

# Verification Report Valencia, Spain

June 2020



# GLOBAL GOALS



# Verification Report

Valencia, Spain

**11 SUSTAINABLE CITIES  
AND COMMUNITIES**



# CONTENTS

1. Introduction and Verification Background.....	1
2. KPI Reporting and Verification Summary.....	2
3. KPI Data Points Reporting and Verification Summary .....	2
4. City Performance Benchmark .....	3
5. Benchmarks and Scoring Methodology.....	4
6. Verification Results.....	5
7. KPIs Not Reported .....	15
8. KPIs Not Verified.....	15
9. Next Steps .....	15
10. Using KPIs for SSC to Reach the SDGs.....	16



## 1. Introduction and Verification Background

This report contains the verification results for the KPI submission by the city of Valencia, Spain 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 May 2019.

The verification assessment activities included:

- collecting and reviewing KPI data;
- interviewing city stakeholders;
- verifying that the data were submitted in conformity 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 during the onsite visit and the information presented during follow-up activities. It was planned and carried out 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
<b>Economy</b>				
Core KPIs	23	23	23	100 %
Advanced KPIs	22	18	18	82 %
<b>Environment</b>				
Core KPIs	12	10	10	83 %
Advanced KPIs	5	5	5	100 %
<b>Society &amp; Culture</b>				
Core KPIs	19	17	17	89 %
Advanced KPIs	10	6	6	60 %
<b>Overall</b>				
Core KPIs	54	50	50	93 %
Advanced KPIs	37	29	29	78 %
<b>Total</b>	<b>91</b>	<b>79</b>	<b>79</b>	<b>87 %</b>

## 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 of those data points

	Total	Reported	Verified	% Data Points Verified
<b>Economy</b>				
Core Data Points	24	24	24	100 %
Advanced Data Points	31	27	27	87 %
<b>Environment</b>				
Core Data Points	23	21	21	91 %
Advanced Data Points	5	5	5	100 %
<b>Society &amp; Culture</b>				
Core Data Points	19	17	17	89 %
Advanced Data Points	10	6	6	60 %
<b>Overall</b>				
Core Data Points	66	62	62	94 %
Advanced Data Points	46	38	38	83 %
<b>Total</b>	<b>112</b>	<b>100</b>	<b>100</b>	<b>89 %</b>





## 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.
- 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
- 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 Valencia's reporting for each of the U4SSC KPIs within the three (3) dimensions:

- Economy
- Environment
- Society and Culture

and the twenty- two (22) 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
 ICT INFRASTRUCTURE	Household Internet Access	79.60 %	
	Fixed Broadband Subscriptions	75.62 %	
	Wireless Broadband Subscriptions	116 000 / 100 000 inhabitants	
	Wireless Broadband Coverage: 3G	100.00 %	
	Wireless Broadband Coverage: 4G	100.00 %	
	Availability of Wi-Fi in Public Areas	250 Spots	N/A
 WATER AND SANITATION	Smart Water Meters	94.80 %	
	Water Supply ICT Monitoring	100.00 %	
	Basic Water Supply	100.00 %	
	Potable Water Supply	99.10 %	
	Water Supply Loss	9.27 %	
	Wastewater Collection	99.70 %	
 DRAINAGE	Drainage/Storm Water System ICT Monitoring	87.50 %	

Dimension: Economy (continued)

CATEGORY	KPI / Data Point	Results	Benchmark
 ELECTRICITY SUPPLY	Smart Electricity Meters	91.27 %	
	Electricity Supply ICT Monitoring	Not reported	
	Demand Response Penetration	Not reported	
	Electricity System Outage Frequency	1.01	
	Electricity System Outage Time	0.68 Minutes	
	Access to Electricity	100.00 %	




Dimension: Economy (continued)

CATEGORY	KPI / Data Point	Results	Benchmark
 TRANSPORT	<b>Dynamic Public Transport Information</b>	<b>100.00 %</b>	
	<b>Traffic Monitoring</b>	<b>100.00 %</b>	
	<i>Intersection Control</i>	34.38 %	
	<b>Public Transport Network</b>	<b>69.50 km / 100 000 inhabitants</b>	
	<i>Public Transport Network Convenience</i>	100.00 %	
	<b>Bicycle Network</b>	<b>20.11 km / 100 000 inhabitants</b>	
	<i>Transportation Mode Share Private Vehicles</i>	35.34 %	
	<i>Transportation Mode Share Public Transport</i>	30.43 %	
	<i>Transportation Mode Share Walking</i>	26.73 %	
	<i>Transportation Mode Share Cycling</i>	7.38 %	
	<i>Transportation Mode Share Para Transport</i>	0.12 %	
	<i>Travel Time Index</i>	1.40	
	<i>Shared Bicycles</i>	344.38 / 100 000 inhabitants	
	<i>Shared Vehicles</i>	15.65 / 100 000 inhabitants	
	<i>Low-Carbon Emission Passenger Vehicles</i>	0.04 %	

Dimension: Economy (continued)

CATEGORY	KPI / Data Point	Results	Benchmark
 PUBLIC SECTOR	<i>Open Data Sets Published</i>	117 Data Sets	N/A
	<i>Open Data Sets % Availability</i>	100.00 %	
	<i>e-Government</i>	487 Services	N/A
	<i>Public Sector e-Procurement</i>	100.00 %	
 INNOVATION	<b>R&amp;D Expenditure</b>	<b>0.99 % GDP</b>	
	<b>Patents</b>	<b>10.23 / 100 000 inhabitants</b>	
	<i>Small and Medium-Sized Enterprises</i>	99.88 %	
 EMPLOYMENT	<b>Unemployment Rate</b>	<b>13.00 %</b>	
	<b>Youth Unemployment Rate</b>	<b>24.80 %</b>	
	<i>Tourism Sector Employment</i>	7.18 %	
	<i>ICT Sector Employment</i>	3.30 %	
 WASTE	<b>Solid Waste Collection</b>	<b>100.00 %</b>	
 BUILDINGS	<i>Public Building Sustainability</i>	Not reported	
	<i>Integrated Building Management Systems in Public Buildings</i>	Not reported	

**Dimension: Economy (continued)**














CATEGORY	KPI / Data Point	Results	Benchmark
 URBAN PLANNING	<i>Pedestrian Infrastructure</i>	4.85 %	
	<i>Urban Development and Spatial Planning: Compact</i>	YES	
	<i>Urban Development and Spatial Planning: Connected</i>	YES	
	<i>Urban Development and Spatial Planning: Integrated</i>	YES	
	<i>Urban Development and Spatial Planning: Inclusive</i>	YES	
	<i>Urban Development and Spatial Planning: Resilient</i>	YES	




















Dimension: Environment

CATEGORY	KPI / Data Point	Results	Benchmark
 AIR QUALITY	Particulate Matter (PM 2.5)	13.00 µg / m <sup>3</sup>	
	Particulate Matter (PM 10)	22.00 µg / m <sup>3</sup>	
	Nitrogen Dioxide (NO <sub>2</sub> )	30.00 µg / m <sup>3</sup>	
	Sulphur Dioxide (SO <sub>2</sub> )	4.00 µg / m <sup>3</sup>	
	Ozone (O <sub>3</sub> )	48.00 µg / m <sup>3</sup>	
	GHG Emissions	1.80 tonnes eCO <sub>2</sub> / capita	
 WATER AND SANITATION	Drinking Water Quality	100.00 %	
	Water Consumption	147.70 ℓ / day / capita	
	Freshwater Consumption	100.00 %	
	Wastewater Treatment: Primary	100.00 %	
	Wastewater Treatment: Secondary	100.00 %	
	Wastewater Treatment: Tertiary	100.00 %	
 WASTE	Solid Waste: Landfill	63.50 %	
	Solid Waste: Burnt	0.00 %	
	Solid Waste: Incinerated	0.00 %	
	Solid Waste: Open Dump	0.00 %	
	Solid Waste: Recycled	14.76 %	
	Solid Waste: Other	21.74 %	



















Dimension: Environment (continued)

CATEGORY	KPI / Data Point	Results	Benchmark
 ENVIRONMENTAL QUALITY	<b>EMF Exposure</b>	<b>100.00 %</b>	
	<i>Noise Exposure</i>	70.48 %	
 PUBLIC SPACE AND NATURE	<b>Green Areas</b>	<b>61.03 ha / 100 000 inhabitants</b>	
	<i>Green Area Accessibility</i>	97.56 %	
	<i>Protected Natural Areas</i>	41.70 %	
	<i>Recreational Facilities</i>	5 255 291 m <sup>2</sup> / 100 000 inhabitants	
 ENERGY	<b>Renewable Energy Consumption</b>	<b>Not reported</b>	
	<b>Electricity Consumption</b>	<b>3 138.73 kWh / yr / capita</b>	
	<b>Residential Thermal Energy Consumption</b>	<b>Not reported</b>	
	<i>Public Building Energy Consumption</i>	149.88 ekWh / m <sup>2</sup> / yr	

Dimension: Society and Culture

CATEGORY	KPI / Data Point	Results	Benchmark
 EDUCATION	Student ICT Access	Not reported	
	School Enrolment	92.36 %	
	Higher Education Degrees	48 815.84 / 100 000 inhabitants	
	Adult Literacy	99.63 %	
 HEALTH	Electronic Health Records	Not reported	
	Life Expectancy	83.34 Years	
	Maternal Mortality Rate	15.33 / 100 000 live births	
	Physicians	482.90 / 100 000 inhabitants	
	In-Patient Hospital Beds	511.31 / 100 000 inhabitants	
	Health Insurance / Public Health Coverage	100.00 %	
 CULTURE	Cultural Expenditure	4.10 %	
	Cultural Infrastructure	Not reported	N/A
 HOUSING	Informal Settlements	0.13 %	
	Housing Expenditure	31.00 %	

Dimension: Society and Culture (continued)

CATEGORY	KPI / Data Point	Results	Benchmark
 SOCIAL INCLUSION	Gender Income Equity	0.78 Ratio Female: Male	
	Gini Coefficient	0.34	
	Poverty Rate	20.64 %	
	Voter Participation	72.12 %	
	<i>Child Care Availability</i>	56.85 %	
 SAFETY	Natural Disaster-Related Deaths	0.00 / 100 000 inhabitants	
	Disaster-Related Economic Losses	Not reported	
	Resilience Plans	Yes	
	Population Living in Disaster-Prone Areas	0.00 %	
	Emergency Service Response Time	Not reported	
	Police Service	196.73 FTE / 100 000 inhabitants	
	Fire Service	49.84 FTE / 100 000 inhabitants	
	Violent Crime Rate	636.41 / 100 000 inhabitants	
	Traffic Fatalities	1.88 / 100 000 inhabitants	
 FOOD SECURITY	Local Food Production	Not reported	

## 7. KPIs Not Reported

KPI Number	Description
EC: ICT: ES: 2A	Electricity Supply ICT Monitoring
EC: ICT: ES: 3A	Demand Response Penetration
EC: I: B: 1A	Public Building Sustainability
EC: I: B: 2A	Integrated Building Management Systems in Public Buildings
EN: E: E: 1C	Renewable Energy Consumption
EN: E: E: 3C	Residential Thermal Energy Consumption
SC: EH: ED:1C	Student ICT Access
SC: EH: ED: 5A	Electronic Health Records
SC: EH: C: 2A	Cultural Infrastructure
SC: SH: SA: 2C	Disaster-Related Economic Losses
SC: SH: SA: 5A	Emergency Service Response Time
SC: SH: FS: 1A	Local Food Production

## 8. KPIs Not Verified

All reported KPIs were verified.

## 9. Next Steps

Valencia is encouraged to focus on KPIs identified within benchmarks as less than 33 per cent of target and categories as less than 33 per cent of target or 33 – 66 per cent of target to determine which of these are critical issues for the city, and to develop plans for improvement.

Valencia is encouraged to review the KPIs for which no data was reported and determine plans for future data collection and reporting.

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

Valencia 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).

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

### United for Smart Sustainable Cities (U4SSC)



**U4SSC** is a UN initiative coordinated by the International Telecommunication Union (ITU) and the United Nations Economic Commission for Europe (UNECE) and supported by 14 other UN Agencies and Programmes, including CBD, ECLAC, FAO, UNESCO, UNDP, UNECA, UN-Women, UN Environment, UNEP-FI, UNFCCC, UN-Habitat, UNIDO, UNOPS, UNU EGOV 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 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 for SSC 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 with 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 '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](mailto:u4ssc@itu.int).









For more information, please contact:

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