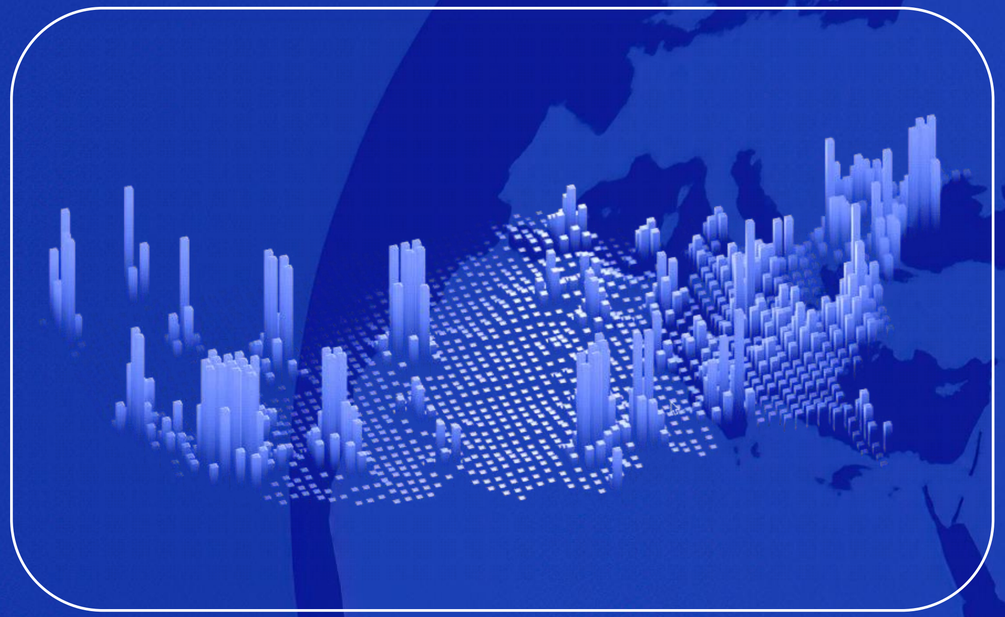
Urban resilience index.
General Methodology >>>



November 2023

Urban Resilience Index **(URI)**

URBAN RESILIENCE INDEX (URI) is a tool for rating and monitoring of **Environmental (E)**, **Social (S)**, and **Governmental (G)** performance of urban areas as well as their Ability & Willingness to achieve better practices.

URI shows whether the basic needs of residents are satisfied, how vulnerable the place is to crises and how it impacts the world around.

URI is a disruptive approach
TO IDENTIFYING AND MONITORING THE SUSTAINABILITY GAP IN CITIES

Tradition × **Innovation**

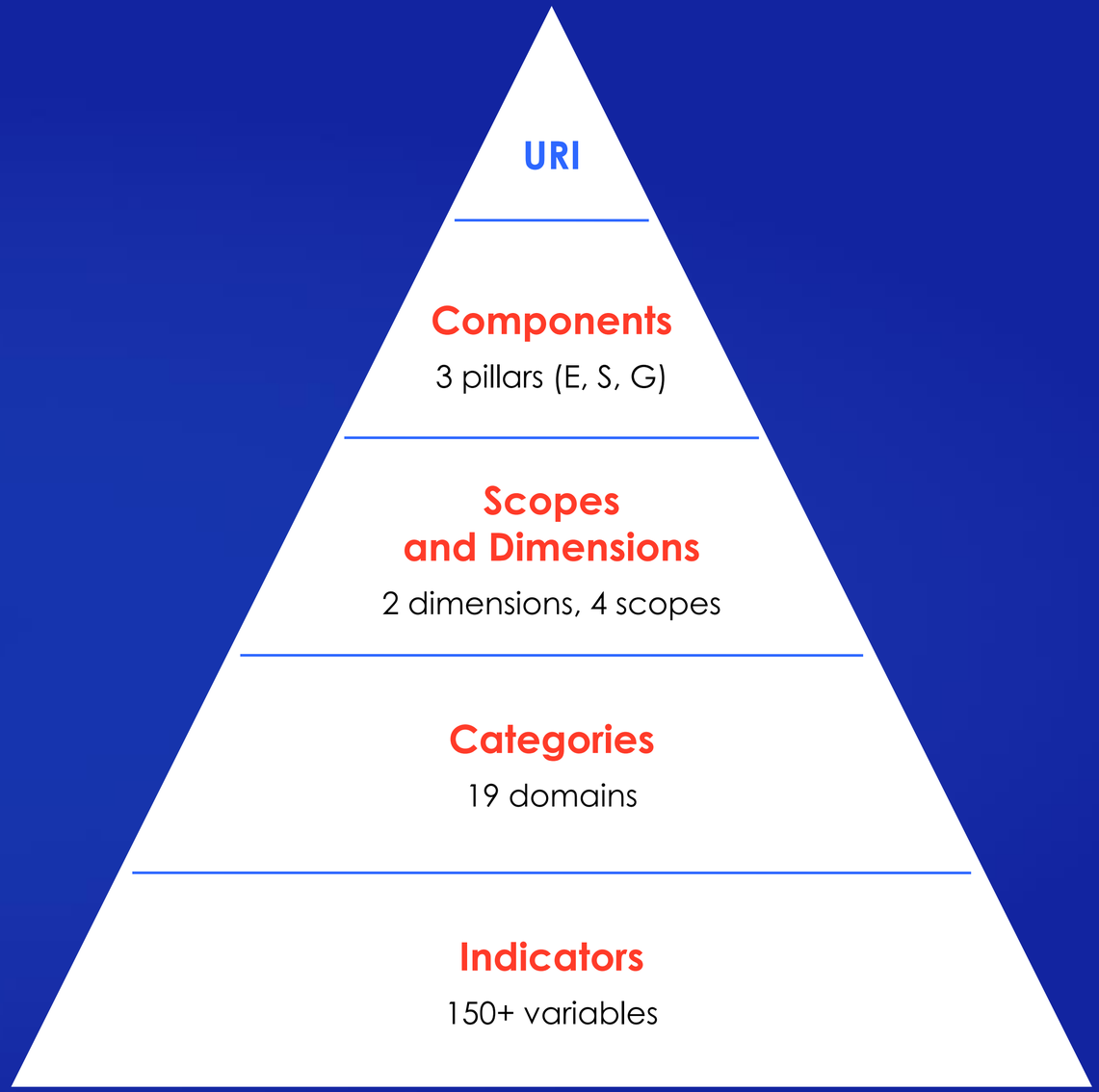
- Methodology is genetically close to well-acknowledged credit ratings
- It fits for current and future rating regulation
- Rating indicators cover all urban-related United Nations Sustainability Development Goals **(SDGs)**

- Focus on citizens' basic needs
- AI-driven data collection and interpretation
- Fully transparent methodology verified by a scientific board

Urban Resilience Index **Architecture**

The URI covers 3 traditional pillars Environmental, Social, Governmental across 2 time dimensions the Current State (CS) and the Ability & Willingness (A&W) and 4 scopes to derive an aggregate assessment

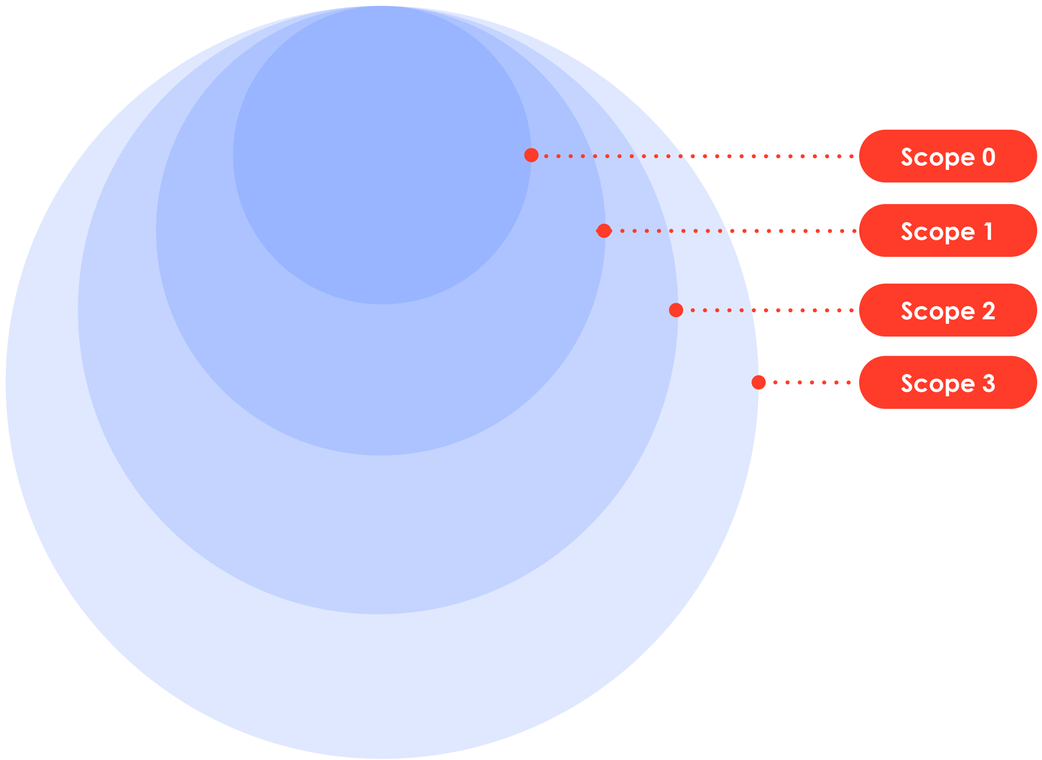
The three components are blended to generate the overall assessment, which is, in its turn, represented on the rating scale. While the scoring of indicators is benchmarked against global standards, employing a step-by-step aggregation via a matrix approach allows us to prioritize critical issues by assigning them the most importance. Social component has a higher importance for municipalities' assessment, especially for the cities of the **Global South** (45% of final assessment).



Scopes

The Urban Resilience Index indicators are categorized into 4 scopes based on their place in the ESG interplay:

- **Scope 0:** citizens' basic needs satisfaction
- **Scope 1:** cities' **ESG** impact
- **Scope 2:** city suppliers' direct **ESG** Impact
- **Scope 3:** city and its suppliers' indirect **ESG** impact



Dimensions

For those categories where possible, we have attempted to select indicators that characterize a city in two dimensions: the Current state (CS) and the Ability & Willingness (A&W):

- **CS** reflects the existing situation highlighting inherited problems
- **A&W** prospects considering current efforts to change.

We have meticulously selected the most relevant indicators for the assessment benchmarked against industry best-practice standards, narrowing down from the long list of 700+ indicators

700+
indicators

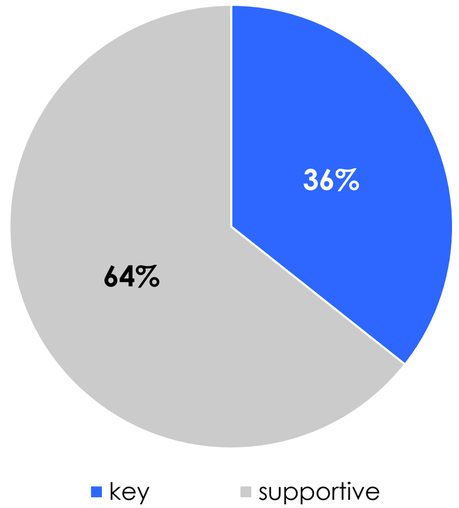
selection

150+
indicators

The complete list of indicators is provided in **Annex 1**

The URI stands out as a robust tool due to the selection process, which involved a vast pool of **over 700** diverse indicators. **As a result, over 150 indicators** were used for further analysis and rating calculations.
The **Urban Resilience Index (URI)** relies on three types of indicators.
Key indicators that encompass critical areas for analysis, carrying significant weight.

Supportive indicators include **Cap indicators.** They offer nuanced insights into the studied domains, effectively highlighting concerns, even when a single critical issue arises.
Supportive indicators are aimed to adjust mid-level assessments while **Cap indicators** come into play at the final evaluation.



The URI combines the amalgamation of insights gathered from 4 different sources: Geo Analytics, Social Media, Official statistics, and Documents and reports

Geo Analytics
Satellite data on build-up, green areas, air quality, transport accessibility

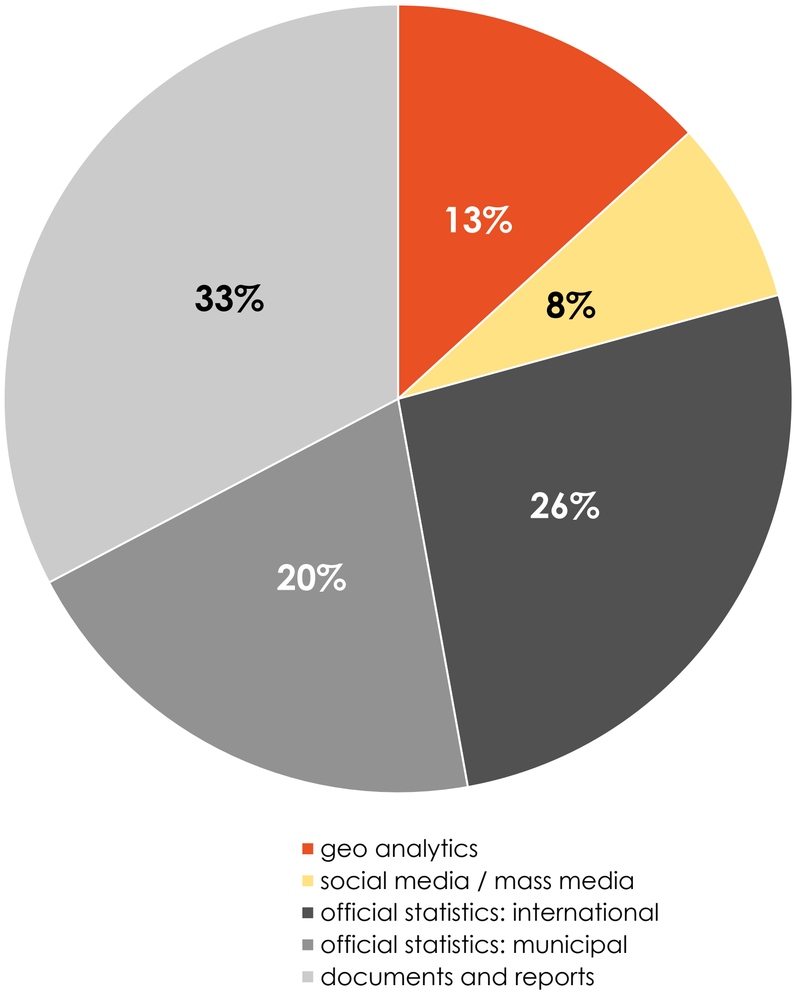
Social Media / Mass Media
Perception of the wide range of topics by people online

Official statistics
Classic statistical indicators: International and municipal/urban

Documents and reports
Strategies, scientific articles, documents, claims

150+
indicators

The complete list of indicators is provided in **Annex 1**



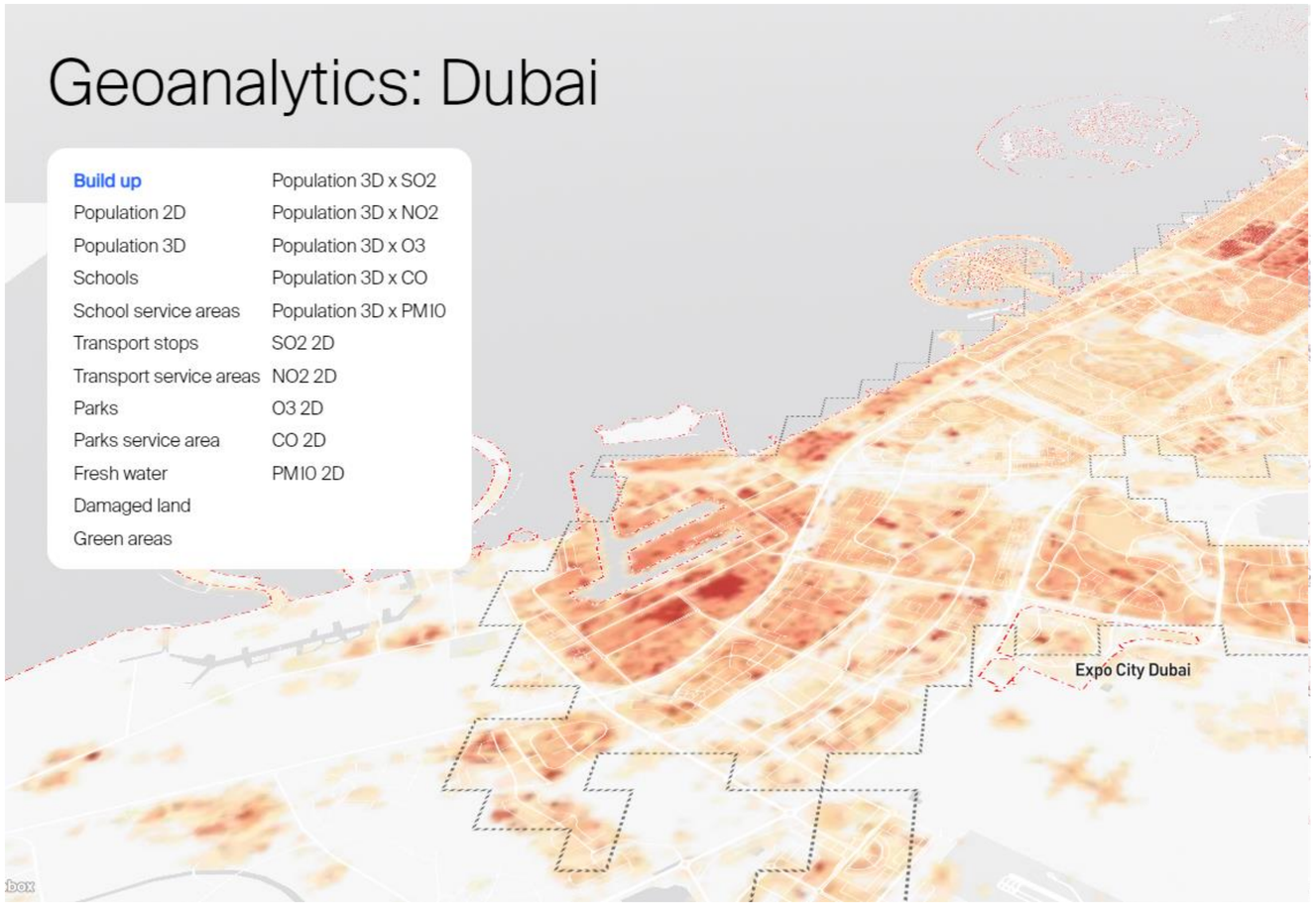
Synthesizing data from these different but complementary origins, our index offers a diverse and deep understanding of urban resilience.

Geo **Analytics**

Satellite data on build-up, green areas, air quality, transport accessibility.
Google Routes API for time loss in traffic.

Geospatial analysis was conducted based on a wide range of data sources including statistical, remote sensing, and crowdsourced data.

- Global Human Settlement Layer **(GHSL)** provided by the European Commission was used in population-related calculations, such as total population, population density, and build-up areas.
- Locational data for service area modelling was derived from OpenStreetMap and then enriched with data coming from governmental geoportals such as the State GIS portal of India.
- Air pollution distribution was analysed using the data produced by Copernicus Atmosphere Monitoring Service **(CAMS)** together with satellite data captured by Sentinel 5P TROPOMI.
- Finally, land use coverages (ESA WorldCover 10m v200 were utilised for the analysis of green areas, water bodies, and devastated lands. This data product was created by the European Space Agency providing a global land cover map for 2021 at 10 m resolution based on Sentinel-1 and Sentinel-2 data.



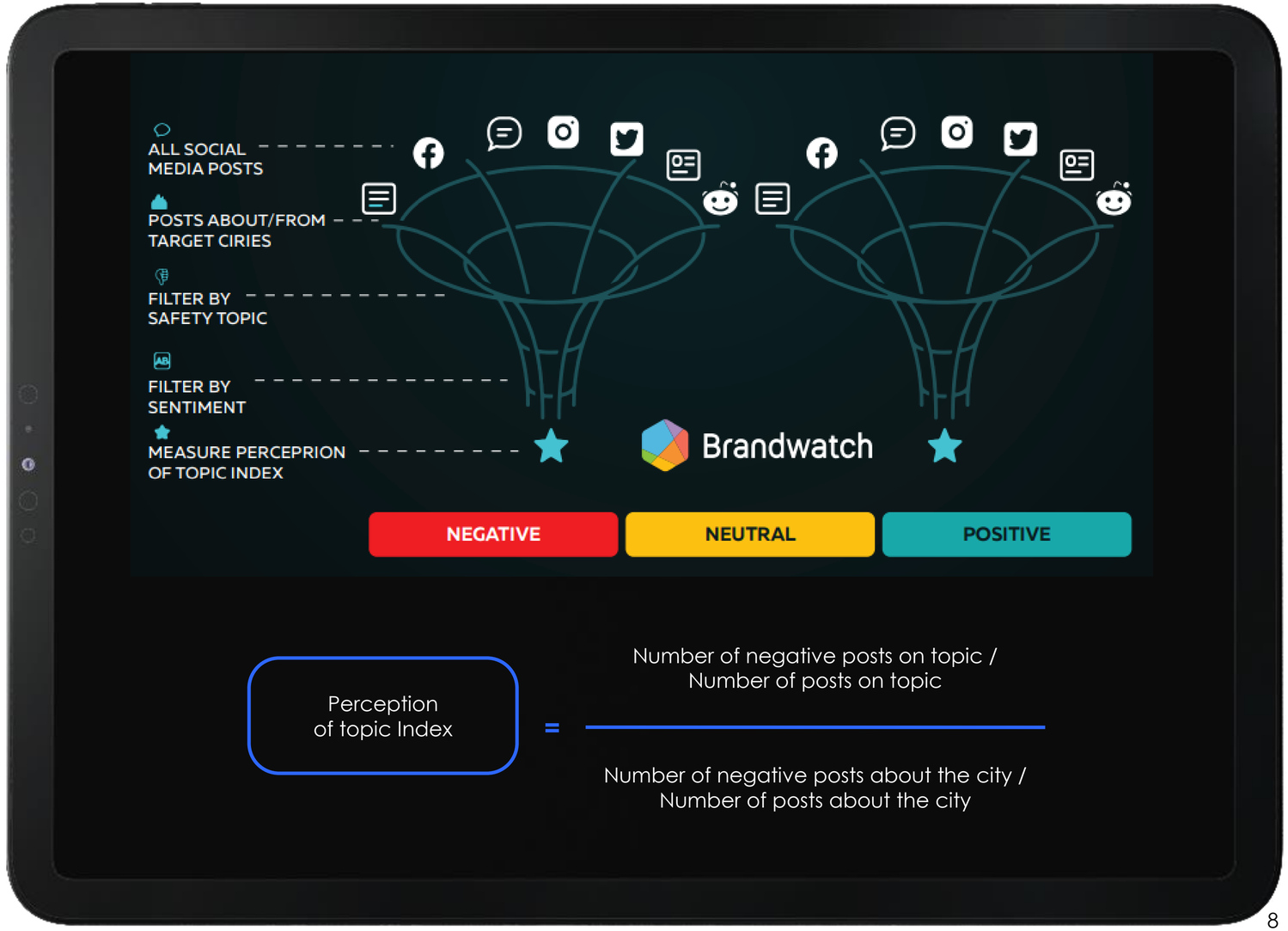
Social **Media** / Mass **Media**

We use the Brandwatch platform to actively monitor and filter social and mass media content, enabling us to craft Perception of the Topic indices integrated into the Urban Resilience Index (URI).

Urban Sentiment Index

- Air pollution
- Water pollution
- Land use and waste
- Food availability
- Energy availability
- Wealth
- Safety
- Livability
- Transport
- Inclusion
- Accountability
- Public services

Perception of the wide range of topics by people online



The indicators are grouped into 19 categories aimed to represent a wide range of aspects covering environmental, social, and governmental domains aligning with the United Nations Sustainable Development Goals (SDGs)

Category of ESG

E

- Air pollution
- Water pollution
- Land use and waste
- Natural disaster hazards

S

- Water availability
- Food availability
- Energy availability
- Health
- Education
- Wealth
- Safety
- Livability
- Transport
- Inclusion

G

- Accountability
- City budget
- SME
- Public services
- Sustainability commitment

ESG	Category	Definition		SDGs
E	Air Pollution	**The Air Pollution category** assesses the levels of air pollutants impacting the urban environment and residents. Air pollution directly affects public health, quality of life, and the environment in cities. In the **Global South**, this issue is particularly acute for many urban areas as industrialization and motorization rates here are still on the rise.	We measure the concentration of the most important pollutants based on **World Health Organization** guidelines. These indicators help us to evaluate the extent of air pollution and its impact on human health and the environment, enabling cities to take informed actions to reduce pollution	>>> 3. / 7. / 11. / 13.
	Water Pollution	**The Water Pollution category** evaluates the quality of water sources and the impact of pollution on the urban environment and communities. Adequate clean water supply is essential for public health and the natural environment. Particularly, in the **Global South**, where access to safe water is often limited, while pollution sources are diverse. We measure the levels of contamination from pollutants, industrial	waste, and inadequate sanitation based on the **WHO** standards while also evaluating the effectiveness of local efforts to mitigate water pollution and safeguard the health and well-being of their communities. These indicators help us to determine the extent of water pollution and the effectiveness of purification methods, gauging efforts to ensure clean and safe water.	>>> 3. / 6. / 14.
	Land Use and Waste	**The Land Use and Waste category** assesses how cities manage land resources and handle waste. The issue of land and waste directly impacts urban development and environmental sustainability. Rapid urbanization and resource constraints in the **Global South** pose distinct challenges to land use and waste management. The category also evaluates a city's efforts to expand green spaces and promote environmental sustainability. Urban greening directly affects livability, health, and resilience to climate change. Vegetation cover mitigates the effect of urban heat island cooling	the environment. In the **Global South**, where rapid urbanization and environmental challenges it causes lead to significant inequalities , greening initiatives are crucial for improving quality of life. We measure land use practices, waste management methods, recycling rates, as well as waste disposal practices based on extensive scientific research . These indicators are designed to evaluate sustainable land management, waste reduction, and environmental protection that guide cities toward eco-friendliness.	>>> 12. / 15.
	Natural Disaster Hazards	**The Natural Disaster Hazards category** aims to assess a city's vulnerability to natural disasters and its capacity to mitigate their impact. For cities around the world, the problem of natural disasters is particularly acute due to higher population densities that multiply the damage caused by natural hazards. In the environmental and social settings of the **Global South**, this often becomes a key challenge for community safety.	We measure resilience by evaluating natural conditions that can exacerbate the situation, as well as past records of extreme events including their type and volume of damage caused based on recent scientific studies . These indicators evaluate the impact of natural disasters on communities and overall sustainability.	>>> 9. / 13.

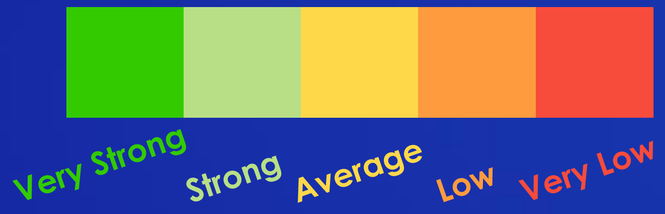
ESG	Category	Definition	SDGs
S	Water Availability	**The Water Availability category** evaluates access to water resources. Water scarcity issues and population growth in many urban areas of the **Global South** make this issue essential for ensuring equitable access to drinking and technical water. It assesses the adequacy of water supply, and its affordability considering the cities' capacity to ensure equitable and sustainable access to water and sanitation services for their residents. These indicators reflect how cities address water security, resilience, and equitable access to such a vital resource.	>>> 3. / 6.
	Food Availability	**The Food Availability category** evaluates access to and availability of food resources. This category is often crucial in the **Global South** due to food security concerns, vulnerable populations, and sustainability challenges. This category is essential to consider as it measures equitable access to nutritious food addressing hunger and malnutrition. We capture and measure data on food supply chains and access to food. This assessment is designed to measure the cities' capacity to ensure a consistent and accessible food supply, as well as their ability to address hunger and nutritional requirements for their residents.	>>> 2. / 3. / 12.
	Energy Availability	**The Energy Availability category** specifically targets challenges related to ensuring reliable energy access, affordability, and sustainability of generation sources. It is essential in the **Global South** due to energy access disparities, sustainability challenges, and rapid economic development. We capture and measure data on energy infrastructure, electricity access, energy efficiency, and renewable energy adoption. This evaluation is intended to measure the cities' capacity to provide affordable and renewable energy for their residents, while also promoting environmental sustainability.	>>> 7. / 13.
	Health	**The Health category** assesses a city's healthcare infrastructure and residents' access to healthcare. It centers on the distinct healthcare challenges faced by urban areas in the **Global South**, including intrinsic burdens of diseases that impact public health, healthcare infrastructure, and overall well-being. We capture and measure data on healthcare access, disease prevention, healthcare quality, and public health outcomes based on the extensive **SDG-**related **WHO** guidelines. This evaluation is crafted to assess the cities' ability to deliver quality healthcare, reduce mortality rates, and enhance the well-being of residents, while also addressing their unique healthcare needs and challenges.	>>> 3.
	Education	**The Education category** assesses a city's commitment to high-quality education, access to schools, and educational outcomes. It addresses the unique educational challenges faced by the cities in the **Global South** due to their generally higher share of the younger population, including issues related to access, quality, and educational attainment. We capture and measure data on educational infrastructure, enrollment rates, as well as literacy and numeracy skills in line with the **UN** recommendations. This assessment aims to evaluate the cities' capacity to provide accessible, high-quality education, promote educational attainment, and offer lifelong learning opportunities for their residents while addressing their specific educational needs and challenges.	>>> 4.

ESG	Category	Definition		SDGs
S	Wealth	**The Wealth category** assesses a city's economic well-being and income distribution. This issue is crucial for the growing economies in the **Global South** facing vast disparities and poverty challenges. We capture and measure data on income distribution, poverty rates, and economic opportunities based on international practices.	This assessment aims to evaluate the cities' capacity to address economic disparities, reduce poverty, and enhance economic well-being for their residents while considering their unique economic challenges.	>>> 1. / 2. / 8.
	Safety	**The Safety category** addresses issues related to road safety, crime, and overall safety. These challenges are inherent to cities of the **Global South** experiencing population growth, poverty, and increasing motorization rates. We capture and measure data on crime and traffic accident rates and law enforcement effectiveness based on substantive scientific	research. This assessment aims to evaluate the cities' ability to enhance safety, reduce crime, and promote overall security for their residents while addressing their safety challenges and concerns.	>>> 3. / 5. / 11. / 16.
	Livability	**The Livability category** assesses a city's quality of life, infrastructure, and overall living conditions. These challenges are quite acute for the rapidly changing urban environment in the **Global South** where authorities seek to improve living conditions and have to focus on infrastructure development. We capture and measure data on housing and infrastructure quality standards, communications, and basic healthcare service	availability as well as public perception of this complex category. This evaluation is designed to assess the cities' efforts in promoting environmentally sustainable and livable urban environments, addressing infrastructure and accessibility challenges, and enhancing the overall quality of life for their residents.	>>> 3. / 9. / 11.
	Transport	**The Transport category** assesses a city's transportation and mobility infrastructure and accessibility. We address here the specific transportation challenges and infrastructure issues that rapidly urbanizing areas in the **Global South** face, including issues related to traffic congestion, accessibility, and public transportation. We capture and measure data on the outcomes of transport	policies regarding public transit infrastructure, its accessibility, affordability and performance, traffic congestion, and green initiatives based on broad scientific evidence. This assessment aims to evaluate the cities' transportation system performance that defines the mobility of their residents.	>>> 9. / 11.
	Inclusion	The Inclusion category assesses a city's commitment to inclusivity and equity, ensuring that all residents have equal access to opportunities and services. This category is crucial in the **Global South** as it addresses social disparities, discrimination, and social justice issues. We capture and measure data on social equity, access to	education and healthcare, economic opportunities, and the presence of anti-discrimination policies based on extensive research. This assessment aims to evaluate the cities' performance regarding social inclusion, gender equity, and support for groups at risk.	>>> 5. /10. / 11.

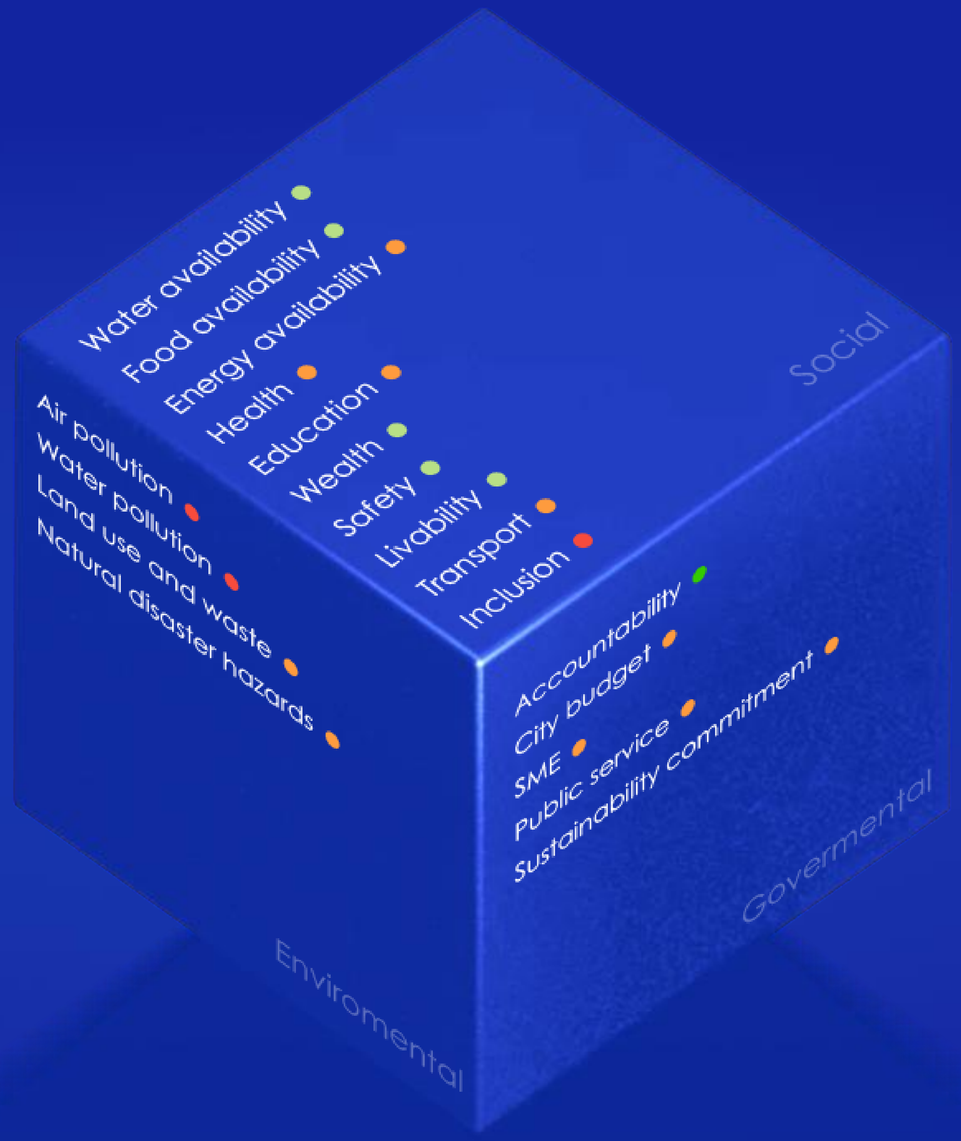
ESG	Category	Definition		SDGs
G	**Accountability**	**The Accountability category** assesses a city's commitment to transparency, governance, and accountability. This category is crucial in the **Global South** where the potential for change is maximized through the promotion of good governance and responsible public resources use.	This assessment aims to evaluate cities' commitment to transparent governance, accountability in resource allocation, and overall effective administration. This category shows how cities ensure responsible resource management, citizens' trust, and effective governance.	>>> 16. / 17.
	City Budget	**The City Budget** category evaluates a city's financial management, allocation of funds, and budget transparency. The topic is of higher importance for the **Global South** as it encompasses the stability of government financial planning. We capture and measure data on budget allocations to essential	services, financial transparency, fiscal responsibility, and adherence to financial sustainability principles. This assessment aims to evaluate the cities' capacity to manage their budgets effectively, ensure fiscal stability, and plan for long-term financial sustainability.	>>> 16.
	SME	**The SME category** evaluates a city's support for and the impact of **SMEs** on the local economy. **SMEs** in the **Global South** are a significant source of employment and economic growth. It is crucial for fostering local businesses and reducing unemployment. We capture and measure data on employment generation,	business sustainability, and innovation related to **SMEs** and entrepreneurship. This assessment aims to evaluate the cities' efforts in promoting a vibrant entrepreneurial ecosystem, supporting small and medium-sized enterprises.	>>> 8. / 9.
	Public Services	**The Public Services** category assesses the quality and accessibility of essential government and municipal services. This category is crucial in the **Global South** due to disparities in access to services. It is essential for improving living standards, health, and social equity. We capture and measure data on the availability and performance	of key government services. This evaluation aims to represent the city's commitment to public service digitalization, efficient emergency response, and citizen engagement in the context of government services.	>>> 11. / 16.
	Sustainability Commitment	**The Sustainability Commitment category** assesses a city's dedication and efforts to promote sustainability and environmental responsibility. This category is critical in the **Global South** because of the more pronounced need to prioritize sustainable development, resilience, and environmental stewardship.	We capture and measure a city's sustainability policies, initiatives, and their effectiveness. This assessment aims to evaluate the cities' dedication to sustainable development, **ESG** principles, and the **UN Sustainable Development Goals** to build community resilience.	>>> 17.

We employ scales to ensure our assessment has comprehensive results

Scale for the categories and components



Very Strong	Exceptionally high performance or quality
Strong	High level of performance or capability
Average	Moderate or standard level
Low	Below-average performance or quality
Very Low	Exceptionally poor or inadequate level



Environmental	Average
Social	Low
Govermental	Average
Current state	Low
Ability & Willingness	Strong

We use a finer URI scale for the overall city's assessment

A1	Demonstrates highest performance standards in environmental, social aspects, and governance, on par with the best-in-class level.
A2	Shows very high performance standards, slightly below the best-in-class level.
A3	Displays high performance standards, somewhat lagging behind the best-in-class level.
B1	Above-average performance standards, currently performing above average.
B2	Average performance standards, at a modest level.
B3	Somewhat below-average performance standards, performing below average.
C1	Relatively weak performance standards, at a relatively weak level.
C2	Weak performance standards, at a low level.
C3	Very weak performance standards, at a very low level.

Urban resielience index

C-2: Weak performance standards, at a low level.

Environmental	Average
Social	Low
Govermental	Average
Current state	Low
Ability & Willingness	Strong

Scoring **Track**

1 >>> 2 >>> 3 >>> 4 >>> 5

Indicators assessment

Indicators aggregation

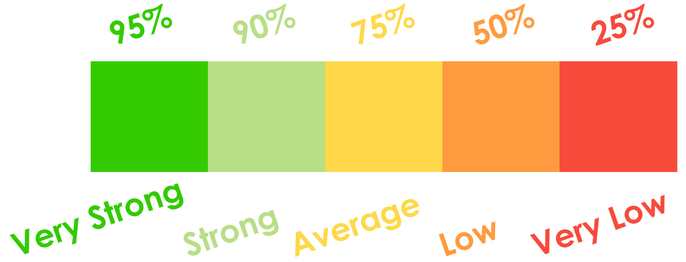
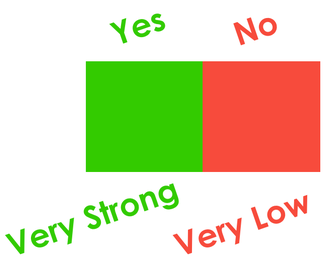
Dimension assessment

Component assessment

Overall URI score

Indicators
Assessment

All indicators (key, supportive and caps) are represented by 2 types of variables — numeric and binary. The first step is to convert these values into a standardized 1–5 scale, ranging from "very strong" to "very low", to facilitate uniform assessment.

Example	Numeric	Binary
Indicator	Percentage of urban population with access to electricity, %	Plans to obtain an **ISO** certification
Value	**87 %**	**Yes**
Scale		

Indicators
Aggregation

We group key indicators for both dimensions using weighted matrices to form a mid-level assessment. Therefore, the resulting combination of scores reflects the relative importance of the incoming indicators. This involves aggregating closely correlated indicators by topic (e.g., CO_2 or land), then crossing these topics before finalizing the mid-assessment by combining key indicators with a perception index derived from social and mass media data.

Example of the **Land indicator matrix** for the Environmental component

Share of devastated and degraded land area requiring reclamation, %	**Green spaces, %**				
	Very low	Low	Average	Strong	Very Strong
Very low	Very low	Low	Low	Average	Average
Low	Very low	Low	Average	Average	Strong
Average	Low	Average	Average	Strong	Strong
Strong	Average	Average	Strong	Strong	Very strong
Very Strong	Average	Average	Strong	Strong	Very strong

Dimension **Assessment**

To obtain a final dimension assessment for both CS and A&W a mid-level assessment may be raised or lowered by 1 notch based on supportive indicators assessment.

Example of the **Land indicator matrix** for the Environmental component

Perception of the component index \ **CO2 indicator, land indicator, air quality**	Very low	Low	Average	Strong	Very Strong
Very low	Very low	Low	Low	Average	Average
Low	Very low	Low	Average	Average	Strong
Average	Low	Average	Average	Strong	Strong
Strong	Average	Average	Strong	Strong	Very strong
Very Strong	Average	Average	Strong	Strong	Very strong

Component Assessment

We combine the CS and A&W scores using weighted matrices to create a compoment assessment. Additionally, we may use caps to adjust the mid-assessment.

Cap indicators

We use cap indicators on components and final assessments to determine whether to notch the value up or down.

Example: if an assessment indicates a component as 'very strong', we evaluate cap indicators such as the existence of risk mitigation strategies for environmental/natural disasters at the city or country level and policies/government statements on environmental issues. If the response to these indicators is negative, we then apply a downward notch to 'strong'.

		Current State (CS)				
		Very low	Low	Average	Strong	Very Strong
Ability and Willingness (A&W)	Very low	Very low	Low	Low	Average	Average
	Low	Very low	Low	Average	Average	Strong
	Average	Low	Average	Average	Strong	Strong
	Strong	Average	Average	Strong	Strong	Very strong
	Very Strong	Average	Average	Strong	Strong	Very strong

The final step involves calculating an overall Urban Resilience Index score, which is then converted to a more refined 1–9 scale, ranging from A1 to C3.

35%
of the final assessment

45%
of the final assessment

20%
of the final assessment

#	Component	Category	Indicator	Scope	Dimension	Key/Supportive	Type of Variable	Unit
1		Air pollution	CO2 emissions	1	Current state	Key	Numeric	kt
2		Air pollution	CO2 emissions (change in last 3 years)	1	Ability & willingness	Key	Numeric	CAGR, %
3		Air pollution	CO2 concentration	1	Current state	Key	Numeric	ppm
4		Air pollution	CO2 concentration (change in last 3 years)	1	Ability & willingness	Key	Numeric	CAGR, %
5		Air pollution	Annual average of SO2 concentration in ambient air	0	Current state	Key	Numeric	microgram/m3
	E							
6		Air pollution	Annual Average of SO2 Concentration in Ambient Air (change in last 3 years)	0	Ability & willingness	Key	Numeric	CAGR, %
7		Air pollution	Annual Average of NO2 Concentration in Ambient Air	0	Current state	Key	Numeric	microgram/m3
8		Air pollution	Annual Average of NO2 Concentration in Ambient Air (change in last 3 years)	0	Ability & willingness	Key	Numeric	CAGR, %
9		Air pollution	Annual Average of O3 Concentration in Ambient Air	0	Current state	Key	Numeric	microgram/m3
10		Air pollution	Annual Average of O3 Concentration in Ambient Air (change in last 3 years)	0	Ability & willingness	Key	Numeric	CAGR, %

#	Component	Category	Indicator	Scope	Dimension	Key/Supportive	Type of Variable	Unit
11		Air pollution	Annual Average of CO Concentration in Ambient Air	0	Current state	Key	Numeric	microgram/m3
12		Air pollution	Annual Average of CO Concentration in Ambient Air (change in last 3 years)	0	Ability & willingness	Key	Numeric	CAGR, %
13		Air pollution	Annual Average of Particulate Matter (PM10) Concentration in Ambient Air	0	Current state	Key	Numeric	microgram/m3
14		Air pollution	Annual Average of Particulate Matter (PM10) Concentration in Ambient Air (change in last 3 years)	0	Ability & willingness	Key	Numeric	CAGR, %
15		Air pollution	Volatile organic compounds/reactive organic gases emissions	1	Current state	Supportive	Numeric	microgram/m3
	E							
16		Air pollution	Perception of air pollution index	0	Current state	Key	Numeric	index
17		Air pollution	Paris Agreement	3	Ability & willingness	Supportive	Binary	Yes/No
18		Water pollution	Annual average of dissolved oxygen (DO) concentration in water	1	Current state	Supportive	Numeric	%
19		Water pollution	Annual average of pH concentration in water	1	Current state	Supportive	Numeric	pH
20		Water pollution	Annual average dissolved solids in drinking water	1	Current state	Supportive	Numeric	ppm

#	Component	Category	Indicator	Scope	Dimension	Key/Supportive	Type of Variable	Unit
21		Water pollution	Water management strategy in a city	1	Ability & willingness	Supportive	Binary	Yes/No
22		Water pollution	Perception of water pollution index	0	Current state	Key	Numeric	index
23		Land use and waste	Share of devastated and degraded land area requiring reclamation	1	Current state	Key	Numeric	%
24		Land use and waste	3-year average growth rate of devastated and degraded land area requiring reclamation	1	Ability & willingness	Key	Numeric	CAGR, %
25		Land use and waste	Waste deposits	0	Current state	Supportive	Numeric	%
	E							
26		Land use and waste	Collected and managed in dumps wastes (hazardous and non-hazardous)	0	Current state	Supportive	Numeric	kg per capita
27		Land use and waste	Collected and managed in dumps wastes (hazardous and non-hazardous), (change in last 3 years)	0	Ability & willingness	Supportive	Numeric	CAGR, %
28		Land use and waste	Total recycled construction waste	1	Current state	Supportive	Numeric	tons per capita
29		Land use and waste	Share of recycled construction and demolish waste in total generated construction and demolish waste	1	Current state	Supportive	Numeric	%
30		Land use and waste	Total area of impervious surfaces and percentage to total city area	1	Current state	Supportive	Numeric	%

#	Component	Category	Indicator	Scope	Dimension	Key/Supportive	Type of Variable	Unit
31		Land use and waste	Productive urban land, % of total area	1	Current state	Supportive	Numeric	%
32		Land use and waste	Waste management strategy	1	Ability & willingness	Supportive	Binary	Yes/No
33		Land use and waste	Perception of waste index	0	Current state	Key	Numeric	index
34		Land use and waste	Green spaces, % city area	1	Current state	Key	Numeric	%
35		Land use and waste	Green spaces, change in last 3 years	1	Ability & willingness	Key	Numeric	CAGR, %
	E							
36		Land use and waste	NDVI (Normalized Difference Vegetation Index)	1	Current state	Supportive	Numeric	index
37		Natural disaster hazards	Share of total area with altitude above sea level less than 0,5 meters	1	Current state	Supportive	Numeric	%
38		Natural disaster hazards	Growth rate of freshwater mirror area	1	Ability & willingness	Key	Numeric	CAGR, %
39		Natural disaster hazards	Number of registered heavy rain, flood and thunderbolt (change in last 3 years)	1	Current state	Supportive	Numeric	CAGR, %
40		Natural disaster hazards	Number of registered sandstorm (change in last 3 years)	1	Current state	Supportive	Numeric	CAGR, %

#	Component	Category	Indicator	Scope	Dimension	Key/Supportive	Type of Variable	Unit
41		Natural disaster hazards	Environmental/natural disasters' risk mitigation	1	Ability & willingness	Supportive	Binary	Yes/No
42		Natural disaster hazards	Strategy/policy/government officials' statement on environmental issues	1	Ability & willingness	Supportive	Binary	Yes/No
43	E	Natural disaster hazards	Total overall losses from natural disaster hazards	1	Current state	Supportive	Numeric	US$ mln
44		Natural disaster hazards	Number of days with average daily temperature above the threshold for 1990-2010	1	Current state	Supportive	Numeric	days
45		Natural disaster hazards	Number of disruptions to basic services, attributed to disasters	0	Current state	Supportive	Numeric	%
46		Water availability	Water consumption per capita	0	Current state	Supportive	Numeric	mcm per capita
47		Water availability	Water tariff to disposable income ratio	0	Current state	Supportive	Numeric	ratio
48	S	Water availability	Sanitary facilities tariff to disposable income ratio	0	Current state	Supportive	Numeric	ratio
49		Water availability	Water consumption per capita (change in last 3 years)	1	Ability & willingness	Supportive	Numeric	CAGR, %
50		Water availability	Percentage of population with access to drinking water	0	Current state	Key	Numeric	%

#	Component	Category	Indicator	Scope	Dimension	Key/Supportive	Type of Variable	Unit
51		Water availability	Percentage of population with access to drinking water (change in last 3 years)	0	Ability & willingness	Supportive	Numeric	CAGR, %
52		Water availability	Percentage of population with access to sanitary facilities	0	Current state	Key	Numeric	%
53		Water availability	Percentage of population with access to sanitary facilities (change in last 3 years)	0	Ability & willingness	Supportive	Numeric	CAGR, %
54		Food availability	Cereal import dependency ratio (5-years average)	1	Current state	Supportive	Numeric	ratio
55	S	Food availability	Cereal import dependency ratio (change in last 3 years)	1	Ability & willingness	Supportive	Numeric	CAGR, %
56		Food availability	Prevalence of undernourishment	0	Current state	Key	Numeric	%
57		Food availability	Prevalence of undernourishment (change in last 3 years)	0	Ability & willingness	Supportive	Numeric	CAGR, %
58		Food availability	Prevalence of undernourishment children	0	Current state	Supportive	Numeric	%
59		Food availability	Prevalence of undernourishment children (change in last 3 years)	0	Ability & willingness	Supportive	Numeric	CAGR, %
60		Food availability	Prevalence of moderate or severe food insecurity in the population	0	Current state	Supportive	Numeric	%

#	Component	Category	Indicator	Scope	Dimension	Key/Supportive	Type of Variable	Unit
61		Food availability	Share of imports in food resources	1	Current state	Supportive	Numeric	%
62		Food availability	Percentage of people with access to at least one food vendor/retailer within 15 minutes of walking	1	Current state	Supportive	Numeric	%
63		Food availability	Perception of food availability index	0	Current state	Key	Numeric	index
64		Energy availability	Percentage of urban population with access to electricity	0	Ability & willingness	Key	Numeric	%
65	S	Energy availability	Percentage of urban population with access to electricity (change in last 3 years)	0	Ability & willingness	Supportive	Numeric	CAGR, %
66		Energy availability	Consumption of electricity per capita	0	Current state	Supportive	Numeric	kWh/person
67		Energy availability	Consumption of electricity per capita (change in last 3 years)	0	Ability & willingness	Supportive	Numeric	CAGR, %
68		Energy availability	Electricity tariff to disposable income ratio	0	Ability & willingness	Supportive	Numeric	ratio
69		Energy availability	Share of renewable sources in electricity consumption	2	Current state	Supportive	Numeric	%
70		Energy availability	Perception of energy availability index	0	Current state	Supportive	Numeric	index

#	Component	Category	Indicator	Scope	Dimension	Key/Supportive	Type of Variable	Unit
71		Health	Child mortality rate (under 5 years-old)	1	Current state	Key	Numeric	% of live births
72		Health	City ambulance	0	Current state	Key	Binary	Yes/No
73		Health	Life expectancy at birth, years	1	Ability & willingness	Supportive	Numeric	years
74		Health	Life expectancy at birth goals	1	Ability & willingness	Key	Numeric	index
75	S	Health	Number of hospital beds per 1,000 population	1	Current state	Supportive	Numeric	per 1,000
76		Health	Number of doctors per 1,000 population	1	Current state	Supportive	Numeric	per 1,000
77		Health	Maternal mortality ratio	0	Current state	Supportive	Numeric	deaths per 1,000 live births
78		Health	Ambulance arrival speed	0	Current state	Supportive	Numeric	min
79		Education	Literacy rate among population (15-24 Years)	0	Current state	Key	Numeric	%
80		Education	Literacy rate among population (15-24 Years) (change in last 3 years)	0	Ability & willingness	Key	Numeric	CAGR, %

#	Component	Category	Indicator	Scope	Dimension	Key/Supportive	Type of Variable	Unit
81		Education	Primary education engagement	1	Current state	Supportive	Numeric	%
82		Education	Pupils per teacher rate	1	Current state	Supportive	Numeric	ratio
83		Education	Proportion of population with post-secondary and higher education	1	Current state	Supportive	Numeric	%
84		Wealth	Percentage of population with food expenditure is above 52% of total expenditure	0	Current state	Key	Numeric	%
85	S	Wealth	Mean monthly salary	1	Current state	Key	Numeric	US dollars thousand, PPP
86		Wealth	Mean monthly salary, change in last 3 years	1	Ability & willingness	Key	Numeric	CAGR, %
87		Wealth	Disposable monthly income	0	Current state	Supportive	Numeric	US dollars thousand, PPP
88		Wealth	Disposable monthly income (change in last 3 years)	1	Ability & willingness	Supportive	Numeric	CAGR, %
89		Wealth	Debt to salary ratio	1	Current state	Supportive	Numeric	ratio
90		Wealth	Number of mobile phones per 1,000 population	1	Current state	Supportive	Numeric	per 1,000

#	Component	Category	Indicator	Scope	Dimension	Key/Supportive	Type of Variable	Unit
91		Wealth	Decile income coefficient	1	Current state	Supportive	Numeric	ratio
92		Wealth	Decile income coefficient (change in last 3 years)	1	Ability & willingness	Supportive	Numeric	CAGR, %
93		Wealth	Poverty headcount ratio at national poverty lines	1	Current state	Supportive	Numeric	ratio
94		Wealth	Working poverty rate (percentage of employed living below US$1.90 PPP), 15+ age (%)	1	Current state	Supportive	Numeric	%
95	S	Wealth	Poverty headcount ratio at $2.15 PPP 2017 a day	0	Current state	Supportive	Numeric	ratio
96		Wealth	Living spaces per capita, sq m (change in last 3 years)	0	Ability & willingness	Supportive	Numeric	CAGR, %
97		Wealth	Population living in slums (% of urban population)	0	Ability & willingness	Supportive	Numeric	%
98		Wealth	Availability of finance (consumer loans)	1	Current state	Supportive	Numeric	%
99		Wealth	Perception of wealth & poverty index	0	Current state	Key	Numeric	index
100		Safety	Road fatalities rate per 100,000 population	1	Current state	Supportive	Numeric	per 100,000

#	Component	Category	Indicator	Scope	Dimension	Key/Supportive	Type of Variable	Unit
101		Safety	Road fatalities rate per 100,000 population (change in last 3 years)	1	Ability & willingness	Supportive	Numeric	CAGR, %
102		Safety	Violent crime rate per 100,000 population	0	Current state	Key	Numeric	per 100,000
103		Safety	Violent crime rate per 100,000 population (change in last 3 years)	0	Ability & willingness	Supportive	Numeric	CAGR, %
104		Safety	Crime rate per 100,000 population	0	Current state	Supportive	Numeric	per 100,000
105	S	Safety	Crime rate per 100,000 population (change in last 3 years)	0	Ability & willingness	Supportive	Numeric	CAGR, %
106		Safety	Police arrival speed	0	Current state	Supportive	Numeric	min
107		Safety	Perception of safety index	0	Current state	Supportive	Numeric	index
108		Livability	Number of LEED certified green buildings	1	Current state	Supportive	Numeric	certified square meters per capita
109		Livability	Number of CEEQUAL certified projects	2	Current state	Supportive	Numeric	certified square meters per capita
110		Livability	Whether or not the city has ISO 37120 certification	2	Ability & willingness	Supportive	Binary	Yes/No

#	Component	Category	Indicator	Scope	Dimension	Key/Supportive	Type of Variable	Unit
111		Livability	Mobile connection coverage	0	Current state	Supportive	Numeric	%
112		Livability	Internet coverage	1	Current state	Supportive	Numeric	%
113		Livability	Perception of livability index	0	Current state	Key	Numeric	index
114		Livability	Share of population in 1 km from hospitals	0	Current state	Key	Numeric	%
115	S	Livability	Share of population in 1 km from parks	0	Current state	Key	Numeric	%
116		Transport	Time loss in traffic	1	Current state	Key	Numeric	%
117		Transport	Share of the population in 1 km from public transport stop	1	Current state	Supportive	Numeric	%
118		Transport	Ratio of the cost of monthly public transport usage (the cheapest option) to average monthly income	1	Current state	Supportive	Numeric	ratio
119		Transport	Ratio of the cost of a 1-kilometer taxi ride to average monthly income	1	Current state	Supportive	Numeric	ratio
120		Transport	Percentage of city roads that are segregated and/or has specialized lane for cyclists	1	Current state	Supportive	Numeric	%

#	Component	Category	Indicator	Scope	Dimension	Key/Supportive	Type of Variable	Unit
121		Transport	Number of public electric vehicle (EV) charging points per 100,000 population	3	Current state	Supportive	Numeric	per 100,000
122		Transport	Public transport (excluding subway) operates by schedule	1	Current state	Supportive	Binary	Yes/No
123		Transport	Perception of transport index	0	Current state	Key	Numeric	index
124		Inclusion	Female-friendly city	1	Current state	Supportive	Numeric	index
125	S	Inclusion	Number of refugees per 1,000 population	0	Current state	Supportive	Numeric	per 1,000
126		Inclusion	Homeless people per 1,000 population	0	Current state	Key	Numeric	per 1,000
127		Inclusion	Difference in number of years of schooling between woman and man, woman to man ratio	1	Current state	Supportive	Numeric	ratio
128		Inclusion	Slavery index	0	Current state	Supportive	Numeric	index
129		Inclusion	Percentage of women aged 25-34 years old that have successfully completed secondary education	1	Current state	Supportive	Numeric	%
130		Inclusion	Regulations for building construction and equipment, public transport for people with disabilities	2	Current state	Supportive	Binary	Yes/No
131		Inclusion	Perception of inclusion index	0	Current state	Key	Numeric	index

#	Component	Category	Indicator	Scope	Dimension	Key/Supportive	Type of Variable	Unit
132		Accountability	City budget execution publication	1	Current state	Key	Binary	Yes/No
133		Accountability	City budget publication	1	Current state	Key	Binary	Yes/No
134		Accountability	Financial transparency on city government companies	2	Current state	Key	Binary	Yes/No
135		Accountability	ISO certification	2	Current state	Key	Binary	Yes/No
136	G	Accountability	City council checks and balances	1	Ability & willingness	Supportive	Binary	Yes/No
137		Accountability	Plans to obtain ISO certification	2	Ability & willingness	Supportive	Binary	Yes/No
138		Accountability	Perception of accountability index	1	Current state	Key	Numeric	index
139		City budget	Poor financial condition	2	Current state	Key	Binary	Yes/No
140		City budget	Central/higher level government financial intervention taking place	2	Current state	Key	Binary	Yes/No

#	Component	Category	Indicator	Scope	Dimension	Key/Supportive	Type of Variable	Unit
141		City budget	Long-term financial planning	3	Ability & willingness	Key	Binary	Yes/No
142		City budget	Central/higher level government financial intervention is considered	2	Ability & willingness	Supportive	Binary	Yes/No
143		City budget	Prudent fiscal policy requirements	2	Ability & willingness	Supportive	Binary	Yes/No
144		City budget	Medium-term planning	3	Ability & willingness	Key	Binary	Yes/No
145	G	SME	Number of SMEs per 100,000 population	2	Current state	Key	Numeric	per 100,000
146		SME	Number of start-ups	2	Current state	Supportive	Numeric	start-ups
147		SME	Global Startup Ecosystem Index	3	Current state	Supportive	Numeric	index
148		SME	Number of SMEs per capita/100 000 population (change in last 3 years)	2	Ability & willingness	Supportive	Numeric	CAGR, %
149		SME	Number of start-ups (change in last 3 years)	2	Ability & willingness	Supportive	Numeric	CAGR, %
150		Public services	Free phone to call the police, ambulance, firefighters	0	Current state	Supportive	Numeric	index

#	Component	Category	Indicator	Scope	Dimension	Key/Supportive	Type of Variable	Unit
151		Public services	Services for working with citizens' appeals and complaint	1	Current state	Supportive	Binary	Yes/No
152		Public services	E-gov services	1	Current state	Key	Binary	Yes/No
153		Public services	Perception of public services index: Public Services	1	Current state	Key	Numeric	index
154		Sustainability commitment	City ESG reporting	3	Ability & willingness	Key	Binary	Yes/No
155	G	Sustainability commitment	City ESG reporting verification	3	Ability & willingness	Supportive	Binary	Yes/No
156		Sustainability commitment	ESG planning	3	Ability & willingness	Key	Binary	Yes/No
157		Sustainability commitment	Plan with specific targets to develop and implement smart city principles	1	Ability & willingness	Supportive	Binary	Yes/No
158		Sustainability commitment	Rollout and status of ESG / UN SDG training across the municipal/asset workforce	1	Current state	Supportive	Binary	Yes/No
159		Sustainability commitment	City municipality involved in network or partnership promoting sustainable development (for example, C40 Cities network)	3	Current state	Supportive	Binary	Yes/No

Thank **You!** >>>