Urban Data Observatory Framework & ClimateSmart City Assessment Framework in India

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Climate Centre for Cities

URBAN RESILIENCE UNIT

About Us

National Institute of Urban Affairs (NIUA) is a premier institute for research, capacity building and dissemination of knowledge for the urban sector in India. It conducts research on urbanization, urban policy and planning, municipal finance and governance, land economics, transit-oriented development, urban livelihoods, environment & climate change and smart cities. The institution functions with a vision to promote integrated solutions for urban India.

The Climate Centre for Cities is an institutional framework which was launch last week by our Honorable Minister for Housing and Urban Affair to build climate actions across urban India

NIUA in collaboration with the Global City Resilience Network (formerly the 100 Resilient Cities Program) have agreed to contribute to the resilience-building efforts in India. At the World Urban Forum, 2018 Minister for Housing and Urban Affairs, Shri Hardeep Singh Puri, oversaw the signing of a letter of intent for the two organisations to collaborate to develop evidence and policy frameworks that can be used by the MoHUA and the Government of India to promote and support the development of resilient cities across the country.

India's Urban Future

- Half of India's population is expected to be living in urban areas by 2050. The current status of growth indicates that cities need to be better prepared to accommodate this expected growth as well as manage shocks and stresses.

- Many cities face challenges in providing basic services and managing their natural resources. Currently, the deficit in urban infrastructure spending is more than Rs. 7,355 per capita

- The cost of poor planning for Indian cities will cost the economy between 1.2% and 6.3% of GDP.

India's Urban Future

Many Indian cities are also underprepared to manage shocks:

- In 2015, the Chennai floods cost the city Rs. 15,000 crores in damages and more than 280 people lost their lives
- Cyclone Hudhud resulted in more than Rs. 9,000 crores of damages
- 116 AMRUT Cities and 30 Smart Cities are prone to high risk of earthquakes

Challenges in Using Data in Urban India:

- **Ambiguity** around protocols regarding the quality, collection, sharing, storage, format and ownership of data.
- Lack of **formal mechanisms** exist to enable data sharing between data producers and users.
- There are also **no standards for sharing** data to ensure quality control or monitor the usage of sensitive information.
- Data sets that are currently available and verified are often accessible in an **impractical format or at frequencies** that are not suitable for analysis.
- Using data effectively: preparation and analysis time does not align with time for decision making

Data Informed Decision Making

- Data is the baseline of effective planning. However, data in Indian cities is siloed, preventing policymakers from understanding the full context before making decisions.

- Around the world, planners, policy makers, civil society groups and other stakeholders use data to help them make informed decisions that have positive impacts on their city. Data can enable stakeholders to be better prepared against shocks and may also support them in allocating resources in preparation for growth and alleviate stresses within a city

Ongoing Initiatives

The Government of India has initiated the following activities to mainstream data driven governance across Indian cities:

- Datasmart Cities is an initiative by the Ministry of Housing and Urban Affairs (MoHUA) to help 100 Smart Cities promote data for better governance and innovation. As a part of this proposed initiative, City Data Officers (CDOs) will be provided to each city to help them establish a City Data Alliance, which will include relevant stakeholders (including, government, business, academia, citizens and NGOs).

- MoHUA is working on helping cities benchmark themselves against various indices for example Ease of Living Index and Climate Smart City Assessment Framework to help them progress in a sustainable manner.

- MoHUA has come up systems and protocols to help cities exchange information across departments and institutions for their decision-making purposes

CLIMATE CENTER FOR CITIES (C-CUBE)

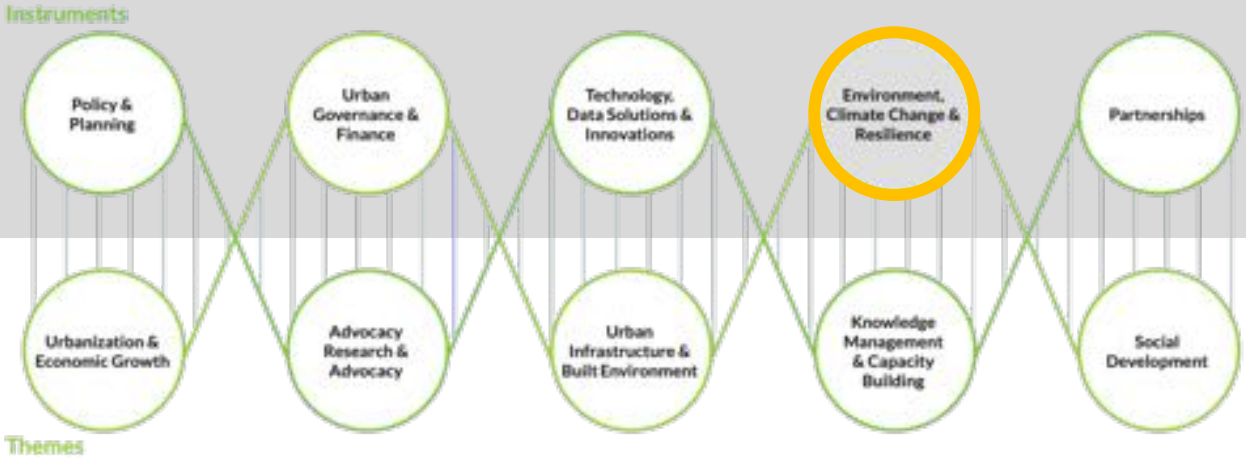
CLIMATE CENTRE FOR CITIES

Background

In the context of India's complex urban challenges and in addition to increasing climate risks and disasters, sustained actions ensuring cities prepare for and develop the ability to thrive in a varying climate is crucial.

In the theme of 'Environment, Climate Change and Resilience', NIUA has associated with over 100 cities and has closely worked with over 25 cities for project implementation and technical assistance in the last decade.

As a way forward to mainstream learnings from various projects and to drive climate action in Indian cities, NIUA with support from the MoHUA has established the Climate Centre for Cities under its theme of 'Environment, Climate Change and Resilience'.



One stop shop for climate informed actions

CLIMATE CENTRE FOR CITIES

6 verticals of the Centre

RESEARCH AND KNOWLEDGE NETWORK

POLICY + PLANNING + PROGRAM + PROJECT SUPPORT

CAPACITY BUILDING

To Build Climate Actions in Cities

INNOVATIONS

COMMUNICATION AND ADVOCACY

PARTNERSHIPS

CLIMATE CENTRE FOR CITIES

Instituting ClimateSmart Alliance

The Centre will engage with a range of stakeholders and institutions for cohesive and collaborative initiatives towards mainstreaming climate resilience in the urban discourse in India. These strategic partnerships will bring together the diverse skills, strengths and resources for implementing projects, sharing knowledge & good practices, and scaling up transformative action to address the increasing climate risks in Indian cities.

Climate Centre for Cities

Ministry of Housing and Urban Affairs
Government of India

Smart City
MISSION TRANSFORM-NATION

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Agency for Development and Cooperation SDC

Supported by giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

On behalf of: Federal Ministry for the Environment, Nature Conservation and Nuclear Safety of the Federal Republic of Germany

UN HABITAT FOR A BETTER URBAN FUTURE

RESILIENT GLOBAL RESILIENT CITIES NETWORK

KFW

UN GLOBAL COMPACT Network India

CLEAN AIR ASIA

GBCI

teri THE ENERGY AND RESOURCES INSTITUTE

The Nature Conservancy India

AFD AGENCE FRANÇAISE DE DÉVELOPPEMENT

ICLEI Local Governments for Sustainability

1UC INTERNATIONAL URBAN COOPERATION

KNOWLEDGE TO ACTION phfi PUBLIC HEALTH FOUNDATION OF INDIA

GRIHA

ALL INDIA INSTITUTE OF LOCAL SELF - GOVERNMENT

WRI INDIA

IGBC Indian Green Building Council

WWF 50 YEARS IN INDIA

aee Alliance for an Energy Efficient Economy

Collaborative initiatives towards mainstreaming urban climate resilience

CLIMATE CENTRE FOR CITIES

Impacts

- ✓ Climate actions are mainstreamed across cities
- ✓ Urban planning and development actions are informed by climate risks
- ✓ Cities are on the path to sustained economic growth
- ✓ Improved quality of life amongst citizens

Future proof and forward looking cities

CLIMATESMART CITIES ASSESSMENT FRAMEWORK 2.0

Approach Overview

The second phase of "ClimateSmart Cities Assessment Framework" aims to capture the progress made by cities since the previous year.

Moving forward, the learnings and experience from phase-I, and the feedback received from cities have helped in improving the indicators, assessment methodology, scoring criteria and respective evidences that are to be captured to conduct a wholistic assessment.

First-of-its-kind city assessment framework on climate relevant parameters in India

2019

- 96 cities
- 8 cluster workshops
- 400 regional workshops
- 300 state and city officials
- 120 datasets
- 27 gvt departments and other stakeholders

CLIMATESMART CITIES ASSESSMENT FRAMEWORK 2.0

Indicator Overview

Energy and Green Building

Urban Planning, Green Cover and Biodiversity

Mobility and Air Quality

Water Resource Management

Waste Management

The Framework is Progressive and Aspirational in Nature

SMART Indicators

- SMART
- MEASURABLE
- ACTIONABLE
- RELEVANT
- TIME-BOUND

CLIMATESMART CITIES ASSESSMENT FRAMEWORK 2.0

Indicator Overview

CLIMATESMART CITIES ASSESSMENT FRAMEWORK 2.0

Assessment Overview

- ✓ Each indicator not only assess but also provides guidance to progress and achieve the next highest levels.
- ✓ The framework provides cities with indicators to evaluate their own performance and facilitate peer to peer learning along with assessment tiles on the basis of their performance.
- ✓ In addition to assessment titles, the framework 2.0 intends to help cities understand their current status regarding climate actions and make efforts to improve their efforts in specific sectors .

Assessment titles


Data Observatory for Indian Cities

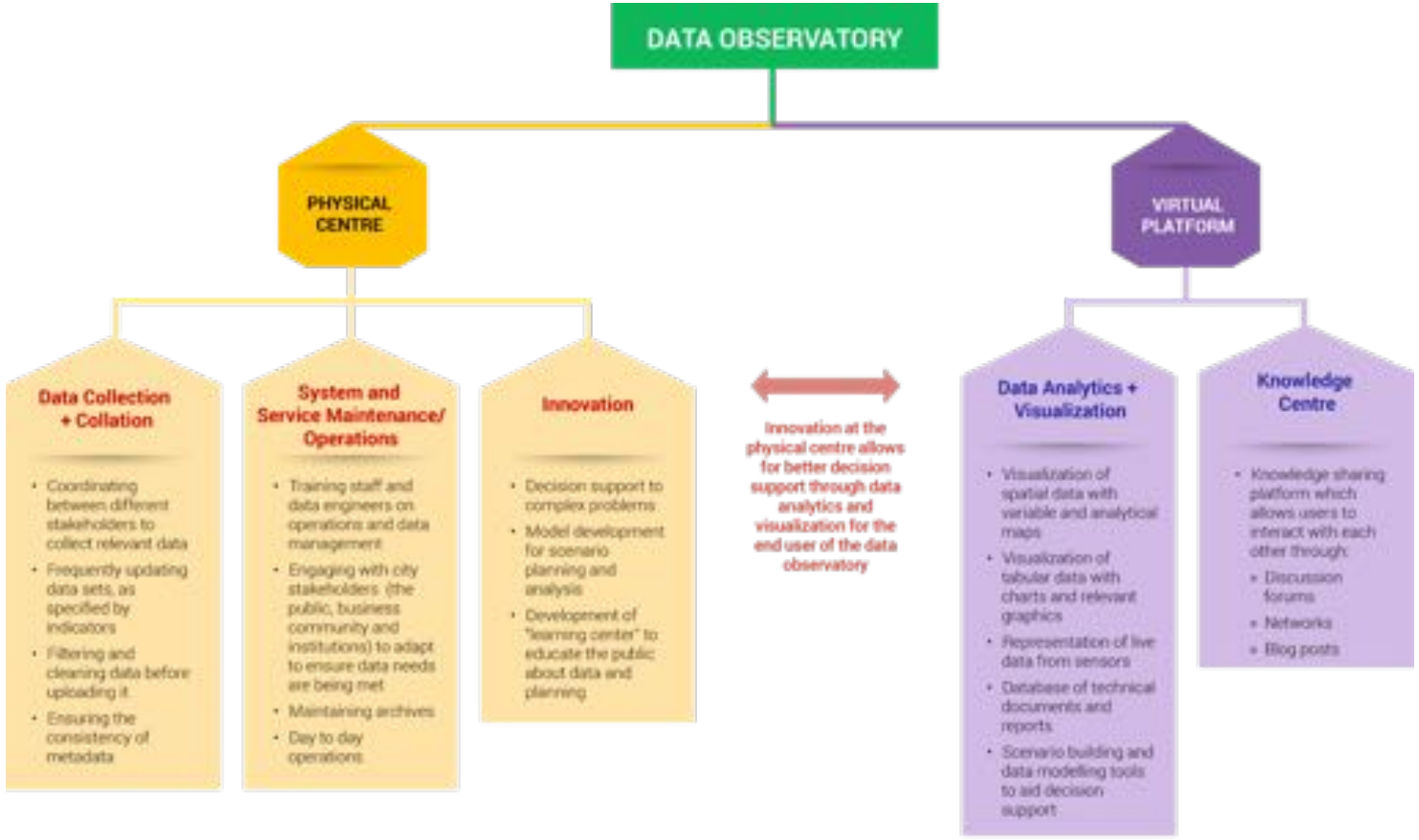
Data Observatory

An urban data observatory is a platform that serves as a repository for accurate and frequently updated city specific spatial and non-spatial data that will serve as a **decision support system**. The observatory adopts a multi-stakeholder and multi-sectoral approach, collating and visualizing data from various government and non-government agencies. This will help **eradicate data gaps** that currently plague decision makers. Decisions makers will be able to use the data observatory to **visualize trends, analyses data and build scenarios to help stakeholders solve complex urban problems**.

Operationalizing the Data Observatory

The observatory will require an operational team that will be led by a **Chief Data Officer** and will include of **data scientists**, **IT programmers** and **urban planners.**

The team will have three main roles: center operations and maintenance, data processing and innovation. Through these roles, the team will ensure quality control of data as it is uploaded to the observatory.



Multi-stakeholder Approach

Much of the urban data generated comes from citywide stakeholders on a daily basis but currently no formal platform for sharing of this data exists. The observatory will **enable multi stakeholder collaboration** as stakeholder contribution in terms of city data will allow decision makers and government agencies to **fill data gaps** and understand the landscape holistically. Also, stakeholders will **have access to public datasets**, which they can use to inform their decisions.

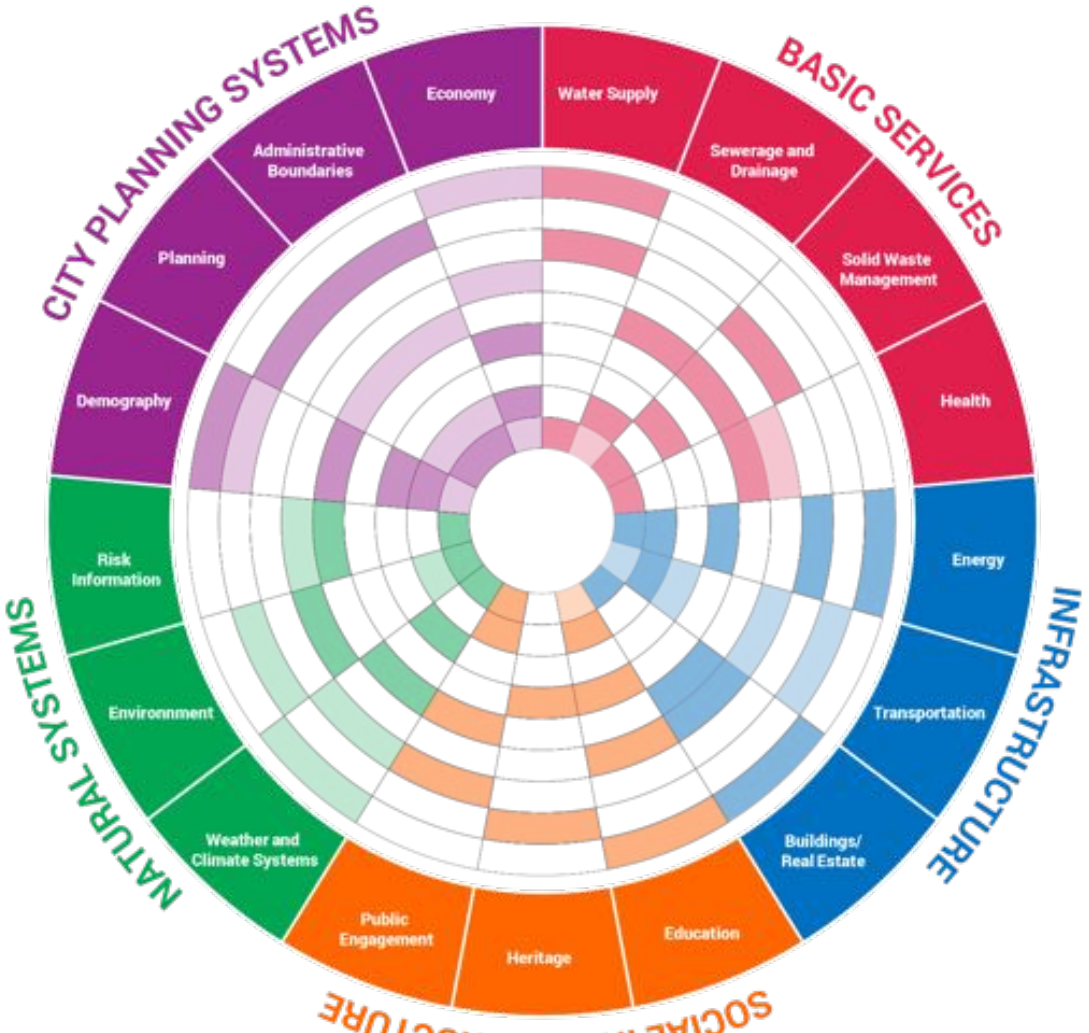
NIUA is working to **establish a data observatory in Chennai** in collaboration with Chennai Smart City Ltd, the Madras Chamber of Commerce and Industry and CUBE at IIT-Madras

Decision Framework

The Urban Resilience Unit is developing a decision framework to help cities make decisions to reduce the risks of shocks and stresses.

This framework will support cities in understanding how to **operationalize data** while using the data observatory. It is designed to enable decision makers **prioritize city needs and develop targeted and risk-informed policies.**

As cities use the framework, they can identify areas for resilient infrastructure development, improvement in service provision, alleviation of stresses and mitigation of shocks.



Use Case 1: Water Challenges

01 Water scarcity is already a challenge for Indian cities. In the next decade**,** several Indian cities are expected to run out of groundwater and by 2030, water scarcity is expected to cost the Indian economy 6% of its GDP. Effective and efficient water management will be critical in ensuring sustainable growth

02 Fluvial and pluvial flooding are a growing concern for Indian cities. Floods impact lives, livelihoods, infrastructure and health. The 2014 flooding in Guwahati affected over 42 lakh people reporting Rs.95 crore loss and Rs. 129 crore in repairing critical infrastructure after floods. More than 300 people lost their life. Given the vulnerability of many cities to flooding, there is a need for coordinated action and data driven planning to build flood resilience.

03 As Indian cities continue to grow, cities will need to address both resource constraints and their institutional capacity to provide for the increasing populations. New water distribution channels will need to be built and maintained to service new residents and businesses. Planning will need to accommodate growth in a safe manner where development is resilient to the impact of flooding.

Municipal Commissioner

The city's water distribution systems are stressed and the city faces the challenge of increasing water scarcity, poor cost recovery and high distribution losses. The municipal commissioner wants to improve their service delivery by using data.

Using the observatory:

The commissioner uses the observatory to determine water levels across the city with sensors providing information. This helps identify leakages in the distribution channels. Geotagged complaints from citizens are displayed on maps to highlight which communities have less access to municipal water supplies.

Changed scenario:

The municipal commissioner now understands where leakages are occurring and which communities are deprived of clean water sources. She is able to take better actions that make service delivery more efficient with better distribution channels and cost recovery systems.

Businesses

Unpredictable water cuts are impacting local businesses and hampering productivity. The industrial communities' complaints are not reaching the necessary departments and staff. Furthermore, there are no early warnings given to businesses in the case of flood risk, affecting the assets, logistics and revenue of businesses in the city.

Using the observatory:

Businesses are mapped on the observatory and alerted when their area will face water cuts. The observatory also provides flood warnings for businesses in exposed localities on a near-real time basis. The business community also contributes to the observatory and provides their data to be collated and shared on the observatory.

Changed scenario:

With early information about possible water supply gaps, businesses are able to plan their operations to accommodate changes, reducing the dip in productivity. Businesses also start to plan in advance around the issue of flooding on both adaptation and mitigation measures.

Citizens

Citizens are facing water cuts frequently and in some slums, municipal water is not available. This has resulted in the urban poor spending more on accessing water from tankers. Evidence of poor health outcomes exists in these areas due improper water storage.

Using the observatory:

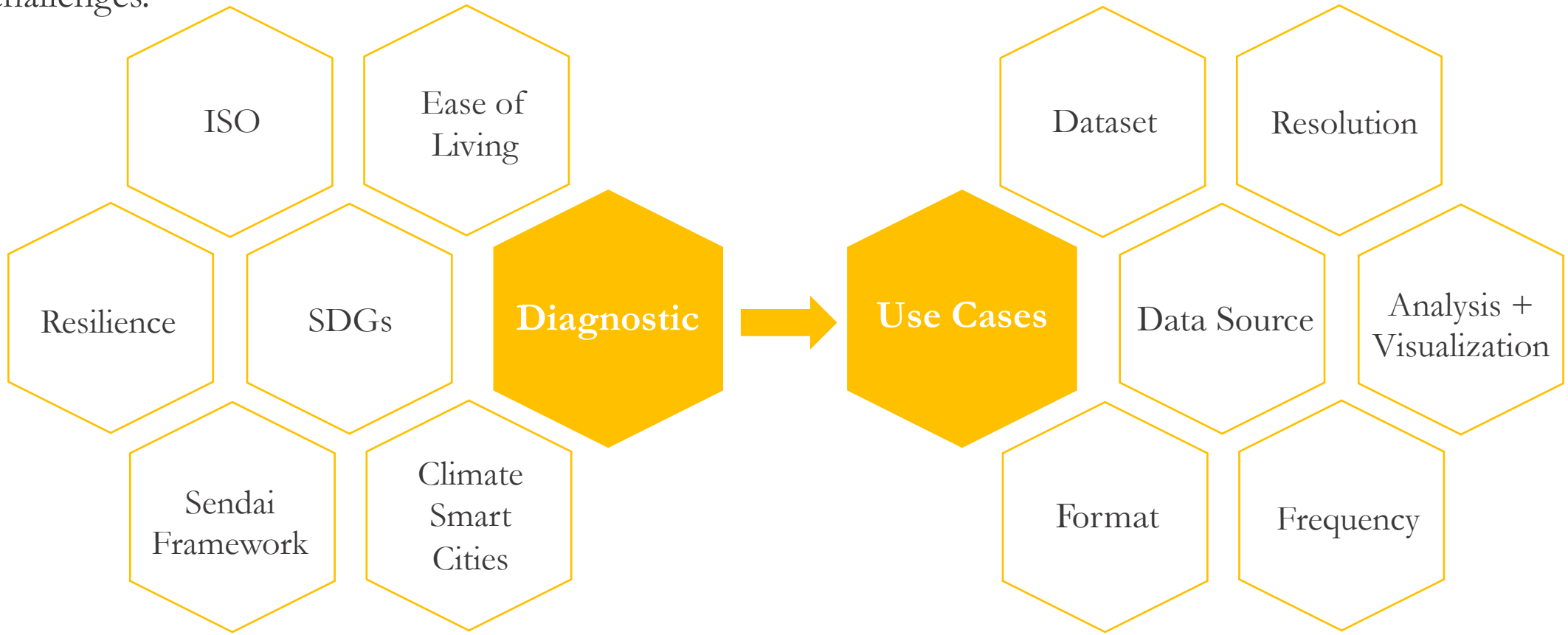
Citizens upload and geotag their water complaints through a single window platform to the data observatory. The complaints are monitored regularly by urban managers and effective actions in critical areas are planned in a timely manner.

Changed scenario:

Residents, especially slum dwellers, have improved access to reliable and safe water supply. Strategic engagement leads to reduction in complaints and cost savings for residents. Municipal investments in water infrastructure is targeted and health outcomes in those communities improve.

Going Forward

The Urban Resilience Unit will be publishing the Decision Framework as a guidebook for cities to use data effectively. The framework will aid cities to **diagnose their key challenges for relevant shocks and stresses** as well as provide detailed **use cases** to showcase how datasets can be used to address these challenges.



Urban Observatory

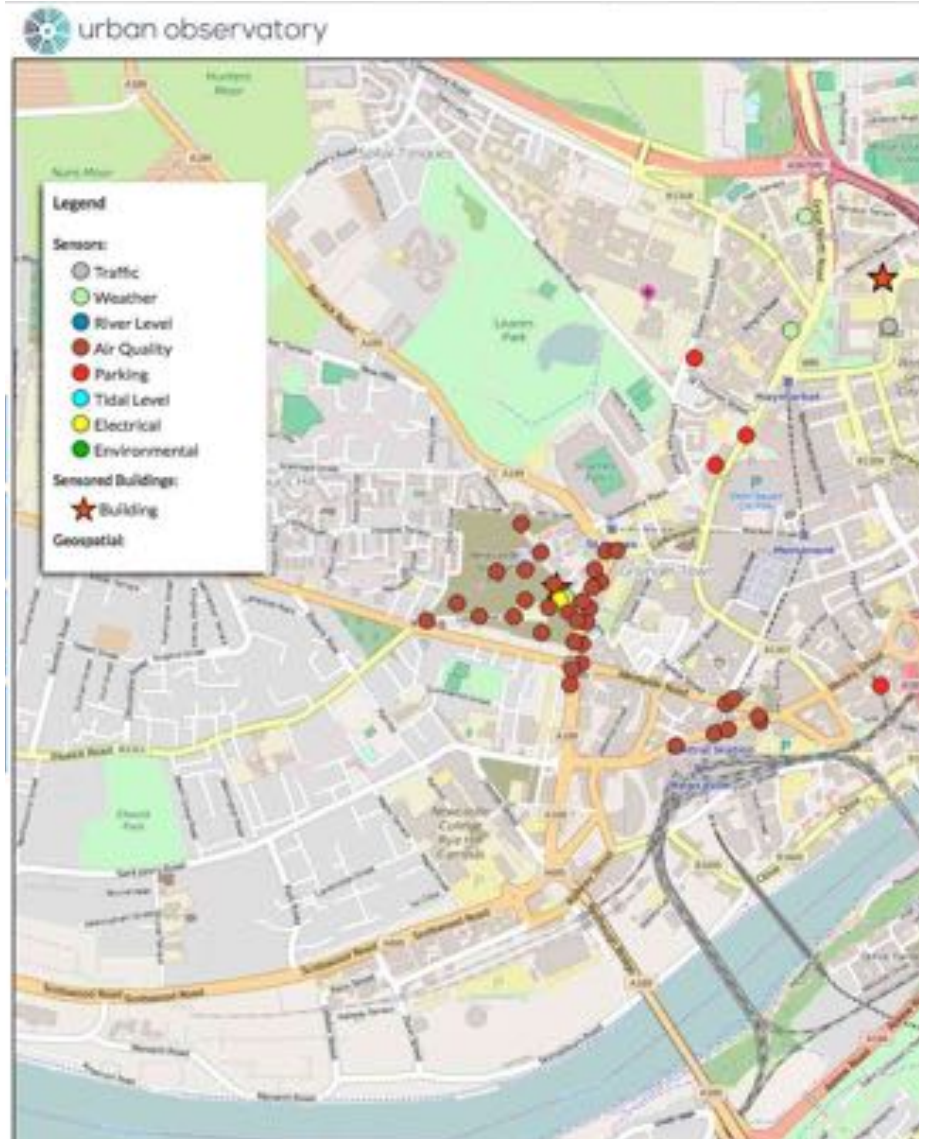
(Newcastle University)

In 2017, Newcastle University set up the Urban Observatory to monitor live data from around the city:

- They primarily collect environmental data regarding **pollution, weather, tides, water levels and water quality.** They also collect other live data including **traffic**.

- Newcastle University and its partners are studying the **100+ sensors** in their Sustainable Urban Drainage Lab to better understand **urban flood management** and the impact of extreme weather events.

- Other sensors are being explored at the university to understand the intersectionality of urban phenomenon.



Thank You

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