Istanbul Environment Friendly City Award

Framework of Sustainability Indicators and Calculation Guidelines

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Framework of Urban Sustainability Indicators

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Code	Criterion	Indicator	Unit of measure
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A3 – Ecosystems protection

Code	Criterion	Indicator	Unit of measure
A3.1	Connectivity measures for natural areas	Amount of natural connected areas in the city divided by the total amount of natural areas in the city	%

B - Built Environment

B1 – Sustainable land use and green areas

Code	Criterion	Indicator	Unit of measure
B1.1	Population density	City population in relation to the city's land area	Inhabitants/km^2
B1.2	Availability of Green Urban Areas	Total amount of Green Urban Areas in the city's boundaries divided by the total area of the city	%
B1.3	Green Urban Areas in relation to the city population	Total extension of Green Urban Areas in the city divided by city's total population	m^2/inhabitant
B1.4	Distribution of Green Urban Areas	Total length of Green Urban Areas' boundaries (edges) divided by the city's urban area	m/ha
B1.5	Accessibility of shores/beaches	Total area of shores/beaches in the city area that are accessible by inhabitants divided by the total area of shores/beaches in the city's urban area	%
B1.6	Urban agricultural land	Total urban agricultural area used for food production located within city boundaries divided by one 1000th of the city's total population	ha/1000 inhabitants

B2 – Sustainable mobility

Code	Criterion	Indicator	Unit of measure
B2.1	Public Transport Network	Kilometers of public transport system per 1000th of the city's population	km/1000 inhabitants
B2.2	Usage of public transportation by population	Total annual number of public transport trips originating in the city divided by the total city population	trips/inhabitant
B2.3	Bicycle network	Total length of bicycle paths and lanes divided by the city's total population	m/inhabitant
B2.4	Green public vehicles	Total number of low emission public vehicles divided by total number of public vehicles	%
B2.5	Pedestrian infrastructure	Total area of pedestrian streets and walkways divided by the total area of streets and roads in the city	%
B2.6	Traffic fatalities	Number of traffic fatalities divided by 1000th of the city's population	number/1000 inhabitants
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Code	Criterion	Indicator	Unit of measure
B2.1	Fine particulate matter (PM2.5) concentration	Annual average fine particulate matter (PM2.5) concentration	µg/m^3 year
B2.2	Fine particulate matter (PM2.5) monitoring	Number of PM2.5monitoring stations	number
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B2.4	Particulate matter (PM10) monitoring	Number of PM10 monitoring stations	number

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B4.2	Solid waste generation	Total amount of solid waste generated divided by the total city population	tonnes/capita/year
B4.3	Solid waste recycling	Total amount of solid waste that is recycled divided by the total amount of solid waste produced in the city	%

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Code	Criterion	Indicator	Unit of measure
B5.1	Availability of a public municipal water supply	Total number of people with potable water supply service divided by total city population	number
B5.2	Total water consumption	Total amount of the city's water consumption in liters per day divided by the total city population	liters /day / inhabitant
B5.3	Sufficiency of domestic water provision	Volume of the water supplied for domestic uses divided by the overall domestic water demand	%
B5.4	Efficiency in water use	Volume of water supplied minus the volume of utilized water divided by the total volume of water supplied	%
B5.5	Access to wastewater collection	Number of people within the city who are served by wastewater collection divided by the city population	%
B5.6	Centralized wastewater treatment	Total volume of city wastewater collected for primary, secondary and tertiary treatment in centralized wastewater treatment facilities divided by the total volume of wastewater produced in the city	%
B5.7	Improved household sanitation	Total number of people using improved sanitation facilities divided by the total city population	%

B6 – Energy

Code	Criterion	Indicator	Unit of measure
B6.1	Access to authorized electrical service	Number of people in the city with authorized electrical service divided by the total population of the city	%
B6.2	Electrical service interruptions	Total sum of hours of interruption multiplied by the number of households impacted divided by the total number of households	hours/household
B6.3	Final energy consumption (natural gas)	Total end-use energy from natural gas consumed by the city divided by the total population of the city	GJ/inhabitant/year
B6.4	Final energy consumption (electricity)	Total end-use energy from electricity consumed by the city divided by the total population of the city	GJ/inhabitant/year
B6.5	Renewable electrical energy consumption	Total consumption of end-use electrical energy generated from renewable sources divided by total end-use electrical energy consumption	%
B6.6	Renewable energy locally produced	Total renewable electrical energy generated in the city's boundaries divided by the total renewable electrical energy consumed by the city	%

C - Social, Economic and Cultural Sustainability

C1 – Integration and solidarity

Code	Criterion	Indicator	Unit of measure
C1.1	Informal settlements	Area of informal settlements within the city boundary divided by the city area	%
C1.2	Unemployment rate	Total number of working-age primary residents not in paid employment or self-employment, but available for work and seeking work divided by the total labour force	%
C1.3	Youth unemployment rate	Total number of a city's unemployed youth divided by the city's youth labour force	%
C1.4	Female employment	Total number of working age women in employment divided by the total female labour force	%
C1.5	Accessibility of public buildings	Total number of public buildings accessible by disabled persons divided by the total number of public buildings	%
C1.6	Accessibility of public transport network	Total number of public vehicles accessible to disabled persons divided by total number of public vehicles	%
C1.7	Population living below poverty line	Number of people living below the national poverty line set at country level divided by the total current population of the city	%
C1.8	School-aged population enrolled in schools	Number of city's school-aged population enrolled in primary and secondary levels in public and private schools divided by the total number of the city's school-aged population	%
C1.9	Female school-aged population enrolled in schools	Number of city's female school-aged population enrolled at primary and secondary levels in public and private schools divided by the total number of a city's female school-aged population	%

C2 – Green economy and eco-innovation

Code	Criterion	Indicator	Unit of measure
C2.1	New jobs in green and circular economy	Number of jobs created in green and circular economy sector	number
C2.2	Digital processes	Number of digital processes operated by the municipality divided by the total number processes operated by the municipality	%
C2.3	Green public procurement	Number of procurement contracts that include green criteria (GPP) divided by the total number of contracts	%

Calculation Guidelines

A - Nature and Biodiversity Protection

A1 – Climate change mitigation

Criterion A1.1	**Greenhouse gas emissions**
Intent	Cities account for about 50% of total global GHG emissions (IPCC 2014). The International Energy Agency's projections indicate that urban energy related GHG emissions could rise to 74% by 2030 (IEA 2008). Consequently, cities play a fundamental role in reaching the Paris Agreement's (COP21) GHG reduction targets.
Indicator	Total amount of greenhouse gases in tonnes (equivalent carbon dioxide units) generated over a calendar year divided by the current city population
Unit of measure	Tons CO_2 eq. / inhabitant
SDGs	13
Reference	Global Covenant of Mayors – Common Reporting Framework Sustainable MED Cities SCTool 2022 (I1.1)
Data sources	For guidance about the collection of data, see the "Global Covenant of Mayors Common Reporting Framework".

Assessment method

The reference standard for the calculation of city's GHG emissions is the "Common Reporting Framework" of the Global Covenant of Mayors (2019).

The emissions of the following gases shall be considered: carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). GHG emissions shall be reported in metric tonnes of CO_2 equivalent (CO_2e).
GHG emissions shall be reported in relation to the following sectors:

- Stationary energy
- Transportation
- Waste

The emission's sources to consider are:

- Stationary sources: residential buildings, commercial buildings and facilities, institutional buildings, and facilities, industry and agriculture, forestry, and fisheries
- Transportation: on-road, rail, waterborne navigation, aviation, and off-road
- Waste: disposal and treatment of waste and wastewater.

To calculate the indicator's value;

1. Calculate the GHG emissions for sector, multiplying the final energy consumptions by the corresponding emission factor. IPCC (Intergovernmental Panel on Climate Change) emission factors can be used.
2. Sum all the GHG emissions calculated in the previous step.
3. Divide the total GHG emissions calculated in the previous step by the current city population

If the data for a specific sector aren't available, the indicator can be still calculated. The missing information shall be declared in the application form.

A3 – Ecosystems protection

Criterion A3.1	Connectivity measures for natural areas
Intent	Fragmentation of green areas is one of the main threats to the sustainability of biodiversity in a city.
Indicator	Amount of natural connected areas in the city divided by the total amount of natural areas in the city
Unit of measure	%
SDG	15
Reference	Reference Framework for Sustainable Cities Sustainable MED Cities SCTool 2022 (A3.3)
Data Sources	Information on natural areas should be obtained from municipal parks departments, planning departments, forestry departments and census. Natural areas can be delineated using aerial photography and/or land use/land cover maps.

Assessment method

The indicator shall be calculated as the amount of connected Green Urban Areas in the city (numerator) divided by the total amount of Green urban Areas in the city (denominator). Areas shall be measured in hectares. The result shall then be multiplied by 100 and expressed as a percentage.

To be connected, Green Urban Areas shall be less than 100 meters apart.

A Green Urban Area is defined as an urban land covered by vegetation of any kind, for instance natural zones, parks, public and private gardens.

B - Built Environment

B1 – Sustainable land use and green areas

Criterion B1.1	Population density
Intent	If density is designed well, it can be viewed as a community asset as it increases the proximity between residents and local goods and services. Its analysis indicates an initial idea of the urban sprawl level.
Indicator	City population in relation to the city's land area
Unit of measure	Inhabitants/Km2
SDG	11 – 13 – 15
Reference	ISO 37120: Sustainable cities and communities Sustainable MED Cities SCTool (A1.1)
Data Sources	Statistical office

Assessment method

Population density shall be calculated as the total city population (numerator) divided by the city's land area. The result shall be expressed as number of persons per square kilometer.

Criterion B1.2	Availability of Green Urban Areas
Intent	Green areas can facilitate climate change adaptation and mitigation, improve health and quality of life, and may favor biodiversity conservation.
Indicator	Total amount of Green Urban Areas in the city's boundaries divided by the total area of the city
Unit of measure	%
SDG	3 - 11
Reference	European Environmental Agency (EEA) Sustainable MED Cities SCTool 2022 (A2.1)
Data Sources	Information on green area should be obtained from municipal recreation and parks departments, planning departments, forestry departments and census. Green areas can be delineated using aerial photography and/or land use/land cover maps.

Assessment method

The indicator shall be calculated as the total amount of Green Urban Areas in the city's boundaries (numerator) divided by the total area of the city (denominator). The result shall then be multiplied by 100 and expressed as a percentage.

A Green Urban Area is defined as an urban land covered by vegetation of any kind, for instance natural zones, parks, public and private garden.

Criterion B1.3	Green Urban Areas in relation to the city population
Intent	Green areas offer important services in an urban setting, including the provision of recreation spaces for inhabitants.
Indicator	Total extension of green areas in the city divided by city's total population
Unit of measure	m2/inhabitant
SDG	3 - 11
Reference	ISO 37120: Sustainable cities and communities Sustainable MED Cities SCTool 2022 (A2.2)
Data Sources	Information on green area should be obtained from municipal recreation and parks departments, planning departments, forestry departments and census. Green areas can be delineated using aerial photography and/or land use/land cover maps.

Assessment method

The indicator shall be calculated as the total amount of vegetated areas in the city's boundaries (numerator) divided by the total city's population (denominator). Areas shall be measured in square meters.

A Green Urban Area is defined as an urban land covered by vegetation of any kind, for instance natural zones, parks, public and private garden.

Criterion B1.4	Distribution of Green Urban Areas
Intent	Within cities, green areas shall be equally distributed. An uneven distribution of green areas prevents equal accessibility for all city dwellers, focuses benefits from exposure on fewer city elements and prevents connectivity of all the available green spaces in the ecological network.
Indicator	Total length of green area boundaries (edges) divided by the city's urban area
Unit of measure	m/ha
SDG	3 - 11
Reference	European Environmental Agency Sustainable MED Cities SCTool 2022 (A2.2)
Data sources	Information on green area should be obtained from municipal recreation and parks departments, planning departments, forestry departments and census. Green areas can be delineated using aerial photography and/or land use/land cover maps.

Assessment method

The indicator shall be calculated as the total length of green area boundaries (numerator) divided by the total city's urban area (denominator).

A Green Urban Area is defined as an urban land covered by vegetation of any kind, for instance natural zones, parks, public and private garden.

Criterion B1.5	Accessibility of shores/beaches
Intent	Shores/beaches provide important recreation opportunities and should be accessible by inhabitants.
Indicator	Total area of shores/beaches in the city area that are accessible by inhabitants divided by the total area of shores/beaches in the city's urban area
Unit of measure	%
SDG	3 - 11
Reference	European Environmental Agency Sustainable MED Cities SCTool 2022 (A2.2)
Data Sources	Information on shores and beaches should be obtained from municipal planning departments.

Assessment method

The indicator shall be calculated as the total area of shores/beaches in the city area that are accessible by inhabitants (numerator) divided by the total area of shores/beaches in the city's urban area (denominator). The result shall then be multiplied by 100 and expressed as a percentage.

Criterion	B1.6 Urban agricultural land
Intent	As food security is becoming a global challenge, it is important that policies promote inclusion of areas devoted to urban agriculture and also plans of new urban development projects with the goal of producing food through reutilization of urban resources.
Indicator	Total urban agricultural area used for food production located within city boundaries divided by one 1000th of the city's total population
Unit of measure	ha/1000 inhabitants
SDG	2 - 11
Reference	ISO 37120: Sustainable cities and communities Sustainable MED Cities SCTool 2022 (A2.2)
Data Sources	Information on shores and beaches should be obtained from municipal planning departments.

Assessment method

The indicator shall be calculated as the total urban agricultural area used for food production located within city boundaries divided by one 1000th of the city's total population (denominator).

B2 – Sustainable mobility

Criterion B2.1	Public Transport Network
Intent	The extent of a city's public transportation network can provide insight into traffic congestion, transportation system flexibility and urban form. Cities with high quality public transport tend to be more compact and supportive of non-motorized modes of transportation.
Indicator	Kilometers of public transport system per 1000th of the city's population
Unit of measure	km/1000 inhabitants
SDG	11, 13
Reference	ISO 37120: Sustainable cities and communities Sustainable MED Cities SCTool 2022 (F1.1)
Data sources	Information on kilometres of public transport should be gathered from municipal transport offices and local/regional transit authorities and can also be counted using computerized mapping, aerial photography or existing paper maps. This information may be gathered from transport system plans or other master plans

Assessment method

The public transport network includes all available passenger transport services (e.g., busses, trams, subway, light rail, trolleybuses, etc.).

The indicator shall be calculated as the total length (in kilometres) of the public transport systems operating within the city (numerator) divided by one 1000th of the city's total population (denominator).

Criterion B2.2	Usage of public transportation by population
Intent	The extent of a city's public transportation network can provide insight into traffic congestion, transportation system flexibility and urban form. Cities with high quality public transport tend to be more compact and supportive of non-motorized modes of transportation.
Indicator	Total annual number of public transport trips originating in the city divided by the total city population
Unit of measure	trips/inhabitant
SDG	11, 13
Reference	ISO 37120: Sustainable cities and communities Sustainable MED Cities SCTool 2022 (F1.3)
Data sources	Public transport data should be gathered from a number of sources including municipal transport authorities, official transport surveys, revenue collection systems (e.g. number of fares purchased) and national censuses (ISO 37120).

Assessment method

The public transport network includes all available passenger transport services (e.g., busses, trams, subway, light rail, trolleybuses, etc.).

This indicator shall be calculated as the total annual number of public transport trips originating in the city (numerator) divided by the total city population (denominator). The result shall be expressed as the annual number of public transport trips per capita.

In some countries, a large number of trips are made via "informal transport" services (e.g. minibuses not operated by the government or municipal transport corporation). These informal trips are not part of the official transport network and shall not be counted.

Criterion B2.3	Bicycle network
Intent	A transportation system that is conducive to cycling can reap many benefits in terms of reduced traffic congestion and improved quality of life. Economic rewards both to the individual and to society are also realized through reduced healthcare costs and reduced dependency on auto ownership.
Indicator	Total length of bicycle paths and lanes divided by the city's total population
Unit of measure	m/inhabitant
SDG	3, 11
Reference	ISO 37120: Sustainable cities and communities Sustainable MED Cities SCTool 2022 (F2.4)
Data sources	Information on city's bicycle network should be gathered from municipal transport offices and local/regional transit authorities and can also be counted using computerized mapping, aerial photography or existing paper maps.

Assessment method

The indicator shall be calculated as the total length (in meters) of bicycle paths and lanes (numerator) divided by the city's total population (denominator).

Criterion B2.4	**Green Public Vehicles**
Intent	Low-carbon emission passenger vehicles offer several advantages over conventional vehicles: energy efficiency, absence of local emissions, less maintenance and quiet operation.
Indicator	Total number of low emission public vehicles divided by total number of public vehicles
Unit of measure	%
SDG	3, 11
Reference	U4SSC - Collection Methodology for Key Performance Indicators for Smart Sustainable Cities Sustainable MED Cities SCTool 2022 (F2.6)
Data sources	Data can be collected from government agencies that register passenger motor vehicles

Assessment method

The indicator shall be calculated as the number of low emission public vehicles (numerator) divided by the city's total number of public vehicles (denominator). The result shall then be multiplied by 100 and expressed as a percentage.

Low emission vehicles are:

- Electric Vehicles (EVs)
- Plug-in Hybrid-Electric Vehicles (PHEVs)

Criterion B2.5	Pedestrian infrastructure

Intent	Pedestrian streets and walkways encourage residents and workers to walk to local facilities as an alternative to using public transport or private cars. This would lead to health benefits for local pedestrians, a decrease in congestion levels of roads, as well as a reduction in pollution, and improvement in air quality.
Indicator	Total area of pedestrian streets and walkways divided by the total area of streets and roads in the city
Unit of measure	%
SDG	3, 11
Reference	REFERENCE FRAMEWORK FOR SUSTAINABLE CITIES Sustainable MED Cities SCTool 2022 (F3.1)
Data sources	Information on city's bicycle network should be gathered from municipal urban planning offices.

Assessment method

The indicator shall be calculated as the total area of pedestrian streets and walkways (numerator) divided by the total area of streets and roads in the city (denominator). The result shall then be multiplied by 100 and expressed as a percentage.

Criterion B2.6	Traffic fatalities

Intent	Street design can enhance safety and quality of life by improving visibility and accessibility for people walking and cycling and encourage safer behavior from drivers. Traffic circles are effective at reducing traffic speeds at intersections, speed humps can control vehicle speeds near residential and school zones, narrower streets encourage more careful driving.
Indicator	Traffic fatalities divided by 1000th of the city's population
Unit of measure	number /1000 inhabitants
SDG	3, 11
Reference	Sustainable MED Cities SCTool 2022 (F3.4)
Data sources	National, regional or municipal statistical offices.

Assessment method

The indicator shall be calculated as the number of traffic fatalities (numerator) divided by 1.000th of city's population (denominator).

The number of traffic fatalities shall be calculated has the mean of the 3 previous years.

Criterion B2.7	Private transportation services

Intent	A private transportation service can be complementary to a public transportation service in reducing the need to use private cars.
Indicator	Number of taxi licenses divided by 1000th of the city's population
Unit of measure	number / 1.000 inhabitants
SDG	11
Reference	Sustainable MED Cities SCTool 2022 (F3.5)
Data sources	Municipal department responsible for the issue of taxi's licenses in the municipality or region.

Assessment method

The indicator shall be calculated as the number of taxi licenses (numerator) divided by 1.000th of city's population (denominator).

B3 – Air pollution

Criterion B3.1	Fine particulate matter (PM2.5) concentration
Intent	Fine particulate matter can cause major health problems in cities. According to the WHO, any concentration of particulate matter (PM) is harmful to human health. PM is carcinogenic and harms the circulatory system as well as the respiratory system.
Indicator	Annual average fine particulate matter (PM2.5) concentration
Unit of measure	µg/m3 year
SDG	3, 11
Reference	ISO 37120: Sustainable cities and communities Sustainable MED Cities SCTool 2022 (E1.1)
Data sources	Municipal department responsible for air quality in the municipality managing the data concerning the PM2.5 monitoring stations in the city's boundaries.

Assessment method

To calculate the annual mean concentration of PM2.5:

- collect the annual mean of PM2.5 concentration values measured over one year by each monitoring station installed in the city's boundaries.
- calculate the average of the values collected in the previous step as the sum of the annual mean PM2.5 concentration values (numerator) divided by the number of monitoring stations (denominator).

The annual concentration values measured by the monitoring stations shall correspond to the total mass of collected particles that are 2,5 µm or less in diameter divided by the volume of air sampled in standard cubic metres.

Criterion B3.2	Number of PM2.5 monitoring stations

Intent	A PM2.5 monitoring system is a necessary tool to deliver efficient air quality plans and to verify the effect of the actions implemented.
Indicator	Number of PM2.5 monitoring stations
Unit of measure	-
SDG	3, 11
Reference	-
Data sources	Municipal department responsible for air quality in the municipality managing the PM2.5 monitoring stations in the city's boundaries.

Assessment method

Verify the number of PM2.5 monitoring stations that are active in the city's boundaries.

Monitoring stations should be able to provide information about the daily and annual mean concentration of PM2.5.

Criterion B3.3	Particulate matter (PM10) concentration

Intent	The evidence on airborne PM and its public health impact is consistent in showing adverse health effects at exposures that are currently experienced by urban populations in both developed and developing countries. PM poses a health concern because it can be inhaled and accumulate in the respiratory system.
Indicator	Annual average particulate matter (PM10) concentration
Unit of measure	µg/m3 year
SDG	3, 11
Reference	ISO 37120: Sustainable cities and communities Sustainable MED Cities SCTool 2022 (E1.2)
Data sources	Municipal department responsible for air quality in the municipality managing the data concerning the PM10 monitoring stations in the city's boundaries.

Assessment method

To calculate the annual mean concentration of PM10:

- collect the annual mean of PM10 concentration values measured over one year by each monitoring station installed in the city's boundaries
- calculate the average of the values collected in the previous step as sum of the annual mean PM10 concentration values (numerator) divided by the number of monitoring stations (denominator).

The annual concentration values measured by the monitoring stations shall correspond to the total mass of collected particles in micrograms in the PM10 size range divided by the volume of air sampled in standard cubic metres.

Criterion B3.4	**Number of PM10 monitoring stations**
Intent	A PM10 monitoring system is a necessary tool to deliver efficient air quality plans and to verify the effect of the actions implemented.
Indicator	Number of PM10 monitoring stations
Unit of measure	-
SDG	3, 11
Reference	-
Data sources	Municipal department responsible for air quality in the municipality managing the PM10 monitoring stations in the city's boundaries.

Assessment method

Verify the number of PM10 monitoring stations that are active in the city's boundaries.

Monitoring stations should be able to provide information about the daily and annual mean concentration of PM10.

B4 – Solid waste

Criterion B4.1	Availability of solid waste collection
Intent	The percentage of the city population served by regular solid waste collection is an indicator of city health, cleanliness and quality of life. Solid waste systems contribute in many ways to public health, the local economy, the environment, and the social understanding and education about the environment.
Indicator	Percentage of population with regular solid waste collection
Unit of measure	%
SDG	11
Reference	ISO 37120: Sustainable cities and communities Sustainable MED Cities SCTool 2022 (D1.1)
Data sources	Information should be obtained from the local operator(s) of solid waste collection systems, census data and municipal waste facilities.

Assessment method

The indicator shall be calculated as the number of people within the city who are served by regular solid waste collection (numerator) divided by the total city population (denominator). The result shall then be multiplied by 100 and expressed as a percentage.

Regular solid waste collection shall be defined as having the solid waste picked up from collection points, transported and dropped at a proper treatment facility (recycling or landfill sites) on at least a weekly basis or every two weeks. If the solid waste is collected in any moving vehicle by persons who have not constituted a legally established entity, the house shall not be considered as a household serviced with a solid waste collection service.

The number of households in the city serviced with regular solid waste collection shall first be determined. The number of households being serviced by the regular solid waste collection service shall then be multiplied by the current average household size for that city to determine the number of persons serviced with regular solid waste collection.

Criterion B4.2	Solid waste generation

Intent	Higher levels of municipal waste contribute to greater environmental problems. Waste reduction may be reached thanks to eco-design, packaging reduction, by separate waste collection for recycling reuse and composting as well as through the promotion of social and economic activities linked to renting, sharing, swapping, repairing, and manufacturing products.
Indicator	Total amount of solid waste generated divided by the total city population
Unit of measure	Tonnes/inhabitant/year
SDG	11, 12
Reference	ISO 37120: Sustainable cities and communities Sustainable MED Cities SCTool 2022 (D2.1)
Data sources	Information should be obtained from the local operator(s) of solid waste collection systems, census data and municipal waste facilities.

Assessment method

This indicator shall be calculated as the total amount of solid waste (household and commercial) generated in tonnes (numerator) divided by the total city population (denominator).

Municipal waste shall refer to waste collected by or on behalf of municipalities.

Municipal waste shall include waste originating from:

- households;
- commerce and trade, small businesses, office buildings and institutions (e.g. schools, hospitals, government buildings).

Municipal waste also includes:

- bulky waste (e.g. white goods, old furniture, mattresses);
- garden waste, leaves, grass clippings, street sweepings, the content of litter containers, and market cleansing waste, if managed as waste;
- waste from selected municipal services, i.e. waste from park and garden maintenance, waste from street cleaning services (e.g. street sweepings, the content of litter containers, market cleansing waste), if managed as waste.

Not to include in the calculation:

- waste from municipal sewage network and treatment;
- municipal construction and demolition waste.

Criterion B4.3	Solid waste recycling
Intent	Recycling is the recovery and reuse of materials from wastes. Recycling has many benefits versus landfilling, including offsetting primary production of materials, reduced greenhouse gas emissions, lower priced secondary materials, production of compost and generation of energy. Many cities generate more solid waste than they can dispose of. Diverting recyclable materials from the waste stream is one strategy for addressing this municipal issue.
Indicator	Total amount of solid waste that is recycled divided by the total amount of solid waste produced in the city
Unit of measure	%
SDG	11, 12
Reference	ISO 37120: Sustainable cities and communities Sustainable MED Cities SCTool 2022 (D2.2)
Data sources	Information should be obtained from the local operator(s) of solid waste collection systems, census data and municipal waste facilities.

Assessment method

The indicator shall be calculated as the total amount of the city's solid waste that is recycled in tonnes (numerator) divided by the total amount of solid waste produced in the city in tonnes (denominator). The result shall then be multiplied by 100 and expressed as a percentage.

Recycled materials shall refer to those materials diverted from the waste stream, recovered and processed into new products following local government permits and regulations.

B5 – Water

Criterion	**B5.1 Availability of a public municipal water supply**
Intent	The percentage of the city population served by a potable water supply is an indicator of city health and quality of life.
Indicator	Total number of people with potable water supply service divided by total city population
Unit of measure	%
SDG	3, 6
Reference	ISO 37120: Sustainable cities and communities Sustainable MED Cities SCTool 2022 (C1.1)
Data sources	Information should be obtained from the local operator(s) of water supply systems.

Assessment method

Potable water shall refer to drinkable water that has been treated and is confirmed safe for human consumption. A potable water supply service shall refer to a service that delivers potable water through a pipe or similar duct that is connected to a network. If a house or group of houses has a "mother" pipe connected either provisionally or permanently, it shall be considered to have access to potable water

The indicator shall be calculated as the total number of people with potable water supply service (numerator) divided by total city population (denominator). The result shall then be multiplied by 100 and expressed as a percentage.

The total number of people with potable water supply service shall be calculated as the total number of households in the city connected to a potable water supply service multiplied by the current average household size for the city.

A house shall not be considered to have access to potable water when an individual house or group is served by a conduit system built with, for example, wood, bamboo, or rubber hose, connected directly to a river, well or another house.

Criterion	B5.2 Total water consumption
Intent	Water consumption must be in harmony with water resources to be sustainable. This harmony can be achieved through improvements in water supply systems and changes in water consumption patterns. Consumption of water per person depends on the availability and price of water, the climate and the uses to which water is customarily put by individuals (e.g. drinking, bathing, washing, gardening) and industrial, commercial and agricultural entities.
Indicator	Total amount of the city's water consumption in liters per day divided by the total city population.
Unit of measure	liters/day/inhabitant
SDG	6, 14
Reference	ISO 37120: Sustainable cities and communities Sustainable MED Cities SCTool 2022 (C2.1)
Data sources	Information should be obtained from the local operator(s) of water supply systems.

Assessment method

The indicator shall be calculated as the total amount of the city's water consumption (numerator) divided by the total city population (denominator). The result shall be expressed as the total water consumption per capita in litres/day.

Criterion	B5.3 Sufficiency of domestic water provision
Intent	The capacity to meet the domestic water demand is a key aspect for the quality of life of city's inhabitants.
Indicator	Volume of the water supplied for domestic uses divided by the overall domestic water demand
Unit of measure	%
SDG	3, 6
Reference	Sustainable MED Cities SCTool 2022 (C2.3)
Data sources	This information should be obtained from the main water supply companies, which maintain records on water supplied, delivered, consumed and ultimately paid for by the end-users for domestic purposes.

Assessment method

The indicator shall be calculated as the volume of water supplied for domestic uses (numerator) divided by the total volume of domestic water demand (denominator). The result shall then be multiplied by 100 and expressed as a percentage.

Criterion	B5.4 Efficiency in water use
Intent	Before reaching the users, a part of the water supplied might be lost through leakage. In cities with old and deteriorating water reticulation systems, a substantial proportion of piped water might be lost through cracks and flaws in pipes. Water scarcity is one of the biggest hazards related with climate change especially in Mediterranean cities and the minimization of water leakage is an important action to reach a sustainable management of available water resources.
Indicator	Volume of water supplied minus the volume of utilized water divided by the total volume of water supplied
Unit of measure	%
SDG	6, 14
Reference	ISO 37120: Sustainable cities and communities Sustainable MED Cities SCTool 2022 (C2.2)
Data sources	Data should be obtained from water utilities servicing the city.

Assessment method

The indicator shall be calculated as the volume of water supplied minus the volume of utilized water (numerator) divided by the total volume of water supplied (denominator). The result shall then be multiplied by 100 and expressed as a percentage.

The percentage of water loss (unaccounted for water) represents the percentage of water that is lost from treated water entering distribution system and that is not accounted for and billed by the water provider. This includes actual water losses, for example due to leaking pipes, and billing losses, for example due to an informal or illegal connection.

Criterion	B5.5 Access to wastewater collection
Intent	Water resources are under increasing pressure in many parts of the world. Biodiversity, health, whole economic sectors including leisure and tourism activities are impacted. If agriculture is the leading source of pollution and of water consumption, cities also have a role to play, especially by ensuring excellent wastewater collection and treatment; The percentage of the city population served by a wastewater collection is an indicator of city health, cleanliness and quality of life.
Indicator	Number of people within the city that are served by wastewater collection divided by the city population.
Unit of measure	%
SDG	6, 14
Reference	ISO 37120: Sustainable cities and communities Sustainable MED Cities SCTool 2022 (C1.2)
Data sources	Information on the number of households in the city serviced with regular wastewater collection should be obtained from the local operator(s) of wastewater systems.

Assessment method

The indicator shall be calculated as the number of people within the city who are served by wastewater collection (numerator) divided by the city population (denominator). The result shall then be multiplied by 100 and expressed as a percentage.

The number of households in the city serviced with wastewater collection shall first be determined by counting the number of households that are connected as part of a public or community-owned system of discharge of served waters and other residues through a pipe or similar duct connected to a network that takes it to a facility where it is treated. The number of households being serviced by wastewater connection shall then be multiplied by the then current average household size for that city to determine the number of persons serviced with wastewater collection.

Criterion	B5.6 Centralized wastewater treatment
Intent	The percentage of wastewater treated is a key indicator of water quality management. It has been proven that improvement of water treatment reduces the incidence of a variety of water-borne diseases. A reliable wastewater treatment system is a major indicator of the level of local development and of community health. Water pollution from human waste is less of a problem in countries that can afford to treat sewage and wastewater, and water pollution can be minimized with adequate investment in treatment systems
Indicator	Total volume of city wastewater collected for primary, secondary and tertiary treatment in centralized wastewater treatment facilities divided by the total volume of wastewater produced in the city
Unit of measure	%
SDG	3, 6, 14
Reference	ISO 37120: Sustainable cities and communities Sustainable MED Cities SCTool 2022 (C3.1)
Data sources	This information may be obtained from municipal authorities and the main water supply and treatment companies.

Assessment method

The indicator shall be calculated as the total volume of city wastewater collected for primary, secondary and tertiary treatment in centralized wastewater treatment facilities (numerator) divided by the total volume of wastewater produced in the city (denominator). This result is then multiplied by 100 and expressed as a percentage.

Primary wastewater treatment shall refer to the physical separation of suspended solids from the wastewater flow using primary clarifiers.
Secondary treatment shall refer to the process of removing or reducing contaminants or growths that are left in the wastewater from the primary treatment process.
Tertiary treatment shall refer to the next wastewater treatment process after secondary treatment. This step removes stubborn contaminants that secondary treatment was not able to clean up.

Criterion	B5.7 Improved household sanitation
Intent	Access to improved sanitation is a fundamental need, vital for the dignity and health of all people. About 2,6 billion people lack even a simple "improved" latrine. Furthermore, 1,6 million people die every year from diarrhoeal diseases attributable to lack of safe drinking water and basic sanitation.
Indicator	Total number of people using improved sanitation facilities divided by the total city population
Unit of measure	%
SDG	3, 6, 14
Reference	ISO 37120: Sustainable cities and communities Sustainable MED Cities SCTool 2022 (C3.1)
Data sources	This information may be obtained from municipal authorities and the main water supply and treatment companies.

Assessment method

The indicator shall be calculated as the total number of people using improved sanitation facilities (numerator) divided by the total city population (denominator). The result shall then be multiplied by 100 and expressed as a percentage.

Access to improved sanitation facilities shall refer to the percentage of the city population with at least adequate access to excreta disposal facilities that can effectively prevent human, animal and insect contact with excreta. Improved facilities range from simple, protected pit latrines to flush toilets with a sewerage connection to a collective wastewater network. To be effective, facilities have to be correctly constructed and properly maintained.
Improved sanitation facilities shall include:
— flush or pour-flush to piped sewer system, septic tank or pit latrine,
— ventilated improved pit latrine,
— pit latrine with slab, and
— composting toilet.

Unimproved sanitation shall include
— flush or pour-flush to elsewhere,
— pit latrine without slab or open pit,
— bucket, hanging toilet or hanging latrine, and
— no facilities or bush or field (open defecation).

The percentage of the city population using wastewater on-site disposal systems can be deduced from indicator B5.5.

B6 – Energy

Criterion	B6.1 Access to authorized electrical service
Intent	The percentage of the city population with authorized connection to the electricity supply system (the electricity grid) is an indicator of lawful provision of a basic urban service, which is of particular relevance to cities in less developed regions of the world. Electrical service is a contributing indicator of sustainability, resilience and economic productivity.
Indicator	Number of people in the city with authorized electrical service divided by the total population of the city
Unit of measure	%
SDG	7, 8, 10
Reference	ISO 37120: Sustainable cities and communities Sustainable MED Cities SCTool 2022 (B1.1)
Data sources	This information may be obtained from electricity supply authorities.

Assessment method

The indicator shall be calculated as the number of people in the city with authorized electrical service in residential buildings (numerator) divided by the total population of the city (denominator). The result shall then be multiplied by 100 and expressed as a percentage.

Authorized electrical service shall refer to a lawful connection to the electrical supply system.

The number of city households with authorized connections to the electricity supply system (often referred to as the electricity grid) shall be multiplied by the current average city household size to determine the number of people with authorized connection to the electricity supply system.

Criterion	B6.2 Electrical service interruptions
Intent	Average annual hours of electrical service interruptions helps to track and benchmark reliability performance in electric utility services and resource constraints. This indicator is affected by the age, standard of maintenance and reliability of the infrastructure that constitutes electricity distribution and transmission. Cities with older infrastructure, intermittent power supply, war or civil unrest, or exposure to natural hazards will tend to experience more service interruptions.
Indicator	Total sum of hours of interruption multiplied by the number of households impacted divided by the total number of households
Unit of measure	hours/household
SDG	7, 8, 10
Reference	ISO 37120: Sustainable cities and communities Sustainable MED Cities SCTool 2022 (B1.2)
Data sources	This information may be obtained from electricity supply authorities.

Assessment method

The indicator shall be calculated by taking the total sum of hours of interruption multiplied by the number of households impacted (numerator) divided by the total number of households (denominator). The result shall be expressed as the average annual hours of electrical service interruptions per household.

It is normal to experience interruptions in service for a number of reasons including scheduled maintenance, equipment breakdown and power load shedding. To ensure valid comparisons between energy providers, major storms and weather events should be excluded due to their variability with geographic location.

Criterion	B6.3 Final energy consumption (natural gas)
Intent	An understanding of how much energy is currently being consumed can help cities to effectively manage the generation, consumption and conservation of energy. This process can be aided further with an understanding of what types of energy are used by end-use sector.
Indicator	Total end-use energy from natural gas consumed by the city divided by the total population of the city
Unit of measure	MWh/inhabitant/year
SDG	7
Reference	ISO 37120: Sustainable cities and communities
Data sources	Data should be gathered from fuel distributors.

Assessment method

The indicator shall be calculated as the total end-use energy from natural gas consumed by the city in gigajoules (numerator) divided by the total population of the city (denominator). The result shall be expressed as the total end-use energy consumed per capita in gigajoules per year.

The end use sectors to be included in the calculation are:

- Residential
- Commercial (tertiary/service sector ranging from commerce to administration - public buildings, financial and real estate activities, services to business, personal services, education, health and social services)
- Industrial
- Transportation.

Criterion	B6.4 Final energy consumption (electricity)

Intent	An understanding of how much energy is currently being consumed can help cities to effectively manage the generation, consumption and conservation of energy. This process can be aided further with an understanding of what types of energy are used by end-use sector.
Indicator	Total end-use energy from electricity consumed by the city divided by the total population of the city
Unit of measure	GJ/inhabitant/year
SDG	7
Reference	ISO 37120: Sustainable cities and communities
Data sources	Data should be gathered from electricity distributors. Electricity consumption statistics are typically collected in categories of residential, industrial, transportation, commercial and other sector.

Assessment method

The indicator shall be calculated as the total end-use energy from electricity consumed by the city in gigajoules (numerator) divided by the total population of the city (denominator). The result shall be expressed as the total end-use energy consumed per capita in gigajoules per year.

The end use sectors to be included in the calculation are:

- Residential
- Commercial (tertiary/service sector ranging from commerce to administration - public buildings, financial and real estate activities, services to business, personal services, education, health and social services)
- Industrial
- Transportation.

Criterion	B6.5 Renewable electrical energy consumption
Intent	The use of renewable energy sources is a main priority for sustainable development, for reasons such as the minimization of greenhouse gas emissions, security and diversification of energy supply, environmental protection. Cities emit significant and growing amounts of greenhouse gases (GHGs) - accounting for 37- 49 of total global GHG emissions (IPCC 2014). The International Energy Agency's projections indicate that urban energy related GHG emissions will rise from around 67% today to 74% by 2030 (IEA 2008).
Indicator	Total consumption of electricity generated from renewable sources divided by total energy consumption
Unit of measure	%
SDG	7, 13
Reference	ISO 37120: Sustainable cities and communities
Data sources	Data are available from local utility providers, city energy or environment offices.

Assessment method

The indicator shall be calculated as the total consumption of end-use energy generated from renewable sources (numerator) divided by total end-use energy consumption (denominator9. The result shall then be multiplied by 100 and expressed as a percentage.

Renewable sources should include geothermal, solar, wind, hydro, tide and wave energy, and combustibles, such as biomass.

Criterion	B6.6 Renewable electrical energy locally produced
Intent	Cities will need to accommodate two-thirds of the world's population in a liveable, low-carbon environment by 2050. Accelerated uptake of locally produced renewables can strengthen the urban economy, create new jobs and improve people's living conditions and welfare.
Indicator	Total renewable electrical energy generated in the city's boundaries divided by the total renewable electrical energy consumed by the city
Unit of measure	%
SDG	7, 13
Reference	ISO 37120: Sustainable cities and communities
Data sources	Data are available from local utility providers, city energy or environment offices.

Assessment method

The indicator shall be calculated as the total renewable electrical energy generated in the city's boundaries (numerator) divided by total renewable electrical energy consumed by the city (denominator9. The result shall then be multiplied by 100 and expressed as a percentage.

Renewable sources should include geothermal, solar, wind, hydro, tide and wave energy, and combustibles, such as biomass.

C - Social, Economic and Cultural Sustainability

C1 – Integration and solidarity

Criterion	C1.1 Informal settlements
Type	Settlements characterized by irregular tenure, unplanned development and unauthorized shelter that is not in compliance with local building codes and regulations are generally marginal and precarious, and affect social well-being, human health and economic development. The size of informal settlements is an indicator of the extent of the challenges for the reporting city in meeting shelter needs and demand.
Indicator	Area of informal settlements within the city boundary divided by the city area
Unit of measure	%
SDG	1, 11
Reference	ISO 37120: Sustainable cities and communities Sustainable MED Cities SCTool 2022 (G2.4)
Data sources	Data should be gathered from the city planning department, together with departments knowledgeable about the city neighbourhoods. Local academic institutions may also be of assistance.

Assessment method

The indicator shall be calculated as the area of informal settlements within the city boundary (in square kilometres) (numerator) divided by the city area in square kilometres (denominator). The result shall then be multiplied by 100 and expressed as a percentage.

The UN Statistics Division has developed the following definitions of informal settlements:
a) Areas where groups of housing units have been constructed on land that the occupants have no formal legal claim to.
b) Unplanned settlements and areas where housing is not in compliance with current planning and building regulations (unauthorized housing).

While many informal settlements also meet the definition of slum, the terms are not synonymous. Slums might exist in areas that do not meet the definition of informal settlements. Some informal settlements might have improved such that they do not meet the definition of slum.

Criterion	C1.2 Unemployment rate
Intent	The unemployment rate is considered one of the most informative labour market indicators reflecting the general performance of the labour market and the health of the economy as a whole. When economic growth is strong, unemployment rates tend to be low and when the economy is stagnating or in recession, unemployment rates tend to be higher.
Indicator	Total number of working-age primary residents not in paid employment or self-employment, but available for work and seeking work divided by the total labour force.
Unit of measure	%
SDG	1, 8
Reference	ISO 37120: Sustainable cities and communities Sustainable MED Cities SCTool 2022 (H2.1)
Data sources	National or regional statistical organisations.

Assessment method

The indicator shall be calculated as the number of working-age primary residents who during the survey reference period were not in paid employment or self-employment, but available for work and seeking work (numerator) divided by the total labour force (denominator). The result shall be multiplied by 100 and expressed as a percentage.

Unemployment shall refer to individuals without work, actively seeking work in a recent period (past four weeks) and currently available for work.

Labour force shall refer to the sum of the total persons employed and unemployed who are legally eligible to work and who are primary residents of the city.

Criterion	C1.3 Youth unemployment rate
Intent	Youth unemployment rate is a key indicator for quantifying and analysing the current labour market trends and challenges of young people, being considered as more sensitive to market changes. Youth unemployment can have damaging effects on individuals, communities, economies and society at large. Unemployed or underemployed youths are less able to contribute effectively to community and national development and have fewer opportunities to exercise their rights as citizens.
Indicator	Total number of a city's unemployed youth divided by the city's youth labour force.
Unit of measure	%
SDG	1, 8
Reference	ISO 37120: Sustainable cities and communities Sustainable MED Cities SCTool 2022 (H2.2)
Data sources	National or regional statistical organisations.

Assessment method

The indicator shall be calculated as the total number of a city's unemployed youth (numerator) divided by the city's youth labour force (denominator). The result shall be multiplied by 100 and expressed as a percentage.

Unemployed youth shall refer to individuals above the legal working age and under 24 years of age who are without work, actively seeking work in a recent period (past four weeks) and currently available for work (registered students are not counted).

Youth labour force shall refer to all persons above the legal working age and under 24 years of age who are either employed or unemployed over a specified reference period.

Criterion	C1.4 Female employment
Intent	Unemployment is considered to increase the risks of poverty and consequent social exclusion. Cities shall promote the increase in employment rates among vulnerable groups.
Indicator	Total number of working age women in employment divided by the total female labour force
Unit of measure	%
SDG	8
Reference	REFERENCE FRAMEWORK FOR SUSTAINABLE CITIES Sustainable MED Cities SCTool 2022 (H2.3)
Data sources	National or regional statistical organisations.

Assessment method

The indicator shall be calculated as the number of working-age women in employment (numerator) divided by the total female labour force (denominator). The result shall be multiplied by 100 and expressed as a percentage.

Female labour force shall refer to the sum of the total female persons employed and unemployed who are legally eligible to work and who are primary residents of the city.

Criterion	C1.5 Accessibility of public buildings

Intent	In the perspective of social integration and equality, municipalities shall guarantee the accessibility of (at least) public buildings by physically disabled persons.
Indicator	Total number of public buildings accessible by disabled persons divided by the total number of public buildings
Unit of measure	%
SDG	10
Reference	Sustainable MED Cities SCTool 2022 (G1.1)
Data sources	Organization or sector managing public buildings in the city.

Assessment method

The indicator shall be calculated as the total number of public buildings accessible by disabled persons divided by the total number of public buildings.

An accessible building is a building where a person with a disability is afforded the opportunity to acquire the same information, engage in the same interactions, and enjoy the same services as a person without a disability in an equally effective and equally integrated manner, with substantially equivalent ease of use.

A disability refers to a physical, sensory or mental limitation that interferes with a person's ability to move, see, hear or learn.

Criterion	C1.6 Accessibility of public transport network

Intent	An accessible public transport network provides a way for disabled people who do not have access to private motorised transport a way to access essential services, as well as employment, entertainment and social activities.
Indicator	Total number of public vehicles accessible to disabled persons divided by total number of public vehicles
Unit of measure	%
SDG	10
Reference	Sustainable MED Cities SCTool 2022 (G1.3)
Data sources	Information should be gathered from municipal transport offices and local/regional transit authorities.

Assessment method

The indicator shall be calculated as the total number of public vehicles accessible to disabled persons (numerator) divided by total number of public vehicles (denominator).

An accessible vehicle is barrier-free and can be used by people who have disabilities, including those who use wheelchairs.

Criterion	C1.7 Population living below poverty line
Intent	The percentage of the city's population living below the national poverty line is an indicator of relative poverty. It reflects social equity and levels of economic and social marginality and/or inclusiveness in a city.
Indicator	Number of people living below the national poverty line set at country level divided by the total current population of the city
Unit of measure	%
SDG	1
Reference	ISO 37120: Sustainable cities and communities Sustainable MED Cities SCTool 2022 (G5.3)
Data sources	National and regional statistical offices.

Assessment method

The indicator shall be calculated as the number of people living below the national poverty line set at country level (numerator) divided by the total current population of the city (denominator). The result shall then be multiplied by 100 and expressed as a percentage.

The total number of people in the city living below the national poverty line shall be determined by multiplying the number of city households at or below the national poverty line by the current average number of persons per household for that city.

The poverty line refers to the minimum level of income deemed adequate in a particular country. It is the minimum level of income considered adequate in a country. Individuals living below this line are those not able to adequately provide themselves over a 12 months period with water, food, shelter and other basic needs for a healthy life.

Criterion	C1.8 School-aged population enrolled in schools

Intent	Education is one of the most important aspects of human development. This indicator addresses the issue of educational opportunity by indicating how widespread formal education is in the city among the school-age population
Indicator	Number of city's school-aged population enrolled in primary and secondary levels in public and private schools divided by the total number of the city's school-aged population.
Unit of measure	%
SDG	4
Reference	ISO 37120: Sustainable cities and communities Sustainable MED Cities SCTool 2022 (G5.3)
Data sources	Data on school enrolment should be obtained from local school boards, or the relevant Ministry or Department of Education. If enrolment data from these sources are not available, then data for enrolment from surveys or censuses may be used.

Assessment method

The indicator shall be calculated as the number of city's school-aged population enrolled in primary and secondary levels in public and private schools (numerator) divided by the total number of the city's school-aged population (denominator). The result shall then be multiplied by 100 and expressed as a percentage.

Part-time enrolment of a half-day or more shall be counted as a full-time enrolment.

Primary education is considered to be the first stage of basic education. It typically covers six years of full-time schooling with the legal age of entrance normally being not younger than 5 years or older than 7 years. Primary education refers to children aged 5–12 years or 1st grade through to 5th or 6th grade, as defined by local education systems. Secondary education is considered to be the second stage of basic education and marks the end of compulsory education where it exists. Secondary students usually enter between the ages of 10 and 13. Secondary education usually ends approximately 12 or 13 years after the beginning of primary education (or around age 18). Secondary education also refers to 6th grade (or 7th grade) to 12th grade, as defined by local education systems.

Criterion	C1.9 Female school-aged population enrolled in schools
Intent	Education is one of the most important aspects to reach the gender equity. This indicator addresses the issue of educational opportunity, by indicating how widespread formal education is in the city among female school-aged population.
Indicator	Number of city's female school-aged population enrolled at primary and secondary levels in public and private schools divided by the total number of a city's female school-aged population
Unit of measure	%
SDG	4, 5
Reference	ISO 37120: Sustainable cities and communities Sustainable MED Cities SCTool 2022 (G4.2)
Data sources	Data on school enrolment should be obtained from local school boards, or the relevant Ministry or Department of Education. If enrolment data from these sources are not available, then data for enrolment from surveys or censuses may be used.

Assessment method

The indicator shall be calculated as the number of city's female school-aged population enrolled at primary and secondary levels in public and private schools (numerator) divided by the total number of a city's female school-aged population (denominator). The result shall then be multiplied by 100 and expressed as a percentage.

Part-time enrolment of a half-day or more shall be counted as a full-time enrolment.

C2 – Green economy and eco-innovation

Criterion	C2.1 New jobs in green and circular economy
Intent	The shift to a green and circular economy is impacting labour market and new jobs are emerging. A job in green and circular economy is an occupation in the field of renewable energy, waste and resource management. (repair, recycling, rental, leasing). Municipalities can enable the upscaling of jobs in green and circular economy through policies, action plans and training programs.
Indicator	Number of jobs created in green and circular economy sector
Unit of measure	%
SDG	9, 16
Reference	-
Data sources	Surveys and inventories can provide a simple and effective way of assessing how many green jobs exist in specific sectors at municipal level. A survey is usually carried out in the form of a questionnaire sent out to relevant companies, government departments or analysts, whilst an inventory commonly draws on a national or regional database to provide employment statistics.

Assessment method

The indicator shall be verified as the number of new jobs created in green and circular economy sector through the initiatives, policies, programs deployed by the municipality in the last 5 years.

A green job is an occupation reducing negative environmental impacts, in the field of renewable energy, waste and resource management. (repair, recycling, rental, leasing).

Criterion	C2.2 Digital processes

Intent	Digitization is the process of converting information into a digital format. The digitalization of public services and processes deliver social benefits for citizens as well as organizations.
Indicator	Number of digital processes operated by the municipality divided by the total number processes operated by the municipality
Unit of measure	%
SDG	9, 16
Reference	REFERENCE FRAMEWORK FOR SUSTAINABLE CITIES
Data sources	Data should be obtained from different departments in the municipality.

Assessment method

The indicator shall be calculated as the number of digital processes operated by the municipality (numerator) divided by the total number of processes operated by the municipality. (denominator). The result shall then be multiplied by 100 and expressed as a percentage.

The reference period are the last 3 years.

Examples of digital services: provision of certificates, online payments, services' subscriptions, etc.

Criterion	C2.3 Green public procurement
Intent	Public authorities are major consumers. By using their purchasing power to choose environmentally friendly goods, services and works, they can make an important contribution to sustainable consumption and production.
Indicator	Number of procurement contracts that include green criteria (GPP) divided by the total number of contracts
Unit of measure	%
SDG	9, 16
Reference	REFERENCE FRAMEWORK FOR SUSTAINABLE CITIES
Data sources	Data should be obtained from different departments in the Municipality (e.g. the transport department for sustainable procurement of roads; the housing department for sustainable procurement of a large-scale urban development project, etc).

Assessment method

The indicator shall be calculated as the number of municipality's procurement contracts that include green criteria (numerator) divided by the total number of a city's procurement contracts (denominator). The result shall then be multiplied by 100 and expressed as a percentage.

The reference period are the last 3 years.