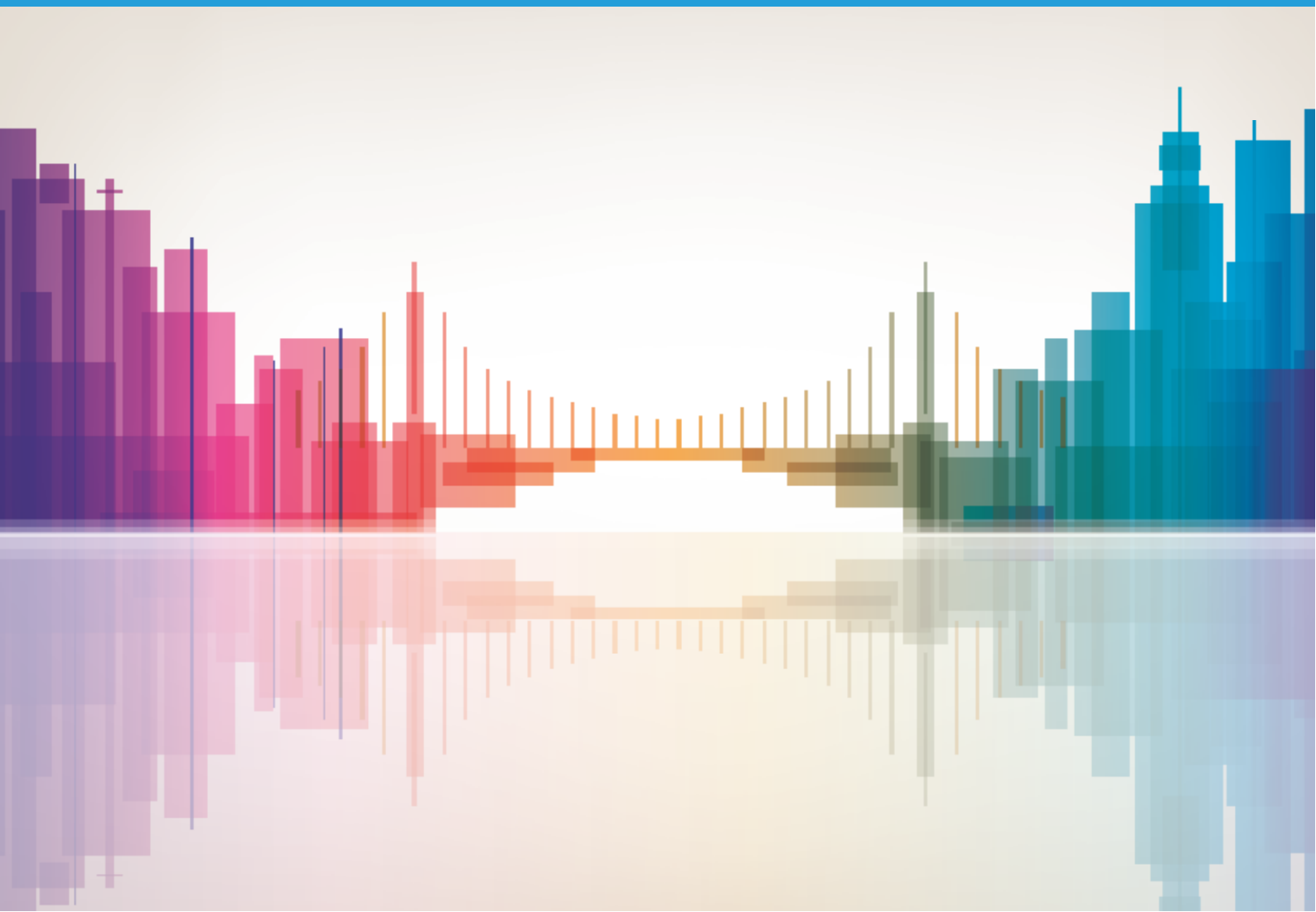


Verification Report Esperanza, Province of Santa Fe, Argentina

November 2020





Verification Report

Esperanza, Province of
Santa Fe, Argentina



Foreword

This publication has been developed by ITU within the framework of the United for Smart Sustainable Cities (U4SSC) initiative. It provides an overview of the reporting and implementation of key performance indicators (KPIs) for smart sustainable cities (SSC) in the City of Esperanza, Argentina. This set of KPIs for SSC was developed to establish the criteria to evaluate ICTs' contributions in making cities smarter and more sustainable, and to provide cities with the means for self-assessments.

Disclaimer

The views expressed in this publication are those of the authors and do not necessarily reflect the views of the contributing organizations.

Any references made to specific countries, companies, products, initiatives, policies, framework or guidelines do not in any way imply that they are endorsed or recommended by ITU, the authors, or any other organization that the authors are affiliated with, in preference to others of similar nature that are not mentioned.

This publication is intended for informational purposes only. The results and interim findings presented are a work in progress, as the KPIs (Recommendation ITU-T Y.4903/L.1603) implemented in Esperanza during the first phase of the project are being refined to improve the applicability of these KPIs to all cities. The revision of the KPIs may alter their scope and definition as well as the required data-collection process.

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1. Introduction and Verification Background

This report contains the verification results for the KPI submission by the city of Esperanza to the requirements of the United for Smart Sustainable Cities (U4SSC) Key Performance Indicators (KPIs) as described within the 'Collection Methodology for Key Performance Indicators for Smart Sustainable Cities'.

John Smiciklas, who is certified as a U4SSC Key Performance Indicators for Smart Sustainable Cities Verifier, completed the verification in August 2020.

The verification assessment activities included:

- collecting and reviewing KPI data;
- interviewing city stakeholders;
- verifying that the data submitted are in conformance with the requirements of the Collection Methodology for Key Performance Indicators for Smart Sustainable Cities; and
- preparing the Verification Report.

The verification was conducted using the information made available by the city and the information presented during follow-up activities. It was planned and performed in order to obtain limited assurance with respect to the information examined.

There were no limitations that impacted the completion of this verification.

2. KPI Reporting and Verification Summary

	Total	Reported	Verified	% KPIs Verified
Economy				
Core KPIs	23	19	19	83 %
Advanced KPIs	22	19	19	86 %
Environment				
Core KPIs	12	8	8	67 %
Advanced KPIs	5	2	2	40 %
Society & Culture				
Core KPIs	19	15	15	79 %
Advanced KPIs	10	8	8	80 %
Overall				
Core KPIs	54	42	42	78 %
Advanced KPIs	37	29	29	78 %
Total	91	71	71	78 %

3. KPI Data Points Reporting and Verification Summary

Certain KPIs are composed of more than one data point.

Below is a summary of the verification results of those data points.

	Total	Reported	Verified	% Data Points Verified
Economy				
Core Data Points	24	20	20	83 %
Advanced Data Points	31	28	28	90 %
Environment				
Core Data Points	23	15	15	65 %
Advanced Data Points	5	2	2	40 %
Society & Culture				
Core Data Points	19	15	15	79 %
Advanced Data Points	10	8	8	80 %
Overall				
Core Data Points	66	50	50	76 %
Advanced Data Points	46	38	38	83 %
Total	112	88	88	79 %

5. Benchmarks and Scoring Methodology

As part of the U4SSC KPIs project, benchmarks were developed for most KPIs in order to develop a reporting framework with which to demonstrate to cities how their performance could be reported.

The benchmarks were set based on several factors:

- fully meeting the aligned SDG(s);
- performance compared with other international and transnational targets (e.g. OECD, European Commission);
- performance against a UN agency's goals (e.g. International Telecommunication Union);
- evaluation of city performance using UN and other international statistical data; and
- performance measured versus leading city performance globally.

Performance to benchmarks were then scored in four ranges for every KPI and data point reported:

- 0 – 33 % of target – 1 pt;
- 33 – 66 % of target – 2 pts;
- 66 – 95 % of target – 3 pts; and
- 95+ % of target – 4 pts.

The scores for each reported KPI and data point were added to give a percentage score for categories, sub-dimensions and dimensions and were reported based on the above target scores. KPIs or data points that are not reported or have no benchmarks yet defined were excluded.

Example: Education 4 KPIs

- If all 4 are reported and the scores are 1 pt, 3 pts, 4 pts and 1 pt;
Total score 9 pts out of 16 = 56.25 % reported as 33 – 66 % of target.
- If only 3 are reported and the scores are 3 pts, 4 pts and 2 pts;
Total score 9 pts out of 12 = 75 % reported as 66 – 95 % of target.

Targets and scoring are meant to provide additional context to KPI data and should be used in context with city goals and comparisons with other similar cities to determine future actions.

6. Verification Results

This section contains the data and results of the verification for Esperanza’s reporting for each of the U4SSC KPIs within the three dimensions:

- Economy
- Environment
- Society and Culture

and the twenty-two categories of the dimensions:

- | | |
|------------------------|---------------------------|
| • ICT Infrastructure | • Air Quality |
| • Water and Sanitation | • Environmental Quality |
| • Drainage | • Public Space and Nature |
| • Electricity Supply | • Energy |
| • Transport | • Education |
| • Public Sector | • Health |
| • Innovation | • Culture |
| • Employment | • Housing |
| • Waste | • Social Inclusion |
| • Buildings | • Safety |
| • Urban Planning | • Food Security |
















Note: The following categories are reported under the Economy and the Environment dimensions.

- Water and Sanitation
- Waste








Note: For the results on following pages.

- **Core KPIs are highlighted in bold.**
- *Advanced KPIs are in italics.*

















Dimension: Economy

CATEGORY	KPI / Data Point	Results	Benchmark
 <p>ICT INFRASTRUCTURE</p>	Household Internet Access	53.40 %	
	Fixed Broadband Subscriptions	51.54 %	
	Wireless Broadband Subscriptions	53 705/ 100 000 inhabitants	
	Wireless Broadband Coverage: 3G	100.00 %	
	Wireless Broadband Coverage: 4G	100.00 %	
	Availability of Wi-Fi in Public Areas	6	N/A
 <p>WATER AND SANITATION</p>	Smart Water Meters	0.00 %	
	Water Supply ICT Monitoring	100.00 %	
	Basic Water Supply	100.00 %	
	Potable Water Supply	100.00 %	
	Water Supply Loss	17.00 %	
	Wastewater Collection	78.52 %	
 <p>DRAINAGE</p>	Drainage/Storm Water System ICT Monitoring	0.00 %	

















Dimension: Economy (continued)

CATEGORY	KPI / Data Point	Results	Benchmark
 ELECTRICITY SUPPLY	Smart Electricity Meters	0.00 %	
	<i>Electricity Supply ICT Monitoring</i>	<i>0.00 %</i>	
	<i>Demand Response Penetration</i>	<i>Not Reported</i>	
	Electricity System Outage Frequency	1.82	
	Electricity System Outage Time	124.35 Minutes	
	Access to Electricity	98.75 %	

Dimension: Economy (continued)

CATEGORY	KPI / Data Point	Results	Benchmark
 TRANSPORT	Dynamic Public Transport Information	Not Reported	
	Traffic Monitoring	15.61 %	
	<i>Intersection Control</i>	<i>0.00 %</i>	
	Public Transport Network	0.00 Km/ 100 000 inhabitants	
	<i>Public Transport Network Convenience</i>	<i>0.00 %</i>	
	Bicycle Network	57.69 Km/ 100 000 inhabitants	
	<i>Transportation Mode Share: Private Vehicles</i>	<i>45.44 %</i>	
	<i>Transportation Mode Share: Public Transport</i>	<i>0.00 %</i>	
	<i>Transportation Mode Share: Walking</i>	<i>21.95 %</i>	
	<i>Transportation Mode Share: Cycling</i>	<i>31.00 %</i>	
	<i>Transportation Mode Share: Para Transport</i>	<i>1.61 %</i>	
	<i>Travel Time Index</i>	<i>1.22</i>	
	<i>Shared Bicycles</i>	<i>0.00/ 100 000 inhabitants</i>	
	<i>Shared Vehicles</i>	<i>0.00/ 100 000 inhabitants</i>	
	<i>Low-Carbon Emission Passenger Vehicles</i>	<i>Not Reported</i>	




Dimension: Economy (continued)

CATEGORY	KPI / Data Point	Results	Benchmark
 PUBLIC SECTOR	<i>Open Data Sets Published</i>	0	N/A
	<i>Open Data Sets % Availability</i>	0.00 %	
	<i>e-Government</i>	25 Services	N/A
	<i>Public Sector e-Procurement</i>	Not Reported	
 INNOVATION	R&D Expenditure	Not Reported	
	Patents	0.00/ 100 000 inhabitants	
	<i>Small and Medium-Sized Enterprises</i>	98.94 %	
 EMPLOYMENT	Unemployment Rate	5.19 %	
	Youth Unemployment Rate	Not Reported	
	<i>Tourism Sector Employment</i>	1.86 % ¹	
	<i>ICT Sector Employment</i>	0.49 % ²	
 WASTE	Solid Waste Collection	Not Reported	
 BUILDINGS	<i>Public Building Sustainability</i>	0.00 %	
	<i>Integrated Building Management Systems in Public Buildings</i>	0.00 %	

¹ Based on private sector labour force only.















² Based on private sector labour force only.

Dimension: Economy (continued)





















CATEGORY	KPI / Data Point	Results	Benchmark	
 URBAN PLANNING	<i>Pedestrian Infrastructure</i>	5.14 % ³		
	<i>Urban Development and Spatial Planning: Compact</i>	NO		
	<i>Urban Development and Spatial Planning: Connected</i>	YES		
	<i>Urban Development and Spatial Planning: Integrated</i>	NO		
	<i>Urban Development and Spatial Planning: Inclusive</i>	YES		
	<i>Urban Development and Spatial Planning: Resilient</i>	YES		

³ Based on urban area only.


















Dimension: Environment

CATEGORY	KPI / Data Point	Results	Benchmark
 <p>AIR QUALITY</p>	Particulate Matter (PM 2.5)	Not Reported	
	Particulate Matter (PM 10)	Not Reported	
	Nitrogen Dioxide (NO ₂)	Not Reported	
	Sulphur Dioxide (SO ₂)	Not Reported	
	Ozone (O ₃)	Not Reported	
	GHG Emissions	Not Reported	
 <p>WATER AND SANITATION</p>	Drinking Water Quality	83.47 %	
	Water Consumption	247.05 ℓ/day/capita	
	Freshwater Consumption	Not Reported	
	Wastewater Treatment: Primary	0.00 %	
	Wastewater Treatment: Secondary	0.00 %	
	Wastewater Treatment: Tertiary	0.00 %	

Dimension: Environment (continued)










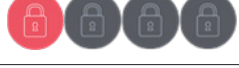






CATEGORY	KPI / Data Point	Results	Benchmark
 WASTE	Solid Waste: Landfill	97.57 %	
	Solid Waste: Burnt	0.00 %	
	Solid Waste: Incinerated	0.00 %	
	Solid Waste: Open Dump	0.00 %	
	Solid Waste: Recycled	2.43%	
	Solid Waste: Other	0.00 %	
 ENVIRONMENTAL QUALITY	EMF Exposure	Not Reported	
	Noise Exposure	Not Reported	
 PUBLIC SPACE AND NATURE	Green Areas	296.12 ha/ 100 000 inhabitants	
	Green Area Accessibility	Not Reported	
	Protected Natural Areas	0.32 %	
	Recreational Facilities	Not Reported	
 ENERGY	Renewable Energy Consumption	0.00 %	
	Electricity Consumption	2 651.17 kWh/yr./capita	
	Residential Thermal Energy Consumption	11.51 GJ/yr./capita	
	Public Building Energy Consumption	45.28 ekWh/m ² /yr	

Dimension: Society and Culture

CATEGORY	KPI / Data Point	Results	Benchmark
 EDUCATION	Student ICT Access	52.70 % ⁴	
	School Enrolment	77.67 %	
	Higher Education Degrees	8 591/ 100 000 inhabitants	
	Adult Literacy	99.04 %	
 HEALTH	<i>Electronic Health Records</i>	<i>Not Reported</i>	
	Life Expectancy	76.81 Years	
	Maternal Mortality Rate	0.00/ 100 000 live births	
	Physicians	351.98/ 100 000 inhabitants	
	<i>In-Patient Hospital Beds</i>	<i>202.76/ 100 000 inhabitants</i>	
	<i>Health insurance/ Public Health Coverage</i>	100.00 %	
 CULTURE	Cultural Expenditure	10.06 %	
	<i>Cultural Infrastructure</i>	<i>85.09 / 100 000 inhabitants</i>	N/A
 HOUSING	Informal Settlements	0.55 %	
	<i>Housing Expenditure</i>	12.80 %	



⁴ Based only on the number of schools reporting, which is optional.

Dimension: Society and Culture (continued)

CATEGORY	KPI / Data Point	Results	Benchmark
 SOCIAL INCLUSION	Gender Income Equity	Not Reported	
	Gini Coefficient	Not Reported	
	Poverty Rate	Not Reported	
	Voter Participation	73.72 %	
	<i>Childcare Availability</i>	<i>6.66 %</i>	
 SAFETY	Natural Disaster-Related Deaths	0.00/ 100 000 inhabitants	
	Disaster-Related Economic Losses	0.00 %/City GDP	
	<i>Resilience Plans</i>	<i>NO⁵</i>	
	<i>Population Living in Disaster-Prone Areas</i>	<i>0.55 %</i>	
	<i>Emergency Service Response Time</i>	<i>8.41 Minutes</i>	
	Police Service	389.76 FTE/ 100 000 inhabitants	
	Fire Service	67.69 FTE/ 100 000 inhabitants	
	Violent Crime Rate	Not Reported	
	Traffic Fatalities	12.26/ 100 000 inhabitants	

⁵ Resilience plans are in place but do not yet meet the requirements of the Sendai Framework. This includes steps taken such as a new ordinance code for land use planning, systematic investments in infrastructure and equipment, development of a procedure manual for civil defense action, and development of simulations of evacuation situations in different scenarios among others.

Dimension: Society and Culture (continued)

CATEGORY	KPI / Data Point	Results	Benchmark
 <p>FOOD SECURITY</p>	<p><i>Local Food Production</i></p>	<p><i>Not Reported</i></p>	

7. KPIs Not Reported

KPI Number	Description
EC: ICT: ES: 3A	Demand Response Penetration
EC: ICT: T: 1C	Dynamic Public Transport Information
EC: ICT: PS: 3A	Public Sector e-procurement
EC: P: EM: 2C	Youth Unemployment Rate
EC: P: IN: 1C	R&D expenditure
EC: I: WA: 1C	Solid Waste Collection
EC: I: T: 8A	Low-Carbon Emission Passenger Vehicles
EN: EN: AQ: 1C	Air Pollution
EN: EN: AQ: 2C	GHG Emissions
EN: EN: WS: 3C	Freshwater Consumption
EN: EN: EQ: 1C	EMF Exposure
EN: EN: EQ: 2A	Noise Exposure
EN: EN: PSN: 2A	Green Area Accessibility
EN: EN: PSN: 4A	Recreational Facilities
SC: EH: H: 6A	Electronic Health Records
SC: SH: SI: 1C	Gender Income Equity
SC: SH: SI: 2C	Gini Coefficient
SC: SH: SI: 3C	Poverty
SC: SH: SA: 8C	Violent Crime Rate
SC: SH: FS: 1A	Local Food Production

8. KPIs Not Verified

All reported KPIs were verified.

9. Next Steps

Esperanza is encouraged to focus on KPIs that have been reported as falling within the benchmarks of 0 – 33 % and 33 – 66 % of targets, determine which of these KPIs indicates critical issues for the city and develop plans for improvement.

Esperanza is encouraged to review the KPIs for which no data were reported, and determine plans for future data collection and reporting.

Esperanza is encouraged to continue ongoing data collection to determine trends in performance against benchmarks over time.

Esperanza is encouraged to stay engaged within the U4SSC process and continue to provide feedback on KPIs and benchmarks.

10. Using KPIs for SSC to Reach the SDGs

The United for Smart Sustainable Cities (U4SSC) initiative has developed the Key Performance Indicators (KPIs) for Smart Sustainable Cities (SSC) to support cities worldwide in evaluating the role and contribution of ICTs in smart sustainable cities, and to provide cities with the tools for self-assessments in order to achieve the United Nations Sustainable Development Goals (SDGs).

United for Smart Sustainable Cities (U4SSC)



U4SSC is a UN initiative coordinated by the International Telecommunication Union (ITU), UN-Habitat and UNECE, and supported by 14 other UN Agencies and Programmes, including CBD, ECLAC, FAO, UNESCO, UNDP, UNECA, UN-Women, UNEP, UNEP-FI, UNFCCC, UNIDO, UNU EGOV, UNOP and WMO.

U4SSC is the global platform to advocate for public policies to encourage the use of ICTs to facilitate and ease the transition to smart sustainable cities. [Find out more...](#)

These indicators are developed based on an international standard – Recommendation ITU-T Y.4903/L.1603 ‘Key performance indicators for smart sustainable cities to assess the achievement of sustainable development goals’.

These indicators have been developed to provide cities with a consistent and standardized method to collect the necessary data to measure performance and progress with regard to:

- achieving the Sustainable Development Goals (SDGs);
- becoming a smarter city; and
- becoming a more sustainable city.

The U4SSC KPIs consist of 91 indicators. Each indicator forms part of a holistic view of a city’s performance in three dimensions: **Economy**, **Environment** and **Society and Culture**. Each of these dimensions provides a separate view of progress, and when reported together they provide a holistic view of a smart sustainable city.

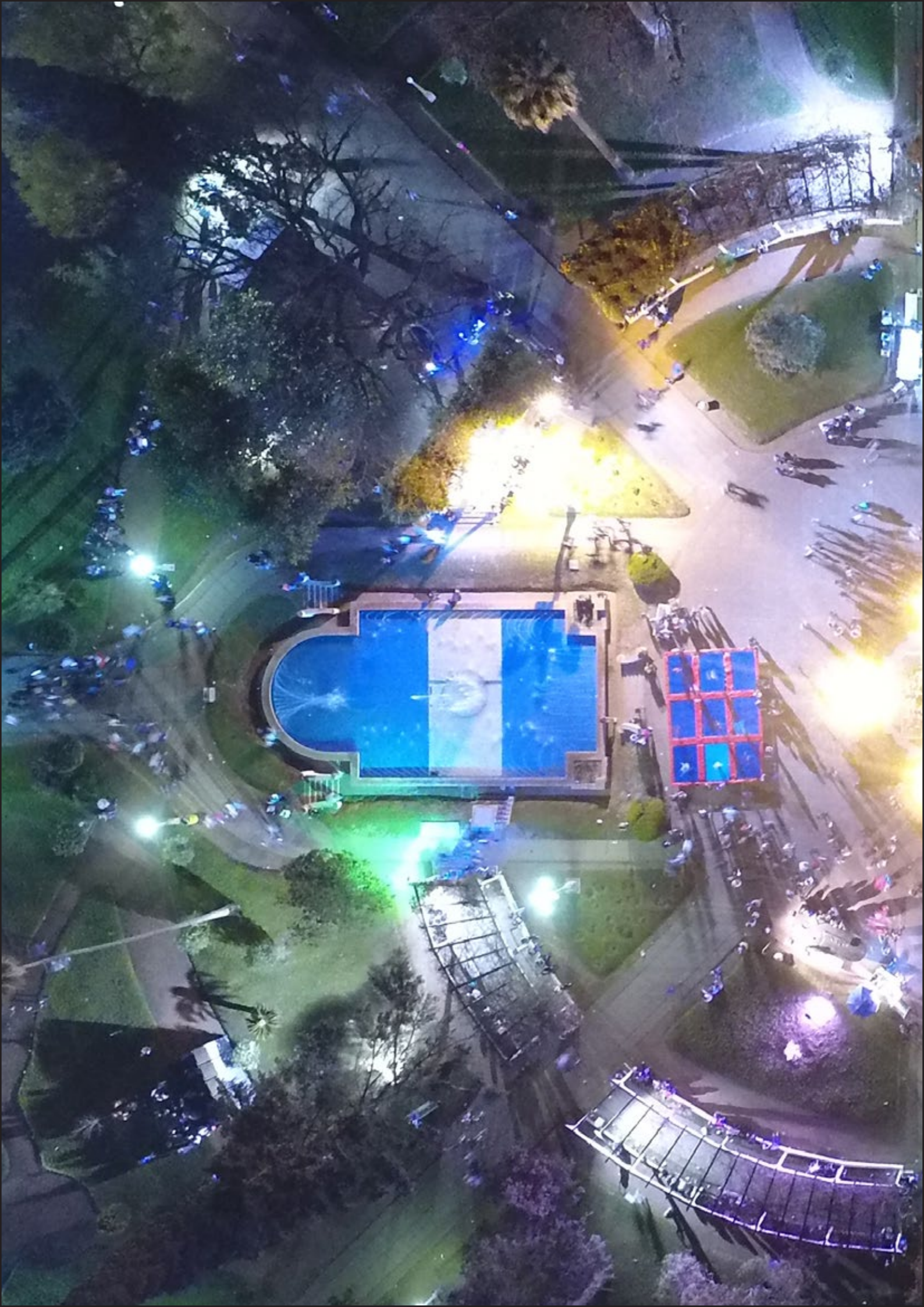
By providing a common set of metrics to benchmark a city's performance, the indicators will also enable cities to compare their performance to other cities, allowing for the dissemination of best practices and setting the standards for progression in meeting the Sustainable Development Goals (SDGs) at the city level.

The list of all the U4SSC KPIs for SSC, along with its collection methodology, are contained in:

- the Flipbook on the 'Collection Methodology for Key Performance Indicators for Smart Sustainable Cities'.

Over 100 cities worldwide are already implementing these KPIs. All cities are invited to participate in this project and employ these KPIs.

To find out more, contact the U4SSC Secretariat at: u4ssc@itu.int.





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