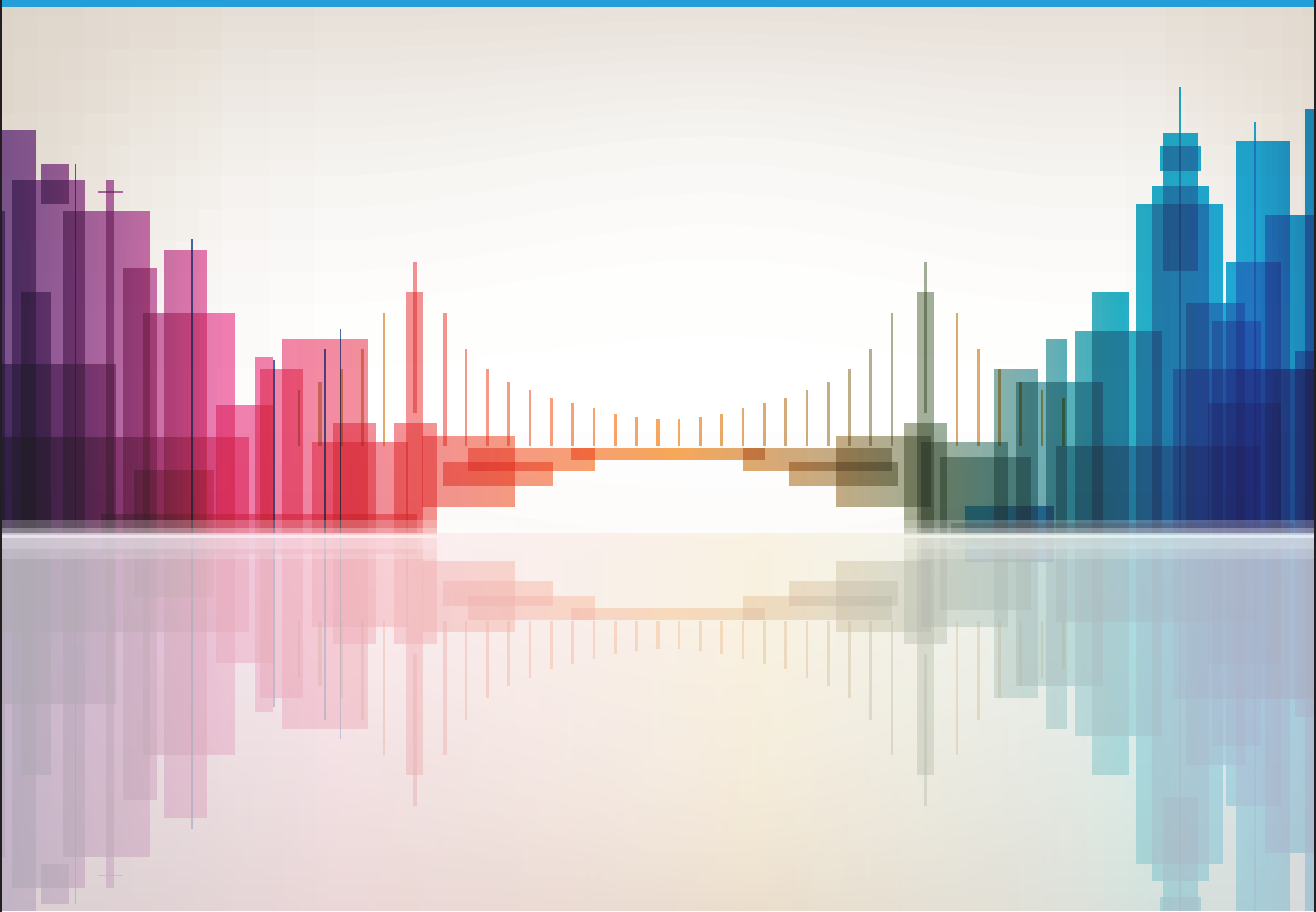


# Verification Report Bizerte, Tunisia

June 2020





# Verification Report

Bizerte, Tunisia

## Foreword

This publication has been developed 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 Bizerte, Tunisia. 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 author 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 Bizerte 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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# CONTENTS

Foreword .....	ii
Disclaimer .....	ii
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 Bizerte, Tunisia 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 2018.

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	21	21	91 %
Advanced KPIs	22	20	19	86 %
<b>Environment</b>				
Core KPIs	12	11	11	92 %
Advanced KPIs	5	3	3	60 %
<b>Society &amp; Culture</b>				
Core KPIs	19	18	17	89 %
Advanced KPIs	10	8	8	80 %
<b>Overall</b>				
Core KPIs	54	50	49	91 %
Advanced KPIs	37	31	30	81 %
<b>Total</b>	<b>91</b>	<b>81</b>	<b>79</b>	<b>87 %</b>

## 3. KPI Data Points Reporting and Verification Summary

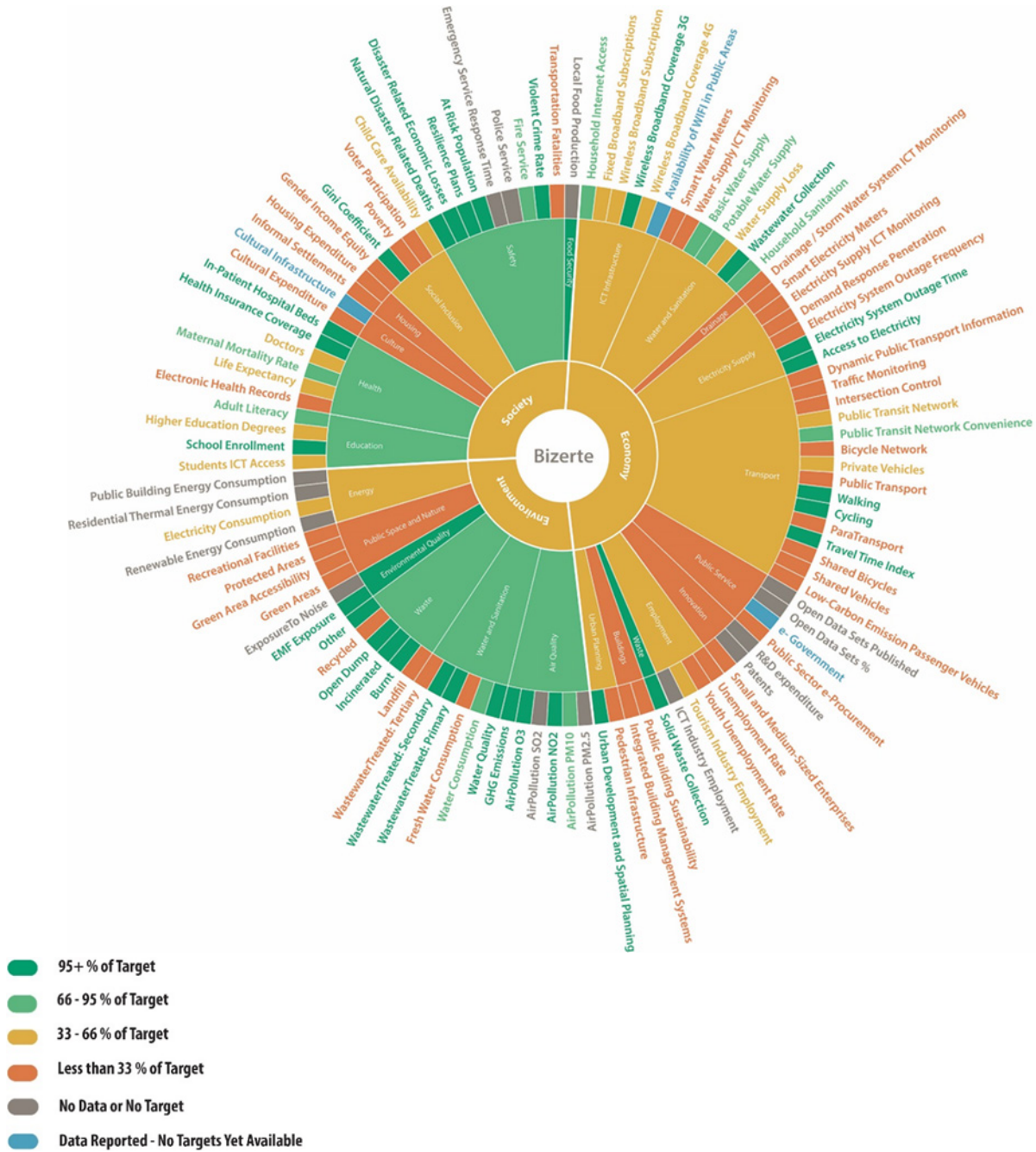
Certain KPIs are composed of more than one data point.

Below is a summary of the verification of those data points

	Total	Reported	Verified	% Data Points Verified
<b>Economy</b>				
Core Data Points	24	22	22	92 %
Advanced Data Points	31	28	27	87 %
<b>Environment</b>				
Core Data Points	23	21	21	91 %
Advanced Data Points	5	3	3	60 %
<b>Society &amp; Culture</b>				
Core KPIs	19	18	17	89 %
Advanced KPIs	10	8	8	80 %
<b>Overall</b>				
Core Data Points	66	61	60	91 %
Advanced Data Points	46	39	38	83 %
<b>Total</b>	<b>112</b>	<b>100</b>	<b>98</b>	<b>88 %</b>



## 4. City Performance Benchmark



Note: Performance Benchmark Targets apply to all sections of the graphic. Starting from the centre: Dimensions, Categories and KPIs

Note: Public Transport Network Convenience and Violent Crimes: The data was not verifiable so that the benchmark values should be taken in that context.

## 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 Bizerte’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	85.70 %	
	Fixed Broadband Subscriptions	35.77 %	
	Wireless Broadband Subscriptions	39 971.65/ 100 000 inhabitants	
	Wireless Broadband Coverage: 3G	100.00 %	
	Wireless Broadband Coverage: 4G	46.00 %	
	Availability of Wi-Fi in Public Areas	0.00 Spots	N/A
 WATER AND SANITATION	Smart Water Meters	0.00 %	
	Water Supply ICT Monitoring	0.00 %	
	Basic Water Supply	84.37 %	
	Potable Water Supply	84.37 %	
	Water Supply Loss	14.11 %	
	Wastewater Collection	98.38 %	
 DRAINAGE	Drainage/Storm Water System ICT Monitoring	0.00 %	

**Dimension: Economy (continued)**














CATEGORY	KPI / Data Point	Results	Benchmark
 ELECTRICITY SUPPLY	<b>Smart Electricity Meters</b>	<b>0.00 %</b>	
	<i>Electricity Supply ICT Monitoring</i>	<i>0.00 %</i>	
	<i>Demand Response Penetration</i>	<i>0.00 %</i>	
	<b>Electricity System Outage Frequency</b>	<b>162.00</b>	
	<b>Electricity System Outage Time</b>	<b>65.00 Minutes</b>	
	<b>Access to Electricity</b>	<b>96.37 %</b>	

Dimension: Economy (continued)




CATEGORY	KPI / Data Point	Results	Benchmark
 TRANSPORT	<b>Dynamic Public Transport Information</b>	<b>0.00 %</b>	
	<b>Traffic Monitoring</b>	<b>0.00 %</b>	
	<i>Intersection Control</i>	<i>0.00 %</i>	
	<b>Public Transport Network</b>	<b>75.53 km / 100 000 inhabitants</b>	
	<i>Public Transport Network Convenience<sup>1</sup></i>	<i>80.00 %</i>	
	<b>Bicycle Network</b>	<b>0.00 km / 100 000 inhabitants</b>	
	<i>Transportation Mode Share Private Vehicles</i>	<i>32.00 %</i>	
	<i>Transportation Mode Share Public Transport</i>	<i>14.00 %</i>	
	<i>Transportation Mode Share Walking</i>	<i>43.00 %</i>	
	<i>Transportation Mode Share Cycling</i>	<i>11.00 %</i>	
	<i>Transportation Mode Share Para Transport</i>	<i>0.00 %</i>	
	<i>Travel Time Index</i>	<i>1.10</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>0.00 %</i>	

<sup>1</sup> Public Transport Network Convenience: The data was not verifiable so that the benchmark values should be taken in that context.

**Dimension: Economy (continued)**

CATEGORY	KPI / Data Point	Results	Benchmark
 PUBLIC SECTOR	<i>Open Data Sets Published</i>	<i>Not Reported</i>	N/A
	<i>Open Data Sets % Availability</i>	<i>Not Reported</i>	
	<i>e-Government</i>	<i>0.00 Services</i>	N/A
	<i>Public Sector e-Procurement</i>	<i>0.00 %</i>	
 INNOVATION	<b>R&amp;D Expenditure</b>	<b>Not Reported</b>	
	<b>Patents</b>	<b>Not Reported</b>	
	<i>Small and Medium-Sized Enterprises</i>	<i>75.00 %</i>	
 EMPLOYMENT	<b>Unemployment Rate</b>	<b>12.20 %</b>	
	<b>Youth Unemployment Rate</b>	<b>23.30 %</b>	
	<i>Tourism Sector Employment</i>	<i>1.21 %</i>	
	<i>ICT Sector Employment</i>	<i>Not Reported</i>	
 WASTE	<b>Solid Waste Collection</b>	<b>100.00 %</b>	
 BUILDINGS	<i>Public Building Sustainability</i>	<i>0.00 %</i>	
	<i>Integrated Building Management Systems in Public Buildings</i>	<i>0.00 %</i>	

**Dimension: Economy (continued)**














CATEGORY	KPI / Data Point	Results	Benchmark
 URBAN PLANNING	<i>Pedestrian Infrastructure</i>	0.00 %	
	<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>	NO	




















Dimension: Environment

CATEGORY	KPI / Data Point	Results	Benchmark
 AIR QUALITY	Particulate Matter (PM 2.5)	Not Reported	
	Particulate Matter (PM 10)	38.00 µg/m <sup>3</sup>	
	Nitrogen Dioxide (NO <sub>2</sub> )	0.02 µg / m <sup>3</sup>	
	Sulphur Dioxide (SO <sub>2</sub> )	Not Reported	
	Ozone (O <sub>3</sub> )	64.00 µg / m <sup>3</sup>	
	GHG Emissions	1.23 tonnes eCO <sub>2</sub> / capita	
 WATER AND SANITATION	Drinking Water Quality	98.98 %	
	Water Consumption	86.26 ℓ / day / capita	
	Freshwater Consumption	100.00 %	
	Wastewater Treatment: Primary	100.00 %	
	Wastewater Treatment: Secondary	100.00 %	
	Wastewater Treatment: Tertiary	0.00 %	
 WASTE	Solid Waste: Landfill	86.21 %	
	Solid Waste: Burnt	0.00 %	
	Solid Waste: Incinerated	0.00 %	
	Solid Waste: Open Dump	0.00 %	
	Solid Waste: Recycled	13.79 %	
	Solid Waste: Other	0.00 %	



















Dimension: Environment (continued)

CATEGORY	KPI / Data Point	Results	Benchmark
 ENVIRONMENTAL QUALITY	<b>EMF Exposure</b>	<b>100.00 %</b>	
	<i>Noise Exposure</i>	<i>Not Reported</i>	
 PUBLIC SPACE AND NATURE	<b>Green Areas</b>	<b>13.65 ha / 100 000 inhabitants</b>	
	<i>Green Area Accessibility</i>	<i>29.05 %</i>	
	<i>Protected Natural Areas</i>	<i>0.18 %</i>	
	<i>Recreational Facilities</i>	<i>12 138.48 m<sup>2</sup> / 100 000 inhabitants</i>	
 ENERGY	<b>Renewable Energy Consumption</b>	<b>9.82 %</b>	
	<b>Electricity Consumption</b>	<b>2 504.04 kWh / yr / capita</b>	
	<b>Residential Thermal Energy Consumption</b>	<b>2 500.00 GJ / yr / capita</b>	
	<b>Public Building Energy Consumption</b>	<b>Not Reported</b>	

Dimension: Society and Culture

CATEGORY	KPI / Data Point	Results	Benchmark
 EDUCATION	Student ICT Access	56.97 %	
	School Enrolment	95.30 %	
	Higher Education Degrees	10 849.86/ 100 000 inhabitants	
	Adult Literacy	87.15 %	
 HEALTH	<i>Electronic Health Records</i>	5.82 %	
	Life Expectancy	75.73 Years	
	Maternal Mortality Rate	30.94 / 100 000 live births	
	Physicians	266.09 / 100 000 inhabitants	
	<i>In-Patient Hospital Beds</i>	690.79 / 100 000 inhabitants	
	<i>Health Insurance / Public Health Coverage</i>	100.00 %	
 CULTURE	Cultural Expenditure	0.16 %	
	<i>Cultural Infrastructure</i>	4.65	N/A
 HOUSING	Informal Settlements	8.88 %	
	<i>Housing Expenditure</i>	42.97 %	

Dimension: Society and Culture (continued)

CATEGORY	KPI / Data Point	Results	Benchmark
 SOCIAL INCLUSION	<b>Gender Income Equity</b>	<b>0.74</b> Ratio Female: Male	
	<b>Gini Coefficient</b>	<b>Not verified</b>	
	<b>Poverty Rate</b>	<b>6.14 %</b>	
	<b>Voter Participation</b>	<b>Not reported</b>	
	<i>Child Care Availability</i>	<i>34.20 %</i>	
 SAFETY	<b>Natural Disaster-Related Deaths</b>	<b>0.00 / 100 000</b> inhabitants	
	<b>Disaster-Related Economic Losses</b>	<b>0.00 %</b>	
	<i>Resilience Plans</i>	<i>Not Reported</i>	
	<i>Population Living in Disaster-Prone Areas</i>	<i>0.00 %</i>	
	<i>Emergency Service Response Time</i>	<i>Not reported</i>	
	<b>Police Service</b>	<b>Not reported</b>	
	<b>Fire Service</b>	<b>117.94 FTE /</b> <b>100 000 inhabitants</b>	
	<b>Violent Crime Rate<sup>2</sup></b>	<b>25.56 / 100 000</b> inhabitants	
	<b>Traffic Fatalities</b>	<b>10.46 / 100 000</b> inhabitants	
 FOOD SECURITY	<i>Local Food Production</i>	<i>91.18 %</i>	

<sup>2</sup> Violent Crimes: The data was not verifiable so that the benchmark values should be taken in that context.

## 7. KPIs Not Reported

KPI Number	Description
EC: P: IN: 1C	Research and Development expenditure as a percentage of city GDP
EC: P: IN: 2C	Number of new patents granted per 100 000 inhabitants per year
EN: EN: AQ: 1C	Air quality index (AQI) based on reported value for: Particulate matter (PM2.5)
EN: EN: AQ: 1C	Air quality index (AQI) based on reported value for: SO2 (sulphur dioxide)
SC: SH: SA: 5C	Average response time for Emergency Services
SC: SH: SA: 6C	Number of police officers per 100 000 inhabitants
EC: ICT: PS: 1A	Number and Percentage of inventoried open datasets that are published
EC: P: EM: 4A	Percentage of the city labour force working in the ICT sector
EN: EN: EQ: 2A	Percentage of inhabitants exposed to excessive noise levels
EN: E: E: 4A	Energy consumption of public buildings
SC: SH: SA: 3A	Implementation of risk and vulnerability assessments for disaster mitigation

## 8. KPIs Not Verified

KPI Number	Description
EC: I: T: 2A	<p>Percentage of the city population that has convenient access (within 0.5 km) to public transport:</p> <p>KPI reported as 80%.</p> <p>While this would seem to be a reasonable value, there is no GIS system to review and verify. Therefore this KPI is considered as not verified.</p>
SC: SH: SA: 8C	<p>Violent crime rate per 100 000 inhabitants:</p> <p>KPI reported as 25.56 / 100 000. This only includes the murder rates and not other violent crimes. Therefore this KPI is considered as not verified.</p>

## 9. Next Steps

Bizerte 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.

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

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

Bizerte 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), the United Nations Economic Commission for Europe (UNECE) and UN-Habitat, and supported by 14 other UN Agencies and Programmes, including CBD, ECLAC, FAO, UNESCO, UNDP, UNECA, UN-Women, UN Environment, UNEP-FI, UNFCCC, 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.

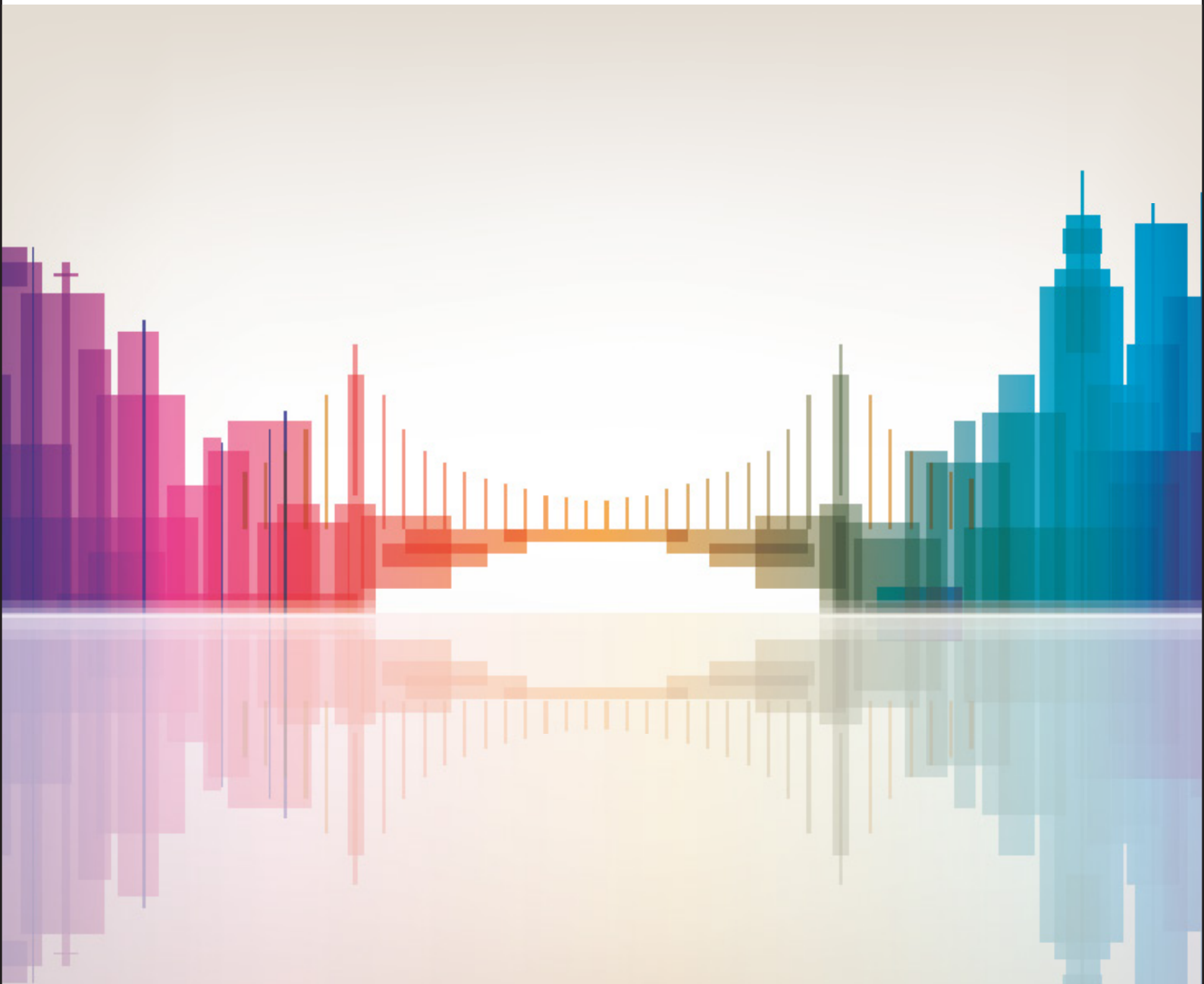
By providing a common set of metrics to benchmark a city's performance, the indicators will also enable cities to compare their performance with other cities, allowing for the dissemination of best practices and setting the standards for progression in meeting the Sustainable Development Goals (SDGs)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



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