



THE WORLD COUNCIL ON CITY DATA

MCR2030-UNDRR-WCCD WEBINAR Strengthening City Data for Resilience: ISO 37123 Indicators for Resilient Cities

May 19, 2022

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WCCD

<http://www.dataforcities.org/>

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CITY DATA ACROSS THE WORLD IS UNEVEN

THE CHALLENGES:

**DIFFERENT DEFINITIONS OF WHAT IS
BEING MEASURED**

**DIFFERENT METHODOLOGIES ON HOW
MEASUREMENT IS UNDERTAKEN**

**AND ACCORDING TO DIFFERENT
BOUNDARIES OF THE CITY BEING
MEASURED**



The WCCD and the ISO 37120 SERIES

The First ISO Standards created for Cities and
The First ISO Standards created for Standardized City Data

WCCD is supporting Cities across the Globe
Equipping them with City Data that is comparable
“Apples to Apples” data



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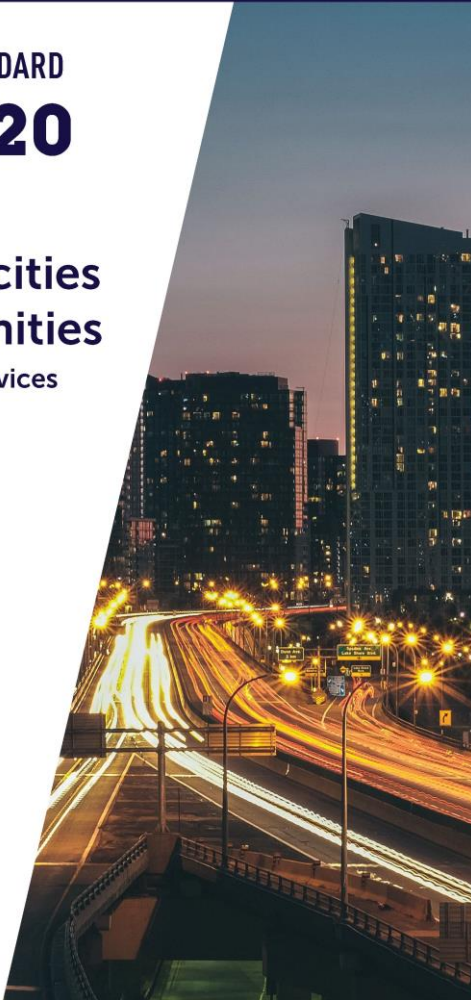
INTERNATIONAL STANDARD
ISO 37120

**Sustainable cities
and communities**

Indicators for city services
and quality of life

Second edition
2018-07

Reference number ISO 37120:2018(E)
© ISO 2018



ISO 37120

Indicators for City Services and Quality of Life

The **1st** ISO Standard for cities

WCCD is implementing this
global first in over **100 cities**
across **35 countries**



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ISO 37120 contains 104 indicators with globally standardized definitions and methodologies across 19 themes – all chosen and prioritized by cities across the globe

19 themes

104 indicators



Economy



Education



Energy



Environment & climate change



Finance



Governance



Health



Housing



Population & social conditions



Recreation



Safety



Solid Waste



Sport & Culture



Telecommunication



Transportation



Urban/local agriculture & food security



Urban Planning



Wastewater



Water



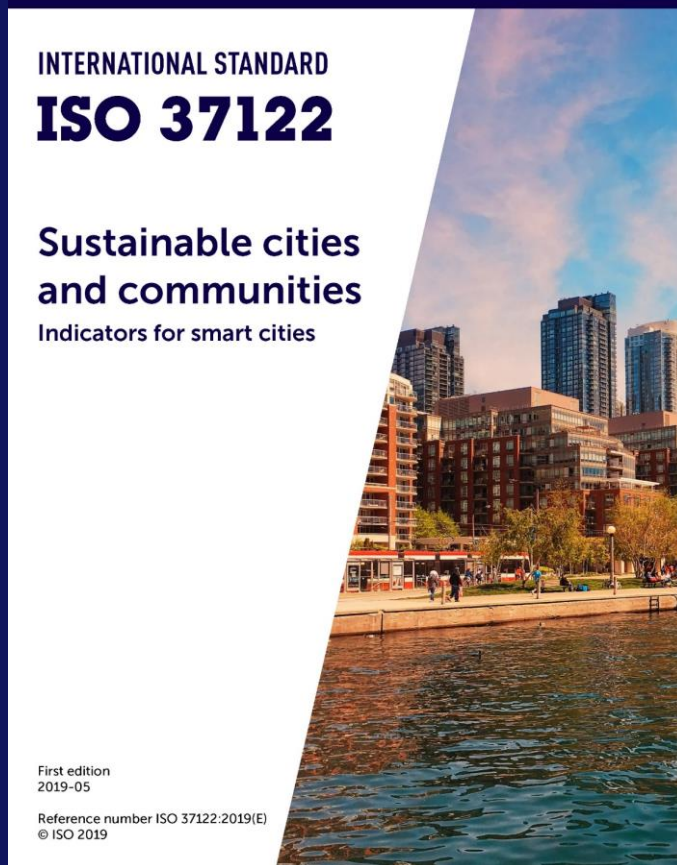
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Building on ISO 37120 as the base:

The “ISO 37120 SERIES”

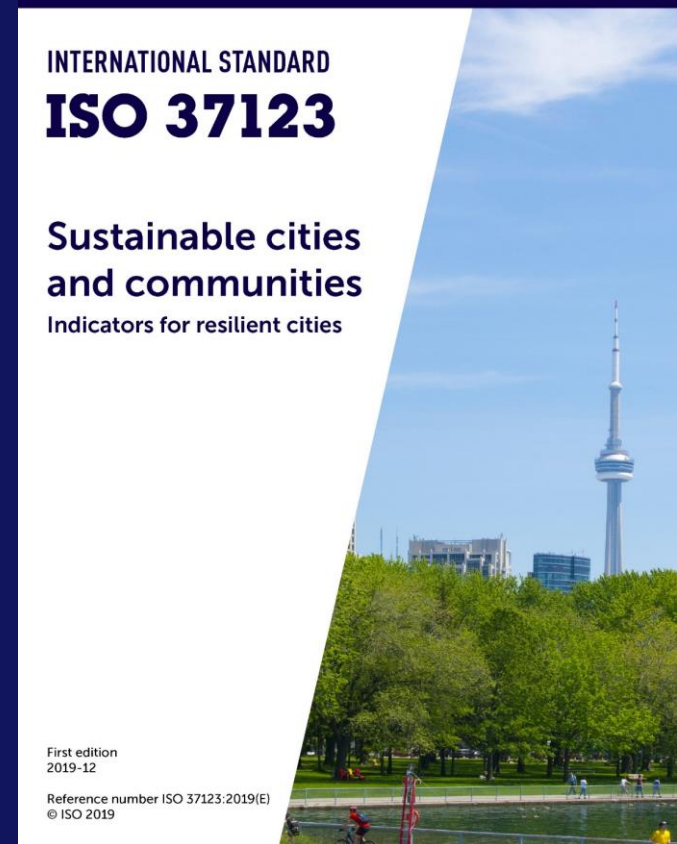
**Launched in 2020 based on city demand for
additional key performance indicators**



ISO 37122

Indicators for Smart Cities

Cities globally are becoming early Adopters and demonstrating that data is the essential starting point for Smart Cities
Tracking Data that is Citizen Focussed



ISO 37123

Indicators for Resilient Cities

Cities globally are becoming Early Adopters and demonstrating that data is instrumental in building more Resilient Cities to plan for, and recover from, shocks and stresses

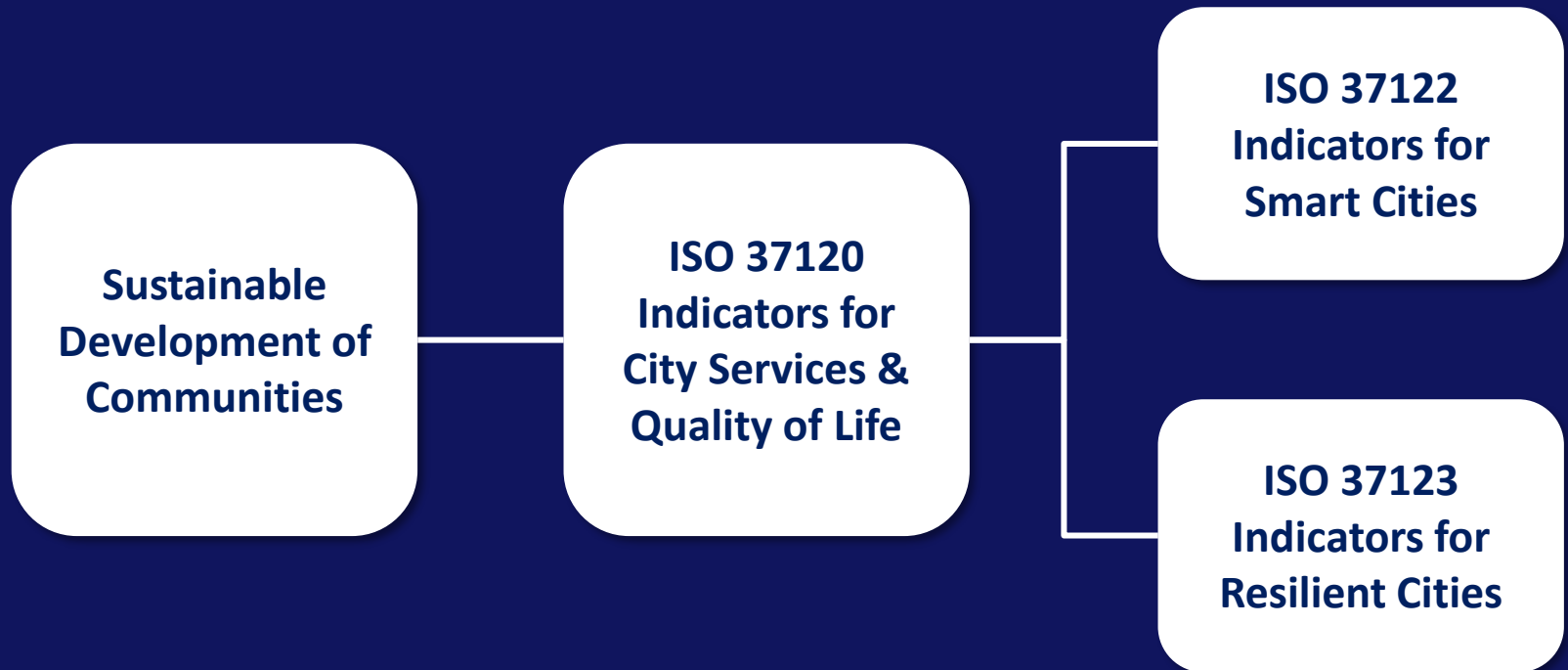


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THE ISO FAMILY OF STANDARDS FOR CITIES

THE ISO 37120 SERIES



Early
Adopter
Cities



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ISO 37123

INDICATORS FOR RESILIENT CITIES

INTERNATIONAL STANDARD
ISO 37123

**Sustainable cities
and communities**
Indicators for resilient cities

First edition
2019-12

Reference number ISO 37123:2019(E)
© ISO 2019





UNDRR

UN Office for Disaster Risk Reduction

PARTNERSHIP COOPERATION
AGREEMENT between THE UNITED
NATIONS Office for Disaster Risk
Reduction and World Council on
City Data (WCCD) since 2015

Supporting Local Resilience with
Data - Cities Reporting ISO 37123
Indicators



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WCCD – A Longstanding Partner of UNDRR



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UNDRR

United Nations Office for
Disaster Risk Reduction

A Core Partner of MCR 2030



**Making
Cities
Resilient**

A resilient city is able to prepare for, recover from, and adapt to, shocks and stresses.



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Cities are increasingly confronted by shocks which include extreme natural, or human made events which result in loss of life and injury, material, economic, and/or environmental losses and impacts.

These **shocks** can include floods, earthquakes, hurricanes, wildfires, pandemics, chemical spills and explosions, terrorism, power outages, financial crises, cyber-attacks, conflicts. A resilient city is also able to manage and mitigate ongoing human and natural **stresses** in a city relating to environmental degradation (e.g. poor air and water quality), social inequality (e.g. chronic poverty and housing shortages) and economic instability (e.g. rapid inflation and persistent unemployment) that cause persistent negative impacts in a city.

MCR2030 RESILIENCE ROADMAP

Cities Know Better

Stage A

Your focus: Induction and orientation

Key themes and activity areas

1. Spread the message: awareness raising on disaster risk reduction and resilience

Cities Plan Better

Stage B

Progression

2. Improving risk analysis
3. Improving diagnostic skills for planning
4. Improving strategies, planning, policies, and responses

Cities Implement Better

Stage C

Implementation

5. Increase access to finance
6. Improving the ability to design and build critical resilient infrastructure
7. Developing and scaling of nature-based solutions
8. Improving inclusion
9. Ensuring climate risk is factored into DRR and resilience strategies

Themes that cut across all three stages

10. Increasing national and regional links and alignment with local governments
11. Improving knowledge exchange with city structures and sectors
12. Improving knowledge exchange between cities

ISO 37123 – INDICATORS FOR RESILIENT CITIES

19 themes 68 indicators

34 Indicators required for “Early Adopter” cities



Economy



Health



Sport & Culture



Education



Housing



Telecommunication



Energy



Population & social conditions



Transportation



Environment & climate change



Recreation



Urban/local agriculture & food security



Finance



Safety



Urban Planning



Governance



Solid Waste



Wastewater



Water



ECONOMY



ISO 37120 Sustainable Cities

- City's unemployment rate
- Assessed value of commercial and industrial properties as a percentage of total assessed value of all properties
- Percentage of persons in full-time employment
- Youth unemployment rate
- Number of businesses per 100 000 population
- Number of new patents per 100 000 population per year
- Annual number of visitor stays (overnight) per 100 000 population
- Commercial air connectivity (number of non-stop commercial air destinations)
- Average household income (USD)
- Annual inflation rate based on the average of the last 5 years
- City product per capita (USD)

ISO 37122 Smart Cities

- Percentage of service contracts providing city services which contain an open data policy
- Survival rate of new businesses per 100 000 population
- Percentage of the labour force employed in occupations in the Information and Communications Technology (ICT) sector
- Percentage of the labour force employed in occupations in the Education and Research & Development sectors

ISO 37123 Resilient Cities

- Historical disaster losses as a percentage of city product
- Average annual disaster loss as a percentage of city product
- Percentage of properties with insurance coverage for high-risk hazards
- Percentage of total insured value to total value at risk within the city
- Employment concentration
- Percentage of the workforce in informal employment
- Average household disposable income (USD)



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ENVIRONMENT AND CLIMATE CHANGE



ISO 37120 Sustainable Cities

- Fine particulate matter (PM2.5) concentration
- Particulate matter (PM10) concentration
- Greenhouse gas emissions measured in tonnes per capita
- Percentage of areas designated for natural protection
- NO2 (nitrogen dioxide) concentration
- SO2 (sulphur dioxide) concentration
- O3 (ozone) concentration
- Noise pollution
- Percentage change in number of native species

ISO 37122 Smart Cities

- Percentage of buildings built or refurbished within the last 5 years in conformity with green building principles
- Number of real-time remote air quality monitoring stations per square kilometre
- Percentage of public buildings equipped for monitoring indoor air quality

ISO 37123 Resilient Cities

- ★ • Magnitude of urban heat island effects (atmospheric)
- Percentage of natural areas within the city that have undergone ecological evaluation for their protective services
- ★ • Territory undergoing ecosystem restoration as a percentage of total city area
- ★ • Annual frequency of extreme rainfall events
- ★ • Annual frequency of extreme heat events
- ★ • Annual frequency of extreme cold events
- ★ • Annual frequency of flood events
- ★ • Percentage of city land area covered by tree canopy
- ★ • Percentage of city surface area covered with high-albedo materials contributing to the mitigation of urban heat islands



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URBAN PLANNING



ISO 37120

Sustainable Cities

- Green area (hectares) per 100 000 population
- Areal size of informal settlements as a percentage of city area
- Jobs/housing ratio
- Basic service proximity
- Population density (per square kilometre)
- Number of trees per 100 000 population
- Built-up density

ISO 37122

Smart Cities

- Annual number of citizens engaged in the planning process per 100 000 population
- Percentage of building permits submitted through an electronic submission system
- Average time for building permit approval (days)
- Percentage of the city population living in medium-to-high population densities

ISO 37123

Resilient Cities

- ★ Percentage of city area covered by publicly available hazard maps
- Pervious land areas and public space and pavement built with porous, draining materials as a percentage of city land area
- ★ Percentage of city land area in high-risk zones where risk-reduction measures have been implemented
- ★ Percentage of city departments and utility services that conduct risk assessment in their planning and investment
- ★ Annual number of critical infrastructures flooded as a percentage of critical infrastructure in the city
- ★ Annual expenditure on water retention measures as a percentage of city prevention measures budget



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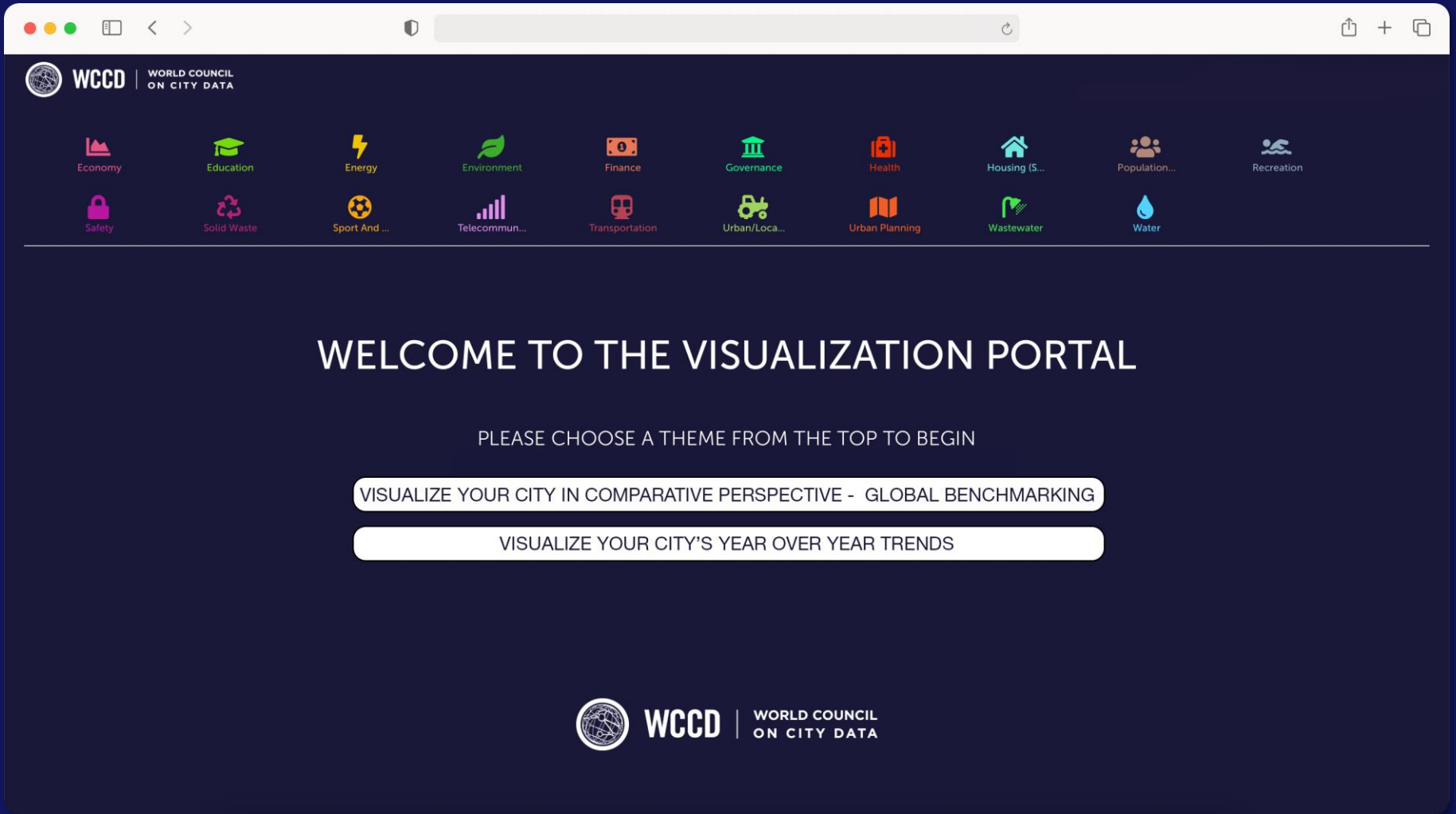
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Celebrating Your Data-Driven City at City Council



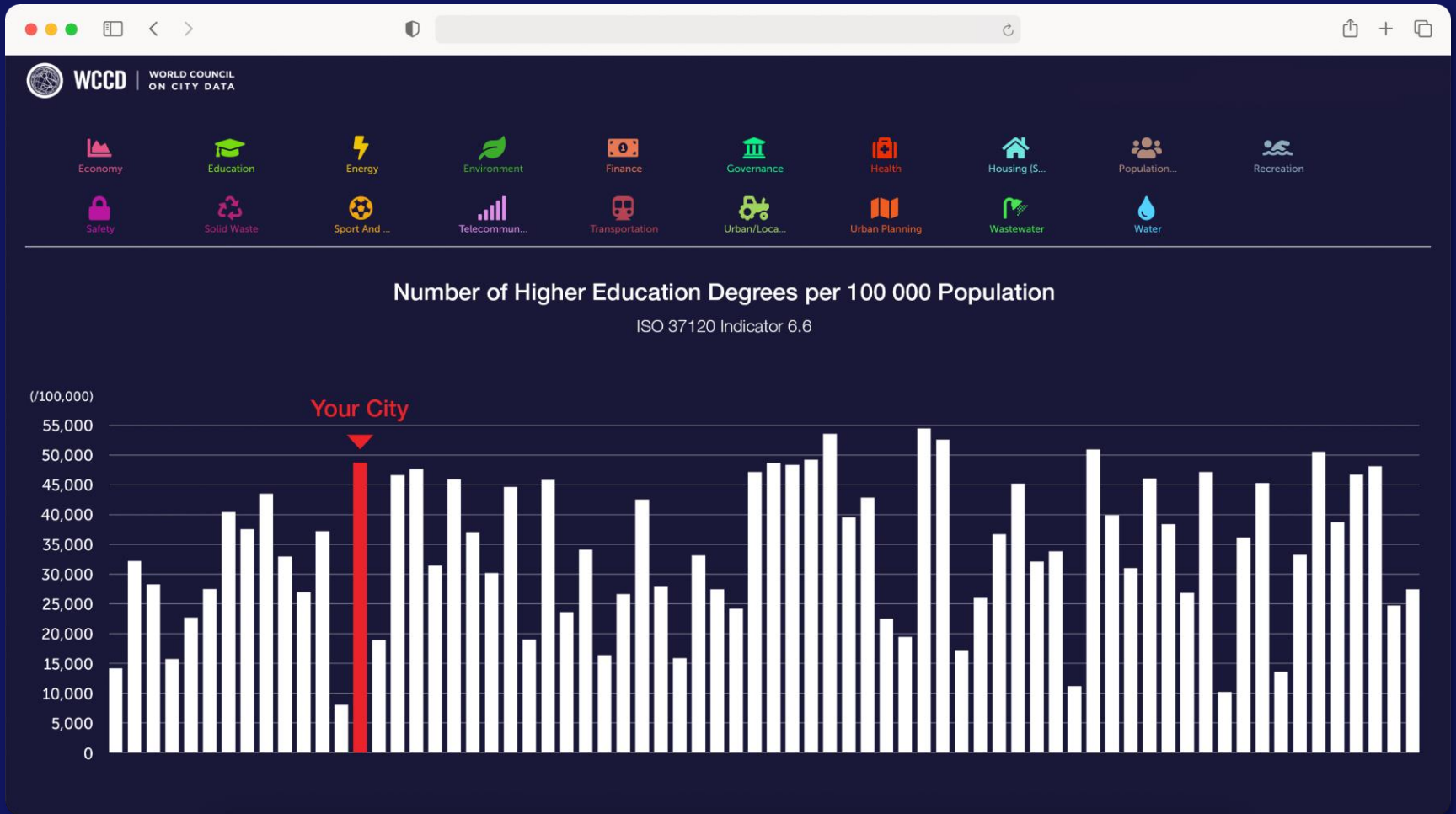
THE WCCD VISUALIZATION PORTAL

Explore “Apples To Apples” Comparisons & Trends With Peer Cities Locally & Globally



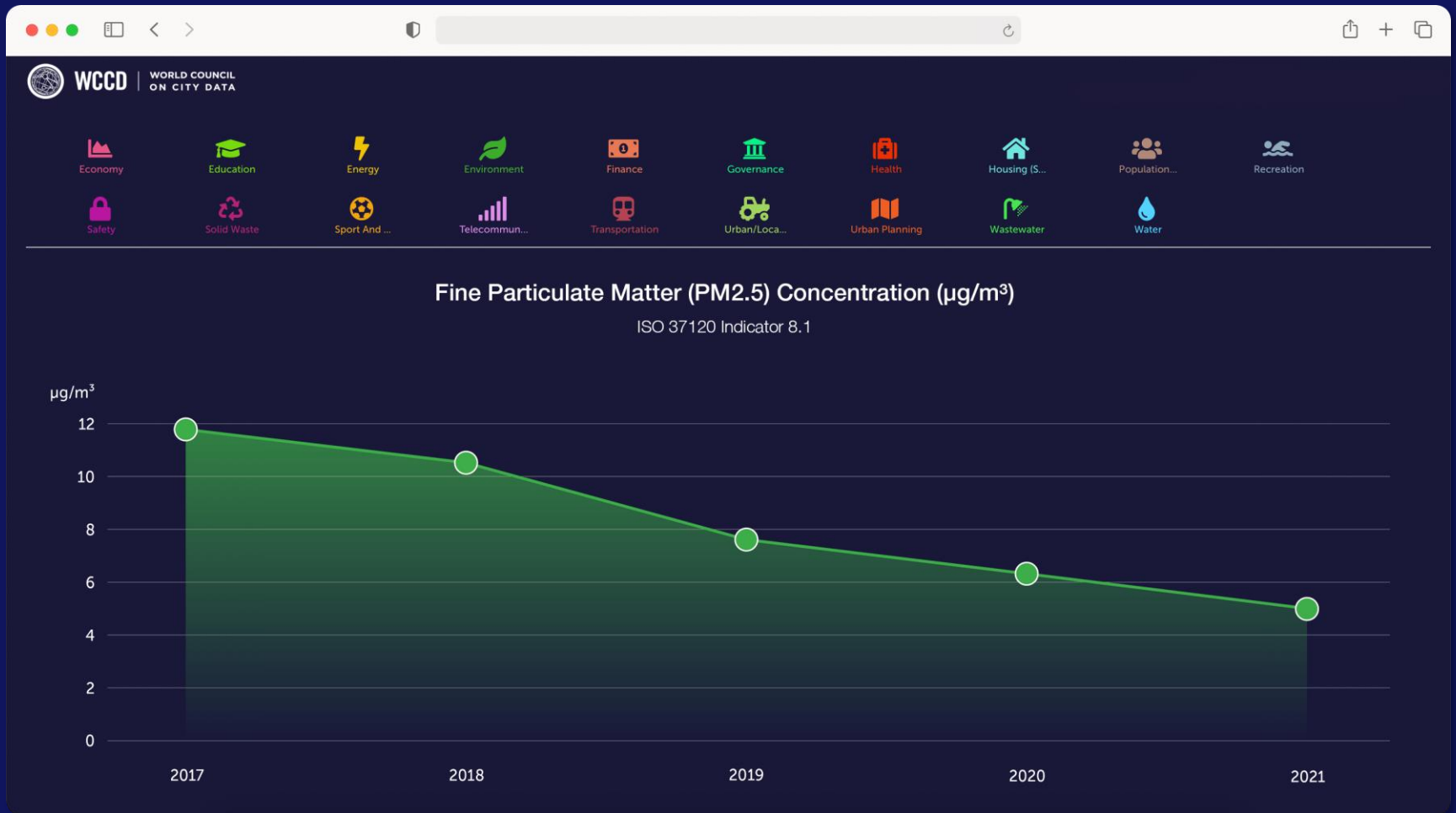
THE WCCD VISUALIZATION PORTAL

Compare and Benchmark Locally and Globally Through “Apples to Apples” Standardized City Data



THE WCCD VISUALIZATION PORTAL

Visualize and Understand Year-Over-Year Trends Within Your Own City



How can WCCD data benefit my city?

Data applications for globally standardized data



Internal Benchmarking



Global Benchmarking



Strategic Planning



Economic Development



Infrastructure Investment


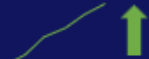
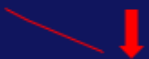



Localizing Global Agendas



Progress Monitoring and Establishing Internal Benchmarks

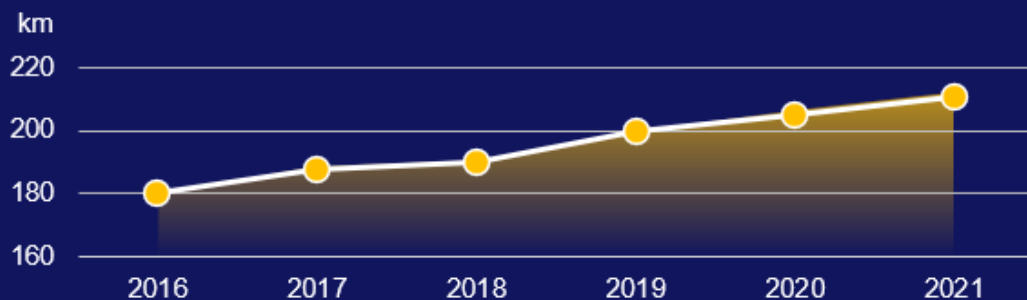


	2016	2017	2018	2019	2020	2021	Trend
5.5 Number of businesses per 100 000 population	4561	4260	4210	4190	4000	3987	
11.2 Number of in-patient hospital beds per 100 000 population	125	131	140	143	150	155	
16.3 Percentage of the city's solid waste that is recycled	35%	31%	28%	25%	22%	19%	
21.1 Green area (hectares) per 100 000 population	394	403	417	427	435	452	

Once aligned with the KPIs, city decision makers can establish baselines, and monitor progress on city-wide goals and objectives over several years.

Annual data reporting contributes to a robust dataset that helps to identify year-over-year improvements and areas for consideration. This facilitates decision-making based on fully numeric measures of city services and quality of life.

19.4 Kilometres of bicycle paths and lanes per 100 000 population



SUPPORTING GOAL 1: GROWING AND DIVERSIFYING OUR ECONOMY

Objective 1.1: Foster a robust and diversified tourism sector
Objective 1.3: Refresh and implement a Yellowknife economic development strategy

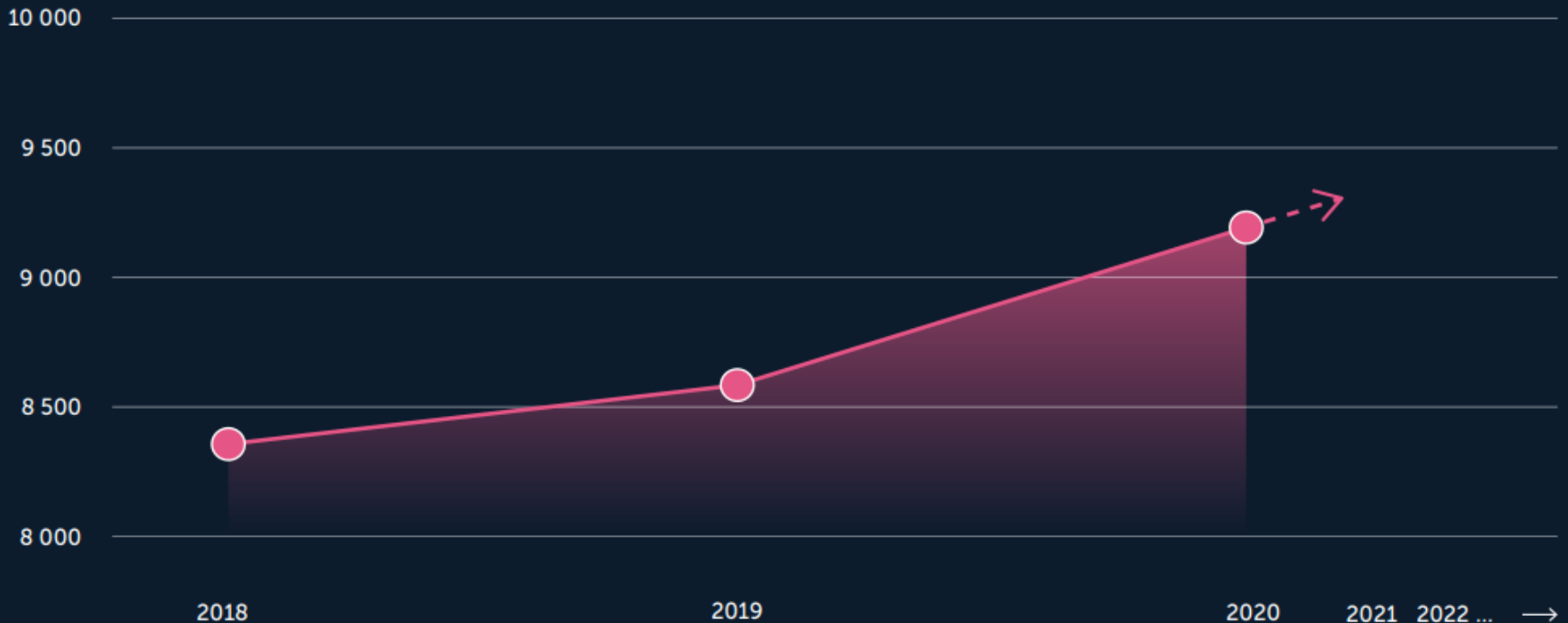
SUPPORTING GOAL 4: DRIVING STRATEGIC LAND DEVELOPMENT AND GROWTH OPPORTUNITIES

Objective 4.4: Promote development across the City

UN SDGs



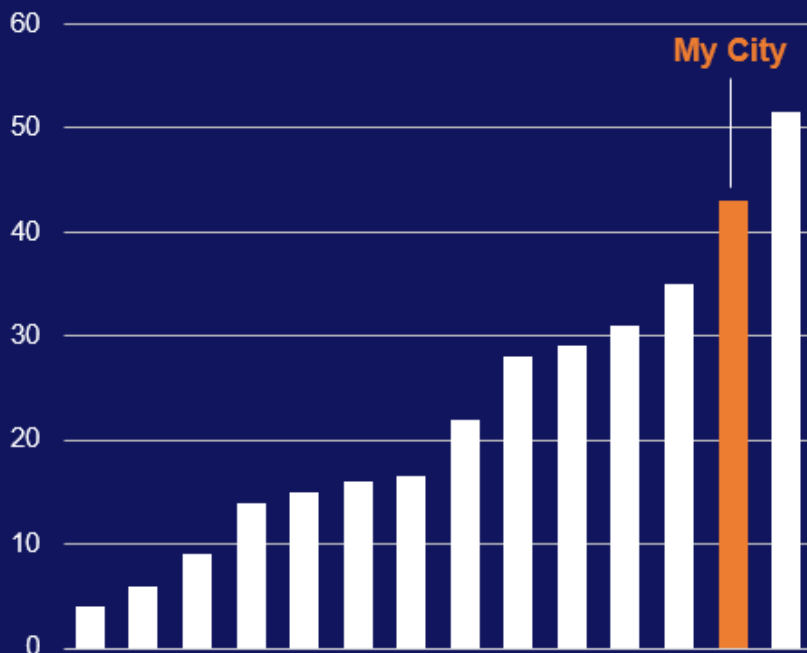
ISO 37120 Indicator 5.5: Number of Businesses per 100 000 Population





Data for Global Benchmarking

Annual Number of Public Transport Trips per capita
ISO 37120 Indicator 19.2



Standardized, “apples to apples” data helps cities to truly see how they measure up in a global comparative context. The WCCD’s newly launched visualization portal allows users to reliably compare their municipality to global peers in order to identify strengths and opportunities for growth.

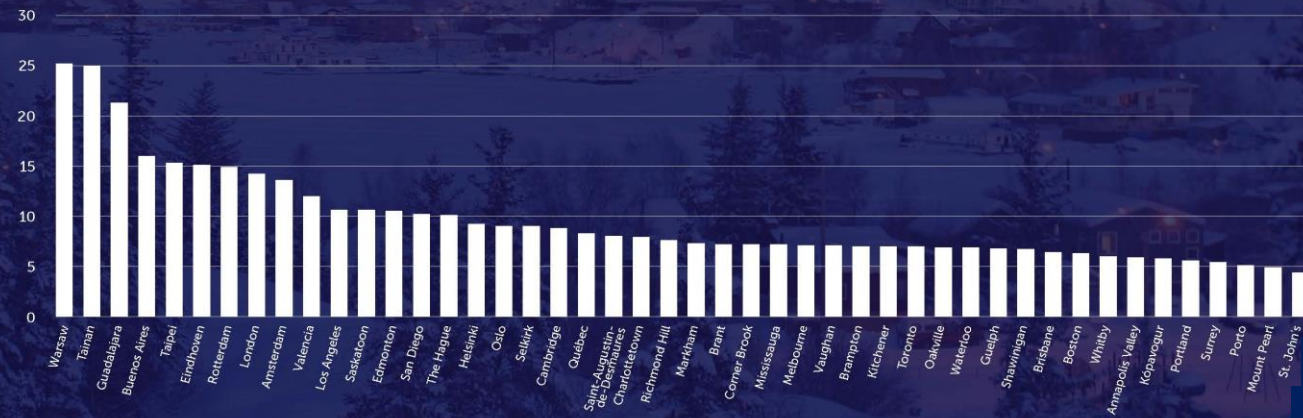
Our robust and growing global network of over 100 cities in 35 countries allows cities to look outside of local and national borders to facilitate benchmarking with like-minded cities from around the world. Compare to and learn from cities with similar economies, climates, population attributes, GDP, and more.



PRIORITIZING CLEAN AIR

PM2.5 measures levels of fine particulate matter in the air, such as fine dust and soil particles, acids, metals and allergens. Health effects from high concentrations of particulate matter in the air are predominantly associated with respiratory and cardiovascular issues.

Fine Particulate Matter (PM2.5) Concentration ISO 37120 Indicator 8.1



Key Performance Indicators for City Strategy



City Strategic Plan Objective	Relevant ISO 37120, ISO 37122, and ISO 37123 Indicators
To ensure a high quality of life for all residents	11.1 Percentage of the city's population with an online unified health file accessible to health care providers
	13.1 Vulnerable population as a percentage of city population
	14.2 Square meters of public outdoor recreation space per capita
To promote smart city technology and infrastructure	5.3 Percentage of the labour force employed in occupations in the information and communications technology sector
	9.1 Annual amount of revenues collected from the sharing economy as a percentage of own-source revenue
	19.11 Percentage of vehicles registered in the city that are autonomous vehicles
To make a resilient city that will serve citizens for generations	9.7 Total allocation of disaster reserve funds as a percentage of total city budget
	11.4 Number of infectious disease outbreaks per year
	21.5 Annual number of critical infrastructures flooded as a percentage of critical infrastructure in the city



Key Performance Indicators for City Strategy: City Strategic Plan Goal 2



	ISO 37120 Indicators	ISO 37122 Indicators	ISO 37123 Indicators
<p>Strategic Plan Goal 2</p> <p>Improve Livability Under a Rubric of Resilience</p>	5.1 City's unemployment rate	7.7 Percentage of street lighting that has been refurbished and newly installed	5.5 Employment concentration
	5.3 Percentage of persons in full-time employment	7.10 Number of electric vehicle charging stations per registered electric vehicle	5.6 Percentage of the workforce in informal employment
	5.4 Youth unemployment rate	8.2 Number of real-time remote air quality monitoring stations per square kilometre	5.7 Average household disposable income
	5.9.1 Average household income	8.3 Percentage of public buildings equipped for monitoring indoor air quality	6.4 Educational disruption
	5.9.2 Annual inflation rate based on the average of the past five years	9.2 Percentage of payments to the city that are paid electronically based on electronic invoices	10.4 Percentage of public meetings dedicated to resilience in the city
	6.1 Percentage of female school-aged population enrolled in schools	10.2 Percentage of city services accessible and that can be requested online	11.2 Percentage of population with basic health insurance
	6.2 Percentage of students completing primary education	11.3 Percentage of the city population with access to real-time public alert systems for air and water quality advisories	12.2 Percentage of buildings structurally vulnerable to high-risk hazards
	6.3 Percentage of students completing secondary education	13.1 Percentage of public buildings that are accessible by persons with special needs	12.3 Percentage of residential buildings not in conformity with building codes and standards
	6.4 Primary education student/teacher ratio		



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Key Performance Indicators for City Strategy: City Strategic Plan Goal 2




	ISO 37120 Indicators	ISO 37122 Indicators	ISO 37123 Indicators
Strategic Plan Goal 2 Improve Livability Under a Rubric of Resilience	6.5 Percentage of school-aged population enrolled in schools	13.2 Percentage of municipal budget allocated for the provision of mobility aids, devices and assistive technologies to citizens with special needs	12.6 Percentage of residential properties located in high-risk zones
	6.6 Number of higher education degrees per 100 000 population	13.3 Percentage of marked pedestrian crossings equipped with accessible pedestrian signals	13.1 Vulnerable population as a percentage of city population
	7.3 Percentage of city population with authorized electrical service	13.4 Percentage of municipal budget allocated for provision of programmes designated for bridging the digital divide	13.2 Percentage of population enrolled in social assistance programs
	7.7 Average annual hours of electrical service interruptions per household	14.1 Percentage of public recreation services that can be booked online	13.3 Percentage of population at high risk from natural hazards
	8.1 Fine particulate matter	16.2 Percentage of the city population that has a door-to-door garbage collection with an individual monitoring of household waste quantities	13.4 Percentage of neighbourhoods with regular and open neighbourhood association meetings
	8.2 Particulate matter (PM10) concentration	17.1 Number of online bookings for cultural facilities per 100 000 population	13.5 Annual percentage of the city population directly affected by natural hazards
	8.5 NO ₂ (nitrogen dioxide) concentration	17.2 Percentage of the city's cultural records that have been digitised	15.1 Percentage of city population covered by multi-hazard early warning system
	8.6 SO ₂ (sulphur dioxide) concentration	17.3 Number of public library book and e-book titles per 100 000 population	15.2 Percentage of emergency responders who have received disaster response training
	8.7 O ₃ (Ozone) concentration	17.4 Percentage of city population that are active public library users	15.3 Percentage of local hazard warnings issued by national agencies annually that are received in a timely fashion by the city



Monitoring Local Progress toward Global Goals – SDGs and MCR2030



Sustainable Development Goal	Relevant ISO 37120, ISO 37122, and ISO 37123 Indicators
 <p>Goal 3. Ensure healthy lives and promote well-being for all at all ages</p>	<p>11.2 Number of in-patient hospital beds per 100 000 population</p> <p>11.2 Percentage of population with basic health insurance</p> <p>13.3 Percentage of marked pedestrian crossings equipped with accessible pedestrian signals</p>
 <p>Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation</p>	<p>5.1 Number of businesses per 100 000 population</p> <p>6.3 Number of science, technology, engineering and mathematics (STEM) higher education degrees per 100 000 population</p> <p>19.1 Percentage of city streets and thoroughfares covered by real-time online traffic alerts and information</p> <p>21.4 Percentage of city departments and utility services that conduct risk assessment in their planning and investment</p>
 <p>Goal 13. Take urgent action to combat climate change and its impacts</p>	<p>7.1 Total end-use energy consumption per capita</p> <p>7.1 Percentage of electrical and thermal energy produced from waste treatment as a share of the city's total energy mix</p> <p>9.3 Annual expenditure allocated to ecosystem restoration in the city's territory as a percentage of total city budget</p>

Cities are playing an increasing and outsized role in monitoring progress on UN-led initiatives such as the Sustainable Development Goals (SDGs), UN Making Cities Resilient 2030 (MCR2030), and Global Climate Agreements.



Investment Attraction and Economic Development



Global private sector leaders are moving beyond traditional metrics when scouting new places to locate and are now considering city service and quality of life indicators such as the talent pool, connectivity, safety, and environmental sustainability of prospective cities.



Investable Cities

City Data for City Leaders



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THE VALUE OF MUNICIPAL DATA AS GENERATED BY THE WCCD AND THE ISO 37120 SERIES

Data that is:

- ✓ Globally Standardized (ISO 37120 + ISO 37122 + ISO 37123)
- ✓ Regularly Reported (Annual Reporting)
- ✓ “Outside of government” and trusted – Independent/Third Party Verified

Data that helps to:

- ✓ Support UNDRR MCR2030 Resilient Cities Agenda
- ✓ Create Data-driven Municipalities and incentivize performance
- ✓ Inform and Direct National and Provincial-level Infrastructure Spending in Cities
- ✓ Drive Job Creation And Economic Development to attract investment with globally comparative data
- ✓ Track progress on the climate agenda
- ✓ Inform resilient city development recovery with solid baselines
- ✓ Embrace the United Nations SDGs at a local level
- ✓ Direct and Monitor Strategic Planning



**DATA IS THE UNIVERSAL
LANGUAGE**



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