

### Contents

|       |  |
|-------|--|
|       | Foreword   |
|       | Introduction   |
| 1     | Scope  |
| 2     | Normative references   |
| 3     | Terms and definitions for cities   |
| 4     | City indicators  |
| 5     | Economy  |
| 5.1   | Percentage of service contracts providing city services which contain an open data policy                            |
| 5.1.1 | General  |
| 5.1.2 | Indicator requirements   |
| 5.1.3 | Data sources   |
| 5.1.4 | Data interpretation  |
| 5.2   | Survival rate of new businesses per 100 000 population   |
| 5.2.1 | General  |
| 5.2.2 | Indicator requirements   |
| 5.2.3 | Data sources   |
| 5.3   | Percentage of the labour force employed in occupations in the information and communications technology (ICT) sector |
| 5.3.1 | General  |
| 5.3.2 | Indicator requirements   |
| 5.3.3 | Data sources   |
| 5.4   | Percentage of the labour force employed in occupations in the education and research and development sectors         |
| 5.4.1 | General  |
| 5.4.2 | Indicator requirements   |
| 5.4.3 | Data sources   |
| 6     | Education  |
| 6.1   | Percentage of city population with professional proficiency in more than one language                                |
| 6.1.1 | General  |
| 6.1.2 | Indicator requirements   |
| 6.1.3 | Data sources   |
| 6.1.4 | Data interpretation  |
| 6.2   | Number of computers, laptops, tablets or other digital learning devices available per 1 000 students                 |
| 6.2.1 | General  |
| 6.2.2 | Indicator requirements   |
| 6.2.3 | Data sources   |
| 6.2.4 | Data interpretation  |
| 6.3   | Number of science, technology, engineering and mathematics (STEM) higher education degrees per 100 000 population    |
| 6.3.1 | General  |
| 6.3.2 | Indicator requirements   |
| 6.3.3 | Data sources   |
| 6.3.4 | Data interpretation  |
| 7     | Energy   |

- 7.1 Percentage of electrical and thermal energy produced from wastewater treatment, solid waste and other liquid waste treatment and other waste heat resources, as a share of the city's total energy mix for a given year
    - 7.1.1 General
    - 7.1.2 Indicator requirements
    - 7.1.3 Data sources
  - 7.2 Electrical and thermal energy (GJ) produced from wastewater treatment per capita per year
    - 7.2.1 General
    - 7.2.2 Indicator requirements
    - 7.2.3 Data sources
  - 7.3 Electrical and thermal energy (GJ) produced from solid waste or other liquid waste treatment per capita per year
    - 7.3.1 General
    - 7.3.2 Indicator requirements
    - 7.3.3 Data sources
  - 7.4 Percentage of the city's electricity that is produced using decentralised electricity production systems
    - 7.4.1 General
    - 7.4.2 Indicator requirements
    - 7.4.3 Data sources
    - 7.4.4 Data interpretation
  - 7.5 Storage capacity of the city's energy grid per total city energy consumption
    - 7.5.1 General
    - 7.5.2 Indicator requirements
    - 7.5.3 Data sources
    - 7.5.4 Data interpretation
  - 7.6 Percentage of street lighting managed by a light performance management system
    - 7.6.1 General
    - 7.6.2 Indicator requirements
    - 7.6.3 Data sources
  - 7.7 Percentage of street lighting that has been refurbished and newly installed
    - 7.7.1 General
    - 7.7.2 Indicator requirements
    - 7.7.3 Data interpretation
    - 7.7.4 Data sources
  - 7.8 Percentage of public buildings requiring renovation/refurbishment
    - 7.8.1 General
    - 7.8.2 Indicator requirements
    - 7.8.3 Data sources
  - 7.9 Percentage of buildings in the city with smart energy meters
    - 7.9.1 General
    - 7.9.2 Indicator requirements
    - 7.9.3 Data sources
  - 7.10 Number of electric vehicle charging stations per registered electric vehicle
    - 7.10.1 General
    - 7.10.2 Indicator requirements
    - 7.10.3 Data sources
- 8 Environment and climate change**
- 8.1 Percentage of buildings built or refurbished within the last 5 years in conformity with green building principles
    - 8.1.1 General
    - 8.1.2 Indicator requirements
    - 8.1.3 Data sources
  - 8.2 Number of real-time remote air quality monitoring stations per square kilometre (km<sup>2</sup>)
    - 8.2.1 General
    - 8.2.2 Indicator requirements
    - 8.2.3 Data sources
  - 8.3 Percentage of public buildings equipped for monitoring indoor air quality
    - 8.3.1 General
    - 8.3.2 Indicator requirements
    - 8.3.3 Data sources

- 9           **Finance**
  - 9.1           **Annual amount of revenues collected from the sharing economy as a percentage of own-source revenue**
    - 9.1.1          **General**
    - 9.1.2          **Indicator requirements**
    - 9.1.3          **Data sources**
    - 9.1.4          **Data interpretation**
  - 9.2           **Percentage of payments to the city that are paid electronically based on electronic invoices**
    - 9.2.1          **General**
    - 9.2.2          **Indicator requirements**
    - 9.2.3          **Data sources**
    - 9.2.4          **Data interpretation**
- 10           **Governance**
  - 10.1           **Annual number of online visits to the municipal open data portal per 100 000 population**
    - 10.1.1          **General**
    - 10.1.2          **Indicator requirements**
    - 10.1.3          **Data sources**
  - 10.2           **Percentage of city services accessible and that can be requested online**
    - 10.2.1          **General**
    - 10.2.2          **Indicator requirements**
    - 10.2.3          **Data sources**
    - 10.2.4          **Data interpretation**
  - 10.3           **Average response time to inquiries made through the city's non-emergency inquiry system (days)**
    - 10.3.1          **General**
    - 10.3.2          **Indicator requirements**
    - 10.3.3          **Data sources**
  - 10.4           **Average downtime of the city's IT infrastructure**
    - 10.4.1          **General**
    - 10.4.2          **Indicator requirements**
    - 10.4.3          **Data sources**
- 11           **Health**
  - 11.1           **Percentage of the city's population with an online unified health file accessible to health care providers**
    - 11.1.1          **General**
    - 11.1.2          **Indicator requirements**
    - 11.1.3          **Data sources**
  - 11.2           **Annual number of medical appointments conducted remotely per 100 000 population**
    - 11.2.1          **General**
    - 11.2.2          **Indicator requirements**
    - 11.2.3          **Data sources**
  - 11.3           **Percentage of the city population with access to real-time public alert systems for air and water quality advisories**
    - 11.3.1          **General**
    - 11.3.2          **Indicator requirements**
    - 11.3.3          **Data sources**
- 12           **Housing**
  - 12.1           **Percentage of households with smart energy meters**
    - 12.1.1          **General**
    - 12.1.2          **Indicator requirements**
    - 12.1.3          **Data sources**
  - 12.2           **Percentage of households with smart water meters**
    - 12.2.1          **General**
    - 12.2.2          **Indicator requirements**
    - 12.2.3          **Data sources**
- 13           **Population and social conditions**
  - 13.1           **Percentage of public buildings that are accessible by persons with special needs**

- 13.1.1 General
- 13.1.2 Indicator requirements
- 13.1.3 Data sources
- 13.2 Percentage of municipal budget allocated for the provision of mobility aids, devices and assistive technologies to citizens with special needs
  - 13.2.1 General
  - 13.2.2 Indicator requirements
  - 13.2.3 Data sources
- 13.3 Percentage of marked pedestrian crossings equipped with accessible pedestrian signals
  - 13.3.1 General
  - 13.3.2 Indicator requirements
  - 13.3.3 Data sources
- 13.4 Percentage of municipal budget allocated for provision of programmes designated for bridging the digital divide
  - 13.4.1 General
  - 13.4.2 Indicator requirements
  - 13.4.3 Data sources
- 14 Recreation
  - 14.1 Percentage of public recreation services that can be booked online
    - 14.1.1 General
    - 14.1.2 Indicator requirements
    - 14.1.3 Data sources
- 15 Safety
  - 15.1 Percentage of the city area covered by digital surveillance cameras
    - 15.1.1 General
    - 15.1.2 Indicator requirements
    - 15.1.3 Data sources
    - 15.1.4 Data interpretation
- 16 Solid waste
  - 16.1 Percentage of waste drop-off centres (containers) equipped with telemetering
    - 16.1.1 General
    - 16.1.2 Indicator requirements
    - 16.1.3 Data source
  - 16.2 Percentage of the city population that has a door-to-door garbage collection with an individual monitoring of household waste quantities
    - 16.2.1 General
    - 16.2.2 Indicator requirements
    - 16.2.3 Data sources
  - 16.3 Percentage of total amount of waste in the city that is used to generate energy
    - 16.3.1 General
    - 16.3.2 Indicator requirements
    - 16.3.3 Data sources
  - 16.4 Percentage of total amount of plastic waste recycled in the city
    - 16.4.1 General
    - 16.4.2 Indicator requirements
    - 16.4.3 Data sources
  - 16.5 Percentage of public garbage bins that are sensor-enabled public garbage bins
    - 16.5.1 General
    - 16.5.2 Indicator requirements
    - 16.5.3 Data sources
  - 16.6 Percentage of the city's electrical and electronic waste that is recycled
    - 16.6.1 General
    - 16.6.2 Indicator requirements
    - 16.6.3 Data sources
- 17 Sport and culture
  - 17.1 Number of online bookings for cultural facilities per 100 000 population
    - 17.1.1 General
    - 17.1.2 Indicator requirements
    - 17.1.3 Data sources

- 17.1.4 Data interpretation
- 17.2 Percentage of the city's cultural records that have been digitised
  - 17.2.1 General
  - 17.2.2 Indicator requirements
  - 17.2.3 Data sources
- 17.3 Number of public library book and e-book titles per 100 000 population
  - 17.3.1 General
  - 17.3.2 Indicator requirements
  - 17.3.3 Data sources
- 17.4 Percentage of city population that are active public library users
  - 17.4.1 General
  - 17.4.2 Indicator requirements
  - 17.4.3 Data sources
  - 17.4.4 Data interpretation
- 18 Telecommunication
  - 18.1 Percentage of the city population with access to sufficiently fast broadband
    - 18.1.1 General
    - 18.1.2 Indicator requirements
    - 18.1.3 Data sources
  - 18.2 Percentage of city area under a white zone/dead spot/not covered by telecommunication connectivity
    - 18.2.1 General
    - 18.2.2 Indicator requirements
    - 18.2.3 Data sources
  - 18.3 Percentage of the city area covered by municipally provided Internet connectivity
    - 18.3.1 General
    - 18.3.2 Indicator requirements
    - 18.3.3 Data sources
- 19 Transportation
  - 19.1 Percentage of city streets and thoroughfares covered by real-time online traffic alerts and information
    - 19.1.1 General
    - 19.1.2 Indicator requirements
    - 19.1.3 Data sources
  - 19.2 Number of users of sharing economy transportation per 100 000 population
    - 19.2.1 General
    - 19.2.2 Indicator requirements
    - 19.2.3 Data sources
    - 19.2.4 Data interpretation
  - 19.3 Percentage of vehicles registered in the city that are low-emission vehicles
    - 19.3.1 General
    - 19.3.2 Indicator requirements
    - 19.3.3 Data sources
  - 19.4 Number of bicycles available through municipally provided bicycle-sharing services per 100 000 population
    - 19.4.1 General
    - 19.4.2 Indicator requirements
    - 19.4.3 Data sources
  - 19.5 Percentage of public transport lines equipped with a publicly accessible real-time system
    - 19.5.1 General
    - 19.5.2 Indicator requirements
    - 19.5.3 Data sources
  - 19.6 Percentage of the city's public transport services covered by a unified payment system
    - 19.6.1 General
    - 19.6.2 Indicator requirements
    - 19.6.3 Data sources
  - 19.7 Percentage of public parking spaces equipped with e-payment systems
    - 19.7.1 General
    - 19.7.2 Indicator requirements
    - 19.7.3 Data sources
  - 19.8 Percentage of public parking spaces equipped with real-time availability systems

- 19.8.1 General
- 19.8.2 Indicator requirements
- 19.8.3 Data sources
- 19.9 Percentage of traffic lights that are intelligent/smart
- 19.9.1 General
- 19.9.2 Indicator requirements
- 19.9.3 Data sources
- 19.10 City area mapped by real-time interactive street maps as a percentage of the city's total land area
- 19.10.1 General
- 19.10.2 Indicator requirements
- 19.10.3 Data sources
- 19.11 Percentage of vehicles registered in the city that are autonomous vehicles
- 19.11.1 General
- 19.11.2 Indicator requirements
- 19.11.3 Data sources
- 19.12 Percentage of public transport routes with municipally provided and/or managed Internet connectivity for commuters
- 19.12.1 General
- 19.12.2 Indicator requirements
- 19.12.3 Data sources
- 19.13 Percentage of roads conforming with autonomous driving systems
- 19.13.1 General
- 19.13.2 Indicator requirement
- 19.13.3 Data sources
- 19.14 Percentage of the city's bus fleet that is motor-driven
- 19.14.1 General
- 19.14.2 Indicator requirement
- 19.14.3 Data sources
- 19.14.4 Data interpretation
- 20 Urban/local agriculture and food security
- 20.1 Annual percentage of municipal budget spent on urban agriculture initiatives
- 20.1.1 General
- 20.1.2 Indicator requirements
- 20.1.3 Data sources
- 20.2 Annual total collected municipal food waste sent to a processing facility for composting per capita (in tonnes)
- 20.2.1 General
- 20.2.2 Indicator requirements
- 20.2.3 Data sources
- 20.2.4 Data interpretation
- 20.3 Percentage of the city's land area covered by an online food-supplier mapping system
- 20.3.1 General
- 20.3.2 Indicator requirements
- 20.3.3 Data sources
- 21 Urban planning
- 21.1 Annual number of citizens engaged in the planning process per 100 000 population
- 21.1.1 General
- 21.1.2 Indicator requirements
- 21.1.3 Data sources
- 21.2 Percentage of building permits submitted through an electronic submission system
- 21.2.1 General
- 21.2.2 Indicator requirements
- 21.2.3 Data sources
- 21.3 Average time for building permit approval (days)
- 21.3.1 General
- 21.3.2 Indicator requirements
- 21.3.3 Data sources
- 21.3.4 Data interpretation
- 21.4 Percentage of the city population living in medium-to-high population densities
- 21.4.1 General
- 21.4.2 Indicator requirements

- 21.4.3 Data sources
- 22 Wastewater
  - 22.1 Percentage of treated wastewater being reused
    - 22.1.1 General
    - 22.1.2 Indicator requirements
    - 22.1.3 Data sources
    - 22.1.4 Data interpretation
  - 22.2 Percentage of biosolids that are reused (dry matter mass)
    - 22.2.1 General
    - 22.2.2 Indicator requirements
    - 22.2.3 Data sources
  - 22.3 Energy derived from wastewater as a percentage of total energy consumption of the city
    - 22.3.1 General
    - 22.3.2 Indicator requirements
    - 22.3.3 Data sources
  - 22.4 Percentage of total amount of wastewater in the city that is used to generate energy
    - 22.4.1 General
    - 22.4.2 Indicator requirements
    - 22.4.3 Data sources
  - 22.5 Percentage of the wastewater pipeline network monitored by a real-time data-tracking sensor system
    - 22.5.1 General
    - 22.5.2 Indicator requirements
    - 22.5.3 Data sources
    - 22.5.4 Data interpretation
- 23 Water
  - 23.1 Percentage of drinking water tracked by real-time, water quality monitoring station
    - 23.1.1 General
    - 23.1.2 Indicator requirements
    - 23.1.3 Data sources
    - 23.1.4 Data interpretation
  - 23.2 Number of real-time environmental water quality monitoring stations per 100 000 population
    - 23.2.1 General
    - 23.2.2 Indicator requirements
    - 23.2.3 Data sources
  - 23.3 Percentage of the city's water distribution network monitored by a smart water system
    - 23.3.1 General
    - 23.3.2 Indicator requirements
    - 23.3.3 Data sources
    - 23.3.4 Data interpretation
  - 23.4 Percentage of buildings in the city with smart water meters
    - 23.4.1 General
    - 23.4.2 Indicator requirements
    - 23.4.3 Data sources
- 24 Reporting and record maintenance
- Annex A (informative) Mapping of ISO 37122 indicators to ISO 37101 issues and purposes
- Annex B (informative) Mapping of ISO 37122 indicators to United Nations Sustainable Development Goals (SDGs) (2015)