environment (28% of all emissions) and the transportation sector (24% of all emissions).[2]

While cities play a key role in contributing toward climate change, cities are also adversely impacted by the changing climate. According to the IPCC 1.5°C Special Report, India is projected to experience more cyclones with high intensity storms, and has higher risk due to extreme rainfall and annually occurring heat waves. Cities, in addition to addressing the urbanization challenges are increasingly tackling extreme events like flooding, heat waves and cyclones. According to the National Disaster Management Authority (NDMA), 77 cities in the coastal regions of the country including some of the largest and most dense urban agglomerations are prone to frequent cyclones. The frequency of urban floods have also increased drastically in the last decade and the 2020 devastating flood in Hyderabad resulted in a loss of Rs.567 crores to the Greater Hyderabad Municipal Corporation(GHMC).[3]

Understanding the losses and damages from disasters, identifying the vulnerability hotspots, safeguarding urban assets, developing city level action plans to not only build disaster resilience but also adapt to the changing climate is becoming a key concern for Indian cities. While the national government has initiated 8 missions under the National Climate Action Plan for Climate Change (NAPCC) and indicated NDCs at the Paris Climate Agreement to mitigate emissions, cities can play a crucial role in greatly reducing GHG emissions by addressing energy consumption in the building and transportation sector in particular.

The Union Budget 2020-21 emphasized investments to infrastructure by allocating US$ 24.27 billion in the transport sector. Further, India plans to invest 1.4 trillion US$ on infrastructure between 2019-23.[4] With a massive push to develop cities and drive the economy, it is crucial to safeguard the investments from climate disasters and build forward looking cities. There is a need for cities to develop a clear roadmap for embedding climate change mitigation and adaptation strategies within their urban planning and development, including investments. To enable cities in taking this informed decision making a holistic assessment and benchmarking of urban development from climate lens is essential. To bridge this gap, the Ministry of Housing and Urban Affairs developed the ClimateSmart Cities Assessment Framework, the first-of-its-kind assessment on climate relevant parameters. The framework builds on the National Mission on Sustainable Habitat and is intended to be used as a tool for cities to inform investments, showcase evidence of their climate actions and monitor the impact.

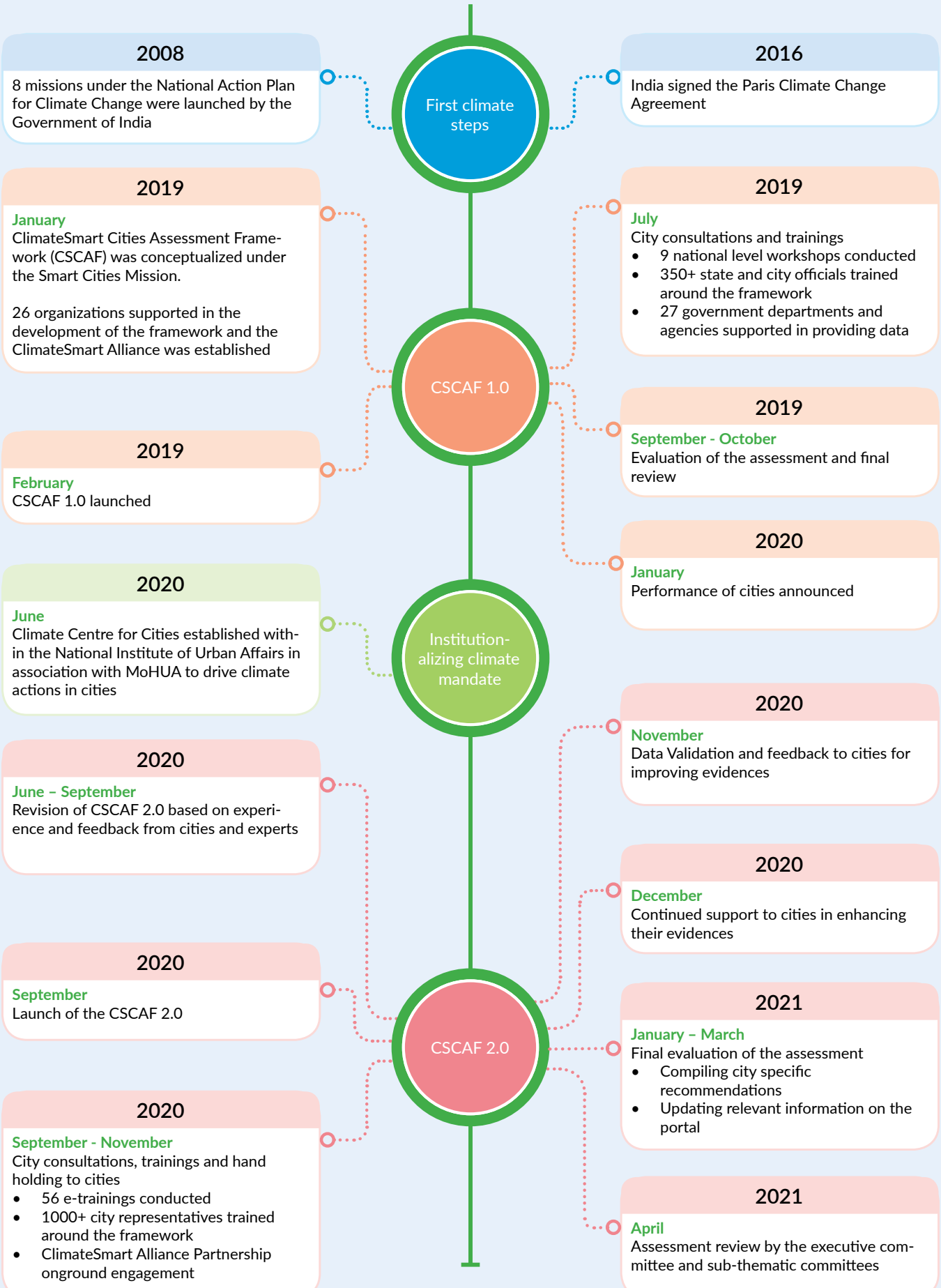
The Climate Centre for Cities, with the support of MoHUA has conducted CSCAF 2.0 and is expected to conduct regular monitoring of the performance of Indian cities with respect to their climate action. In order to institutionalize the process the following structure has been established:

- **MoHUA** is the apex funding agency supporting through its Smart Cities Mission.
- **C-Cube, NIUA** being the project implementation unit has established the secretariat for ClimateSmart Cities Alliance and continues to conduct various training to build the capacity of cities for taking up climate actions.
- Chaired by JS and Mission Director (Smart Cities), an 18-member **Executive Committee** and **5 Thematic Sub-committees** have been formed. The Executive Committee provides technical guidance and validation, and the Thematic Sub-committees provides technical inputs to development and review of indicators. Member details are available in Annexure 1.
- The **ClimateSmart Cities Alliance** member organizations associated with C-Cube to provide on-ground support to cities in the implementation of CSCAF 2.0.

1. Climate Transparency, 2018. Brown to Green: The G20 transition to a low carbon economy. India Country facts. Available at: https://www.teriin.org/sites/default/files/2018-11/BROWN%20TO%20GREEN_2018.PDF [Accessed 26 April 2021]
2. Sridhar, K. 2010. Carbon Emissions, Climate Change, and Impacts in India's Cities. India Infrastructure Report 2010. Available at: https://irade.org/Program%20Details%20&%20reading%20Materials/Reading%20Materials/Impact%20on%20Indian%20Cities.pdf [Accessed 26 April 2021]
3. Ishaqui, S. 2020. Telangana tells Centre: State suffered nearly 9K crore loss due to floods. Deccan Chronicle [Online] Available at: https://www.deccanchronicle.com/nation/in-other-news/231020/telangana-state-informs-centre-on-flood-damage.html [Accessed 26 April 2021]
4. IBEF, 2021. Infrastructure Sector in India. [Online] Available at: https://www.ibef.org/industry/infrastructure-sector-india.aspx [Accessed 26 April 2021]

CSCAF 2.0 Journey

A first-of-its-kind city assessment on climate relevant parameters



Improvements in the framework

The CSCAF 2.0 framework has been improved to capture the contribution of cities to the national and international initiatives like INDCs and SDGs respectively. This was done by capturing comprehensive feedback from 16 cities on the evidences and assessment methodology. In addition, deep-dive consultations with the thematic sub-committee and executive committee members were conducted. The improvements made in the framework with respect to indicators, scoring, evidence, support, engagement, coordination and the IT infrastructure are highlighted in this section.

Improved indicators

To avoid duplication and replication of data collation by cities for various MoHUA frameworks, indicators under the theme of waste management were aligned to Swach Survekshan. The data for these waste management indicators were sourced directly from the mission to avoid dual reporting.

Few indicators under the thematic area of **mobility, urban planning, green cover and biodiversity** were merged to enable ease of reporting. As a result, the total number of indicators were reduced from 30 to 28 within this assessment.

Standardized data templates were developed to ease the process of data collection from internal and external agencies. The design of the template helped in standardizing the data collected from line departments and other government agencies.

Spatial mapping support cities with better visualization and analysis is likely to improve decision making. Therefore, in addition to mandatory evidence, cities were encouraged to provide **maps as an additional evidence document.**

The definition and description of indicators and data points relevant to climate actions were simplified within this assessment to **support ease of understanding**.

Shri Lal Chhandama
Director - SC I
Ministry of Housing and Urban Affairs

> Rapid pace of urbanisation made cities more vulnerable to the adverse impact of climate change with little time to act. Smart Cities Mission has launched the 'ClimateSmart Cities Assessment Framework' to sensitize cities to swiftly take up climate-oriented actions. This framework paves the way for increasing climate resilience and development of sustainable urban centres

Better Coordination

C-Cube's core team **coordinated and managed** the assessment.

6 thematic experts **provided technical support to the cities** on a need to basis.

The team was supported by executive committee and sub-thematic committee members **in reviewing and improving the framework**

The ClimateSmart Alliance was established one month from the launch of the CSCAF to **support on ground coordination and climate action**

During the assessment, more than 50 ClimateSmart Alliance institutional members comprising both national and international organizations working in the area of climate change **extended on ground staff support to 121 cities.**

Comprehensive **data for green building performance indicators** were collated for all participating cities with support from Indian Green Building Council (IGBC), Green Business Certification Inc. (GBCI) and Green Rating for Integrated Habitat Assessment (GRIHA).

Dr. Umamaheshwaran Rajasekar
Chair Urban Resilience – Global Resilience Cities Network
National Institute of Urban Affairs

"This report is a culmination of contribution and support C-Cube received from Climate Alliance Partners spanning a multitude of developmental organizations and practitioners from cities, states, national and international institutions. This report outlines the key findings from the 2020 assessment and provides future directions including opportunity for increased collaboration and need for collective climate actions across Indian cities."

Increased Engagement

Online orientation sessions were conducted for city nodal officers and the supporting partner coordinators during the first two weeks of the assessment. The focus of these orientation and training sessions were to introduce the city nodal officers the framework, its indicators, our assessment methodology and the evidence required.

Daily mentoring sessions were conducted with the cities for the duration of the assessment period. During these sessions the nodal officers and other city officials got an opportunity to personally interact with the thematic experts. These sessions further helped nodal officers in not only understanding the requirements but also seek suggestions on data source and its access. A total of **56 such sessions were conducted** during the assessment period and over 1,000 city officials participated in these sessions.

Enhanced Digital Interactions

A help-desk to expedite the process of addressing queries from the cities was established. The **desk addressed over 800 queries and responded to over 2,200 calls** from city officials.

Support was provided in 8 different regional languages to city officials from varied geographies.

An online portal was developed in coordination with the National Informatics Centre (NIC). Carefully designed **dashboards with enhanced user interface** combined with real time updates were some of the added features.

Training videos on using the online portal were developed to further help the city officials.

Credits:

Discussion on CSCAF 2.0 implementation in Pune

by Pune Smart City Development Corporation Limited

Credits:

Discussion on CSCAF 2.0 implementation in Thiruvananthapuram

by Smart City Thiruvananthapuram Limited

Introduction to the Themes

The CSCAF 2.0 has five themes that captures both mitigation and adaptation aspects of various sectors in a city. The themes have varying weightages in the assessment based on their contribution to GHG emissions. The five themes of CSCAF are:

Urban Planning, Green Cover and Biodiversity

Water bodies and green spaces not only provide a better living environment but also help people to adapt to the adverse impacts of extreme climate events. Green areas also aid in carbon sequestration and minimising the impacts of air pollution. In this thematic area cities were assessed based on the measures taken to rejuvenate water bodies and open spaces, increase their green cover and conserve biodiversity. In addition, strategies, plans and actions adopted to build disaster resilience and climate actions were also considered.

Energy and Green Buildings

Growing urban population contributes to an increase in energy consumption. Currently, much of the energy consumed is derived from burning fossil fuels thereby contributing to GHG emissions. This theme therefore focused on assessing cities on their measures taken to reduce energy consumption, increase energy use efficiency and transition to clean energy (renewables). Further, the promotion and adoption of green buildings were also emphasised to address the built environment as they are prime contributors to GHG emissions.

Mobility and Air Quality

Vehicles plying within cities usually contribute to a significant portion of GHG emissions also result in deteriorating air quality. This thematic area assessed cities on the availability of public transportation, non-motorised transport infrastructure along with initiatives undertaken for transitioning to low carbon mobility. While these measures support in mitigating future GHG emissions, cities also need to address the challenges of air pollution. On these lines, cities were assessed based on measures taken to monitor air pollution and develop clean air city action plans.

Water Management

Achieving water security will be the key to growth and sustainable development of all Indian cities. Climate variability and change is expected to impact water resources especially its availability, accessibility and quality. To ensure sustainable development, this thematic area focused on water resource management considering the current supply and future demand. Other indicators in this thematic area include reduction of non-revenue water, recycling and reusing of waste water, energy efficiency in water supply and waste water management, flood and water stagnation risk management.

Waste Management

Urbanisation has resulted in tremendous increase in waste generation. Solid waste directly contributes to GHG emissions, treating waste / storm water / sewage consumes energy and indirectly contributes to GHG emissions. Further, the increased construction activity in cities results in waste that can also lead to air pollution. A detailed assessment of urban waste management is already being carried out within Swachh Survekshan (SS). Therefore the data provided by cities for the SS 2019 was used for assessing the performance of cities across selected indicators aligning to waste minimization, recycling of dry and wet waste, management of construction and demolition waste and scientific remediation of landfills.

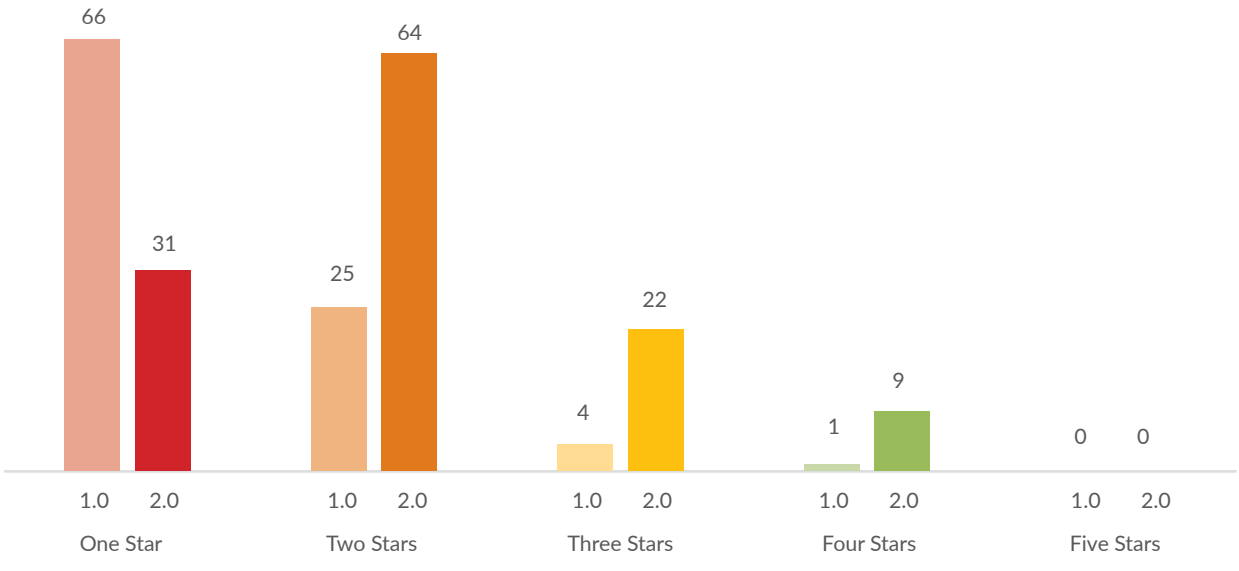
Overview of cities' performance

To illustrate cities' performance in addressing climate change 5 performance levels were used. The levels capture the progressive nature of cities and provide directions that are needed to build climate actions.

- **One Star** - Cities that are in the early stages of development. These cities are yet to consider climate change or are in the process of conceptualizing climate actions.
- **Two Stars** - Cities that have initiated data analysis, established committees and are in the process of hiring technical agencies to initiate climate planning.
- **Three Stars** - Cities that have institutional mechanisms in place, this includes but not limited to functioning committees. These are also cities which have developed action plans or in the process of doing so.
- **Four Stars** - Cities that have allocated budgets and have initiated the implementation of identified projects
- **Five Stars** - Cities that have showcased successful implementation of climate actions and were able to showcase the impacts/ benefits of such actions.

Marks wre allocated to cities based on the evidences provided for the indicated measures across each of the indicators. The technical document can be referred to for more details on the scoring methodology.[5]

In order to better understand the performance of the cities, key insights based on city tiers, geographical regions and climatic zones are presented for each of the indicators. 4 tier classifications i.e. small towns (< 50,000 population), medium cities (50,000 - 5 lakhs population), large cities (5 - 10 lakhs population) and metropolitan cities (>10 lakhs population) based on the URDPFI population classification as per Census 2011 has been followed. Geographical regions such as Central, Northern, Eastern, North-Eastern, Southern and Western regions are considered for classification of cities. Further, the climatic zones of cities based on cold, composite, hot-dry, temperate and warm-humid zones are also considered for analysis. More details are available in Annexure 2.



Performance of participating cities in CSCAF

The CSCAF 2.0 assessment indicates that cities have been able to showcase considerable progress since the first assessment conducted in 2019. Significant progress has been reported specifically in the themes of urban planning, green cover and biodiversity; energy and green buildings; and waste management.

This year, considerable number of cities have progressed to the performance level of *Two Stars* by documenting data and initiating assessment studies that can inform developing action plans. Cities progressing to the performance level of *Three Stars* have been able to establish institutional mechanisms for taking up relevant climate actions and have progressed to initiate the preparation of action plans. 9 cities have made good progress by implementing some of the identified climate initiatives and have moved to the performance level of *Four Stars*.

Note: The number of cities participating in CSCAF 2.0 has increased by 30 cities

[5]The technical document for CSCAF 2.0 can be accessed here - https://www.niua.org/csc/assets/pdf/CSCAF_2_Booklet.pdf

URBAN PLANNING, GREEN COVER & BIODIVERSITY

	★	★★	★★★	★★★★	★★★★★
CSCAF 2.0	55	40	22	6	3
CSCAF 1.0	62	27	7	0	0

ENERGY & GREEN BUILDINGS

	★	★★	★★★	★★★★	★★★★★
CSCAF 2.0	9	57	52	7	1
CSCAF 1.0	67	15	13	1	0

MOBILITY & AIR QUALITY

	★	★★	★★★	★★★★	★★★★★
CSCAF 2.0	64	38	19	5	0
CSCAF 1.0	60	34	2	0	0

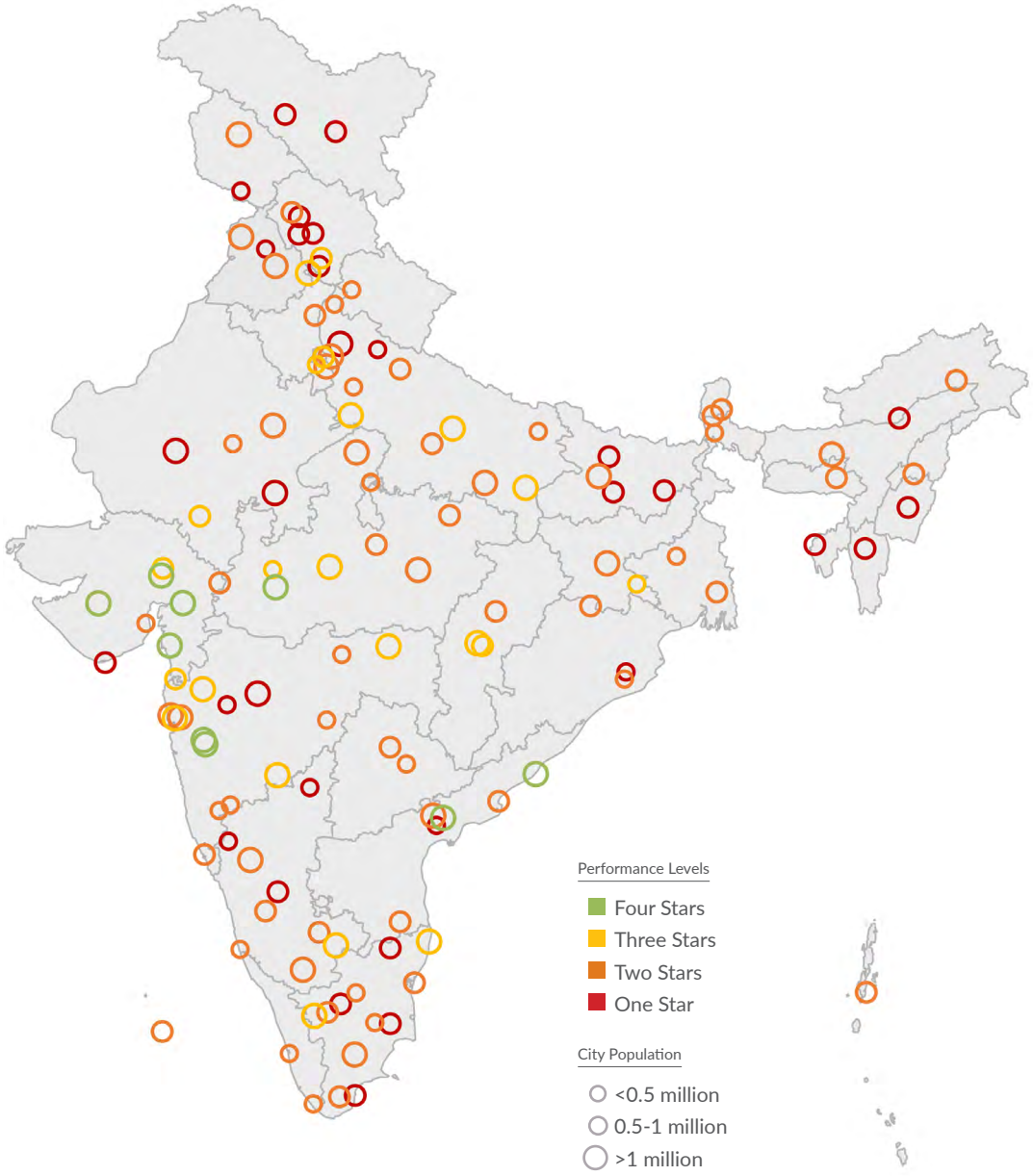
WATER MANAGEMENT

	★	★★	★★★	★★★★	★★★★★
CSCAF 2.0	77	37	9	3	0
CSCAF 1.0	81	15	0	0	0

WASTE MANAGEMENT

	★	★★	★★★	★★★★	★★★★★
CSCAF 2.0	53	5	15	22	31
CSCAF 1.0	64	32	0	0	0

Note: The number of cities participating in CSCAF 2.0 has increased by 30 cities



Performance of 126 cities in CSCAF 2.0

In CSCAF 2.0, conducted between September to December 2020, 126 cities have reported on 96 data points across 28 indicators under five themes. The participating cities included all 100 Smart Cites and 26 cities with population over that include state capitals and other interested cities.

0	5 Stars
9	4 Stars
22	3 Stars
64	2 Stars
31	1 Star

★★★★

- **Ahmedabad**
- **Indore**
- **Pimpri Chinchwad**
- **Pune**
- **Rajkot**
- **Surat**
- **Vadodara**
- **Vijayawada**
- **Visakhapatnam**

★★★

- **Agra**
- **Bengaluru**
- **Bhopal**
- Chandigarh
- **Chennai**
- **Coimbatore**
- Delhi
- Gandhinagar
- Gurugram
- Jamshedpur
- **Lucknow**
- **Nagpur**
- **Nashik**
- Naya Raipur
- **Raipur**
- Shimla
- Silvassa
- Solapur
- **Thane**
- Udaipur
- **Ujjain**
- **Varanasi**

★★

- Ajmer
- Aligarh
- Amravathi
- Amravati
- **Amritsar**
- Barielly
- Bhavnagar
- Bhubaneshwar
- Bilaspur
- Dahod
- Dehradun
- Dharamshala
- Durgapur
- **Faridabad**
- Gangtok
- Ghaziabad
- Gorakhpur
- Guwahati
- **Gwalior**
- Hubli Dharwad
- **Jabalpur**
- **Jaipur**
- Jhansi
- Kakinada
- **Kalyan Dombivali**
- **Kanpur**
- Karimnagar
- Karnal
- Kavaratti
- Kochi
- Kohima
- Kolhapur
- **Ludhiana**
- **Madurai**
- Mangalore
- Mira Bhayandar
- Mysore
- Namchi
- Nanded
- New Town Kolkata
- Panaji
- Pasighat
- **Patna**
- Port Blair
- **Prayagraj**
- Puducherry
- **Ranchi**
- Rourkela
- **Sagar**
- Saharanpur
- Salem
- Sangli Miraj &Kupwad
- **Satna**
- Shillong
- Shivamogga
- Siliguri
- **Srinagar**
- Tiruchirapalli
- Tirunelveli
- Tirupati
- Tiruppur
- Tiruvanantapuram
- Tumakuru
- Warangal

★

- Agartala
- Aizawl
- **Aurangabad**
- Belagavi
- Bhagalpur
- Bihar Sharif
- Cuttack
- Davangere
- Diu
- Erode
- Gulbarga
- Guntur
- Hamirpur
- Imphal
- Itanagar
- Jalandhar
- Jammu
- **Jodhpur**
- Kargil
- **Kota**
- Leh
- Loni
- Mandi
- **Meerut**
- Moradabad
- Muzaffarpur
- Palampur
- Solan
- Thanjavur
- Toothukudi
- Vellore

● Smart and AMRUT cities ◈ Smart cities ◆ AMRUT cities ○ Other cities *__Million + population cities__