SNTool
 MED

Sustainable Neighbourhood Tool

Integrated tool and assessment methodology for sustainable neighbourhoods in MED cities

Version : 2023-A





TABLE OF CONTENTS

Introduction
1. SBE method
1.1 Hierarchy levels 1.1 Assessment process
2. Contextualization
2.1 Selection of the active crit 2.2 Benchmarking 2.3 Weighting
3. Sustainable Neighbourhoo
4. Key performance indicator
5. SMC Passport
6. References

Sustainable MED Cities - Integrated Tools and Methodologies for Sustainable Mediterranean Cities, is a capitalization project whose main objective is to enhance the capacity of public administration in delivering, implementing and monitoring efficient measures, plans and strategies to improve the sustainability of cities, neighbourhoods and buildings.

This project received funding from the European Union's ENI CBC MED Programme under Grant Contract C_B.4.3_0063. This manual is part of WP3 deliverables.

Content of the manual:

Editor: Andrea Moro (iiSBE Italia R&D), Elena Bazzan (iiSBE Italia R&D), Constantinos A. Balaras (NOA), Popi Droutsa (NOA).

Editing and layout: Luis Alonso, Valentina Restrepo Rojas, ESDesigner on behalf of iiSBE Italia R&D

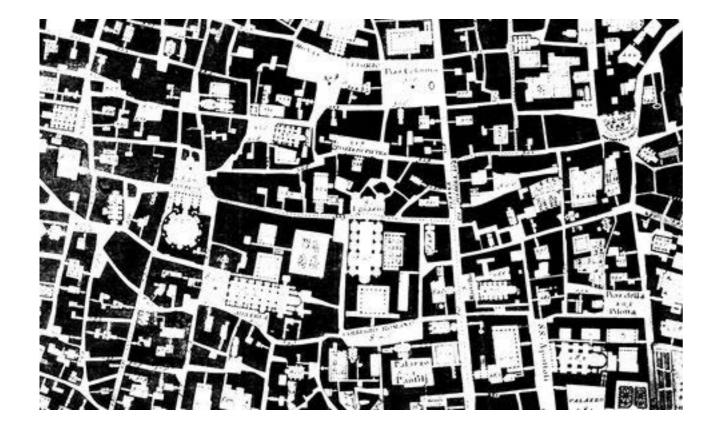
All rights reserved.

The document reflects the views of the authors. The ENI CBC MED Programme is not responsible for the use that may be made of the information contained therein.

Published February 2023

•••••••••••••••••••••••••••••••••••••••	5
	6
	30
iteria	36
•••••••••••••••••••••••••••••••••••••••	40
od Tool	46
ors	106
	122
	128

Sustainability assessment method for the neighbourhoods built environment



SNTool MED is an assessment system for measuring the sustainability of neighbourhoods and small urban areas. It is a tool useful to support decision making processes for the development, implementation and monitoring of urban plans and action plans for more sustainable cities. SNTool can be contextualized and adapted to any Mediterranean region. SNTool is based on a transnational common methodology, the SBE Method.

SBE Method has been developed by iiSBE (international initiative for a Sustainable Built Environment) through the Green Building Challenge (GBC), an international research initiative launched in 1996. Over time, more than 25 countries from all the continents contributed to the development of SBE Method and the test of the assessment tools based it.

SBE Method implements the "think globally, act locally" concept, acting as a common "language" for assessing the sustainability of the built environment. An assessment tool based on the SBE Method, such as SNTool, can be adapted to any context reflecting local priorities and peculiarities. The use of SNTool allows to evaluate, compare and aggregate the results of sustainability measures deployed in different cities (act locally) and, at the same time, to evaluate the progress towards the global sustainability targets (think globally), avoiding the uncertainty and confusion generated using different assessment tools and methodologies. Any city can develop its own version of SNTool that will provide sustainability assessment results comparable and aggregable with the ones of other Mediterranean cities.

The first version of SNTool has been developed through the Interreg MED project "CESBA MED: Sustainable Cities", leaded by the City of Torino with the scientific coordination of iiSBE Italia R&D. The other partners of the project were: Government of Catalonia, National Observatory of Athens, AURA-EE, EnvirobatBDM, City of Udine, City of Sant Cugat del Vallés, University of Malta, Energy Institute Hrvoje Požar, CESBA. In the Sustainable MED Cities project, SNTool has been further upgraded and upscaled to be applicable to the whole Mediterranean region, taking in account the specific issues of the South and East shores, with the contribution of Greater Irbid Municipality, Municipality of Sousse, Municipality of Moukhtara, UNEP/MAP and MedCities.

This publication illustrates the SBE Method, how to contextualise SNTool to a specific city, and how to carry out a sustainability assessment using it. The use of the MED Passport and KPIs for comparing the sustainability of Mediterranean neighbourhoods is also explained.

SNTool MED is freely available to any municipality in the Mediterranean willing to develop its own sustainability assessment tool at neighbourhood scale. The use of SNTool contributes to the achievement of the objectives of the Mediterranean Strategy for Sustainable Development, raising the capacity to act of municipalities.

Andrea Moro

WP3 Coordinator iiSBE Italia R&D

SNTool MED

1. SBE Method

Sustainable Built Environment Method



sustainability.

Main elements:

1. A set of assessment criteria. criterion. 3. A normalization method. 4. An aggregation method.



SNTool MED



SBE Method is a multi-criteria analysis method for assessing the sustainability of the built environment.

Starting from a set of assessment criteria, SBE Method provides a final concise score about a neighbourhood's overall

2. A set of indicators, which allow to quantify the neighbourhood's performances with respect to each

hierarchic levels:

- 1. Issues 2. Categories 3. Criteria
- 4. Indicators

1.1 Hierarchic levels

The multicriteria analysis method is structured in four

Categories Issues Describe general themes, recognized as relevant for assessing the sustainability of a neighbourhood. For instance, the issues of SNTool are: A.1 Use of land A.2 Green urban areas A.3 Biodiversity and ecosystems A - Use of land and biodiversity F - Transportation and mobility **B.1** Energy infrastructure B.2 Energy consump-(45 B - Energy G - Social Aspects tions



C - Water





E Environmental quality



I - Climate Change: mitigation and adaptation



- Governance



impacts

8

A

Concern particular aspects of issues. For instance, in the SNTool, the issue A-Use of land and biodiversity contains 3 categories: A1-Use of land, A2- Green urban areas and A3- Biodiversity and ecosystems.

(\$

-F.1 Performance of mobility service

F.2 Green mobility

F.3 Safety in mobility

F.4 Urban morphology and transporta-

G.3 Availability of public and private facilities and services



G.5 Social inclusion

G.8 Food security

G.9 Cultural Heritage

-G.10 Perceptual

-H.2 Employment

-H.3 Innovation

H.4 ICT infrastructure

-I.1 Climate change mitigation

I.2 Adaptation to the climate action: heatwaves and increase of temperature

I.3 Adaptation to the climatic action: pluvial flood

I.4 Adaptation to the climatic action:fluvial and coastal flood

I.5 Adaptation to the climatic action: drought

I.6 Adaptation to the climatic hazard: wildfire

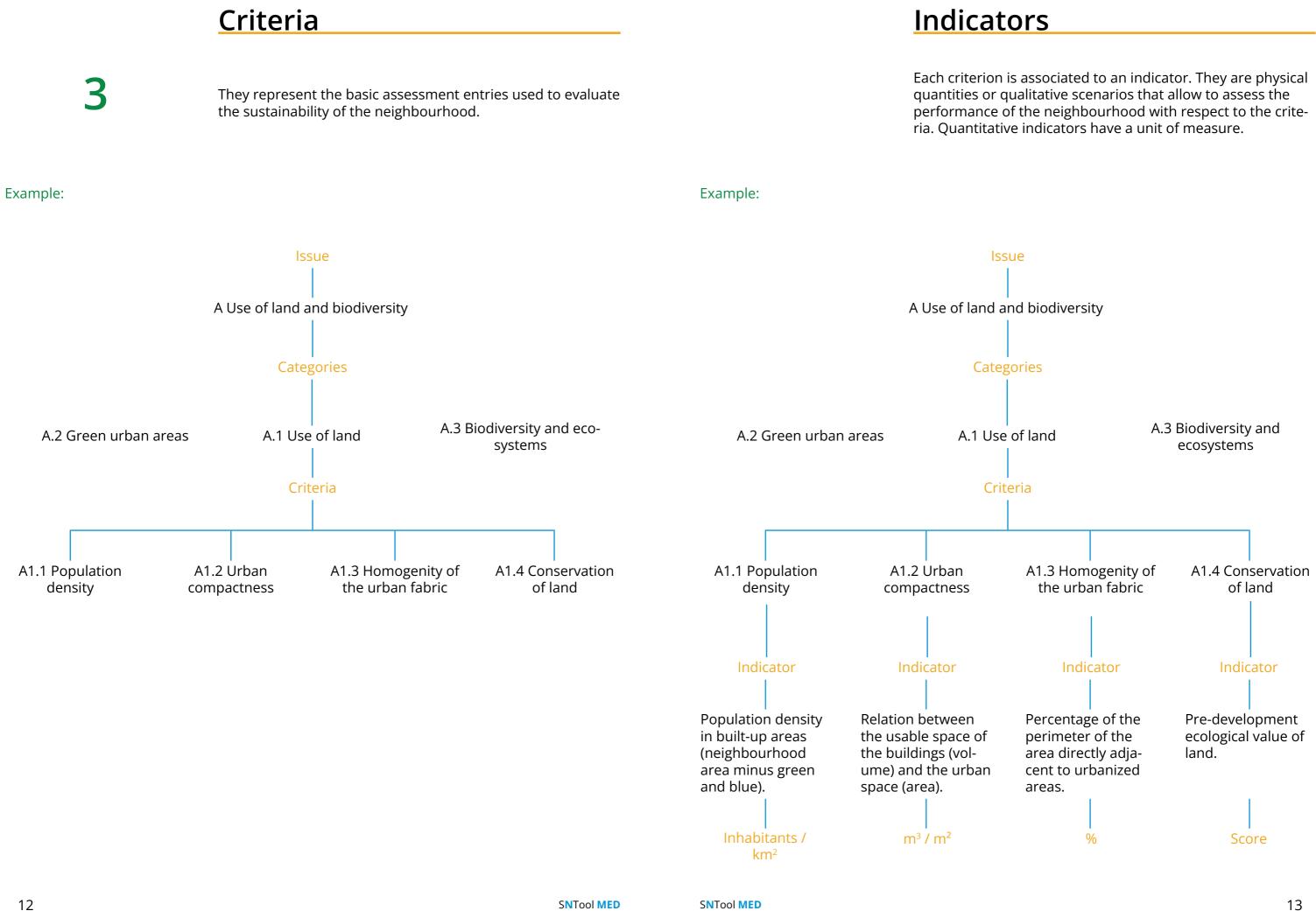
I.7 Adapatation to - the climatic hazard: Wind

_J.1 Urban planning

J.2 Management and community involvement

J.3 Public buildings cooperation





Definition and objective:

1. Characterization

Calculation/evaluation of the indicators' value.

2. Normalisation

Assignement of a score to the indicators' value.

3 Aggregation

Weighted sum of criteria's scores to calculate the score of categories, issues.

1.2 Assessment process

The main goal of the SBEMethod is to provide a final concise score, which summarizes the overall performance of the neighbourhood with respect to all criteria.

The assessment procedure is articulated in 3 main steps:

Input Experimental data Design data Output Indicators' values and selected escenarios

Input Indicators' values and selected escenarios Output Normalized scores

Input Normalised scores Output Final concise score

Step 1: Characterization

In the first stage of the assessment process, the values of all the quantitative indicators in SNTool are calculated.

For each criterion, SNTool provides the description of an "Assessment Method" that specifies the calculation procedure.

For the qualitative indicators, the performance of the neighbourhood is assessed thorough the selection of a reference scenario.

Examp	ole:			
Code	Criterion	Indicator	Unit of measurement	Value
A1.3	Homogeneity of the urban fabric.	Percentage of the perimeter of the area directly adjacent to urbanized areas	%	78
B2.2	Total final thermal energy consumption for building operations.	Aggregated annual final thermal energy consumption of residential buildings per aggregated internal useful floor area.		180
C3.2	Public wastewater that is disposed or treated.	Percent of public wastewater that is disposed or treated.	%	78
D1.1	Availability of solid waste collection.	Percentage of buildings with regular solid waste collection.	%	70
E2.1	Ambient daytime noise conditions.	Percentage of building area over noise limit.	%	23
F1.1	Performance of the public transport system.	Percentage of inhabitants that are within 400 meters walking distance of a least one public transportation service stop.	at %	80
G1.3	Barrier-free accessibility in local outdoor public areas.	Adequacy of barrier-free accessible pul lic outdoor areas compared to the tota public area.		47
H4.2	Wireless Broadband Cov- erage.	Percentage of the neighborhood area served by wireless broadband (3G 4G, 5G).	%	56
12.3	Green roofs.	Aggregate area of building roofs covered with vegetated material.	%	1
J1.1	Community involvement in urban planning activities	Percentage of residents active in public urban planning	Level	3

Step 2: Normalisation

In the second stage of the assessment process, a performance score is associated to the value or scenario of each indicator. This process is named "normalisation". The indicators are normalised in the interval (-1,+5), where -1 corresponds to a negative performance and +5 to an excellent performance. The better the performance, the higher the normalised score. The values of quantitative indicators are normalised through linear functions of two kinds: H.I.B. (High Is Better) and L.I.B. (Low is Better). Qualitative indicators are normalised using discrete values corresponding to the reference scenarios.

For each indicator, the normalisation function depends on two parameters: the thresholds assigned to score 0 and 5. These parameters are named "benchmarks" and they define the value or scenario of the indicator associated to the "minimum acceptable performance" (score zero) and to the "excellent and ideal performance" (score five).

-1	The score corresponds der the minimum accep
0	The score corresponds resents the minimum ac defined on the base of r
1	The score corresponds resents a minimum incr the minimum acceptabl
2	The score corresponds resents a substantial inc minimum acceptable pe
3	The score corresponds resents a best practice.
4	The score corresponds resents an improvemen
5	The score corresponds resents an excellent and

Scoring scale:

16

ls to a value of the indicator that is uneptable performance.

ls to a value of the indicator that repacceptable performance. It is usually of regulations and standards.

ls to a value of the indicator that repncrease of performance with regards to able performance.

ls to a value of the indicator that repincrease of performance with to the performance.

ls to a value of the indicator that repe.

ls to a value of the indicator that repent towards the best practice level.

ls to a value of the indicator that repind ideal performance.

Normalisation H.I.B. Criteria (Higher Is Better)

All criteria such that the higher the numerical value of the corresponding indicator, the higher the performance level.

Since the normalized score must fulfil the requirement "the better the performance, the higher the normalized score", normalisation functions associated with H.I.B. criteria must be increasing functions.

The normalised score is -1 if the value of the indicator is lower than the benchmark corresponding to score 0.

The normalised score is 5 if the value of the indicator is equal of higher than the benchmark corresponding to score 5.

In the other cases, the value of the indicator is normalised through an interpolation.

Normalisation L.I.B. Criteria (Lower Is Better)

All criteria such that the lower the numerical value of the corresponding indicator, the higher the performance level. Normalisation functions associated with L.I.B. criteria must be decreasing functions.

The normalised score is 5 if the value of the indicator is equal or lower than the benchmark corresponding to score 5.

The normalised score is -1 if the value of the indicator is higher than the benchmark corresponding to score 0.

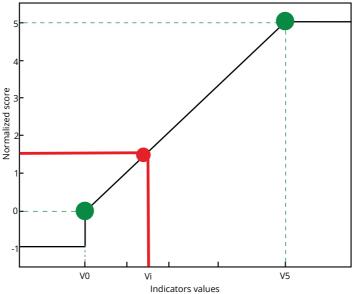
In the other cases, the value of the indicator is normalised through an interpolation.

Base representation:

V0 = value of the indicator for benchmark zero

V5 = value of the indicator for benchmark five

Vi = value of the indicator



Example:

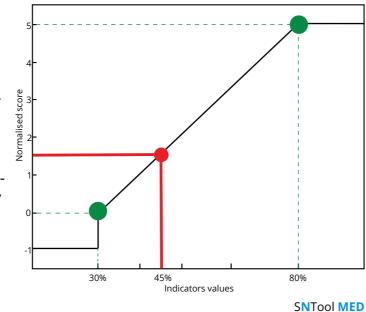
Criterion:

B3.7 - Share of renewable energy on-site, relative to total primary energy consumption for building operations.

Indicator:

Total consumption of primary energy generated from renewable sources on-site divided by total primary energy consumption.

Value of the indicator: 45% Normalised score: 1,5



Base representation:

V0 = value of the indicator for benchmark zero

V5 = value of the indicator for benchmark five

Vi = value of the indicator

Example:

Criterion:

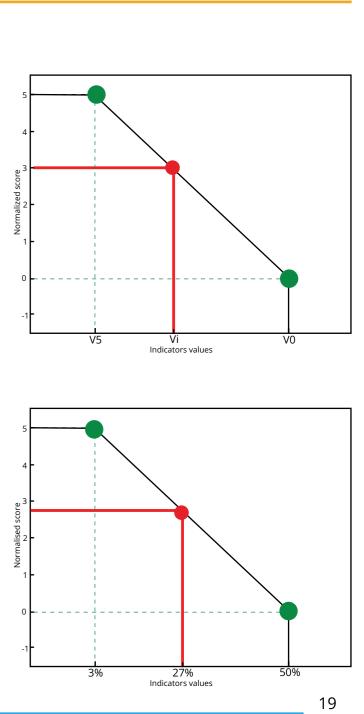
I1.2 - Greenhouse gas emissions from residential buildings

Indicator:

Total amount of greenhouse gases in Kg (equivalent carbon dioxide units) generated over a calendar year per aggregated indoor useful floor area

Value of the indicator: 27 Kg CO2 eq / m² Normalised score: 2.7

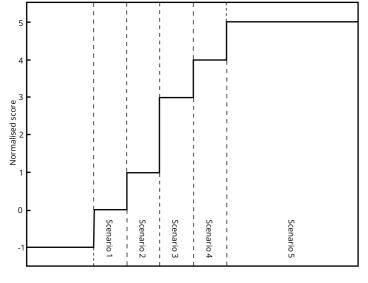
SNTool MED



Normalisation qualitative criteria

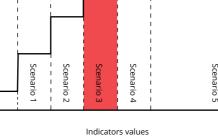
All criteria such that the normalised score can only attain discrete values in the normalisation interval, each of them corresponding to a reference scenario defined by the corresponding indicator.

The normalised score is computed by comparing the neighbourhood's performance with reference scenarios which are defined by the indicator associated with the criterion.



Indicators values

Example: Criterion: Management & Community Involvement Normalisation of the indicator's value: 3 corresponding to the scenario "Degrees of citizen power: Partnership, delegated power and citizen power in one phase, like diagnosis or after delivery" Scer S



SNTool MED

SNTool MED

21

Step 3: Aggregation

In the third step the normalised scores of criteria are aggregated to calculate the overall sustainability score of the neighbourhood.

The aggregation takes place in 3 phases:

3.1 Aggregation through criteria: the scores of the criteria in the same category are aggregated to calculate the score of each category.

3.2 Aggregation though categories: the scores of the categories in the same issue are aggregated to calculate the score of each issue.

3.3 Aggregation through issues: the scores of the issues are aggregated to calculate the overall sustainability score of the neighbourhood.

In what follows are used the symbols:

a. Xi the i-th issue. The issues in SNTool are 10, consequently i=1,10. NI is the number of the issues included in SNTool

b. $C_{i,j}$ the j-th category of the issue X_i, j=1,, N_c⁽ⁱ⁾, where N_c⁽ⁱ⁾ is the number of the categories in the i-th issue

c. $c_{i,j,k}$ is the k-th criterion of the j-th category in the i-th issue, k=1,...... $N_{c}^{(l,j)}$, where $N_{c}^{(l,j)}$ is the number of the criteria in the category C_{ii}

Through criteria

The main goal of aggregation through criteria is to provide a single normalised score for each category. This is computed for each category aggregating the normalised score of all criteria included in that category.

Aggregation is performed by linear aggregation of scores through weights. These quantify the relative weight of each criterion in percentage with respect to all criteria in the same category.

$$S_{i,j} = \sum_{k=1}^{N_c^{(i,j)}}$$

 $\omega_{i,j,k}$: the weight of the criterion ci,j,k in the category $C_{i,j}$ si,j,k: the score of the criterion ci,j,k in the category Ci,j Sij: the score of resulting from the aggregation of criteria's scores included in the category Cij.

Example

Calculation of the score for the SNTool category A1 Use of land:

Code	Criteria	Score	Weight
A1.1	Population density	3,1	24%
A1.2	Urban Compactness	2,2	34%
A1.3	Homogenity in the urban fabric	1,3	16%
A1.4	Conservation of land	0,5	26%

Calculation of the category's score as weighted sum:

Code	Criteria	Score X Weight	Weighted Score
A1.1	Population density	3,1*0,24	0,7
A1.2	Urban Compactness	2,2*0,34	0,8
A1.3	Homogenity in the urban fabric	1,3*0,16	0,2
A1.4	Conservation of land	0,5*0,26	0,1
	Score of t	the category	1,8

SNTool MED

 $W_{i,j,k}$ Si, j, k

Through categories

The scores of categories are aggregated to calculate the score of each issue (A,B,C,D,E,F,G,H,I,J). The calculation consists in a linear aggregation of the scores of the categories included in that issue.

w_{ij}: the weight of each category included in issue Xi;

S_i: the score of each category included in issue Xi;

S: the score resulting from the aggregation of the categorie's scores included in issue Xi.

$S_i = \sum_{i=1}^{N_c^{(i,i)}} w_{i,j \, Si,j}$

Example:

Calculation of the score for the SNTool issue A **Use of land and biodiversity:**

Code	Category	Score	Weight
A1	Use of land	1,6	30%
A2	Green urban areas	2,6	30%
A3	Biodiversity and ecosystems	2,2	40%

Through issues

The scores of issues are aggregated to calculate the overall sustainability score of the neighbourhood.). The calculation consists in a linear aggregation of the scores of the issues include in SNTool.

W_i = the weight of each issue included in SNTool

S_i = the score of each issue included in SNTool

 $\sum = \sum_{i=1}^{N_A} w_{i,si}$

Example:

Calculation of the overall sustainability score for a **neighbourhood:**

Code	lssue	Score	Weight
А	Use of land and biodiversity	2,2	8%
В	Energy	1,9	13%
С	Water	2,3	10%

Calculation of the issue's score as weighted sum:

Code	Category	Score X Weight	Weighted Score
A1	Use of land	1,6*0,3	0,5
A2	Green urban areas	2,6*0,3	0,8
A3	Biodiversity and ecosystems	2,2*0,4	0,9
	Total scor	e of the issue	2,2

Calculation of the neighbourhood's overall score as a weighted sum:

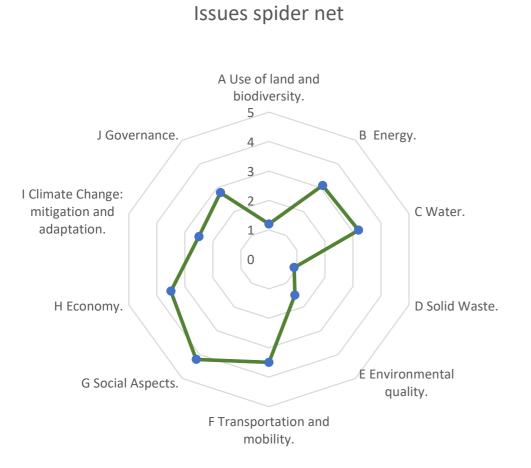
Code	lssue	Score X Weight	Weighted Score
А	Use of land and biodiversity	2,2*0,08	0,2
В	Energy	1,9*1,3	0,2
С	Water	2,3*0,1	0,2
	Sustair	ability score	0,6

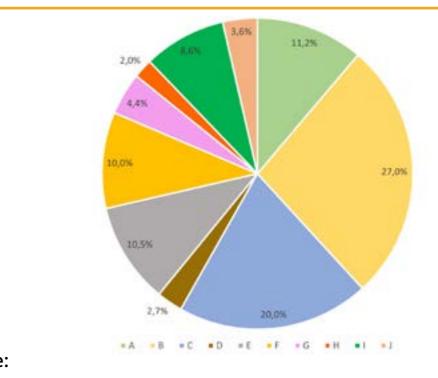
Assessment's results

Spider chart:

Easy-to-read representation of the 10 issues score on a scale from 0 (minimum acceptable performance) to 5 (best performance).

Pie chart: Percentual contribution weight of each issue to the overall score.





Final score:

Detail of the scores and weights for the 10 issues and overall score.

lssue	Score	Weight	Weighted scores
A Use of land and biodiversity.	1,2	11,2%	0,13
B Energy	3,1	27,0%	0,83
C Water	3,2	20,0%	0,64
D Solid Waste.	0,9	2,7%	0,02
E Environmental quality.	1,5	10,5%	0,45
F Transportation and mobility.	3,5	10,0%	0,15
G Social Aspects.	4,2	4,4%	0,18
H Economy.	3,5	2,0%	0,07
I Climate Change: mitigation and adaptation.	2,5	8,6%	0,21
J Governance.	2,8	3,6%	0,10
		100% Total weight	2,78/5 Total score

Number of active indicators:

Total number of indicators available in SNTool and number of indicators selected (including KPI- key performance indicators) in the assessment.

The number available criteria	92	The number active criteria	91
is:		is:	

27

Description of the KPIs:

Value of the Key Performance Indicators for the SMC Passport, the reporting document to compare the sustainability of Mediterranean neighbourhoods

Example:

	KPIs neighbourhood scale	Value	Unit of measurement
B2.1	Total final thermal energy consumption for building operations	45	kWh/m²/yr
B2.4	Total final electrical energy consumption for building operations	8	kWh/m²/yr
B2.7	Total primary energy demand for building operations	60	kWh/m²/yr
B3.1	Share of renewable energy on-site in total final thermal energy consumption for building operations	30%	percentage
B3.4	Share of renewable energy on-site in total final electrical energy consumption	72%	percentage
B3.7	Share of renewable energy on-site in total primary energy consumption for building operations	72%	percentage
C2.3	Consumption of potable water in residential buildings	120	L /occupant/yr
D2.2	Access to solid waste and recycling collection points	88%	percentage
E1.2	Particulate matter (PM10) concentration	22	days/yr
F1.1	Performance of the public transport system	88%	percentage
F2.3	Bicycle network	15	m/inhabitant
G3.1	Availability and proximity of key services	75%	percentage
11.1	Greenhouse gas emissions	5	t CO _{2 eq} ./inhabitant/yr
13.3	Permeability of land	22%	percentage



2. Contextualization



Definition:

neighbourhood scale.

Objectives:

ty issues.

The contextualisation process takes place in 3 steps:

1. Selection of criteria 2. Benchmarking

3. Weighting

SNTool MED



SNTool is a generic multicriteria sustainability assessment.

Users need to adapt it to local conditions.

The result of the contextualisation process is a local version of SNTool, ready to be used for assessing the sustainability at

Develop a contextualised version of SNTool to take in account local priorities, history, climatic conditions, socio-economic conditions, and advancement state in relation to sustainabili-

Definition:

SNTool.

selected.

Objectives:

tables.

The selection of the active criteria can be documented and justified, using the following tables.

2.1 Selection of the active criteria

In the first step of the contextualisation process, users shall select the criteria that will compose the local version of

Criteria are selected from the whole list of the Generic Framework. There isn't a fixed number of criteria to be

Only a core set of criteria, the Key Performance Indicators (KPIs) are mandatory for all. They represent the core criteria linked to the transnational global sustainability goals.

The rationale behind the selection could depend on regional policies, targets, specific characteristics of the territory (e.g. touristic area, agricultural area, etc....). The selection of criteria can be documented and justified, using the following

Generic table to report the criteria selection

	e				
AX	Name of the category	Justification			
AX.X	Name of the criterion	Text			
Example selection	of active criterias:				
. Use of land and bio	diversity		G. Social aspects		
A1	Use of land	Justification	G3	Availability of public and private facilities and services	Justification
A1.2	Urban compactness	Soil consumption is a policy priority set by the Municipality	G3.2	Availability and proximity of a pub- lic primary school	Support to sustainable mobility policies consistency with the draft revision of the general reg ulation plan (P.R.G.) of the City
Energy			H. Economy		
B2	Energy infrastructure	Justification	H1	Economic performance	Justification
	Energy infrastructure Total final thermal energy con- sumption for building operations	Justification Achievement of the objectives set by the Covenant of Mayors		Economic performance Average annual per-capita income of residents	Justification Support to social and welfare policies
B2	Total final thermal energy con-	Achievement of the objectives set	H1	Average annual per-capita income of residents	Support to social and welfare
B2 B2.1	Total final thermal energy con-	Achievement of the objectives set	H1 H1.1	Average annual per-capita income of residents	Support to social and welfare

Definition:

selected criterion.

Objectives:

order:

1. National, regional laws

- 4. Statistical data
- 5. Scientific literature
- 6. Local reference values
- 7. Simulations

The selection of benchmarks can be documented and justified, using the following tables.

2.2 Benchmarking

Consists in the definition of the scoring scale for each

The value of benchmarks assigned to the different criteria for score zero (minimum acceptable performance) and for score 5 (excellent and ideal performance). The value of indicators corresponding to score zero is usually depends on regulations, standards or a typical performance in the region. Score 3 represents a best practice performance.

Set the benchmarks for each criteria following the priority

2. National, regional, municipal regulations 3. Technical standards (national or international9

Generic table to report the benchmarks assignment

Indicator	Unit of me	easurment	Benchmark	Rationale	sources
Text	Te	ext	0 (min): number 5 (max): number	Text	Text
_	sitv				
	-	Unit of measurment	Benchmark	Ratic	onale
Urban compa	ctness	m3/m2	0 (min): 14 5 (max): 18	Technical evalua municipal offices	
E	2.1	Unit of measurment	Benchmark	Ratic	onale
		kWh/m2 yeai	0 (min): 70 5 (max): 30		TABULA project esearch project
	chmarking and biodiver A Urban compa B Total final the consumption	Text Text chmarking and biodiversity A1.2 Urban compactness B2.1 Total final thermal energy consumption for building	Text Text chmarking and biodiversity Image: Compact of the second secon	TextText0 (min): number 5 (max): numberchmarking and biodiversityUnit of measurmentBenchmarkA1.2Unit of measurmentBenchmarkUrban compactnessm3/m20 (min): 14 5 (max): 18B2.1Unit of measurmentBenchmarkTotal final thermal energy consumption for buildingKWh/m2 year0 (min): 70 5 (max): 30	Text Text 0 (min): number 5 (max): number Text chmarking and biodiversity

D. Solid waste

Solid waste co infrastruct		Unit of measurment	Benchmark	Rationale
D1	Availability of solid waste collection	%	0 (min): 75 5 (max): 98	Represents a minimum standard on average in the whole city (city center, peripherical areas,)

G. Social aspects

Availability of public and private facilities and services	G3.2	Unit of measurment	Benchmark	Rationale
G3	Availability and proximity of a public primary school	%	0 (min): 30 5 (max): 60	Based on national regula tion (DM 75/75, evaluated with municipal offices)
H. Economy				
Economic performance	H1.1	Unit of measurment	Benchmark	Rationale
H1	Average annual per-capita income of residents	%	0 (min): 80 5 (max): 90	Based on technical repor (Rapporto Rota)
. Climate change: mitiga	ation and adaptation			
Greenhouse gas emissions	11.1	Unit of measurment	Benchmark	Rationale
	Total amount of green- house gases (equivalent carbon dioxide units)	kgCO2/	0 (min): 22 5	Technical evaluation

Availability of public and private facilities and services	G3.2	Unit of measurment	Benchmark	Rationale
G3	Availability and proximity of a public primary school	%	0 (min): 30 5 (max): 60	Based on national regula- tion (DM 75/75, evaluated with municipal offices)
H. Economy				
Economic performance	H1.1	Unit of measurment	Benchmark	Rationale
H1	Average annual per-capita income of residents	%	0 (min): 80 5 (max): 90	Based on technical report (Rapporto Rota)
I. Climate change: mitig Greenhouse gas emissions	ation and adaptation I1.1	Unit of measurment	Benchmark	Rationale
11	Total amount of green- house gases (equivalent carbon dioxide units) generated from building operations over a calendar year per inhabitant	kgCO2/ 1000m2	0 (min): 22,5 5 (max): 0	Technical evaluation

Definition:

text dependent.

calculation.

calculation.

lation.

2.3 Weighting

Consists in setting the weights at criterion, category and issue level through the assignment of priorities.

Priorites are set in relation to local policies and sustainability goals. The priority of criteria, categories and issues are con-

The weighting process takes place in 3 steps:

1. Assignment of priority values to issues and weights

2. Assignment of priority values to categories and weights

3. Assignment of impact factors to criteria and weights calcu-

Weighting of issues

To set the weight s at issue level, it is necessary to define a priority factor for each of them.

The priority factor indicates the relevance of the issue in relation to the context.

A value of 1 means a low priority, a level 5 represents the higher priority.

When all the priority factors have been set, it is possible to calculate the weight of each issue as:

$$W_i = \sum_{i=1}^{\frac{Pi}{N}} Pi \times 100$$

Where: wi = weight of the issue Ai Pi = priority level of the Ai issue

Example:

lssue	Priority factor (1 to 5)	Formula	Weight
A.Use of land and biodiversity	3	W=(3/26)*100	11,6%
B.Energy	3	W=(3/26)*100	11,6%
D.Water	2	W=(2/26)*100	7,6%
D.Solid Waste	2	W=(2/26)*100	7,6%
E. Environmental quality	3	W=(3/26)*100	11,6%
F Transportation and mobility	4	W=(4/26)*100	15,3%
G.Social aspects	3	W=(3/26)*100	11,5%
H.Economy	1	W=(1/26)*100	3,8%
I.Climate change	3	W=(3/26)*100	11,6%
J Governance	2	W=(2/26)*100	7,6%
			100%

Weighting of categories:

When all the priority factors have been set, it is possible to calculate the weight of each To set the weight for category level, it is necessary to define a category as: priority factor for each of them. $W_{i,j} = \frac{Lj}{\sum_{j=1}^{N_c^{(i)}} Lj} \times 100$ The priority factor indicates the relevance of the issue in relation to the context. A value of 1 means a low priority, a level 5 represents the Where: higher priority. Wi,j= weight of category Cj,k includ-

Example:

Category: Social aspects

Category	Priority factor(PF)	Formula	Weight
G1. Accesibility	3	W=(3/35)*100	8,5%
G2. Housing	4	W=(4/35)*100	11,4%
G3. Availability of public and private facilities and services	4	W=(4/35)*100	11,4%
G4. Education	2	W=(2/35)*100	5,7%
G5. Social inclusion	4	W=(4/35)*100	11,4%
G6. Safety	5	W=(5/35)*100	14,2%
G7. Health	5	W=(5/35)*100	14,2%
G8. Food and security	3	W=(3/35)*100	8,5%
G9. Cultural and heritage	3	W=(3/35)*100	8,5%
G10. Perceptual	2	W=(2/35)*100	5,7%
			100%

ed in issue Ai Lj = priority factor of category Cj,k included in issue

100%

Weighting of criteria

To weight the criteria is necessary to assign an impact level to each assessment criterion.

The weighting of criteria takes place in 2 steps. Firstly, users assign an impact level (Pk) to each criterion. The impact level is defined as

Step 1: Calculated Pk The impact level is defined as: $P_k = I_k * E_k * D_k * A_k$

Intensity of potential effect Intensity of the potential effect (lk) It can get from 1 to 3 points depending on the intensity of the 1 Minimum 1 Moderation extent of an effect. The impact is considered very relevant for 2 High all the energy criteria whose effect is very strong on the terri-3 tory, but also economical and air quality criteria may have a big impact in that sense. Extent of potential effect Extent of potential effect (Ek) Block It can get from 1 to 5 points; this factor examines the extent 1 Cluster 2 3 of the effect of the criterion, for example, the road connec-Neighborhood tivity is an aspect that could strongly affect the larger scale in 4 Urban/Region terms of extent and also the pollutant emissions whose effect 5 Global is perceived on a large scale. Duration of potential effect (Dk) Duration of potential effect It can get from 1 to 5 points; it measures the durability of the effect evaluated by the criterion. Land consumption criteri-1 - 3 years on confirms that an urbanized soil will remain as it is over 3 - 10 Years 2 time, also other aspects related to the urban planning have a 10-30 Years 3 strongly duration impact like for example, green areas provi-30-75 years 4 sion, street connections, pedestrian areas, etc. >75 years 5 A = Adjustment factor in relation to local priorities (1-3) (Ak) It can get from 1 to 3 points; it is a factor that can be used if there is the need to adjust the priority factor of the criterion in relation to specific local priorities. Maybe in a region a particular sustainability issue has a dramatic importance in relation to other issues. In this case the adjustment factor can be used to take in account the local context.

Step 2: the weight of each criterion in its category is calculated as:

$$W_{i,j} = \frac{Pk}{\sum_{k=1}^{N_c^{(i,j)}} Pk}$$

 $\omega_{i,i,k}$: weight of the criterion $c_{i,i,k}$ included in the category $C_{i,i}$ P_k = impact level of the criterion $c_{i,i,k}$ included in the category Ci

Criterion	lmpact (Pk)	Intensity (lk)	Extent (Ek)	Duration (Dk)	Adjustmen (Ak)
F3.1 Pedestrian infra- structure	12	2	3	2	1
F3.2 Availability of side- walks	12	2	3	2	1
F3.3 Safety of bicycle lines	12	2	3	2	1
F3.4 Traffic fatalities	60	3	5	4	1
	inmont in the	cotogory E2			
xample step 2: Weights assig	nment in the	e category F3 Formula		Weigh	t
				Weigh 12,5%	
Criterion F3.1 Pedestrian infra-	(1	Formula			
Criterion F3.1 Pedestrian infra- structure F3.2 Availability of side-	(1	Formula 2/96)*100		12,5%	
Criterion F3.1 Pedestrian infra- structure F3.2 Availability of side- walks	(1 (1 (1	Formula 2/96)*100 2/96)*100		12,5%	

I= Intensity of the potential

E= Extent of potential effect

D= Duration of potential ef-

A= Adjustment factor in relation to local priorities (1-3)

Effect (1-3)

(1-5)

fect (1-5)

SNTool MED

Defintion:

Main elements:

10 lssues 43 Categories 134 Criteria





SNTool MED

SNTool MED



Complete list of the criteria which make up the Sustainable MED Cities SNTool are described below. The table also includes for each criterion, the information related to the name of the indicator and the unit of measure.

A	Use of land and biodiversity		
A1	Use of land		
CODE	CRITERION	INDICATOR	UNIT
A1.1	Population density	Population density in built-up areas (neighbourhood area minus green and blue)	Inhabitants / km²
A1.2	Urban compactness	Relation between the usable space of the buildings (volume) and the urban space (area)	m ³ / m ²
A1.3	Homogeneity of the urban fabric	Percentage of the perimeter of the area directly adjacent to urbanized areas	%
A1.4	Conservation of land	Pre-development ecological value of land	Score
A2	Green urban areas		
CODE	CRITERION	INDICATOR	UNIT
A2.1		I I	
A2.1	Availability of green urban areas	Proportion of all vegetated areas within the neighborhood boundaries in relation to the total area	%
A2.1	Availability of green urban areas 	within the neighborhood boundaries	% — — — — — — — — — — — — — — — — — — —
	Green areas in relation to the neigh-	within the neighborhood boundaries in relation to the total area Total area of green in the neighbor- hood divided by neighborhood's	
A2.2	Green areas in relation to the neigh- borhood population	within the neighborhood boundaries in relation to the total area Total area of green in the neighbor- hood divided by neighborhood's total population Percentage of inhabitants with	m²/inhabitant
A2.2 A2.3	Green Area Accessibility	within the neighborhood boundaries in relation to the total area Total area of green in the neighbor- hood divided by neighborhood's total population Percentage of inhabitants with accessibility to green areas Density of green spaces within the	m²/inhabitant %

A3	Biodiversity and ecosystems	
CODE	CRITERION	
A3.1	Connectivity measures for natural areas	Share o connect
A3.2	Biodiversity in green zones	Numbe vegetal
В	Energy	
B1	Energy infrastructure	
CODE	CRITERION	
B1.1	Access to electrical service	Percent authoriz
B2	Energy infrastructure	
CODE	CRITERION	

	Biodiversity and ecosystems		
ODE	CRITERION	INDICATOR	UNIT
A3.1	Connectivity measures for natural areas	Share of natural areas that are connected	%
A3.2	Biodiversity in green zones	Number of plants on number of vegetal species	%
	Energy		
1	Energy infrastructure		
CODE	CRITERION	INDICATOR	UNIT
B1.1	Access to electrical service	Percentage of households with authorized access to electricity	%
2	Energy infrastructure		
CODE	CRITERION	INDICATOR	UNIT
B2.1	Total final thermal energy consump- tion for building operations	Aggregated annual total final ther- mal energy consumption per aggre- gated indoor useful floor area	kWh/m²/yr
B2.2	Total final thermal energy consump- tion for residential building opera- tions	Aggregated annual final thermal energy consumption of residential buildings per aggregated internal useful floor area	kWh/m²/yr
B2.3	Total final thermal energy consump- tion for public office/ educational building operations	Aggregated annual final thermal energy consumption of public office and educational buildings per aggre- gated internal useful floor area	kWh/m²/yr
B2.4	Total final electrical energy con- sumption for building operations	Aggregated annual total final electric energy consumption per aggregated internal useful floor area	kWh/m²/yr
		Aggregated annual final electrical	

B2.6	Total final electric energy consump- tion for public office/ educational building operations	Aggregated annual final electric energy consumption of public office and educational buildings per aggre- gated internal useful floor area	kWh/m²/yr
B2.7	Total primary energy demand for building operations	Aggregated annual total primary energy consumption per aggregated indoor useful floor area	kWh/m²/yr
B2.8	Total primary energy demand for residential building operations	Ratio of average total primary ener- gy consumption of residential build- ings to the local minimum value	%
B2.9	Total primary energy demand for public office/educational building operations	Ratio of average total primary en- ergy consumption of public office/ educational buildings to the local minimum value	%
B2.10	Energy consumption of public lighting	Total electricity consumption of public street lighting divided by the total distance of streets where street lights are present	kWh/кm/ yr
B3	Renewable Energy		
CODE	CRITERION	INDICATOR	UNIT
B3.1	Share of renewable energy on-site, relative to total final thermal energy consumption for building operations	Total consumption of final thermal energy generated from renewable sources on-site divided by total final thermal energy consumption	%

Share of renewable energy on-site,

relative to total final thermal energy

consumption for residential building

operations

Share of renewable energy on-site,

relative to total final thermal energy

consumption for public office/edu-

cational building operations

Share of renewable energy on-site,

relative to final electric energy

consumption

Share of renewable energy on-site,

relative to total final electric energy

consumption for residential building

operations

	ا building operations ۱	public o
B3.7	Share of renewable energy on-site, relative to total primary energy consumption for building operations	Total co gy gene es on-si energy
B3.8	Share of renewable energy on-site, relative to total primary energy consumption for residential building operations	Total cc gy gene es on-si energy building
B3.9	Share of renewable energy on-site, on total primary energy consump- tions for public office/ educational building operations	Total co gy gene es on-si energy educati
	Water	

Share of renewable energy on-site,

on final electric energy consump-

tions for public office/educational

B3.6

Water infrastructur

CI			
CODE	CRITERION	INDICATOR	UNIT
C1.1	Availability of a public municipal water supply	 Percentage of the buildings within the neighborhood that are served by a municipal water supply 	%
C1.2	Availability of wastewater treatment system	Percentage of buildings within the neighbourhood that are served by wastewater collection	%
C2	Water Consumption		

CODE	CRITERION	INDICATOR	UNIT
C2.1		I Total amount of the neighborhood's I I Total amount of the neighborhood's I I water consumption in litres per day I I divided by the total neighborhood I I population I	l/day/occupant
C2.2	I I Efficiency in water use I	Volume of water supplied minus the volume of utilized water divided by the total volume of water supplied	%
C2.3	Consumption of potable water in residential buildings	Annual potable water consumption per occupant	L/occupant/yr
C2.4	Consumption of potable water in public offices	Annual potable water consumption	L/occupant/yr
SNTool MI	ED	·	51

residential buildings

electric energy consumption of

Total consumption of final thermal

energy generated from renewable

Total consumption of final thermal

energy generated from renewable

public office/educational buildings

Total consumption of final electric energy generated from renewable

electric energy consumption

sources on-site divided by total final

Total consumption of final electric

energy generated from renewable

sources on-site divided by total final

thermal energy consumption of

sources on-site divided by total final

thermal energy consumption of

residential buildings

sources on-site divided by total final

%

%

%

%

SNTool MED

B3.5

B3.2

B3.3

B3.4

Total consumption of final electric energy generated from renewable sources on-site divided by total final electric energy consumption of public office/educational buildings	%
Total consumption of primary ener- gy generated from renewable sourc- es on-site divided by total primary energy consumption	%
Total consumption of primary ener- gy generated from renewable sourc- es on-site divided by total primary energy consumption of residential buildings	%
Total consumption of primary ener- gy generated from renewable sourc- es on-site divided by total primary energy consumption of public office/ educational buildings	%

C2.5	Consumption of potable water in educational buildings	Annual potable water consumption per occupant	i I I L/occupant/yr I
C2.6	Re-use of rainwater in residential buildings	Share of rainwater collected from roofs of residential buildings for reuse	 %
C2.7	Consumption of potable water in public green spaces	Potable water used for irrigation purposes in public green spaces	m ³ /m ²
 C2.8	Solar powered water desalinisation	Percentage of water acceptable for human consumption or agriculture from solar desalination	I I I% I
С3	Effluents management		

_

_ _ _ _ _ _ _ _ _ _

_

CODE	CRITERION	INDICATOR	UNIT
C3.1	I I Water treatment	Total volume of wastewater collect- ed for at least secondary treatment in centralized wastewater treatment facilities divided by the total vol- ume of wastewater produced in the neighborhood	% %
C3.2	Public wastewater (from outdoor areas) that is disposed or treated	Percent of public wastewater that is disposed or treated	1 1 1 %
C3.3	Solar powered water desalinisation	Percentage of households with ac- cess to basic sanitation facilities	 %

Solid Waste

Solid waste collection infrastructure

CODE	CRITERION	INDICATOR	UNIT
D1.1	Availability of solid waste collection	Percentage of buildings with regular solid waste collection	 %
D1	Solid waste collection infrastructure		

CODE	CRITERION	INDICATOR	UNIT
D2.1	Access to solid waste and recycling collection points	Proximity of the resident popula- tion to the solid waste and recycling collection point	/ / % /
D2.2	Access to solid waste and recycling collection points	Percentage of inhabitants with access to solid waste and recycling collection points within 400 meters walking distance	%
52		·	SNTool MED

E	Environmental quality	
E1	Air quality	
CODE	CRITERION	
E1.1	Fine particulate matter (PM2.5) concentration	Numbo PM2.5 daily li
E1.2	Particulate matter (PM10) concentration	Numbo PM10 daily li
E1.3	Nitrogen Dioxide concentration (NO2)	Numbo NO2 co limit
E1.4	Sulfur Dioxide concentration (SO2)	Numbo SO2 cc limit
E1.5	Ozone concentration (O3)	Numbo O3 cor limit
E2	Noise	
CODE	CRITERION	
E2.1	Ambient daytime noise conditions	Percer noise l
E2.2	Ambient night-time noise conditions	Percer noise l
E3	EMF exposure	
CODE	CRITERION	
E3.1	Exposure to high frequency electro- magnetic fields	Percen tenna: exposi
E3.2	Percentage of buildings exposed to ELF magnetic field	Percen located distand
E4	Environmental impacts	
CODE	CRITERION	
E4.1	Degree of atmospheric light pol-	Percen upwar

SNTool MED

_ _ _ _ _

_ _

INDICATOR	UNIT
per of days within a year that concentration exceeds the imit	days / yr
per of days within a year that concentration exceeds the imit	
per of days within a year that concentration exceeds the daily	μg/m³
per of days within a year that oncentration exceeds the daily	μg/m³
er of days within a year that ncentration exceeds the daily	μg/m³

INDICATOR	UNIT
ntage of building area over limit	 %
ntage of building area over limit	

INDICATOR	UNIT
ntage of mobile network an- sites in compliance with EMF ure guidelines	1 1 % 1
ntage of buildings in the area d not respecting the safety ice from high voltage lines	·

INDICATOR	UNIT
ntage of lighting fixtures with rd luminous emission cient equal to 0%	%

Transportation and mobility

^{F1} Performance and mobility services

CODE	CRITERION	INDICATOR	UNIT
F1.1	l I I Performance of the public transport I system I	Percentage of inhabitants that are within 400 meters walking distance of at least one public transportation service stop	 %
F1.2	Walking distance to public transport for area workers and students	Percent of workers and students who can reach a public transport stop within a 400 meters distance	

F2 Green mobility

CODE	CRITERION	INDICATOR	UNIT
F2.1	I I Shared vehicles	 Number of shared vehicles per 1.000 inhabitants 	n/1.000 inhabitants
F2.2	Electric-vehicle infrastructure (charging stations)	Electric vehicle charging stations per inhabitant	n/inhabitant
F2.3	Bicycle network	Total length of bicycle paths in the neighborhood per inhabitant	n/inhabitant
F2.4	Shared bicycles	 Number of shared bicycles per 1.000 inhabitants 	n/1.000 inhabitants
F2.5	A Availability of bicycle parking facilities	 Bicycle parking spaces per inhabitant 	n/inhabitant
E3	Cafaty in mability	•	

F3 Safety in mobility

CODE	CRITERION	INDICATOR	UNIT
F3.1	I I I Pedestrian infrastructure I	 Percentage of the neighborhood designated as a pedestrian/car free zone 	 %
F3.2	Availability of sidewalks	Percentage of roads' length that has dedicated sidewalks	 %
F3.3	I Safety of bicycle lines	 Percentage of bicycle paths physical- Iy separated from traffic roads 	 %
F3.4	Traffic fatalities	Traffic fatalities per 1.000 inhabi- tants	 n/1.000 inhabitants
F4	Safety in mobility		

CODE	CRITERION	INDICATOR	UNIT
F3.1	I I I Cyclomatic complexity of the street I network	i I I Cyclomatic number I I	i I number I
F3.2	Connectivity of the street network	Number of intersections related to the overall surface area	number/km²
54	/		SNTool MED

G	Social Aspects	
G1	Accessibility (disabled persons)	
CODE	CRITERION	
G1.1	Public buildings that are accessi- ble for use by physically disabled persons	Percen are acc disable
G1.2	Sidewalks and other pedestrian paths that are accessible for use by physically disabled persons	Percen destria use by
G1.3	Barrier-free accessibility in local outdoor public areas	Adequa public the tot
G2	Housing	
CODE	CRITERION	
G2.1	Affordability of housing property	Housir that ar lowest
G2.2	Affordability of housing rental	Percent the low used fo
G2.3	Vacant residential units in the neighborhood	Percent units
G2.4	I Informal settlements	Percen slums, equate
G3	Availability of public and private	facilitie
CODE	CRITERION	
G3.1	Availability and proximity of key services	Percen within of at le
G3.2	Availability and proximity of a public primary school	Percen public
G3.3	Availability and proximity of a public secondary school	Percent public s
G3.4	Availability and proximity of childrens' play facilities	Percen childre
G3.5	Open space for public use	Averag of the r space f
SNTool M	ED	

INDICATOR	UNIT
nt of key public buildings that cessible for use by physically ed persons	%
nt of sidewalks and other pe- an ways that are accessible for y physically disabled persons	%
uacy of barrier-free accessible outdoor areas compared to tal public area	%

INDICATOR	UNIT
ng properties in the local area re financially accessible to the t quintile of area population	%
ntage of the average salary of vest quintile of the population or rental payments	%
tage of vacant residential	%
ntage of inhabitants living in informal settlements or inad- housing	%

es and services

INDICATOR	UNIT
ntage of inhabitants that are 800 meters walking distance east 3 key services	%
ntage of population near a primary school	
ntage of population near a secondary school	%
ntage of population near a ens' play facilities	 %
ge share of the built-up area neighborhood that is open for public use	%

G4	Education		
CODE	CRITERION	INDICATOR	UNIT
G4.1	Primary enrollment rate	Net primary enrollment rate	%
G4.2	Rate of female scholarship	Ratio of female to male mean years of education received of population age 25+	%
G4.3	Secondary school enrollment	Lower secondary completion rate	%
G4.4	Tertiary education	Population age 25-34 with tertiary educational attainment	%

G5 Social inclusion

CODE	CRITERION	INDICATOR	UNIT
G5.1	Energy poverty of households	Percentage of households unable to afford the most basic levels of en- ergy (more than 10% of the income spent on energy bills)	%
G5.2	Population at risk of poverty or exclusion	hare of persons with an equivalised disposable income below 60 % of the national median income	%
G6	Safety		

1

_ _

SNTool MED

_ _

CODE	CRITERION	INDICATOR	UNIT
G6.1	Police service	Number of police officers per 1.000 inhabitants	n/1.000 inhabitants
G6.1	Fire service	Number of firefighters per 1.000 inhabitants	n/1.000 inhabitants
G6.1	Population living in disaster prone areas	 Percentage of inhabitants living in a zone subject to natural hazards 	%
G7	Health		
CODE	CRITERION	INDICATOR	UNIT
G7.1	In-Patient Hospital Beds	Number of in-patient public hospital beds per 1.000 inhabitants	n/1.000 inhabitants

____ _

8	Food security		
CODE	CRITERION	INDICATOR	UNIT
G8.1	Urban agricultural land	Area of urban agricultural land on total neighborhood area	%
9	Culture and Heritage		
CODE	CRITERION	INDICATOR	UNIT
G9.1	Compatibility of urban design with local cultural values	Compatibility with local area tradi- tional values of street layouts and the character of urban spaces	Score
G9.2	Compatibility of public open space with local cultural values	Compatibility with local area tradi- tional values of local public open spaces, including major uses, dimen- sions and adjacent uses	Score
10	Perceptual		
CODE	CRITERION	INDICATOR	UNIT
G10.1	Perceived safety of public areas for pedestrians	Perceived safety of public places and pedestrian routes, as determined by a sample of pedestrians	Score
G10.2	Impact of commercial signage on the visual environment	Visual impact of exterior commercial signage	Score
G10.3	Impact of overhead electric distribution system	Visual impact of above-grade electri- cal distribution systems	Score
	Economy		
1	Economic performance		
CODE	CRITERION	INDICATOR	UNIT
H1.1	Average annual per-capita income of residents	Percentage of average per-capita income	%
2	Employment		
CODE	CRITERION	INDICATOR	UNIT
H2.1	Unemployment rate	Percentage of working age adults unemployed or actively looking for work	%
H2.2	Youth unemployment rate	Percentage of unemployed youth	%

56

1 1

H3	Innovation		
CODE	CRITERION	INDICATOR	UNIT
H3.1	New business registration rate	Proportion of business registrations per 10.000 inhabitants aged 16 and above	n
H4	ICT infrastructure		
CODE	CRITERION	INDICATOR	UNIT
H4.1	Fixed Broadband Subscriptions	Percentage of households with fixed (wired) broadband	%
— — — — — Н4.2	Wireless Broadband Coverage	Percentage of the neighborhood area served by wireless broadband (3G, 4G, 5G)	%
H4.3	Availability of WIFI in Public Areas	Number of public WIFI hotspots in the neighborhood per 1000 inhabi- tants	n/1.000 inhabitants
— — — — — Н4.4	Mobile phone subscriptions	Total number of mobile phone sub- scriptions in the area divided by one 1000th of the area's total population	n/1.000 inhabitants
I	Climate Change: mitigation and	adaptation	
11	Climate change mitigation		

CODE	CRITERION	INDICATOR	UNIT
11.1	I I I Greenhouse gas emissions I I	 I Total amount of greenhouse gases I (equivalent carbon dioxide units) I generated from building operations I over a calendar year per inhabitant I I 	t CO ₂ eq. / inhabitant/yr
 I1.2	Greenhouse gas emissions from residential buildings	Total amount of greenhouse gases in Kg (equivalent carbon dioxide units) generated over a calendar year per aggregated indoor useful floor area	Kg CO ² eq / m ²
 I1.3	Embodied carbon for construction and renovation of infrastructures	Aggregated total embodied carbon per aggregated linear area	kg CO ₂ eq / m ²
 I1.4	I Embodied carbon for construction/ I Embodied carbon for construction/ I renovation of residential buildings	Aggregated total embodied carbon per aggregated indoor useful floor area	kg CO ₂ eq / m²
 I1.5	Embodied carbon for construction/ renovation of public offices/educa- tional buildings	Aggregated total embodied carbon per aggregated indoor useful floor area	kg CO ₂ eq / m ²
 I1.6	CO2 sequestration	Potential CO2 sequestraion in the neighborhood per hectare	kg CO ₂ eq / m ²
 58 _	'		SNTool MED

Adaptation	i to the c	limatic	action:	heat
------------	------------	---------	---------	------

CODE	CRITERION	INDICATOR	UNIT
12.1	I Albedo I I	Mean Solar Reflectance Index of paved surfaces and roofs in the neighborhood	SRI I
 I2.2	Use of vegetation to provide ambient outdoor cooling	Leaf Area Index: ratio of total vege- tated surface area (on ground and on roofs, and including trees), divid- ed by total site area	Index
12.3	I Green roofs	 Aggregate area of building roofs covered with vegetated material 	

Adaptation to the climatic action: pluvial flood

13

15

CODE	CRITERION	INDICATOR	UNIT
13.1	I Stormwater retention capacity on I site by buildings	 Share of the attenuation storage capacity by buildings in relation to the optimal volume 	 %
13.2		I =	 %
I3.3	Permeability of land	Percentage of weighted ground permeability	
14	Adaptation to the climatic action	n: fluvial and coastal flood	

CODE	CRITERION	INDICATOR	UNIT
14.1	l Flood risk l I	Percentage of population exposed to flood risk	%
 I4.2	Protection of vulnerable zones	Share of land in vulnerable areas	 %
14.3	I Protection of buildings from flooding	Share of buildings with elevated ground floor in vulnerable sites	~

Adaptation to the climatic action: drought

CODE	CRITERION	INDICATOR	UNIT
15.1	I Rainwater collection and storage from buildings for non-potable uses	Share of buildings in the neighbor- hood with a rainwater collection system	 %
15.2	Rainwater collection and storage from outdoor areas	Share of rainwater collected from paved (not permeable) surfaces in the neighborhood (excluding build- ings' roofs and plots)	
SNTool MI	!		<u> </u>

waves and increase of temperature

 15.3	I		
15.4	Local vegetation	Share of landscape (green areas)	%
16	Adaptation to the climatic actior	r: pluvial flood	
CODE	CRITERION	INDICATOR	UNIT
16.1	i I Wildfire risk I	Percentage of population exposed I to wildfire risk I I	%
 I6.2	Fire protection	I =	
16.3	ı Fireproof ground	 Share of ground cover materials (excluding buildings' plots) in vulner- able areas that are fire resistant 	%
17	Climatic hazard: wind	· · · ·	
CODE	CRITERION	INDICATOR	UNIT
17.1	l Windproof urban form	Strategies to minimise the impact of wind	Score
	1		
J	Governance		
J J1	Governance Urban Planning		
J J1 CODE		I I I I I INDICATOR	UNIT
	Urban Planning	INDICATOR Percentage of residents active in public urban planning	UNIT Level
CODE	Urban Planning CRITERION Community involvement in urban	Percentage of residents active in public urban planning	
CODE J1.1	Urban Planning CRITERION Community involvement in urban planning activities	Percentage of residents active in public urban planning	
CODE J1.1 J2	Urban Planning CRITERION Community involvement in urban planning activities Management and community in	Percentage of residents active in public urban planning volvement	Level
CODE J1.1 J2 CODE	Urban Planning CRITERION Community involvement in urban planning activities Management and community in CRITERION	Percentage of residents active in public urban planning volvement INDICATOR Percentage of resident population above 16 years having an involve- ment in community affairs	Level UNIT
CODE J1.1 J2 CODE J2.1	Urban Planning CRITERION Community involvement in urban planning activities Management and community in CRITERION Involvement of residents in commu- nity affairs	Percentage of residents active in public urban planning volvement INDICATOR Percentage of resident population above 16 years having an involve- ment in community affairs	Level UNIT
CODE J1.1 J2 CODE J2.1 J3	Urban Planning CRITERION Community involvement in urban planning activities Management and community in CRITERION Involvement of residents in commu- nity affairs Management and community in	Percentage of residents active in public urban planning volvement INDICATOR Percentage of resident population above 16 years having an involve- ment in community affairs volvement	Level UNIT %
CODE J1.1 J2 CODE J2.1 J3 CODE	Urban Planning CRITERION Community involvement in urban planning activities Management and community in CRITERION Involvement of residents in commu- nity affairs Management and community in CRITERION	Percentage of residents active in public urban planning volvement INDICATOR Percentage of resident population above 16 years having an involve- ment in community affairs volvement INDICATOR Percentage of population exposed	Level UNIT % UNIT

end use of energy in public		
ngs within a neighborhood		
d by total indoor useful area	kWh/m ²	
se buildings		

A.Use of Land & Biodiversity

Description of the Information

A: Issue.

Ax: Category.

A1: Urban Structure and Form.

A2: Green Urban Areas.

A3: Biodiversity and Ecosystems. Ax.x: Criterion.

Intent: Description of the objective of the criterion.

Indicator: Name of the indicator to be calculated.

Unit of Measure: Measuring unit of each indicator.

Standard: The calculation standard for the criterion.

References: The acquiring source of information.

	A. Use of Lo Biodive		SN Tool
A1	Urban Structu	re	1
A1.2	Urban Compa	ctness	1
Intent: T	o maximize efficienc build	ry in the use of land ings.	used for
	ndicator	Unit of Measure	

Relation between the	
usable space of the	m ³ / m ²
buildings (volume) and the	·
urban space (area).	

Assessment Methodology:

1. Calculate the aggregate gross volume of all buildings in the local area, in m³.

2. Calculate the net developable area by stubtracting the surface area used for parks, streets, parking and, pedestrian areas from the gross surface area of the locality.

3. Determine the ratio of the aggregate volume of the buildings to the net local developable area, expressed as m^3/ha .

l:	Reference:
	1.CESBA MED Proje
	2 SNTool Assessmer

	A. Use of L Biodiv		SN Tool
A1	Urban Structu	ıre	
A1.1	Population De	ensity	
		increase of the proximit local goods and service.	
h	ndicator	Unit of Measure	e
bui (neighbo	ation density in It-up areas. rhood area minus en and blue).	Inhabitants / km²	
Assessm	ent Methodolog	y:	
2. Co (neig 3. Co The r	(A) - 1 Ilculate the total are hborhood area min (B) - de Ilculate the value of	ighborhood population. numerator ea of the neighborhood us green and blue) . enominator f the indicator as A/B. ssed as number of perso	ns
Standar	d:	Reference:	
		1.CESBA MED Project 2 SNTcol Assessment S	System.

0 0 0 0	A. Use of Land and Biodiversity	SN Tool
A1	Urban Structure	
A1.3	Homogeneity of the Urban Fabric	1
	o identify voids in the urban fabric and c e time to contain the peripheral expansion	

	Unit of
Indicator	Measure
D . C .(

Percentage of the	
perimeter of the area	%
directly adjacent to	
urbanized areas.	l

Assessment Methodology:

Standard:

1. Quantify the total length of the perimeter of the area anayzed (A).

Evaluate by quantifying, the linear meters of urban fabric adjacent to the urbanized areas (B).
 Calculate the percentage ratio between the length of the urban fabric perimeter adjacent to the urbanized areas and the overall length of the perimeter of the area: (B/A)* 100.

Reference: 1.CESBA MED Project 2 SNTool Assessment Sy

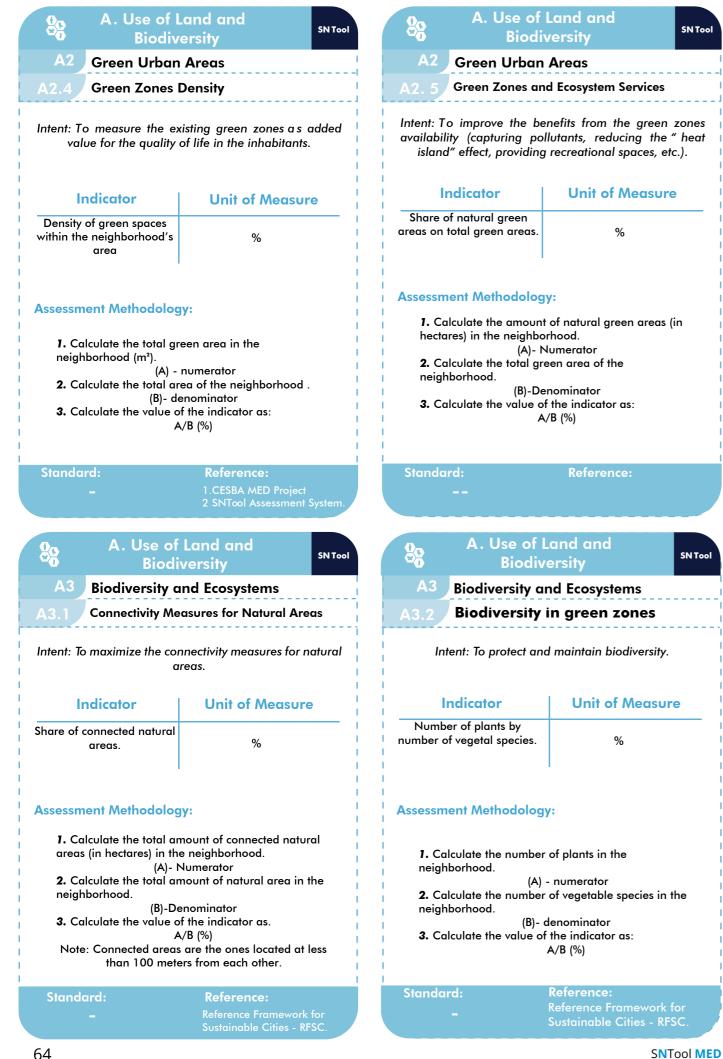
SNTool MED

	versity SN Too
A1 Urban Struct	ure
A1. 4 Conservation	n of Land
value for ecological or ag	ortion of land, considered to be of ricultural purposes, that r emains eveloped.
Indicator	Unit of Measure
Pre-developed ecological value of land.	Score
Assessment Methodolog	gy:
1. Determine the area of the	e neighborhood.
considered by authorities to value.	e undeveloped land that is be of ecological and agricultural en the undeveloped area and
considered by authorities to value. 3. Calculate the ratio betwe the total area of the neighbo	be of ecological and agricultural en the undeveloped area and orhood.
considered by authorities to value. 3. Calculate the ratio betwe the total area of the neighbor -Only areas with recognized also in case of reconverted of	be of ecological and agricultural en the undeveloped area and orhood. d ecological or agricultural value,
considered by authorities to value. 3. Calculate the ratio betwee the total area of the neighbor -Only areas with recognized also in case of reconverted of account. -The areas of the neighborh the perimeter selection. -Parks and squares are not -Definition of agricultural vo agricultural objectives (food	be of ecological and agricultural en the undeveloped area and orhood. d ecological or agricultural value, areas, must be taken into wood is the area included within considered undeveloped land. alue: an area that is intended for , forage, etc.). ue: an area that provides support
considered by authorities to value. 3. Calculate the ratio betwee the total area of the neighbor- Only areas with recognized also in case of reconverted of account. -The areas of the neighborh the perimeter selection. -Parks and squares are not -Definition of agricultural of agricultural objectives (food -Definition of ecological val	be of ecological and agricultural en the undeveloped area and orhood. d ecological or agricultural value, areas, must be taken into wood is the area included within considered undeveloped land. alue: an area that is intended for , forage, etc.). ue: an area that provides support

	A. Use of Biodiv	Land and versity	SN Tool
	A2 Green Urbar A2.2 Green Areas in R Population	n Areas elation to the Neighborho	od
	regulate air quality and cli supplies and protecting la		lwater
1	Indicator	Unit of Measure	•
	Total green area in the neighborhood by total population.	m²/inhabitant	
i	Assessment Methodolog	gy:	
	 Calculate the neight (B)-D Calculate the value of 	Numerator porhood's total population enominator	
	Standard: –	Reference: IEFCA 2019 Edition- Calculation Guideline	

SNTool MED

	A. Use of I Biodiv		SN Tool
A2	Green Urban	-	
A2.1	Availability of	Green Urban Areas	
benefit f	rom the availabilits, reducing the "	rmeability of the area a ity of green spaces (cap heat island" effect, prov al spaces, etc.).	turing
h	ndicator	Unit of Measur	e
area neighbo	n of all vegetated as within the rhood in relation ne total area.	%	
Assessm	nent Methodolog	3 y :	
	Ilculate the amoun Ires) in the neighbo	t of vegetated areas (in orhood.	l
	(A) -	numerator rea of the neighborhood .	
3. Co	Iculate the value o		
	,	A/B (%)	1
Stando	ard: -	Reference: 1.CESBA MED Project 2 SNTcol Assessment S	System.
		and and	
00 00	A. Use of I Biodiv		SN Tool
Со А2	Biodiv Green Urban	versity Areas	SN Tool
Co A2 A2.3	Biodiv	versity Areas	SN Tool
Intent: Te	Biodiv Green Urban Green Area A o work towards a rhood's inhabitan	versity Areas	or the
Intent: To neighboi	Biodiv Green Urban Green Area A o work towards a rhood's inhabitan	ersity Areas Accessibility higher quality of life for ts and to reduce the neg	or the gative
Intent: Ta neighbor In Percenta	Biodiv Green Urban Green Area A o work towards a rhood's inhabitan effects of the ur	Areas Accessibility higher quality of life for ts and to reduce the neg banization process.	or the gative
Intent: To neighbor In Percenta with acce	Biodiv Green Urban Green Area A o work towards a rhood's inhabitan effects of the ur ndicator ge of inhabitants essibility to green	Areas Accessibility higher quality of life for ts and to reduce the neg banization process. Unit of Measur %	or the gative
Intent: To neighbou In Percenta with acco Assessm 1. Co 300 r	Biodiv Green Urban Green Area A o work towards a rhood's inhabitan effects of the ur ndicator ge of inhabitants essibility to green areas. ment Methodolog	Areas Accessibility higher quality of life for ts and to reduce the ney banization process. Unit of Measur % y: or of inhabitants living with a publicly accessible green	e nin
Intent: To neighbou Percenta with acco Assessm 1. Co 300 r space	Biodiv Green Urban Green Area A o work towards a rhood's inhabitan effects of the ur ndicator ge of inhabitants essibility to green areas. hent Methodolog alculate the numbe meter distance of a e of at least 0.5 ha (A) - alculate the neighb	Areas Accessibility higher quality of life for ts and to reduce the ney banization process. Unit of Measur % y: or of inhabitants living with a publicly accessible green numerator orhood's total population	e nin
Intent: To neighbol Percenta with acco Assessm 1. Co 300 r space 2. Co	Biodiv Green Urban Green Area A o work towards a rhood's inhabitan effects of the ur ndicator ge of inhabitants essibility to green areas. hent Methodolog alculate the numbe meter distance of a e of at least 0.5 ha (A) - alculate the neighb (B)- da	Areas Accessibility higher quality of life for ts and to reduce the ney banization process. Unit of Measur % y: or of inhabitants living with a publicly accessible green numerator orhood's total population enominator	e nin
Intent: To neighbol Percenta with acco Assessm 1. Co 300 r space 2. Co	Biodiv Green Urban Green Area A o work towards a rhood's inhabitan effects of the ur ndicator ge of inhabitants essibility to green areas. hent Methodolog alculate the numbe meter distance of a e of at least 0.5 ha (A) - alculate the neighb (B)- da	Areas Accessibility higher quality of life for the and to reduce the neg- banization process. Unit of Measur % y are of inhabitants living with a publicly accessible green numerator orhood's total population enominator of the indicator as: A/B (%) Reference:	e nin
Intent: To neighbou Percenta with acco Assessm 1. Ca 300 r space 2. Ca 3. Ca	Biodiv Green Urban Green Area A o work towards a rhood's inhabitan effects of the ur ndicator ge of inhabitants essibility to green areas. hent Methodolog alculate the numbe meter distance of a e of at least 0.5 ha (A) - alculate the neighb (B)- da	Areas Accessibility higher quality of life for ts and to reduce the ney banization process. Unit of Measur % y br of inhabitants living with a publicly accessible green numerator orhood's total population enominator of the indicator as: A/B (%)	e nin



SNTool MED



Description of the Information B: Issue **Bx:** Category **B1: Energy Infrastructure B2: Energy Consumption B3: Renewable Energy** Bx.x: Criterion **Intent:** Description of the objective of the criterion **Indicator:** Name of the indicator to be calculated Unit of Measure: Measuring unit of each indicator Standard: The calculation standard for the criterion **References:** The acquiring source of information **★** Key Performance Indicator

В.	B. Energy			
B2 Energy Consumption ★B2.1 Total Final Thermal Energy Consumption for Building Operations				
	pan thermal energy consur Iding operations.	nption		
Indicator	Unit of Measur	'e		
Aggregated annual total final thermal energy kWh/m²/yr consumption per aggregated indoor useful floor area				
Assessment Method	ology:			
To perform the calculation, it is possible to use: Metered Data or Estimated Data For the evaluation of the actual performance of the urban area it is preferable to use metered data. If metered data aren't available, estimated data shall be used. Estimated data shall be used for evaluating alternative scenarios in planning and decision-making processes. In reporting the indicator's value, the data source must be indicated.				
Note: See anex for further details on the calculation steps.				
Standard: EN 13790	Reference: CESBA MED Project - S Assessment System	NT∞l		

(Z)	B.E	ne	rgy	SN Tool		
B1	B1 Energy Insfrastructure					
B1.1	Access to Ele	ectri	cal Service			
	ng indicator of	f su	electrical services as stainability, resilien roductivity			
In	dicator	1	Unit of Measu	Jre		
with auth	je of household orized access to ectricity		%			
Assess	ment Method	lolo	gy:			
with aut	 Calculate the number of people in the neighborhood with authorized electrical services (A) - numerator Calculate the total population of the neighborhood (B) - denominator Calculate the value of the indicator as =A/B 					
Standard	Standard: Standard: ISO 37120: Sustainable Cities and Communities - Indicators for City Services and Quality of Life					
$\langle \!$	B. En	nerg	ЭУ	SN Tool		
B2 2 To	B2 Energy Consumption B2.2 Total Final Thermal Energy Consumption for Residential Building Operations					
Intent: To estimate urban thermal energy consumption per gross area of all residential buildings.						
Ind	Indicator Unit of Measure					
Urban thermal energy consumption per gross area kWh/m²/yr of all residential buildings						
Assessment Methodology:						

1.Calculate the annual total final t hermal energy consumption of non-renewable energy for the building operations (Heating, Cooling, Domestic Hot Water and Lighting), in kWh, for each residential buildings in the neighborhood.

 Calculate the aggregated annual total final thermal energy consumption for all residential buildings.
 Calculate the indicator:

Aggregated annual total final thermal energy consumption / Total gross area of all residential buildings.

Standard:

Reference: CESBA MED Project - SNTool Assessment Sytem

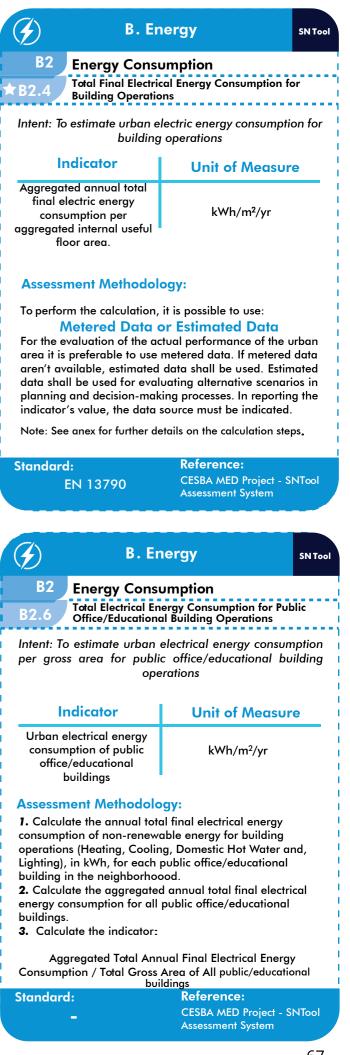
	B. E	nergy	SN Too
B2	Energy Con	sumption	
		mal Energy Consumption fo ducational Building Operati	
		urban thermal energy con Jblic office/educational bu	
		perations	Ū
In	dicator	Unit of Measur	e
Consump area for education	nermal energy otion per gross public office/ onal building erations	kWh/m²/yr	
Assessm	ent Methodo	logy:	
Lighting), ir in the neigl 2. Calculat consumptic 3. Calculat	n kWh, for each hborhood. e the aggregate on for all public o e the indicator a	ng, Domestic Hot Water and public office/ educational bu d annual total final thermal e office/educational buildings. s: final thermal energy consum	energy
		ublic office/educational build	
Standard		Reference:	
		CESBA MED Project - S Assessment System	N 1 00 1
Ð	B. E	nergy	SN Too
P2 5	Energy Cons Fotal Electrical E Building Operat	nergy Consumption for Res	identia
		electrical energy consum idential building operation	•
Inc	dicator	Unit of Measur	е
consumptic	ectrical energy on of residentia vildings	kWh/m²/yr	
Assessn	nent Method	ology:	
consump operatior Lighting),	tion of non-ren ns (Heating, Co , in kWh, for ea	total final electrical energy ewable energy for building oling, Domestic Hot Water ch residential building in th	and,
energy co	ate the aggrege	ated annual total final elect all residential buildings. or:	trical

Aggregated Total Annual Final Electrical Energy Consumption / Total Gross Area of All Residential Buildings

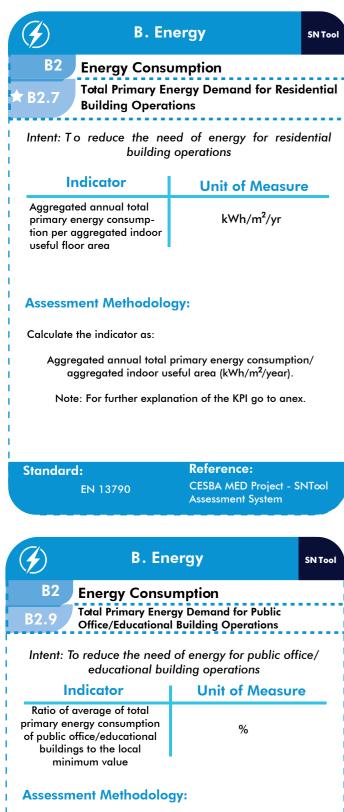
Standard:

CESBA MED Project - SNTool Assessment System

66



67



1. Calculate the annual total primary energy consumption of non-renewable energy for building operations (Heating, Cooling, Domestic Hot Water and Lighting), in kWh/m of gross area for each public office/educational buildings in the local area.

2. Calculate the neighborhood's public office/educational buildings total primary energy consumption as the weighted mean value of total primary energy.

3. Calculate the indicator:

Neighborhood's public office-educational buildings total primary energy consumption / Local minimum value * 100

Standard: Reference: CESBA MED Project - SNTool Assessment System

 $(\mathbf{4})$ **B.** Energy SN Tool **B2** Energy Consumption Total Primary Energy Demand for Residential **B2.8 Building Operations** Intent: To reduce the need of energy for residential building operations Indicator Unit of Measure Ratio of average total primary energy consumption % of residential buildings to the local minimum value. **Assessment Methodology:** 1. Calculate the annual total primary energy consumption of non-renewable energy f or building operations(Heating, Cooling, Domestic Hot Water and Lighting), in kWh/m, of gross area for each residential building in the local area. 2. Calculate the neighborhood's residential total primary energy consumption as the weighted mean value of total primary energy consumption over the floor surfaces of all residential buildings in the area. 3. Calculate the indicator as: (Neighborhood Residential Total Primary Energy Consumption/Local Minimum Value)*100 **Reference:** Standard: CESBA MED Project - SNTool Assessment System (\mathbf{f}) **B.** Energy SN Too **B2 Energy Consumption** Energy Consumption of Public Lighting B2.10 Intent: To improve the efficiency of street lighting for cost-effective steps and energy efficiency Indicator Unit of Measure Total electricity kWh/Km/yr consumption of public street lighting by total distance of streets where streetlights are present **Assessment Methodology:** 1. Calculate the total electricity consumption of public street lighting for cost-effective steps and energy efficiency. (A)-Numerator 2. Calculate the length of streets where streetlights are present in the neighborhood. (B)-Denominator 3. Calculate the indicator: A/B **Reference:** Standard: ISO 3710: Sustainable Cities and

B. Energy SN Too **B3** Re newable Energy Share of Renewable Energy On-Site, Relative to B3.1 Final Thermal Energy Consumption for Building Operations -----Intent: To incentive the consumption and production of renewable energy Indicator **Unit of Measure** Total consumption of final thermal energy generated % from renewable sources on-site by total final thermal energy consumption **Assessment Methodology:**

_

To perform the calculation, it is possible to use: Metered Data or Estimated Data

For the evaluation of the actual performance of the urban area it is preferable to use metered data. If metered data aren't available, estimated data shall be used. Estimated data shall be used for evaluating alternative scenarios in planning and decision-making processes. In reporting the indicator's value, the data source must be indicated.

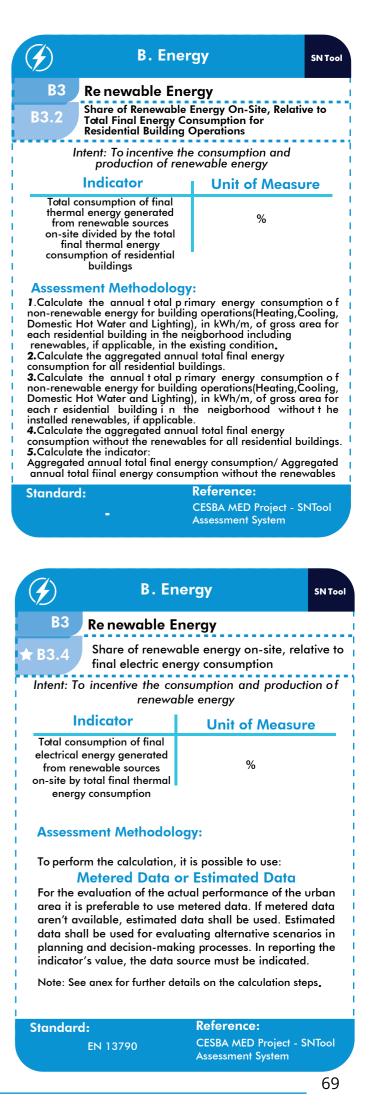
Note: See anex for further details on the calculation steps.

Standard:	Reference:
EN 13790	CESBA MED Project - SNTool Assessment System

(Z)	B. Ener	Эλ	SN Tool	
B3 Re newable Energy B3.3 Share of Renewable Energy On-Site, Relative to the Total Final Thermal Energy Consumption for Public Office/ Educational Building Operations Intent: To incentive the consumption and production of renewable energy /				
1	ndicator	Unit of Measur	e i	
thermal e renewab the total consum	onsumption of final mergy generated from les sources on-site by final thermal energy ption of public office/ cational buildings	%	_	
Assessm	ent Methodology:		1	
 Calculate the annual total final energy consumption of non-renewable energy for building operations (Heating, Cooling, Domestic Hot Water and Lighting), in kWh/m of gross area for each public office/educational buildings in the neighborhood, including renewables, if applicable, in the existing conditions. Calculate the aggregated annual total final energy consumption for all public office/educational buildings. Calculate the annual total final energy consumption for building operations (heating, cooling, domestic hot water and lighting), in kWh, for each public office/educational buildings in the local area without the installed renewables, if applicable. 				
4. Calcula consumpti educationa 5. Calcula Agg	te the aggregated annu on without the renewat al buildings. te the ratio: regated annual total fin ed annual total final en renewa	al total final energy oles for all public office, al energy consumption ergy consumption with	/	
Standard		Reference: CESBA MED Project - S Assessment System	NTool	

SNTool MED

Communities- Indicators for City Services and Quality of Life.



(\mathbf{z})	B. Er	ergy	SN Tool
B3 B3.5 Intent: T	Relative to Total Consumption for Operations o reduce the ne	nergy ole Energy On-Site, Final Electrical Energy Residential Buildings ed of energy for resid operations	ential
1	ndicator	Unit of Measur	e I
Total consumption of final electric energy generated from renewable sources on-site divided by total final electric energy consumption of residential buildings		%	

Assessment Methodology:

1.Calculate the annual total final electric energy consumption for building operations (heating, cooling, domestic hot water and lighting), in kWh, for each residential building in the local area including renewables, if applicable, in the existing condition.

condition.
2. Calculate the aggregated annual total primary energy consumption for residential buildings.
3. Calculate the annual total final electric energy consumption for building operations (heating, cooling, domestic hot water and lighting), in kWh, for each residential building in the local area without the installed renewables, if applicable. 4.Calculate the aggregated annual total final electric energy consumption without the renewables for residential buildings.

5.Calculate the ratio:

Aggregated annual total final electric energy consumption / Aggregated annual total final electric energy consumption without the renewables.

Standard:	Reference:
•	CESBA MED Project - SNT Assessment System

Total Primary Ener	nergy		
Operations	e Energy On-Site, Relative to gy Consumption for Buildings nsumption and production of		
	ble energy		
Indicator	Unit of Measure		
Total consumption of primary energy generated % from renewable sources on-site divided by the total primary energy consumption			
Assessment Methodolo	ogy:		
Calculate the indicator as:			
on-site renewable energy so	mary energy consumption from purces/ Aggregated total annual rgy consumption		
	on the calculation process go to anex		
Standard:	Reference:		
EN 13790	CESBA MED Project - SNTool Assessment System		

rgy	SN Tool		
B3.6 Share of Renewable Energy On-Site, Relative to Total Final Electrical Energy Consumption for Public Office/Educational Buildings Operation			
Intent: To incentive the consumption and production of renewa- ble energy			
Unit of Measur	e I		
%			
	ion and production of re ergy Unit of Measur		

Assessment Methodology:

1.Calculate the annual total final electric energy consumption for building operations (heating, cooling, domestic hot water and lighting), in kWh, for each public office/educational building in the local area including renewables, if applicable, in the existing condition.

 Calculate the aggregated annual total primary energy consumption for public office/educational buildings.
 Calculate the annual total final electric energy consumption for building operations (heating, cooling, domestic hot water and lighting), in kWh, for each public office/educational building in the local area without the installed renewables, if applicable.

4.Calculate the aggregated annual total final electric energy consumption without the renewables for public office/ educational buildings.

5. Calculate the ratio: Aggregated annual total final electric energy consumption / Aggregated annual total final electric energy consumption

	without the renewables.
Standard:	Reference:
	CESBA MED Project - SNT Assessment System

Ý	B. En	ergy	SN Tool	
B3 Re newable Energy B3.8 Share of Renewable Energy On-Site, Relative to the Total Primary Energy Consumption for Residential Buildings Operations				
Intent: T		nsumption and production being the second	ion of	
	Indicator	Unit of Measu	re	
Total consumption of primary energy generated from renewable sources on-site divided by total primary energy consumption of residential buildings				
 Assessment Methodology: 1. Calculate the annual total primary energy consumption for building operations (heating, cooling, domestic hot water and lighting), in kWh, for each residential building in the local area including renewables, if applicable, in the existing condition. 2. Calculate the aggregated annual total primary energy consumption for residential buildings. 3. Calculate the annual total primary energy consumption for building operations (heating, cooling, domestic hot water and lighting), in kWh, for each residential building in the local area without the installed renewables, if applicable. 4. Calculate the aggregated annual total primary energy consumption without the renewables for residential buildings. 5. Calculate the ratio: 				
Aggregated annual total primary energy consumption / Aggregated annual total primary energy consumption without the renewables.				
Standar	d: -	Reference: CESBA MED Project - S Assessment System	NTool	

Ì	B. Er	SN Tool	
B3	Re newable E	nergy	
B3.9	Share of R enewable Energy On- Site, On T otal Primary Energy Consumptions for Public Office/Educational Building Operations		
Intent: To incentive the consumption and production of			
renewable energy			e
Total consumption of primary energy generated from renewable sources on-site divided by total primary energy consumption of public office/ educational buildings			
Assessment Methodology: 1.Calculate the annual total final electric energy consumption for building operations (heating, cooling, domestic hot water and lighting), in kWh, for each public office/educational building in the local area including renewables, if applicable, in the existing condition. 2.Calculate the aggregated annual total primary energy consumption for residential buildings.			

3. Calculate the annual total final electric energy consumption for building operations (heating, cooling, domestic hot water and lighting), in kWh, for each public office/educational building in the local area without the installed renewables, if applicable.

4.Calculate the aggregated annual total final electric energy consumption without the renewables for public office/

educational buildings. 5.Calculate the ratio:

Aggregated annual total final electric energy consumption / Aggregated annual total final electric energy consumption without the renewables.

Standard:	Reference:
-	CESBA MED Project - SNTool Assessment System



Description of the Information C: Issue Cx: Category **C1: Water Infrastructure C2: Water Consumption C3: Effluents Management** Cx.x: Criterion **Intent:** Description of the objective of the criterion Indicator: Name of the indicator to be calculated Unit of Measure: Measuring unit of each indicator **Standard:** The calculation standard for the criterion References: The acquiring source of information ★ Key Performance Indicator

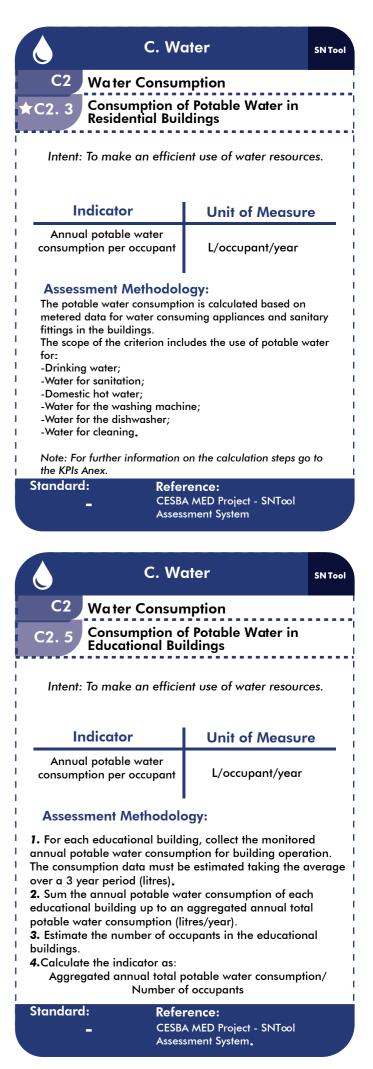
6	C. Water		SN Tool
	frastructure ty of Wastev		atment
Intent: To evalue cleanili	ate the neighb ness and quali		ealth, I
Indicator	Ur	nit of Me	asure I
Number of people w the neighborhood wh served by a wastew collection divided by neighborhood's population.	no are rater y the	%	
Assessment Met	hodology:		i
 Calculate the numb who are served by a w Calculate the total p (Calculate the value 	rastewater colle (A) - numerate population of th B) - denominat	ection. or ne neighbo or	i
	Deference		1
Standard: –	Reference: ISO 37120: S and Commun Services and (ities - Indico	ators for City

C. Wo	ater s	N To
C1 Water Infrastr C1. 1 Availability of a Supply	ucture a Public Municipal Wa	ter
	eighborhood's health and v of life	1
Indicator	Unit of Measure	
Number of people within the neighborhood who are served by a municipal water supply divided by the neighborhood's population.	%	
Assessment Methodolo	ogy:	
 Calculate the total populati (B) - den Calculate the value of the i 	al water supply. umerator ion of the neighborhood. nominator	00
Standard: Refe		
ISO 3	rence: 7120: Sustainable Cities	
ISO 3 and C		Cit
ISO 3 and C	7120: Sustainable Cities Communities - Indicators for tes and Quality of Life	City
ISO 3 and C Servic	7120: Sustainable Cities Communities - Indicators for tes and Quality of Life	
- ISO 3 and C Servic	7120: Sustainable Cities Communities - Indicators for tes and Quality of Life	
C. Wo C2 Wa ter Consun C2. 1 Total Water Con Intent: To evaluate the	7120: Sustainable Cities Communities - Indicators for tes and Quality of Life	
C. Wo C2 Wa ter Consun C2. 1 Total Water Con Intent: To evaluate the	7120: Sustainable Cities Communities - Indicators for tes and Quality of Life ater since Inption Insumption	
C. Wo C. Wo C2 Wa ter Consun C2. 1 Total Water Con Intent: To evaluate the neighbo	7120: Sustainable Cities Communities - Indicators for tes and Quality of Life ater sin mption nsumption e water resources in the orhood.	
C. Wa C. Wa C. Wa C2 Wa ter Consum C2. 1 Total Water Con Intent: To evaluate the neighbor Indicator Total amoun of the neighborhood's water consumption in litres per day divided by the total	7120: Sustainable Cities Communities - Indicators for Sees and Quality of Life Inter Signature Inption Insumption Invator resources in the orhood. Unit of Measure L/day/occupant	
 ISO 3 and C Servic C. Wa C. Wa C2 Wa ter Consum C2 Wa ter Consum C2 Wa ter Consum C2 Total Water Consum C2 Intent: To evaluate the neighborhood's water Indicator Indicator Indicator Total amoun of the neighborhood's water consumption in litres per day divided by the total neighborhood's population Assessment Methodolo Calculate the total amount consumption in litres per day. 	7120: Sustainable Cities Communities - Indicators for Sees and Quality of Life Inter signature Inption nsumption ewater resources in the orhood. Unit of Measure L/day/occupant ogy: of the neighborhood's wa	N T 4
C. Wa C. Wa C. Wa C2 Water Consum C2 Water Consum C2 Total Water Consum Intent: To evaluate the neighborhood's water consumption in litres per day divided by the total neighborhood's water consumption in litres per day divided by the total neighborhood's population Assessment Methodolo 1. Calculate the total amount consumption in litres per day. (A) - m 2. Calculate the total populati (B) - den 3. Calculate the value of the i	7120: Sustainable Cities Communities - Indicators for Sees and Quality of Life Cater s Inption Insumption e water resources in the orhood. Unit of Measure L/day/occupant Ogy: of the neighborhood's wa umerator ion of the neighborhood.	N T 4

	C. Wo	ater	SN Tool
C2 Wat			
C2. 2 Effici	ency in Wo	ater Use	
Intent: To ma	ke an efficie	ent use of water resource	ces.
Indicat	or	Unit of Measu	re
Volume of wate		%	
utilized water	divided by	70	
the total volum suppli			
Assessment	Mathadal	0.001	
Assessment	Memodol	ogy.	
1. Calculate the the neighborhood.	total volume	of water supplied in the	•
2. Calculate the	()	umerator ilized water	
	(B) - der	nominator	
3. Calculate the		/B (%)	
Standard:		rence: 2019 Edition-Calculatio	
-	Guide		
		eline	
		eline	
			SN Tool
	C. We	ater	SN Tool
	C. Wo	ater nption	SN Tool
C2 4 Cons	C. Wo	ater	SN Tool
C2. 4 Cons Publi	C. Wo er Consur sumption o ic Offices	ater nption	
C2. 4 Cons Publi	C. We er Consur sumption o ic Offices	ater nption f Potable Water in	
C2. 4 Cons Publi	C. We er Consur sumption o ic Offices	ater nption f Potable Water in	ces
C2. 4 Cons Public Intent: To mo Indicat Annual potat	C. We er Consur sumption o c Offices ake an efficie or ole water	ater nption If Potable Water in ent use of water resour	ces
C2. 4 Cons Public Intent: To mo Indicat	C. We er Consur sumption o c Offices ake an efficie or ole water	ater nption f Potable Water in ent use of water resour Unit of Measur	ces
C2. 4 Cons Public Intent: To mo Indicat Annual potat	C. We er Consur sumption o c Offices ake an efficient or ole water er occupant	ater nption of Potable Water in ent use of water resour Unit of Measur L/occupant/year	ces
C2. 4 Cons Public Intent: To ma Indicat Annual potat consumption per Assessment 1. For each public	C. We er Consur sumption o ic Offices ake an efficie or ole water er occupant Methodolo c office build	nption f Potable Water in ent use of water resour Unit of Measur L/occupant/year ogy: ing, collect the monitor	ces re
C2. 4 Cons Public Intent: To ma Indicat Annual potat consumption per Assessment 1. For each public annual potable v	C. We er Consur sumption o ic Offices ake an efficie or ole water er occupant Methodole c office build vater consur	ater nption f Potable Water in ent use of water resour Unit of Measur L/occupant/year	ces re ed
C2. 4 Cons Public Intent: To ma Indicat Annual potat consumption per Assessment 1. For each public annual potable w The consumption over a 3 year per	C. We er Consur- sumption of c Offices ake an efficient ake an efficient office sum office sum office build vater consum data must b riod (litres).	cter nption of Potable Water in ent use of water resour Unit of Measur L/occupant/year ogy: ling, collect the monitor uptions for building oper e estimated taking the o	cces re ed rations. average
C2. 4 Cons Public Intent: To ma Indicat Annual potat consumption per Assessment I. For each public annual potable w The consumption over a 3 year per 2. Sum the annu building up to an	C. We er Consur- sumption of c Offices ake an efficient ake an efficient office sum office sum offi	nption f Potable Water in ent use of water resour Unit of Measur L/occupant/year ogy: ing, collect the monitor ptions for building oper	ed rations. average
C2. 4 Cons Public Intent: To ma Indicat Annual potat consumption per Assessment I. For each public annual potable w The consumption over a 3 year per 2. Sum the annu building up to an consumption (litr	C. We er Consur sumption o ic Offices ake an efficient ake an efficient office sum office sum office build vater consum data must b riod (litres). al potable we aggregated es/year).	citer nption of Potable Water in ent use of water resour Unit of Measur L/occupant/year ogy: ling, collect the monitor ptions for building oper e estimated taking the o ater consumption of eac	ed rations. average ch office ater
C2. 4 Cons Public Intent: To ma Indicat Annual potat consumption per Assessment 1. For each public annual potable w The consumption over a 3 year per 2. Sum the annu building up to an consumption (litr	C. We er Consur sumption of c Offices ake an efficient of the water er occupant Methodolo vater consum data must b riod (litres). al potable wa aggregated es/year). umber of occ	citer nption If Potable Water in ent use of water resour Unit of Measur L/occupant/year ogy: ling, collect the monitor ptions for building oper e estimated taking the operation atter consumption of eac annual total potable wa	ed rations. average ch office ater
C2. 4 Cons Public Intent: To ma Indicat Annual potat consumption per Assessment I. For each public annual potable w The consumption over a 3 year per 2. Sum the annu building up to an consumption (litr 3. Estimate the n buildings. 4.Calculate the in	C. We er Consur sumption of c Offices ake an efficient of the water er occupant Methodolo c office build vater consum data must b riod (litres). al potable wa aggregated es/year). umber of occ ndicator as: nnual total p	citer nption If Potable Water in ent use of water resour Unit of Measur L/occupant/year ogy: ling, collect the monitor ptions for building oper e estimated taking the operation atter consumption of eac annual total potable wa	ed rations. average ch office ater
C2. 4 Cons Public Intent: To ma Indicat Annual potat consumption per Assessment 1. For each public annual potable w The consumption over a 3 year per 2. Sum the annu- building up to an consumption (litr 3. Estimate the n buildings. 4.Calculate the in	C. We er Consur- sumption o ic Offices ake an efficie or ole water er occupant Methodol vater consum data must b riod (litres). al potable water es/year). umber of occ ndicator as: nnual total p Number of	citer nption of Potable Water in ent use of water resour Unit of Measur L/occupant/year ogy: ling, collect the monitor ptions for building oper e estimated taking the of ater consumption of eac annual total potable water cupants in the public off potable water consumption	ed rations. average ch office ater

Assessment System

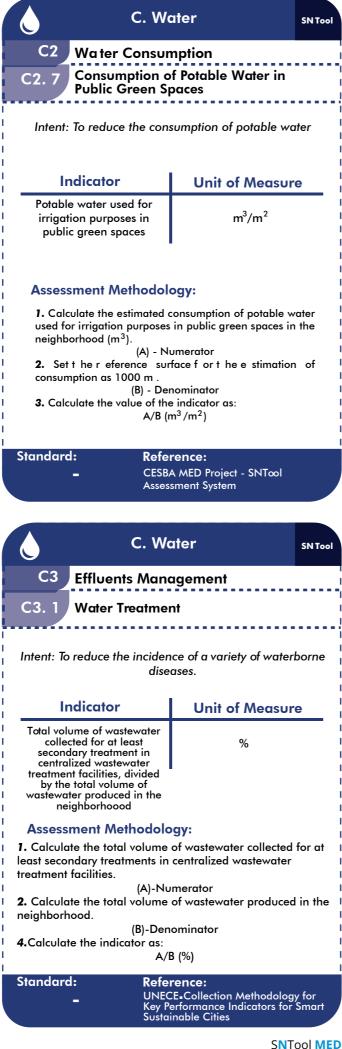
SNTool MED



73

	C. We	ater	SN Tool
C2 C2. 6		nption inwater in Resident	tial
I Intent: I I		on of rainwater from ro I buildings	oofs in
I	Indicator	Unit of Measur	е
colle	are of rainwater cted from roofs of ential buildings for reutilization	%	
Asse	ssment Methodol	ogy:	
•	nborhood.	f rainwater collected in t	he
ı and i ı neigl ı	alculate the volume of rrigation in residentic nborhood. (B) - Den	nominator	ets
3. Co 	alculate the value of t A/I	he indicator as: B (%)	
Standa	i d.	rence:	
		A MED Project - SNTool sment System	

6 C. W	ater	SN Tool
C2 Water Consu	mption	
C2. 8 Solar-Powered	Water Desalinizatio	on i
Intent: To alleviate water stress, to reduce production cost for saline water in o rder t o re consumption an	removing salts from brack	kish or III
Indicator	Unit of Measur	e
Percentage of water acceptable for human consumption or agriculture from solar-desalinization	%	
Assessment Methodol	ogy:	
To perform the calculation, it is estimated data for producing fr indirect (electrical) solar-desalin	esh water from direct (the	
1.Calculate the annual water p desalinization facilities (m ³ /yea 2.Calculate the annual total wa	r) serving the city (A).	r) of the 1
city (B). 3.Calculate the value of the ind average annual water p roduc water consumption (%) as:	1 5	
	A/B	
Standard: -WHO/HSE/ - from Desalir -Directive (E -EurEau 202	: WSH/11.03 Safe Drinking iization,2011. J 2020/2184 1. Europe's Water in Figur	Water



C. Water SN Too C3 Effluents Management Public Wastewater (from Outdoor C3. 2 Areas) that is Disposed or Treated Intent: To reduce the incidence of a variety of waterborne diseases. Indicator Unit of Measure Percentage of public wastewater that is % disposed or treated **Assessment Methodology:** 1.Calculate the total volume of public wastewater from outdoor areas disposed or treated in the neighborhood. (A)-Numerator 2.Calculate the total volume of public wastewater produced from outdoor areas in the neighborhood. (B)-Denominator 3.Calculate the indicator: A/B (%) Reference: Standard: UNECE.Collection Methodology for Key Performance Indicators for Smart Sustainable Cities

6	C. Wo	ater	SN Tool
	fluents Mana ousehold San		
Intent: To m	aintain basic hy	vgiene levels in househ	olds.
India	ator	Unit of Measur	e ¦
with acce	of households ess to basic n facilities	%	
 Calculate with access Calculate Calculate 	to basic sanitatic (A)-Nu the total numbe (B)-Den the indicator as: A/I	er of neighborhood housel on and facilities. umerator r of neighborhood housel nominator B (%)	1
Standard: –		rence: E-Collection Methodolog	y for

Key Performance Indicators for Smar Sustainable Cities

D.Solid Waste

	D1
Description of the Information	D1.1
D: Issue	
Dx: Category	Inte
D1: Solid Waste Collection Infrastructure	
D2: Solid Waste Management	
	Pe
DX.X: Criterion	l popu solie
Intent: Description of the objective of the criterion	
Indicator: Name of the indicator to be calculated	Asse
Unit of Measure: Measuring unit of each indicator	1. Calcu that are
Standard: The calculation standard for the criterion	2. Calculation C
References: The acquiring source of information	3. Calcu
★ Key Performance Indicator	Stando

	ł	D. Solid	Waste	SN Tool	E	~
	D2	Solid Waste M	anagement		L	D
	D2. 1	Access to Solid Collection Point	Waste and Recyclin ts	g	D2	
	household	ds and non-reside	rtion of potential resid ential users with acce r solid waste and recycl	ess to	Inter	ור
	In	dicator	Unit of Measur	e I	1	
	popula waste	ty of the resident tion to the solid and recycling ection points	%		Pe wit ar	h
	Assessi	ment Methodolo	ogy:		I As	S
		ted collection of wo	is or individual bins for iste present in the		I I. Co distau I the n	n
 		te the actual distan I the accesses of the	ce on foot between thes e buildings.	e I	2. Co	ıl
	more than	50 meters from the	of the population that is e waste collection points ces of the buildings.		3. Co	ıl
	Standard	_ CESB/	rence: A MED Project-SNT∞l sment System.		Stan	С

	D. Solid	Waste SN Tool
D1 So	lid Waste C	ollection Infrastructure
D1.1 Av	ailability of S	olid Waste Collection
Intent: To		eighborhood's health and of life.
Indic	ator	Unit of Measure
population	ige of the with regular e collection.	%
Assessme	nt Methodolo	ogy:
that are served	d by solid waste (A) - nu ne total number	ouseholds in the neighborhood collection. umerator of households in the nominator
3. Calculate th		
		ndicator as: /B (%)
Standard: –	=A/ Refe UNEC Key P	
Standard: –	=A/ Refe UNEC Key P	/B (%) rence: CE-Collection Methodologies for erformance Indicators for Smart inable Cities.
- 난	=A/ Refe UNEC Key P Sustai	/B (%) rence: CE-Collection Methodologies for erformance Indicators for Smart inable Cities. Waste
- D2 So D2.2 Ac	=A/ Refe UNEC Key P Sustai D. Solid lid Waste M	/B (%) rence: CE-Collection Methodologies for erformance Indicators for Smart inable Cities. Waste anagement Waste and Recycling
D2 So D2.2 Ac Co	=A/ Refe UNEC Key P Sustain D. Solid lid Waste M cess to Solid llection Point prove separate	/B (%) rence: CE-Collection Methodologies for erformance Indicators for Smart inable Cities. Waste anagement Waste and Recycling

Indicator	Unit of Measure
Percentage inhabitants with access to solid waste and recycling collection points within 400 meters of walking distance.	%
Assessment Methodol	ogy:
distance to the solid waste an the neighborhood.	ubitants living with 400 meters ad recylcing collection points in umerator
2. Calculate the total populat	
3. Calculate the value of the =A	indicator as: /B (%)
or an an an	rence: CE-Collection Methodologies for

Key Performance Indico Sustainable Cities.	•
	SNTool MED

E.Environmental Quality

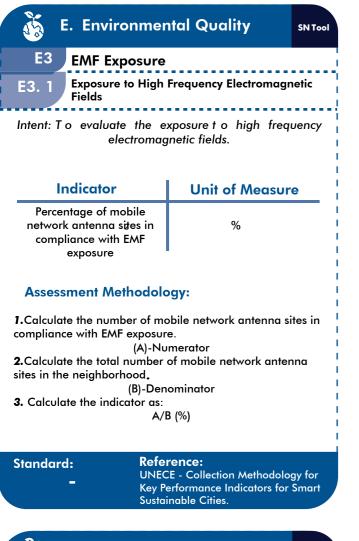
	_	
Description of the Inform	ation	
: Issue		
X:Category		
E1: Air Quality		
E2: Noise		
E3: EMF Exposure		
E4: Environmenta	I Impacts	
X.X Criterion		
Intent: Description criterion	of the objective of	the
Indicator: Name calculated	of the indicator to l	be
Unit of Measure each indicator	e: Measuring unit	of
Standard: The c standard for the crite		
References: The information		of
Key Performance Ind	licator	
E. Environmen	ntal Quality	SN Tool
E. Environmen	ntal Quality	SN Tool
E1 Air Quality		SN Tool
E1 Air Quality E1. 2 Particulate Matter	(PM ₁₀) Concentration	
E1 Air Quality E1. 2 Particulate Matter Intent: To assess the long-te	(PM ₁₀) Concentration erm ambient air quality < 10mu (PM10) in the	
E1 Air Quality E1. 2 Particulate Matter Intent: To assess the long-te respect to particulates	(PM ₁₀) Concentration erm ambient air quality < 10mu (PM10) in the	with
E1 Air Quality E1. 2 Particulate Matter Intent: To assess the long-te respect to particulates neighbor	(PM ₁₀) Concentration erm ambient air quality <10mu (PM10) in the orhood.	with
E1 Air Quality E1. 2 Particulate Matter Intent: To assess the long-te respect to particulates neighbor Indicator Number of days within a year that PM ₁₀ concentration exceeds the	(PM ₁₀) Concentration erm ambient air quality < 10mu (PM ₁₀) in the prhood. Unit of Measure Days/Year	with
E1 Air Quality E1. 2 Particulate Matter Intent: To assess the long-te respect to particulates neighbor Indicator Number of days within a year that PM ₁₀ concentration exceeds the daily limit.	(PM ₁₀) Concentration erm ambient air quality < 10mu (PM ₁₀) in the orhood. Unit of Measure Days/Year	with
E1 Air Quality E1. 2 Particulate Matter Intent: To assess the long-terrespect to particulates neighbor Indicator Number of days within a year that PM10 concentration exceeds the daily limit. Assessment Methodolo 1. Daily test air samples in or regional procedures over	(PM ₁₀) Concentration erm ambient air quality < 10mu (PM ₁₀) in the orhood. Unit of Measure Days/Year Pgy: accordance with nationa r a period time of one	with
 E1 Air Quality E1. 2 Particulate Matter Intent: To assess the long-terrespect to particulates neighbor Indicator Number of days within a year that PM10 concentration exceeds the daily limit. Assessment Methodolo 1. Daily test air samples in or regional procedures over year. 2. Evaluate the number of days 	(PM ₁₀) Concentration erm ambient air quality <10mu (PM ₁₀) in the orhood. Unit of Measure Days/Year egy: accordance with nationa r a period time of one days exceeding the daily	with

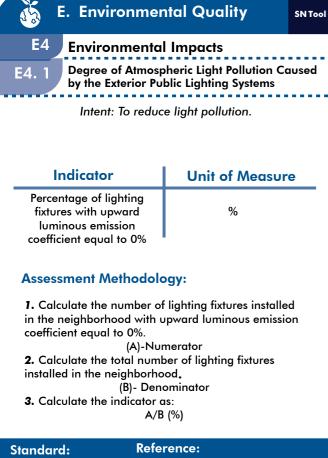
E. Environmer	atal Quality	CALT
	nur gounry	SN Tool
EI. 4 Sulfur Dioxide Co	ncentration (SO ₂)	
Intent: To evaluate the que exceeded daily limit:	ality of the air througl s of pollutants (SO ₂).	h the
Indicator	Unit of Measure	e
Number of days within a year that SO ₂ concentration exceeds the daily limit.	µg/m³	
Assessment Methodolo	ogy:	
1.Calculate the mass of pollut		
(A)-INU 2. Calculate the volume of air meters (μg/m ³).	merator sampled in standard cub	oic
(B)-Den 3. The result shall be expresse in micrograms per standard c		f SO ₂
μο	g/m³	
UNEC Key Po	rence: CE - Collection Methodolog erformance Indicators for S inable Cities.	
E. Environmer	ntal Quality	SN Tool
E. Environmer E2 Noise	ntal Quality	SN Tool
		SN Tool
E2 Noise E2. 1 Ambient Daytime Intent: To promote acoustic	Noise Conditions	
E2 Noise E2. 1 Ambient Daytime Intent: To promote acoustic safe env	Noise Conditions comfort, for a healthy ironment	y and
E2 Noise E2. 1 Ambient Daytime Intent: To promote acoustic safe env	Noise Conditions	y and
E2 Noise E2. 1 Ambient Daytime Intent: To promote acoustic safe env	Noise Conditions comfort, for a healthy ironment	y and
E2 Noise E2. 1 Ambient Daytime Intent: To promote acoustic safe env Indicator Percentage of building area over noise limit.	Noise Conditions comfort, for a healthy ironment Unit of Measure %	y and
E2 Noise E2. 1 Ambient Daytime Intent: To promote acoustic safe env Indicator Percentage of building area over noise limit. Assessment Methodolo	Noise Conditions comfort, for a healthy ironment <u>Unit of Measure</u> %	y and
E2 Noise E2. 1 Ambient Daytime Intent: To promote acoustic safe env Indicator Percentage of building area over noise limit. Assessment Methodolo 1. Calculate the number of neighborhood with excessi levels.	Noise Conditions comfort, for a healthy ironment Unit of Measure % Sgy: f people living in the ve ambient daytime nois	e
E2 Noise E2. 1 Ambient Daytime Intent: To promote acoustic safe env Indicator Percentage of building area over noise limit. Assessment Methodolo 1. Calculate the number of neighborhood with excessi levels. (A)-Nur 2. Calculate the total numl neighborhood.	Noise Conditions comfort, for a healthy ironment Unit of Measure % Sgy: f people living in the ve ambient daytime nois merator ber of people living in the	e e
E2 Noise E2. 1 Ambient Daytime Intent: To promote acoustic safe env Indicator Percentage of building area over noise limit. Assessment Methodolo 1. Calculate the number of neighborhood with excessi levels. (A)-Nur 2. Calculate the total numl neighborhood. (B)- Denv 3. Calculate the indicator of	Noise Conditions comfort, for a healthy ironment Unit of Measure % Ogy: f people living in the ve ambient daytime nois merator ber of people living in the ominator	e e
E2 Noise E2.1 Ambient Daytime Intent: To promote acoustic safe env Indicator Percentage of building area over noise limit. Assessment Methodolo 1. Calculate the number of neighborhood with excessi levels. (A)-Nur 2. Calculate the total numl neighborhood. (B)- Denv 3. Calculate the indicator of A/B	Noise Conditions comfort, for a healthy ironment Unit of Measure % Dgy: f people living in the ve ambient daytime nois merator ber of people living in the ominator as:	e e

SN	Tool	M	FD

E. Environme	ntal Quality s	N Tool
E1 Air Quality		
E1. 5 Ozone Concentro	ition (O ₃)	ļ
Intent: To evaluate the que exceeded daily lim	vality of the air through its of pollutants (O ₃).	the
Indicator	Unit of Measure	_ ;
Number of days within a year that O ₃ concentration exceeds the daily limit.	μ g/m ³	
Assessment Methodol	ogy:	
 Calculate the volume of air meters (µg/m³). (B)-Der The results shall be express in micrograms per standard of air meters. 	umerator ir sampled in standard cubic nominator sed as the concentration of	
UNE Key F	erence: CE.Collection Methodology for Performance Indicators for Sm inable Cities	or hart
E. Environme	ntal Quality si	N Tool
E2 Noise E2. 2 Ambient Night-Ti	me Noise Conditions	
Intent: To promote acousti safe env	c comfort, for a healthy c rironment.	and
Indicator	Unit of Measure	
Percentage of building area over noise limit	%	
Assessment Methodol	- ogy:	- 1
neighborhood that is exposed 40dBA during periods from 2		
neighborhood that is exposed 40dBA during periods from 2 1.Calculate the number of pe that is exposed to ambient no periods from 22:00 to 7:00.	I to ambient noise exceeding 2:00 to 7:00. ople living in the neighborho ise exceeding 40dBA during	od
neighborhood that is exposed 40dBA during periods from 22 1.Calculate the number of pe that is exposed to ambient no periods from 22:00 to 7:00. (A)- N 2.Calculate the total number neighborhood.	I to ambient noise exceeding 2:00 to 7:00. ople living in the neighborho ise exceeding 40dBA during umerator	od
neighborhood that is exposed 40dBA during periods from 22 1.Calculate the number of periods from 22:00 to 7:00. (A)- N 2.Calculate the total number neighborhood. (B)-Der 3.Calculate the indicator as:	I to ambient noise exceeding 2:00 to 7:00. ople living in the neighborho ise exceeding 40dBA during umerator of people living in that	od

79





CESBA MED Project - SNTool Assessment System. E. Environmental Quality

Exposure to High Frequency Electromagnetic

Intent: To assess the quantity of buildings exposed to ELF

magnetic fields.

1. Calculate the number of buildings located in the neigh-

(A)-Numerator

(B)-Denominator

A/B (%)

Reference:

Sustainable Cities

UNECE-Collection Methodology for Key Performance Indicators for Smart

borhood not respecting the safety distance from high

2. Calculate the total number of buildings in the

.

Unit of Measure

%

12

E3. 2

E3 Air Quality

Fields

Indicator

Percentage of buildings in

the neighborhood, located

not respecting the safety distance from high voltage

lines.

voltage lines.

neighborhood.

Standard:

Assessment Methodology:

3. Calculate the value of the indicator:

SN Tool

F. Transportation & Mobility

Description of the Information F: Issue FX : Category F1: Performance of Mobility Services F2: Green Mobility F3: Safety in Mobility F4: Urban Morphology & Transportation FX.X :Criterion Intent: Description of the objective of the criterion Indicator: Name of the indicator to be calculated Unit of Measure: Measuring unit of each indicator

Standard: The calculation standard for the criterion

References: The acquiring source of information

★ Key Performance Indicator

	portation obility
	e of Mobility Services ce to Public Transport for Area udents
	e performance of the public tation system.
Indicator	Unit of Measure
Percentage of workers an students that are within 400 meters walking distance of at least one public transportation service.	d %
Assessment Method	ology:
the area that are within 4	ge of workers and students in 00 meters walking distance of ortation service stop (bus, tram, I
	alid for the calculation, a stop rvice frequency of at least 20
	indicator are considered only pole in the neighborhood.
Standard: Global Platform for Sustaina Cities - Urban Sustainability Frame	Reference: Dle CESBA MED Project - SNTool Assessment System.

F	F. Transpo & Mot		SN Tool
F1	Performance o	f Mobility Services	
★ F1. 1	Performance of th	e Public Transport Syste	em i
Intent		performance of the pub ion system.	olic I
Ir	ndicator	Unit of Measur	e 1
that are walking one put	age of inhabitants within 400 meters distance of at lesat olic transportation ervice stop.	%	
Assess	ment Methodolo	ogy:	į
total ser neighbo 2.Locate with a w the locat 3. Calcu 4.Calcul 5.Calcul occupan	vice frequency of at rhood. all the residential bu alking distance from t ed stops up to 400 m late the occupants o ate the total popula ate the indicator's v	bal transport stops with a least 20trips, that serve ildings in the neighborhoo heir entrance to at least a eters. If the selected buildings tion of the neighborhoo alue as the percentage ildings to the total popu	the 1 od 1 one of 1 . 1 d. 1 of the 1
	or further informatio Pls Anex.	n on the calculation step	os go I I
	1: tform for Sustainable ban Sustainability	Reference: CESBA MED Project - S Assessment System.	SNTool
F A	F. Transpo & Mob		SN Tool
F2	Green Mobility	/	1
F2. 1	Shared Vehicles		ا - ا

Intent: To promote an alternative form of transportation.

Indicator	Unit of Measure
Number of shared vehicles per 1.000 inhabitants.	N/1000 Inhabitants

Assessment Methodology:

1. Calculate the number of shared vehicles.
(A)- Numerator
2. Calculate the one 1.000 of the neighborhood's
population.
(B)-Denominator
3. Calculate the indicator as:
A/B

Standard: Refere UNECE Key Per Smart S

Reference: UNECE-Collection Methodology for Key Performance Indicators for Smart Sustainable Cities.

F2 Green Mobilit F2. 2 Electric-Vehicle In	
E2 2	у
FZ. Z Electric-Vehicle In	frastructure (Charging Station
laterat Terrarate the	
Infent: To promote the	use of electric vehicles.
	_
Indicator	Unit of Measure
Electric vehicle's charging stations per inhabitant	N/Inhabitants
2. Calculate the neighborhood	nominator
,	А/В
Standard: Re	eference:
	SBA MED Project - SNTool sessment System.
F. Transp & Mol	SN 100
	-

Intent: To emphazise the use of bicycles as a method to reduce traffic congestion and pollution.

Indicator	U
Number of shared bicycles per 1.000 inhabitants.	N/1

F2. 4 Shared Vehicles

Unit of Measure

N/1000 Inhabitants

Assessment Methodology:

SNTool MED

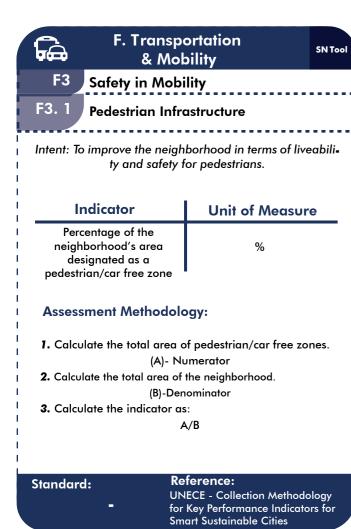
1. Calculate the numb	per of shared bicycles available.
(4	A)- Numerator
2. Calculate the one 1.0 population.	000 of the neighborhood's
	B)-Denominator
3. Calculate the indica	ator as:
	A/B
Standard:	Reference:
	UNECE-Collection Methodology for
-	Kou Porformanco Indicators for

Smart Sustainable Cities

MED

6	F. Transp & Mol		SN Tool
F2	a Mor Green Mobility	-	
12.5	Bicycle Netwo	ork	
		e of bicycles as a meth estion and pollution.	nod to
In	dicator	Unit of Measur	е
paths in t	ngth of bicycle he neighborhood inhabitant.	m/inhabitants	
Assessr	nent Methodolo	ogy:	
 Calculation Calculation 	hood.	n of bicycle paths/lanes i umerator	n the
2. Estimat neighborh	e/calculate the tota	I number of inhabitants in	ı the
3 Calcul	(B)-Den ate the indicator as	nominator	
J. Culcul		х. А/В	
	Sm	nart Sustainable Cities.	
	F. Transpo		SN Tool
F2	& Mok	oility	SN Tool
-	& Mok Green Mobility	oility	SN Tool
F2.5	& Mot Green Mobility Availability of Bic promote cycling as	pility /	le use
F2. 5	& Mot Green Mobility Availability of Bic promote cycling as	bility / cycle Parking Facilities : an alternative to vehicl	le use rk.
F2. 5 Intent: To p by prov	& Mob Green Mobility Availability of Bic promote cycling as iding a safe and e	oility ycle Parking Facilities an alternative to vehicle efficient mobility networ	le use rk.
F2. 5 Intent: To p by prov	& Mot Green Mobility Availability of Bic promote cycling as iding a safe and e dicator rking spaces per	vility cycle Parking Facilities an alternative to vehicle efficient mobility networ Unit of Measury N/Inhabitants	le use rk.
F2. 5 Intent: To p by prov Inc Bicycle pa in	& Mok Green Mobility Availability of Bic promote cycling as iding a safe and e dicator rking spaces per habitant nent Methodolo the the number of B borhood.	vility vycle Parking Facilities an alternative to vehicle efficient mobility networ Unit of Measure N/Inhabitants pgy: picycles parking availabl	le use rk. e
F2. 5 Intent: To p by prov Inc Bicycle pa in Assessn 1. Calcula the neight	& Mok Green Mobility Availability of Bic promote cycling as iding a safe and e dicator rking spaces per habitant nent Methodolo the the number of B borhood. (A)- Nu te the neighborhood	pility yycle Parking Facilities an alternative to vehicle efficient mobility network Unit of Measure N/Inhabitants Pgy: picycles parking available umerator d's population.	le use rk. e
F2. 5 Intent: To p by prov Inc Bicycle pa in Assessm 1. Calcula the neight 2. Calcula	& Mok Green Mobility Availability of Bic boromote cycling as iding a safe and e dicator rking spaces per habitant nent Methodolo ate the number of B borhood. (A)- Nu te the neighborhood (B)-Den ate the indicator as	pility yycle Parking Facilities an alternative to vehicle efficient mobility network Unit of Measure N/Inhabitants pgy: picycles parking available umerator d's population. ominator	le use rk. e
F2. 5 Intent: To p by prov Inc Bicycle pa in Assessm 1. Calcula the neight 2. Calcula	& Mok Green Mobility Availability of Bic boromote cycling as iding a safe and e dicator rking spaces per habitant nent Methodolo the the number of B borhood. (A)- Nu te the neighborhood (B)-Den the the indicator as A	pility ycle Parking Facilities an alternative to vehicle efficient mobility network Unit of Measure N/Inhabitants pgy: picycles parking available promerator d's population. ominator :	le use rk. e

83



F	F. Transportation & Mobility		SN Tool
F3	Safety in Mobi	lity	
F3. 3 Safety of bicycle lines			
Intent: To promote the use of the bicycle as an alternative vehicle from the private car.			
In	dicator	Unit of Measur	е
physically	e of bicycle paths / separated from ffic roads.	%	
Assessment Methodology:			
I. Calculate the length of the bicycle paths physically I separated from traffic roads. I (A)- Numerator I			
(A)- Nomeration I 2. Calculate the total length of bicycle paths in the I neighborhood. I			
(B)-Denominator			
3. Calculate the indicator as: A/B(%)			
Standard: Reference: CESBA MED Project - SNTool Assessment System.			

	F. Transportation		
F3	Safety in Mobi	lity	
F3. 2	Availability of	Sidewalks	
Intent: To	Intent: To promote road connectivity, as a key element of spatial accessibility.		
l In	ndicator	Unit of Measur	'e
Percentage of road's length that has dedicated % sidewalks.			
Assess	ment Methodolo	ogy:	
1. Calcu sidewalk	S.	h that has dedicated	
I 2. Calcul	A)- Nu) ate the total length c	umerator of the roads in the	
neighbor	hood		
I 3. Calcu	B)-Den) late the indicator as	ominator 	
	A/B (%)		
Standard: Reference: _ CESBA MED Project - SNT∞l Assessment System.			
F	F. Transpo & Mot		SN Tool
F3 Safety in Mobility			
F3.4 Traffic Fatalities			
Intent: To assess road safety			

F3 Safety in Mobility		
F3.4 Traffic Fatalities		
Intent: To ass	ess road safety	
Indicator	Unit of Measure	
Traffic fatalities per 1.000 inhabitants	N/1.000 Inhabitants	
Assessment Methodology:		
 Calculate the number of traffic fatalities. (A)- Numerator 		
2. Calculate one 1.000 inhabitants of the neighborhood's population.		
(B)-Denominator		
3. Calculate the indicator as:		
A/	′B(%)	
- Ke	e ference: IECE-Collection Methodology for y Performance Indicators for aart Sustainable Cities.	

6	F. Transportation		
F 4	Urban Morpho	ology & Transporta	tion
F4. 1 Cyclomatic Complexity of the Street Network			
Intent: To assess road connectivity as a key element of spatial accessibility.			
I	ndicator	Unit of Measur	e
	Cyclomatic Number	Number	
Assessment Methodology:			
To assess this indicator, it is necesarry to add up all the road links and subtratc the number of intersections. Links-Nodes+1 For the calculation of the performance indicator proceed as follows:			
 Locate in the neighborhood the intersections (nodes N), and quantify them. Find in the neighborhood segments between successive intersections, quantify them (sides L). Apply the formula: L-N+1 			
Standar	u	ference: SBA MED Project - SNTool	

Assessment System.

F A	F. Transportation & Mobility			
F4	Urban Morph	ology & Transporta	tion	
F4. 2	F4. 2 Connectivity of the Street Network			
Intent: To determine the connectivity of the local street network.				
In	dicator	Unit of Measur	e	
related	of intersections to the overall face area.	Number/Km ²		
Assessn	nent Methodolo	ogy:		
 Calculate the number of streets intersections in the neighborhood. 				
(A)- Numerator 2. Calculate the area of the neighborhood in Km ² .				
(B)-Denominator				
3. Calculate the indicator as:				
A/B I				
Standard		eference: SBA MED Project - SNToo		

CESBA MED Project - SNTool Assessment System.

SNTool MED

G.Social Aspects

Description of the Information

G: Issue

Gx:Category

G1: Accessibility	G
(Disabled People)	G
G2: Housing G3: Availability of Public,	G
Private Facilities & Services	G
G4: Education G5: Social Inclusion	G

G6: Safety G7: Health G8: Food Security G9: Culture & Heritage G10: Perceptual

Gx.x Criterion

Intent: Description of the objective of the criterion

Indicator: Name of the indicator to be calculated

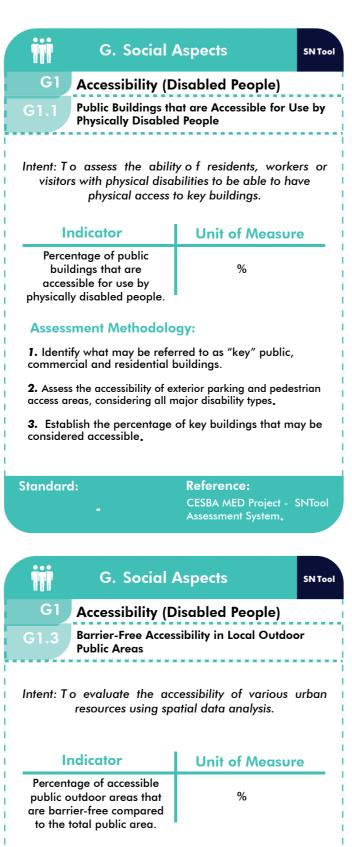
Unit of Measure: Measuring unit of each indicator

Standard: The calculation standard for the criterion

References: The acquiring source of information

🔶 Key Performance Indicator

G. Social	G. Social Aspects		
G1 Accessibility (Disabled People)		
G1.2 Sidewalks & Other Pedestrian Paths that are Accessible for Use by Physically Disabled People			
Intent: To assess the ability of residents, workers or visitors with physical disabilities to be able to make use of public outdoor facilities in the neighborhood.			
Indicator	Unit of Measur	e	
Percentage of sidewalks and other pedestrian ways % that are accessible for use by physically disabled people Assessment Methodology:			
 Identify key pedestrian paths or other public routes that may be frequently used by people with physical disabilities. 			
2. Assess the accessibility of exterior parking and pedestrian access areas, considering all major disability types.			
 Establish the percentage of public pedestrian routes that may be considered accessible. 			
Standard:	Reference:		
	CESBA MED Project - Assessment System.	SNTool	



Assessment Methodology:

1. Identify key outdoor public facilities that may be frequently used by people with physical disabilities.

2. Assess the accessibility of pedestrians routes, considering all major disability types.

3. Establish the percentage of public outdoor facilities that may be considered accessible.

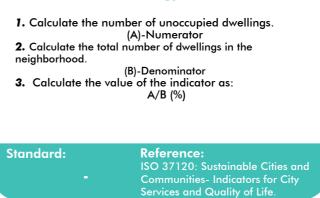
Standard: Reference: CESBA MED Project - SNTool Assessment System

iii G	. Social A	Aspects	SN Tool	
G2 Hous	ing			
G2.1 Afford	ability of Ho	ousing Property		
Intent: To assess	Intent: To assess the affordability of housing property in the neighborhood.			
Indicate	or	Unit of Measu	re	
Housing properties in the neighborhood that are % financially accessible to the lowest quintile of area population.				
Assessment A	Nethodolo	gy:		
 Calculate the number of housing properties in the neighborhood that are financially accessible to the lowest quintile of area population. (A)-Numerator Calculate the total number of housing properties in the neighborhood. (B)-Denominator 				
3. Calculate the		s: 3 (%)		
Standard: -		Reference: CESBA MED Project - Assessment System.	SNTool	
iii G	. Social /	Aspects	SN Tool	
G2 Housing				
G2.3 Vacant Residential Units in the Neighborhood				
Intent: To understand the current and future housing				

Indicator	Unit of Measure
Percentage of vacant residential units.	%

needs in the neighborhood.

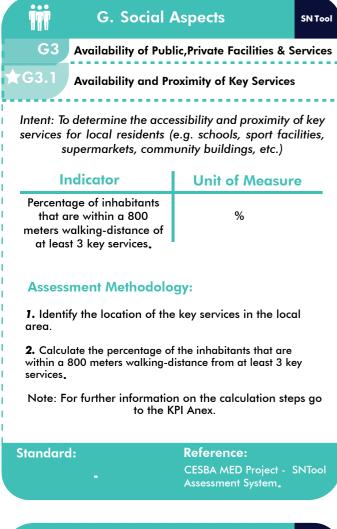
Assessment Methodology:



SNTool MED



⁸⁷



iii	G. Social Aspects	SN Tool
G3	Availability of Public, Private Facilities &	Services
G3.3	Availability and Proximity to a Public Second School	lary
Intent: To	evaluate the percentage of the population a secondary school.	near

Indicator	Unit of Measure
Percentage of the population living within a 500m distance to a public secondary school	%

Assessment Methodology:

 Locate all the secondary schools present in the neighborhood.
 Calculate a 500 meter buffer zone for each primary

school located in the neighborhood.3.Calculate the number of buildings contained in each

buffer zone. 4.Calculate the indicator as:

Total number of buildings located near a secondary school (500m) / Total number of buildings in the neighborhood.

Standard:

Reference: ISO 37120: Sustainable Cities and Communities- Indicators for City Services and Quality of Life.

	T	G. Social A	Aspects	SN Tool
	G3	Availability of Publ	ic,Private Facilities & S	ervices
(G3.2	Availability and Prov	kimity of a Public Primar	y School
I	Intent: To evaluate the percentage of the population near a primary school.			
 	h	ndicator	Unit of Measur	е
	populat 300 m	centage of the ion living within a eter distance to a primary school	%	
 	Assess	ment Methodolo	gy:	
	neighbo 2. Calcu school la 3.Calcul buffer za 4.Calcul Total nu	late a 300 meter bu ocated in the neighbo late the number of b one. late the indicator as: mber of buildings loo	ffer zone for each prime	ich hool
S	tandaro	IS • Co	eference: O 37120: Sustainable Ci ommunities- Indicators fo ervices and Quality of Life	or City
	iii	G. Social A	Aspects	SN Tool
	G3	Availability of Pub	lic, Private Facilities & S	Services
	G3.4	Availability & Proxin Facilities	nity to Children's Play	
	ntent: To	evaluate the percen children's pl	ntage of the populatior ay facilities.	near
	h	ndicator	Unit of Measur	е
, 	рор	centage of the ulation near a en's play facility.	%	
 	Assess	ment Methodolo	gy:	
 1. 1. Locate all the children's play facilities present in the neighborhood. 2. Calculate a 300 meter buffer zone for each primary school located in the neighborhood. 3. Calculate the number of buildings contained in each buffer zone. 4. Calculate the indicator as: 			ary	

4.Calculate the indicator as:

Total number of buildings located near a children's play facility (300m) / Total number of buildings in the

Standard: - **Reference:** ISO 37120: Sustainable Cities and Communities- Indicators for City Services and Quality of Life.

SNTool	M	:г
J		

G. Social A	Aspects SN Tool
G3 Availability of Pub	lic,Private Facilities & Services
G3.5 Outdoor Public Sp	aces
Intent: To ensure that public local cultural value is pr	
Indicator	Unit of Measure
Average share of the built-up area of the neighborhood that is open space for public use.	%
Assessment Methodolo	gy:
 Calculate the share of the neigborhood that is open sp (A)-Nu 	
2. Calculate the total area of t (B)-Den	he neighborhood. ominator
3. Calculate the value of the A/E	indicator as: 3 (%)
Standard:	Reference:
	CESBA MED Project - SNTool Assessment System.
G. Social /	Aspects SN Tool
G4 Education	
G4.2 Rate of Female Scho	olarship
Intent: To monito	r woman's rights

Indicator	Unit of Measure
Ratio of female to male mean years of education received og population age 25+	%

Assessment Methodology:

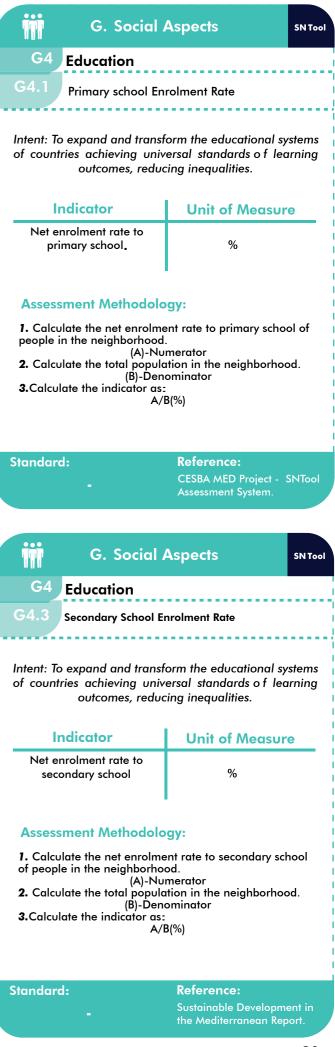
1. Calculate the number of female's average years of education received of population age 25+ in the neighborhood.

(A)-Numerator **2.** Calculate the number of male's average years of education received of population age 25+ in the neighborhood.

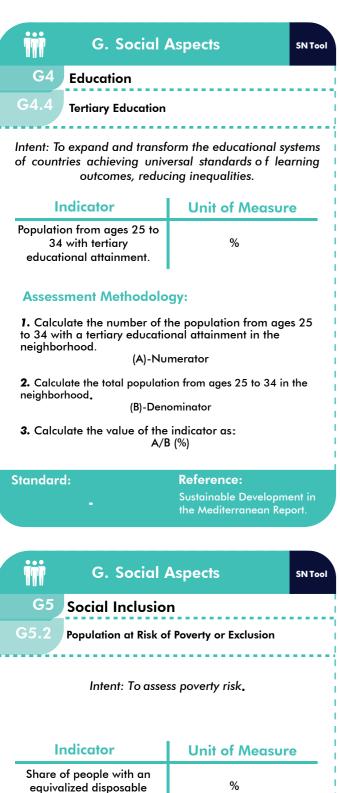
(B)-Denominator

3. Calculate the value of the indicator as: A/B(%)

Standard:	Reference:
•	Sustainable Development in the Mediterranean Report.



⁸⁹



Assessment Methodology:

income below 60% of the national median income.

```
G. Social Aspects
                                                   SN Tool
  G5
         Social Inclusion
G5.1
         Energy Poverty of Households
            . . . . . . . . . . . . . . . . . . .
             Intent: To assess poverty risk.
       Indicator
                               Unit of Measure
 Percentage of households
 unable to afford the most
                                       %
   basic levels of energy
   (more than 10% of the
  income spent on energy
           bills)
 Assessment Methodology:
 1. Calculate the number of households unable to afford
 the most basic levels of energy (more than 10% of the
 income spent on energy bills)
 (A)-Numerator
2. Calculate the total number of households in the
 neighborhood.
                    (B)-Denominator
 3.Calculate the indicator as:
                        A/B(%)
                             Reference:
Standard:
              G. Social Aspects
                                                   SN Tool
  G6
         Safety
G6.1
         Police Service
Intent: To assess the overall crime prevention in place in
                  the neighborhood.
       Indicator
                               Unit of Measure
 Number of police officers
                              N/1.000 Inhabitants
   per 1.000 inhabitants.
```

Assessment Methodology:

Standard:

```
Reference:
ISO 37120: Sustainable cities and
communities-Indicators for city services
and quality of life.
```

SNTool MED

G. Social	Aspects SN	Tool
G6 Safety		
G6.2 Fire Service		
	all fire security/prevention neighborhood.	in
Indicator	Unit of Measure	
Number of firefigthers per 1.000 inhabitants	N/1.000 Inhabitants	
 Calculate one 1.000 of the population. (B)-De Calculate the value of t	manent full-time or (FTE) neighborhood. umerator e neighborhood's total nominator	
Standard: -	Reference: Sustainable Development i the Mediterranean Report.	n
G. Social G7 Health		Tool
G7.1 In-Patient Hospital	Beds	
Intent: To monitor the leve	l of a health service delivery	<i>.</i>

Indicator	Unit of Measure
Number of in-patient public hospital beds per 1.000 inhabitants	N/1.000 Inhabitants

Assessment Methodology:

(public and private) (A)- 2. Calculate one 1.000 o population.	Denominator
Standard	Reference

UNECE - Collection Methodology

for Key Performance Indicators fo Smart Sustainable Cities

SNTool MED

G. Social	Aspects SN Tool		
G6 Safety			
G6.3 Population Living in	Disaster Prone Areas		
significant risk of death or d hazards; cyclones, droug	ns living i n areas subject to amage caused by prominent ght, floods, earthquakes, nd landslides.		
Indicator	Unit of Measure		
Percentage of inhabitants living in a zone subject to natural hazards.	%		
damage caused by promine (A)-Nu 2. Calculate the total numbe population. (B)-Den 3.Calculate the indicator as:	er of neighborhood inhabi- to significant risk of death or nt hazards. merator er of the neighborhood's ominator		
Standard: Refere	ence:		
UNECE • Key Per	- Collection Methodology for formance Indicators for able Smart Cities.		
G. Social	Aspects SN Tool		
G. Social G8 Food Security	Aspects SN Tool		
G8 Food Security			
G8 Food Security G8.1 Urban Agriculture Intent: To promote inclusion agriculture and also plans projects with the goal of			
G8 Food Security G8.1 Urban Agriculture Intent: To promote inclusion agriculture and also plans projects with the goal of	al Land n of areas devoted to urban of new urban development producing food through		
G8 Food Security G8.1 Urban Agriculture Intent: To promote inclusion agriculture and also plans projects with the goal of reutilization of c	al Land n of areas devoted to urban of new urban development producing food through urban resources.		
G8 Food Security G8.1 Urban Agriculture Intent: To promote inclusion agriculture and also plans projects with the goal of reutilization of o Indicator Area for urban agricultural land on the total	al Land n of areas devoted to urban of new urban development producing food through urban resources. Unit of Measure %		
G8 Food Security G8.1 Urban Agriculture Intent: To promote inclusion agriculture and also plans projects with the goal of reutilization of a Indicator Area for urban agricultural land on the total neighborhood area.	al Land n of areas devoted to urban of new urban development producing food through urban resources. Unit of Measure % PGy: ated urban agricultural area		
G8 Food Security G8.1 Urban Agriculture Intent: To promote inclusion agriculture and also plans projects with the goal of reutilization of the culture Indicator Area for urban agricultural land on the total neighborhood area. Assessment Methodolo 1. Calculate the total design used for food production loc boundaries. (A)-Nu 2. Calculate the total extens area.	al Land of areas devoted to urban of new urban development producing food through urban resources. Unit of Measure % egy: ated urban agricultural area ated within neighborhood merator ion of the neighborhood		
G8 Food Security G8.1 Urban Agricultura Intent: To promote inclusion agriculture and also plans projects with the goal of reutilization of a Indicator Area for urban agricultural land on the total neighborhood area. Assessment Methodolo 1. Calculate the total design used for food production loc boundaries. (A)-Nu 2. Calculate the total extens area. (B)-Den 3.Calculate the indicator ass	al Land n of areas devoted to urban of new urban development producing food through urban resources. Unit of Measure % PGY: ated urban agricultural area ated within neighborhood merator ion of the neighborhood ominator		
G8 Food Security G8 Food Security Urban Agricultura Intent: To promote inclusion agriculture and also plans projects with the goal of reutilization of a Indicator Area for urban agricultural land on the total neighborhood area. Assessment Methodolo 1. Calculate the total design used for food production loc boundaries. (A)-Nu 2. Calculate the total extension area. (B)-Den 3. Calculate the indicator as: (A)-Nu 3. Calculat	al Land n of areas devoted to urban of new urban development producing food through urban resources. Unit of Measure % PGY: ated urban agricultural area ated within neighborhood merator ion of the neighborhood ominator		



G. Social	
G9 Culture and H G9.2 Compatibility of Put Cultural Values	eritage olic Open Space with Local
	open space compatible with rovided in large projects.
Indicator	Unit of Measure
Compatibility with local area traditional values of local public open spaces, including major uses, dimensions and adjacent uses.	Score
Assessment Methodolo	ogy:
experienced third -p	tive assessment by an arty design professional sociologist.
	e nce: MED Project - SNTool nent System.
	Annosta
G. Social A	Aspects SN Tool
G10 Perceptual G10.2 Impact of Commerc Environment	ial Signage on the Visual
G10. 2 Impact of Commerc Environment Intent: To avoid visual envir	ial Signage on the Visual conment obstruction through ommercial signage.
G10. 2 Impact of Commerc Environment Intent: To avoid visual envir	onment obstruction through
G10. 2 Impact of Commerc Environment Intent: To avoid visual envir the integration of co	conment obstruction through ommercial signage.
G10. 2 Impact of Commerc Environment Intent: To avoid visual envir the integration of co Indicator Visual Impact of exterior	onment obstruction through ommercial signage. Unit of Measure Score
G10. 2 Impact of Commerce Environment Intent: To avoid visual envir the integration of control Indicator Visual Impact of exterior commercial signage. Assessment Methodolo Aggregate visual impact of based on degree of integr diversity in signage dime	onment obstruction through ommercial signage. Unit of Measure Score
G10. 2 Impact of Commerce Environment Intent: To avoid visual envir the integration of control Indicator Visual Impact of exterior commercial signage. Assessment Methodolo Aggregate visual impact of based on degree of integr diversity in signage dime	onment obstruction through ommercial signage. Unit of Measure Score Score

G. Social A	Aspects	SN Tool
G10 Perceptual		
G10.3 Impact of Overhead Electric Distribution System		
Intent: To avoid visual enviro overhead electric o		sed by
Indicator	Unit of Measur	е
Visual impact of above-grade electrical distribution systems	Score	
Assessment Methodolo Aggregate visual impact distribution systems, based o determined by a sample o	of above-grade electric on degree of visual clutt	er; as
Standard: -	Reference: CESBA MED Project - SNTool Assessment Sys	stem

B H.Economy
Description of the Information
H: Issue
Hx: Category
H1: Economic Performanc e H2: Employment H3: Innovatio n H4: ICT Infrastructure
Hx.x: Criterion
Intent: Description of the objective of t criterion
Indicator: Name of the indicator to b calculated
Unit of Measure: Measuring unit of each indicator
Standard: The calculation

standard for the criterion References: The acquiring source of information

۱e

★ Key Performance Indicator

(5) H. Ec	onomy SN Tool	
H2 Employment		
H2.1 Unemployme	nt Rate	
Intent: To assess the labour market status, the economy development and citizens' quality of life.		
Indicator	Unit of Measure	
Percentage of working age adults unemployed or actively working for work.	%	
Assessment Methodo	logy:	
 Calculate the number of working age adults unemployed or actively looking for work in the neighborhood. (A) - Numerator Calculate the number of working age people in the 		
neighborhood. (B)-Denominator 3. Calculate the value of the indicator as: A/B(%)		
Standard:	Reference:	
	CESBA MED Project - SNTool Assessment System.	

(5)	H. Ecor	nomy	SN Tool
H1	Economic Perfo	ormance	
H1.1	Average Annual P Residents	er-Capita Income of	
Intent: To evaluate the economic well-being.			
i Ir	ndicator	Unit of Measur	е і
	tage of average apita income.	%	
Assessment Methodology: 1. Calculate the income per-capita of residents in the neighborhood. (A) - Numerator 2. Calculate the income per-capita income of the whole urban region. (B)-Denominator 3. Calculate the value of the indicator as: A/B(%)			
Standard	l: -	Reference: CESBA MED Project - S Assessment System.	SNTool
S H. Economy SN Tool			
H2 Employment			
H2.2 Youth unemployment rate			
Intent: To quantify and analyze the current labor market trends and challenges of young people.			

Indicator	Unit of Measure
Percentage of unemployed youth.	%

Assessment Methodology:

- 1. Calculate the total number of a neighborhood's unemployed youth. (A) - Numerator 2. Calculate the neighborhood's total youth labor force.
- (B)-Denominator **3.** Calculate the value of the indicator as: A/B(%)

Standard:

Reference: ISO 37120: Sustainable Cities and Communities - Indicators for City Services and Quality of Life.



(3)	H. Ecor	nomy	SN Tool
H3	Innovation		
H3.1	New Business R	egistration Rate	
Intent: T	o assess the neigbo activity and econo	orhood's level of eco mic performance.	onomic
h	ndicator	Unit of Measu	re
registro	rtion of business ations per 10.000 ants aged 16 and above.	N/10.000 Inhabitar	nts
Assess	ment Methodolo	gy:	
 Calculate the total number of new businessess registrations per 10.000 inhabitants aged 16 and above. (A) - Numerator Calculate one 10.000th of the neighborhood's total population. (B)-Denominator Calculate the value of the indicator as:			
Standar	ISC • Co	ference: 0 37120: Sustainable Ci mmunities- Indicators fo rvices and Quality of Life	or City
(5)	H. Ecor	nomy	SN Tool
	ICT Infrastructu Wireless Broadl	oand Coverage	
	<i>.</i> ,	,	
	ndicator centage of the	Unit of Measu	re
neighb wirel	orhood served by ess broadband 3G,4G,5G)	%	
Assess	ment Methodolo	gy:	
mobile s	services (km²). (A) - Nu late the total area of t	neighborhood covered Imerator he neighborhood (Km ²) omingtor	

- Calculate the total area of the neighborhood (Km²). (B)-Denominator
 Calculate the value of the indicator as: A/B(%)
 Note: Each service should be reported on separately (3G, and, 4G)

Standard:	Reference:	
•	UNECE-Collection Methodology for Key Performance Indicators for Smart Sustainable Cities	/

SNTool MED

	H. Ecor	nomy	SN Tool
H4	ICT Infrastruct	ure	
H4.1	Fixed Broadband S	Subscriptions	i
Inte	nt: To assess the acc technology o	cess to information an connectivity.	d i
h	ndicator	Unit of Measur	ا ۲ e ا
with	age of households n fixed (wired) proadband.	%	
 Calcu in the ne Calcu neighbor 	Assessment Methodology: 1. Calculate the number of fixed broadband subscriptions in the neighborhood. (A) - Numerator 2. Calculate the total number of households in the neighborhood. (B)-Denominator 3. Calculate the value of the indicator as: A/B(%)		
Standard	Standard: Reference: UNECE-Collection Methodology for Key Performance Indicators for Smart Sustainable Cities.		
	H. Ecor		SN Tool
н4.3	ICT Infrastruct		
114.5	Availability of WI	ri in Public Areas	
Intent: T	o increase access to	o internet at little or no	cost.
lr	ndicator	Unit of Measur	re
ho neighbo	Number of public WIFI hotspots in the n/1000 inhabitants neighborhood per 1.000 inhabitants.		
Assess	Assessment Methodology:		
by the n 2. Calcu populatio	 Calculate the total number of WIFI hotspots provided by the neighborhood's administration. (A) - Numerator Calculate one 1.000th of the neighborhood's total population. (B)-Denominator 		
J. Cult	ulate the value of the A/I	B(%)	1
			1

95

for Key Performance Indicators for Smart Sustainable Cities.

(5)	H. Ecor	nomy	SN Too
H4	ICT Infrastructu	Jre	
H4.4	Mobile Phone Sub	scriptions	
Intent: To evaluate the levels of communication technology, information, communication technology and innovation.			
h	ndicator	Unit of Measur	е
Total number of mobile phones subscriptions in the area per 1.000 inhabitants in the neighborhood.			
Assessment Methodology:			
 Calculate the total number of mobile phone connections in the neighborhood. (A) - Numerator Calculate one 1.000th of the neighborhood's total population			
Standard	d. Re	ference:	
orundur	ISO anc	37120: Sustainable Citic Communities - Indicato Services and Quality of	ors for

1



Description of the Information : Issue X: Category 11: Climate Change Mitigatio n 12: Adaptation of the Climatic Action: Heatwaves & Increase of Temperatures 13: Adaptation of the Climatic Action: Pluvial Flood 14: Adaptation to the Climatic Action: Fluvial & Coastal Flood 15: Adaptation to the Climatic Action: Drought 16: Adaptation to the Climatic Action: Wildfire 17: Climatic Hazard: Win d **HX.X:** Criterion **Intent:** Description of the objective of the criterion **Indicator:** Name of the indicator to be calculated Unit of Measure: Measuring unit of each indicator **Standard:** The calculation standard for the criterion **References:** The acquiring source of information ★ Key Performance Indicator

Mitigation & Adaptation		
I1 Climate Chang	ge Mitigation	
I1.2 Greenhouse gas emissions from residential buildings		
Intent: To estimate urban greenhouse emissions from all residential buildings.		
Indicator Unit of Measure		
Total amount of greenhouse gases in Kg (equivalent carbon dioxide units) generated over a calendar year per aggregated indoor useful floor area	Kg CO² eq / m²	
Assessment Methodology:		
A. Calculate the annual total final greenhouse emissions for the building operations in Kg CO ² eq/m ² , for each residential building.		

B. Calculate the aggregated useful floor area for all residential buildings.

C. Calculate the indicator:

A/B

ect - SNTool

Standard:	Reference:
	CESBA MED Pro Assessment Syst

I. Climate Mitigation &		
11 Climate Chang	ge Mitigation	
Green House Ga	s Emissions	
	dverse contribution the ing to climate change.	
Indicator	Unit of Measure	
Total amount of greenhouse gases (equivalent to carbon dioxide units) per inhabitant, generated from building operations per year.		
Assessment Methodology:		
 Calculate the total amount of greenhouse gases in tonees (equivalent carbon dioxide units) generated over a calendar year by all activities within the neighborhood, including indirect emissions outside neighborhood boundaries. (A) - Numerator Calculate the total population of the neighborhood.		
Standard: ISO 37120: Sustainable Cities and Communities-Indicators for City Services and Quality of Life.		
I. Climate Mitigation &	SN 1001	

	K.	I. Climate Mitigation &	· · · · · · · · · · · · · · · · · · ·	SN Tool
	1	Climate Chang	e Mitigation	
	11.3	Embodied Carbon Renovation Infras	n for Construction and tructures	d 1
			of construction materic ow embodied carbon.	als for 1
	Ir	ndicator	Unit of Measur	e I
	Aggregated total embodied carbon per aggregated linear area.		kg CO₂ eq / m²	2 I
Assessment Methodology:			gy:	1
 Identify the basic composition of each infrastructure element. The mass of each constituent material has to be estimated: Aggregate by material: The mass for each constituent material should thereafter be aggregated to obtain the total mass for each type of material. 				
	multiplyi carbon c database CO 2equ unit mas sed per	ing the specific mass coefficient (national d es) the coefficients a vivalent (kgCO ₂ eq) p ss (kg) of the materia unit area of material vlate the total linear of	carbon of each material with its corresponding coefficients or internation re quantified in kilogram per unit mass (kgCO ₂ eq Il or sometimes also exp (kgCO ₂ eq/m ²). area of the infrastructur	nal I ms of I) per I pres- I

considered. 5. Calculate the indicator's value as:

Total embodied carbon of the building /Total linear area.

Standard:	Reference:
EN 15978	CESBA MED Project - SNT Assessment System

I. Climate Change : 69 SN Too **Mitigation & Adaptation** 11 **Climate Change Mitigation** Embodied Carbon for Construction/ 11.4 **Renovation of Residential Buildings** Intent: To promote the use of construction materials with a low embodied carbon Indicator Unit of Measure Aggregated total embodied carbon per aggregated kg CO₂ eq / m² indoor useful floor area. Assessment Methodology: 1. Identify the basic composition of each building element for

all residential building of the neighborhood. The mass of each

constituent material has to be estimated:

2. Aggregate by material: The mass for each constituent material should thereafter be aggregated to obtain the total

- mass for each type of material. 3. Calculate the embodied carbon of each material by
- multiplying the specific mass with its corresponding carbon coefficient (national coefficients or international databases)
- the coefficients are quantified in kilograms of CO2 equivalent
- (kgCO 2eq) per unit mass (kgCO 2 eq) per unit mass (kg) of the
- material or sometimes also expressed per unit area of material (kgCO₂eq/m²). 4. Calculate the total interal floor area of the residential
- buildings in the neighborhood.
- 5. Calculate the indicator's value as:
- Total embodied carbon of the building /Total useful internal floor area of residential buildings.

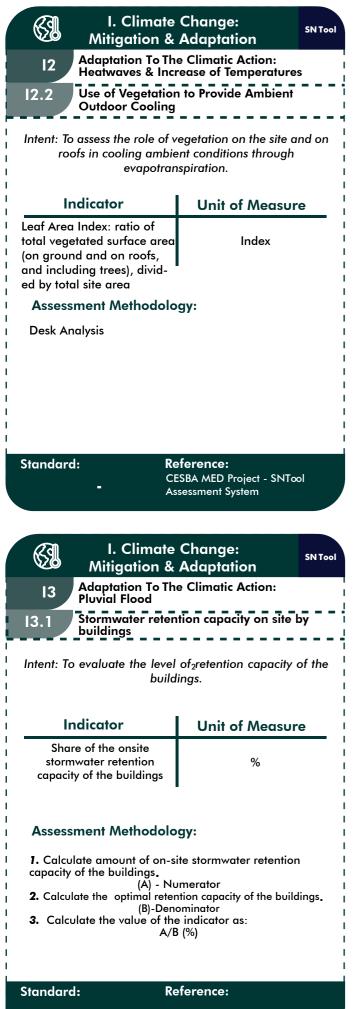
Standard:	Reference:
EN 15978	CESBA MED Project - SNTool Assessment System
	Assessment System

I. Climate Change: Mitigation & Adaptation			SN Tool
I1 Climate Change Mitigation			!
11.6 CO ₂ Sequestration			
Intent: To promote the CO2 sequestration in the neighbborhood		e 	
h	ndicator	Unit of Measur	ו פ ו
Potential CO2 sequestration in the neighborhood per hectare.		tepCO2 /ha	
Assessment Methodology: 1. Calculate the amount of CO ₂ sequestration in the neighborhood. (A) - Numerator 2. Calculate the total area of the neighborhood in hectares. (B)-Denominator 3. Calculate the value of the indicator as:		1	
Standard: - Standard: - CESBA MED Project - SNTcol Assessment System			

SNTool MED

SNTool MED

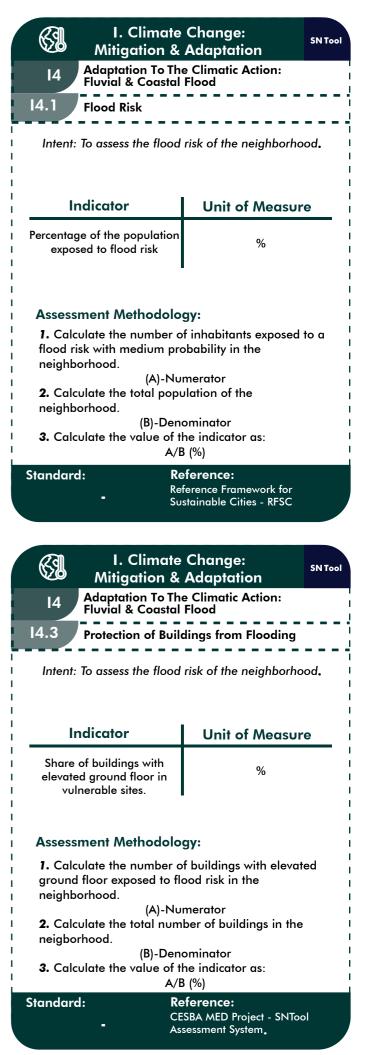
		Change : Adaptation	SN Tool
I1 Climate	Chang	e Mitigation	
		or Construction/Renove ational Buildings	ation of
•		of construction materi ow embodied carbon.	
Indicator		Unit of Measu	re
Aggregated total em carbon per aggreg linear area.		kg CO₂ eq / m	2
Assessment Methodology:			l
 all office/educational buildings. The mass of each constituent material has to be estimated: 2. Aggregate by material: The mass for each constituent material should thereafter be aggregated to obtain the total mass for each type of material. 3. Calculate the embodied carbon of each material by multiplying the specific mass with its corresponding carbon coefficient (national coefficients or international databases) the coefficients are quantified in kilograms of CO2equivalent (kgCO2eq) per unit mass (kgCO2eq) per unit mass (kg) of the material or sometimes also expressed per unit area of material (kgCO2eq/m²). 4. Calculate the total useful internal floor area for all offices/educational buildings of the neighborhood. 5. Calculate the indicator's value as: Total embodied carbon of the building /Total useful internal floor area of offfices/educational buildings. 			e total rbon ases) ivalent i) of a of
Standard:	Po	eference:	
EN 15978	CE	SBA MED Project - SNTo sessment System	ol
Mitiga	tion &	Change: Adaptation	SN Tool
Mitiga 12 Adaptatio	tion & on To The		
Mitiga 12 Adaptatio	tion & on To The	Adaptation Climatic Action:	
Mitigation12Adaptation12Heatwaye12.1AlbedoIntent: To estimate the stimule of the stimu	tion & on To The ss & Incr he exter	Adaptation Climatic Action:	es
Mitigation12Adaptation12Heatwaye12.1AlbedoIntent: To estimate the stimule of the stimu	tion & on To The ss & Incr he exter	Adaptation e Climatic Action: ease of Temperature nt of the Urban Heat	es Island
Mitigation 12 Adaptation 12 Adaptation 12.1 Albedo Intent: To estimate the effect	tion & In To The s & Incr he exter in the n tance ces and	Adaptation e Climatic Action: rease of Temperature nt of the Urban Heat eighborhood.	es Island
Mitigation 12 Adaptation 12 Adaptation 12.1 Albedo Intent: To estimate the effect Indicator Mean Solar Reflect Index of paved surface	tion & m To The s & Incr he exter in the n tance ces and orhood	Adaptation e Climatic Action: ease of Temperature of of the Urban Heat eighborhood. Unit of Measur SRI	es Island
Mitigation 12 Adaptation 12 Adaptation 12 Adaptation 12.1 Albedo Intent: To estimate the effect Indicator Mean Solar Reflect Index of paved surfation roofs in the neighbor Assessment Met 1. Identify the bound 2. Obtain records of	tion & In To The s & Incr he exter in the n tance ces and orhood hodolo daries of local amb	Adaptation e Climatic Action: ease of Temperature of of the Urban Heat eighborhood. Unit of Measur SRI	es Island re
Mitigation 12 Adaptation 12 Adaptation 12 Adaptation 12 Albedo 12.1 Albedo Intent: To estimate the effect Indicator Mean Solar Reflect Index of paved surfation roofs in the neighbor Assessment Method 1. Identify the bound 2. Obtain records of speeds during summer	tion & In To The set of the exter in the exter in the n trance ces and orhood hodolo daries of local amber condition	Adaptation e Climatic Action: rease of Temperature at of the Urban Heat eighborhood. Unit of Measur SRI gy: the area being assessed pient temperatures and v	es Island re
Mitigation 12 Adaptation 12 Adaptation 12 Adaptation 12 Albedo 12.1 Albedo Intent: To estimate the effect Indicator Mean Solar Reflect Index of paved surfation roofs in the neighbor Assessment Mether 1. Identify the bound 2. Obtain records of speeds during summer 3. Obtain similar data	tion & In To The set Incr the exter in the n trance ces and prhood hodolo daries of local amb er condition ta for the	Adaptation e Climatic Action: rease of Temperature at of the Urban Heat eighborhood. Unit of Measur SRI gy: the area being assessed bient temperatures and void on sover a 3-year period	es Island re ed. vind
Mitigation 12 Adaptation 12 Adaptation 12 Albedo 12.1 Albedo Intent: To estimate the effect Indicator Mean Solar Reflect Index of paved surfation roofs in the neighbor Assessment Mether 1. Identify the bound 2. Obtain records of a speeds during summer 3. Obtain similar data 4. Identify difference UHI effects. 5. Identify factors in	tion & In To The set of the exter in the exter in the n trance ces and brhodolo daries of local amb er condition ta for the es between configural albedo a	Adaptation e Climatic Action: rease of Temperature at of the Urban Heat eighborhood. Unit of Measur SRI gy: the area being assesses bient temperatures and void ons over a 3-year period e larger urban region. en the local and region	es Island re ed. vind I.



	ate Change:	SNT
	The Climatic Action: Increase of Temperatu	res
I2.3 Green Roofs		
Intent: To determine the on all buildings relative neig		
Indicator	Unit of Meas	ure
Aggregate area of buildi roofs covered with vegeta materia l		
Assessment Method	ology:	
	ngs with green roofs an ate net green roof area	
2. Determine the rat roof area to the tota neighborhood.	io of the aggregate gre I surface area in the	en
Standard:	Reference:	
	Nelelelice.	
	CESBA MED Project - SN Assessment System	
Mitigation	CESBA MED Project - SN Assessment System	
Mitigation 13 Adaptation To Pluvial Flood	CESBA MED Project - SN Assessment System	
Mitigation 13 Adaptation To Pluvial Flood	CESBA MED Project - SN Assessment System	
Mitigation 13 Adaptation To Pluvial Flood 13.2 Sustainable U	CESBA MED Project - SN Assessment System	
Mitigation Adaptation To Pluvial Flood 13.2 Sustainable U Intent: To ens	CESBA MED Project - SN Assessment System	SNT
Mitigation Adaptation To Pluvial Flood 13.2 Sustainable U Intent: To ens Indicator	CESBA MED Project - SN Assessment System	SNT
Mitigation Adaptation To Pluvial Flood 13.2 Sustainable U Intent: To ens	CESBA MED Project - SN Assessment System	SNT
Mitigation Adaptation To Pluvial Flood 13.2 Sustainable U Intent: To ens Indicator Share of the optimal capacity of sustainable	CESBA MED Project - SN Assessment System	SNT
Mitigation Adaptation To Pluvial Flood 13.2 Sustainable U Intent: To ens Indicator Share of the optimal capacity of sustainable urban drainage systems Assessment Method 1. Calculate the share of sustainable urban draina	CESBA MED Project - SN Assessment System	SNT
Mitigation Adaptation To Pluvial Flood I3 Sustainable U Intent: To ens Indicator Share of the optimal capacity of sustainable urban drainage systems Assessment Method I. Calculate the share of sustainable urban draina (A) Calculate the optimal carainage systems	CESBA MED Project - SN Assessment System	SN T
Mitigation Adaptation To Pluvial Flood I3 Sustainable U Intent: To ens Indicator Share of the optimal capacity of sustainable urban drainage systems Assessment Method I. Calculate the share of sustainable urban draina (A) Calculate the optimal carainage systems	CESBA MED Project - SN Assessment System	SN T
Mitigation Adaptation To Pluvial Flood Sustainable U Intent: To ens Indicator Share of the optimal capacity of sustainable urban drainage systems Assessment Method 1. Calculate the share of sustainable urban drainage (A) Calculate the optimal c (A)	CESBA MED Project - SN Assessment System	SN T

I. Climate Change: **E** SN Too **Mitigation & Adaptation** Adaptation To The Climatic Action: 13 Pluvial Flood ★ I3.3 Permeability of Land Intent: To improve the permeability of the area Indicator Unit of Measure Percentage of weighted ground permeability % **Assessment Methodology:** Calculate the size (Sa) of the neighborhood area (m²). 2. Calculate the size of the surfaces with a different paving or occupied by constructions in the neighborhood area. Note: For further information on the calculation steps go to the KPIs Anex. Standard: **Reference:** CESBA MED Project - SNTool Assessment System I. Climate Change: <u>(</u> SN Tool **Mitigation & Adaptation** Adaptation To The Climatic Action: 14 Fluvial & Coastal Flood 14.2 **Protection of Vulnerable Zones** Intent: To assess vulnerable zones to flood risk. Indicator Unit of Measure Share of land in vulnerable % areas protected by flooding barriers. Assessment Methodology: 1. Calculate the amount of land in vulnerable areas protected by flooding barriers. (A)-Numerator 2. Calculate the total extension of land in the neighborhood. (B)-Denominator 3. Calculate the value of the indicator as: A/B (%) Standard: **Reference: CESBA MED Project - SNTool** Assessment System.

SNTool MED



101

	K3	I. Climate Mitigation &		SN Tool
	15	Adaptation To The Drought	e Climatic Action:	
	15.1	Rainwater Collect Buildings for Nor	tion and Storage fron Potable Uses.	ייייייייייייייייייייייייייייייייייייי
	Intent: To promote rainwater collection for re-use.			se.
	Indicator		Unit of Measur	е
Share of buildings in the neighborhood with a rainwater collection system.		%		
	Assessment Methodology: 1. Calculate the number of buildings in the neighborhood with a rainwater collection system. (A)-Numerator 2. Calculate the total number of buildings in the neighborhood. (B) - Denominator 3. Calculate the value of the indicator as: A/B (%)			
	Standard	_ CE	s ference: SBA MED Project - SNToo sessment System	ol

E	I. Climate Change: Mitigation & Adaptation		SN Tool
15	I5 Adaptation To The Climatic Action: Drought		1
15.3	I5.3 Greywater Collection in Buildings for Non- Potable Uses		
Intent: To reduce potable water consumption.			1
1 			
Ir	ndicator	Unit of Measur	e i
Share of buildings in the neighborhood with a % greywater collection system			1
Assess	Assessment Methodology:		
	 Calculate the number of buildings in the neighborhood with a greywater collection system. (A) blumerator 		
	(A)-Numerator 2. Calculate the total number of buildings in the neighborhood.		
3. Calc	ulate the value of t	ominator he indicator as: 8 (%)	
Standard	Standard: Reference: CESBA MED Project - SNTool Assessment System.		

	I. Climate Mitigation &	Change: Adaptation	SN Tool
15	Adaptation To Th Drought	e Climatic Action:	
15.2	-	n and Storage for Outd	<u> </u> oor _
I I Intent: To I	Intent: To ensure the optimization of supply, storage and distribution of rainwater.		e and I
 r	ndicator	Unit of Measur	e I
from pav surfaces i	Share of rainwater collected from paved (non permeable) % surfaces in the neighborhood (excluding buildings' roofs and plots)		
Assess	ment Methodolo	gy:	i
paved	(not permeable) sui ing buildings' roofs	of rainwater collected f faces in the neighborl and plots). merator	
collecto	able from paved (no	n amount of rainwater of permeable) surfaces ing buildings' roofs and	
1 1 3. Calc	ulate the value of t	ominator he indicator as: 3 (%)	1
Standard	d: Re	eference:	
		SBA MED Project - SNToo sessment System.	ol
হন	I. Climate	Chanae:	
	Mitigation &	Adaptation	SN Tool
15	Adaptation To Th Drought	e Climatic Action:	i
15.4	Local Vegetation		
Inte			
	ent: To promote the	use of local vegetation	
Ir	nt: To promote the ndicator	use of local vegetation Unit of Measur	1
Share of areas)			
Share o areas)	ndicator f landscape (green plated with local	Unit of Measur %	1
Share or areas) Assess 1. Calc	ndicator f landscape (green plated with local vegetation. ment Methodolo sulate the extent of egetation in the nei	Unit of Measur % gy: green areas planted w ghborhood.	'e
Share o areas) Assess 1. Calc local ve	ndicator f landscape (green plated with local vegetation. ment Methodolo culate the extent of egetation in the nei (A)-Nu culate the total exter orhood.	Unit of Measur % gy: green areas planted w ghborhood. merator nt of green areas in th	/e
Share or areas) Assess 1. Calc local ve 2. Calc neighb	ndicator f landscape (green plated with local vegetation. ment Methodolo culate the extent of egetation in the nei (A)-Nu culate the total exter orhood. (B)-Den culate the value of t	Unit of Measur % gy: green areas planted w ghborhood. merator nt of green areas in th ominator	/e
Share or areas) Assess 1. Calc local ve 2. Calc neighb	ndicator f landscape (green plated with local vegetation. ment Methodolo culate the extent of egetation in the nei (A)-Nu culate the total extent orhood. (B)-Den culate the value of t A/E	Unit of Measur % gy: green areas planted w ghborhood. merator nt of green areas in th ominator he indicator as:	re i
Share or areas) Assess I. Calc local ve 2. Calc neighb	ndicator f landscape (green plated with local vegetation. ment Methodolo culate the extent of egetation in the nei (A)-Nu culate the total extent orhood. (B)-Den culate the value of t A/E	Unit of Measur % gy: green areas planted w ghborhood. merator nt of green areas in th ominator he indicator as: 3 (%) eference: SBA MED Project - SNToo sessment System.	re 1

	Changes	
I. Climate Change: Mitigation & Adaptation		
16 Adaptation To The Wildfire	e Climatic Action:	
I6.1 Wildfire Risk		
Intent: To assess the wildfire	e risk of the neighborhood.	
Indicator	Unit of Measure	
Percentage of the population exposed to wildfire risk.	%	
Assessment Methodolo		
 Calculate the amount of p wildfire risks in the neighbort (A)-Nur 	hood.	
2. Calculate the total population neighborhood.		
(B) - Den 3. Calculate the value of the in A/B		
CE	f erence: ISBA MED Project - SNTool sessment System	
I. Climate Mitigation &	SN IO	
16 Adaptation To The Climatic Action: Wildfire		
16.3 Fire Proof Ground		
I6.3 Fire Proof Ground		
16.3 Fire Proof Ground Intent: To assess the r Indicator		
16.3 Fire Proof Ground	t risk exposure to fire.	
16.3 Fire Proof Ground Intent: To assess the r Indicator Share of ground cover materials (excluding buildings' plots) in vulnerable areas that are fire	t isk exposure to fire. Unit of Measure %	
16.3 Fire Proof Ground Intent: To assess the r Indicator Share of ground cover materials (excluding buildings' plots) in vulnerable areas that are fire resistant. Assessment Methodology 1. Calculate the share of gro (excluding building's plots) in fire resistant in the neighborh	nisk exposure to fire. Unit of Measure % gy: und cover materials a vulnerable areas that are hood.	
16.3 Fire Proof Ground Intent: To assess the r Indicator Share of ground cover materials (excluding buildings' plots) in vulnerable areas that are fire resistant. Assessment Methodolog 1. Calculate the share of gro (excluding building's plots) in fire resistant in the neighborh (A) - Nu 2. Calculate the total extension (excluding buildings' plots) in v neighborhood.	gy: und cover materials vulnerable areas that are hood. merator n of ground cover materials vulnerable areas in the	
16.3 Fire Proof Ground Intent: To assess the r Indicator Share of ground cover materials (excluding buildings' plots) in vulnerable areas that are fire resistant. Assessment Methodolog 1. Calculate the share of gro (excluding building's plots) in fire resistant in the neighborh (A) - Nu 2. Calculate the total extension (excluding buildings' plots) in v neighborhood.	gy: und cover materials vulnerable areas that are hood. merator n of ground cover materials ulnerable areas in the ominator adicator as:	
16.3 Fire Proof Ground Intent: To assess the non- Indicator Indicator Share of ground cover materials (excluding buildings' plots) in vunerable areas that are fire resistant. Assessment Methodolog (a) Calculate the share of gro (excluding building's plots) in (A) - Nu (A) - Nu (A) - Nu (B) - Den (Calculate the value of the in (A/B) (B) - Den (Calculate the value of the in (A/B)	gy: und cover materials vulnerable areas that are hood. merator n of ground cover materials ulnerable areas in the ominator adicator as:	

SNTool MED

Mitigation & Adaptation Adaptation To The Climatic Action: Wildfire I6.2 Fire Protection Intent: To assess the level of vulnerable zones to fire to		
I6.2 Fire Protection		
Intent: To assess the level of vulnerable zones to fire a		
	isk.	
Indicator Unit of Measure		
Share of wildfire vulnerable	_	
areas protected by fire % barriers.		
Assessment Methodology:		
1. Calculate the amount of wildifre vulnerable areas		
protected by fire barriers. (A) - Numerator		
 Calculate the total extension of wildfire vulnerable area in the neighborhood. (B) - Denominator 	is	
3. Calculate the value of the indicator as: A/B (%)		
Standard: Reference:		
CESBA MED Project - SNTool Assessment System		
Ra I. Climate Change:	N Tool	
Mitigation & Adaptation		
17 Climatic Hazard: Wind		
I7.1 Windproof Urban Form		
Intent: To minimize the impact of wind in urban conte	exts.	
Indicator Unit of Measure		
Strategies to minimize the		
Strategies to minimize the Score Score		
Assessment Methodology:		
impact of wind.	ď	
impact of wind. Score Assessment Methodology: Evaluate the strategies adopted in the neighborhood	ď	
impact of wind. Score Assessment Methodology: Evaluate the strategies adopted in the neighborhood	ď	
Score Assessment Methodology: Evaluate the strategies adopted in the neighborhoo to minimize the impact of wind.	ď	
impact of wind. Score Assessment Methodology: Evaluate the strategies adopted in the neighborhood	ď	



Description of the Information

J: Issue

Jx:Category

J1: Urban Planning

J2: Management and Community Involvemen t J3: Public Buildings Operatio n

Jx.x Criterion

Intent: Description of the objective of the criterion

Indicator: Name of the indicator to be calculated

Unit of Measure: Measuring unit of each indicator

Standard: The calculation standard for the criterion

References: The acquiring source of information

J. Gove	ernance	SN Tool	Ī
J2 Management &	ement	J	
J2.1 Involvement of F Affairs	Residents in Communit	t y	J3.
Intent: To promote involver afi	nent of citizens in comm airs.	nunity	Inter
Indicator	Unit of Measur	i i 'e i	i L
Percentage of residents population above 16 years having an involvement in community affairs.	%	_	P re ce
Assessment Methodol	ogy:	I I	As
 Calculate the amount of resident population above 16 years having an involvement in community affairs. (A) - Numerator Calculate the total population of the neighborhood above 			
16 years. (B) - D	enominator		2. C
(b) - Denominator 3. Calculate the value of the indicator as: A/B (%) Standard: CESBA MED Project - SNT∞l Assessment System.			3. C
			Stan

	J. Governance SN Tool		
J1Urban PlanningJ1.1Community Involvement in Urban Planning Activities			
Intent: To raise the level of community involvement in planning through the redistribution of power.			
In	dicator	Unit of Measur	e i
Percentage of residents active in public urban % planning.			
	Assessment Methodology:		

To characterize the indicator's value: Use of the Sherry Arnstein ladder on citizen participation. Rate the level of users' involvement on planning.

SCORE - 1 (LEVEL 1) Non-participation or manipulation and therapy (in the Arnstein ladder).
 SCORE 0 (LEVEL 2) Degrees of tokenism: Information / Consultation / Placation (in the Arnstein ladder).
 SCORE 3 (LEVEL 3) Degrees of citizen power: Partnership, delegated power and citizen power (in the A rnstein ladder) in one phase, like diagnosis or after delivery.
 SCORE 5 (LEVEL 4) Degrees of citizen power: Partnership, delegated power and citizen power (in the Arnstein ladder), at every stages.

Reference:

CESBA MED Project - SNTool Assessment System.

Standard:

Sherry Arnstein

J. G	vernance SN Tool	
J3 Public Buildings Operation		
J3.1 Public Buildings Sustainability		
Intent: To evaluate the number of buildings with a certifi- cation label.		
Indicator	Unit of Measure	
Percentage area of the public buildings with % recognized sustainability certifications on ongoing operations.		
Assessment Metho	ology:	
 Assessment Methodology: 1. Calculate the floor area of public buildings with certification to a recognized standard for ongoing building operations (m²)		
Standard:	Reference: CESBA MED Project - SNTool	

	. Gover	mance		SN Tool
J3 Public I	Building	s Operat	ion	
J3.2 Operating Energy Costs for Public Buildings				
Intent: To evaluate the operational amount energy costs for public buildings.				
Indicator		Unit o	f Measur	е
Aggregated annual operating energy cost per aggregated indoor useful floor area.				
Assessment Me	thodolo	gy:		
 Identify all the pucalculate their usefu Calculate the age cost of the public build of the public build of the public build of the public build of the age cost per aggregated (€/m /yr) Note: in case of build actual thermal and should be calculate 	ul floor are gregated a uildings id gregated a d indoor us ildings in a electrical	ea (m). annual oper entified (€) annual oper seful floor a use, the tota energy use	ating ² nerg ating energ rea, per yea Il annual co from energy	y ar st of y bills

3 years period. Standard: Ref CES

Reference: CESBA MED Project - SNTool Assessment System.

J. Gove	rnance	SN Tool		
J3 Public Building	s Operation			
J3.3 Energy Consump	tion of Public Building	js		
Intent: To evaluate the energy efficiency of public buildings.				
Indicator	Unit of Measur	e i		
Total end use of energy in public buildings within a kWh/m ² neighborhood by the total indoor useful area of the buildings.				
Assessment Methodolo	ogy:	1		
 Calculate the total end use of energy in public buildings withing the neighborhood (Kwh). (A) - Numerator Calculate the total indoor useful area of these buildings (m²) (B) - Denominator Calculate the value of the indicator as: A/B (%) 				
	eference: ESBA MED Project - SNToc	bl		

4.Key performance indicators



Definition:

the SNTool MED.

bourhoods in different cities.

B. Energy: 6

C. Water: 1

D. Solid waste: 1 E. Environmental quality: 1 F. Transportation and mobility: 2 G. Social aspects: 1 H. Economy: 0 I. Climate change: mitigation and adaptation: 2 J. Governance: 0

SNTool MED

SNTool MED



KPIs are a set of assessment criteria that during the contextualisation process must be included in the local versions of

KPIs are linked to the global sustainability goals in the Mediterranean and they are meaningful in any region.

KPIs allows to compare directly the perforamnce of neigh-

The value of KPIs is reported in the SMC Passport.

There are 14 key performance indicators :

A. Use of land and biodiversity: 0

\mathbf{f}

B2

B. Energy

SN Tool

Energy Consumption

Total Final Thermal Energy Consumption for Building Operations B2.1

Intent: To estimate urban thermal energy consumption for building operations

Indicator	Unit of Measure
Aggregated annual total final thermal energy consumption per aggregated indoor useful floor area	kWh/m²/yr

Assessment Methodology:

To perform the calculation, it is possible to use metered or estimated data. The source of data must always be clearly declared.

For the evaluation of the actual performance of the urban area it is preferable to use metered data. If metered data aren't available, estimated data shall be used. Estimated data shall be used for evaluating a Iternative scenarios in planning and decision-making processes. In reporting the indicator's value, the data source must be indicated.

Use of Estimated Data

1. In the calculation of the final thermal energy consumption, the following energy uses must be considered: Heating, Cooling, Domestic Hot Water.

2. For each building in the local area, calculate the annual final thermal energy consumption in kilowatts hours (kWh/year)

3. Sum the annual final thermal energy consumption of each building up to an aggregated total annual final thermal energy consumption (kWh/year)

4.Sum the indoor useful area of each building in the area up to an aggregated indoor useful area value (m²)

5. Calculate the indicator's value as: aggregated annual total final thermal energy consumption/aggregated indoor useful area (kWh/m²/year)

Note: Calculations are based on EN 13790 using the quasi-steady state monthly method.

Use of Metered Data

1. In the evaluation of the final thermal energy consumption, the following energy uses must be considered: Heating, Cooling, Domestic Hot Water

2. For each building in the local area, collect the metered annual final thermal energy consumption in kilowatt hours (kWh/year)

3. Sum the annual final thermal energy consumption of each building up to an aggregated total annual final thermal energy consumption (kWy/year)

4.Sum the annual final thermal energy consumption of each building up to an aggregated total annual final thermal energy consumption (kWy/year)

5. Calculate the indicator's value as: aggregated annual total final thermal energy consumption/aggregated indoor useful area (kWh/m²/year)

Note: The metered energy consumption is suitable for the indicator's calculation only if the building has been in use for 3-years, in order to ensure that there has been time enough to have building systems reach their normal operating efficiency levels, and also to factor out unusual seasonal variations. This means that the buildings assessed are at least 3 years old.

Reference:

Standard: EN 13790

CESBA MED Project - SNTool Assessment System



Total Final Electrical Energy Consumption for Building Operations

Intent: To estimate urban electrical energy consumption for building operations.

Indicator

Aggregated annual total final electrical energy consumption per aggregated indoor useful floor area.

Assessment Methodology:

To perform the calculation, it is possible to use metered or estimated data. The source of data must always be clearly declared.

For the evaluation of the actual performance of the urban area it is preferable to use metered data. If metered data aren't available, estimated data shall be used. Estimated data shall be used for evaluating alternative scenarios in planning and decision-making processes. In reporting the indicator's value, the data source must be indicated.

Use of Estimated Data

1. In the calculation of the final electrical energy consumption, the following energy uses must be considered: heating, cooling, domestic hot water and, lighting. 2. For each building in the local area, calculate the annual final electrical energy consumption in kilowatts hours (kWh/year).

3. Sum the annual final electrical energy consumption of each building up to an aggregated total annual final electrical energy consumption (kWh/year). **4.**Sum the indoor useful area of each building in the area up to an aggregated indoor useful area value (m²).

5. Calculate the indicator's value as: aggregated annual total final electrical energy consumption/aggregated indoor useful area (kWh/m²/year). Note: Calculations are based on EN 13790 using the guasi-steady state monthly method.

Use of Metered Data

SNTool MED

1. In the evaluation of the final electrical energy consumption, the following energy uses must be considered: Heating, Cooling, Domestic Hot Water and Lighting. 2. For each building in the local area, collect the metered annual final electrical energy consumption in kilowatt hours (kWh/year)

3. Sum the annual final electrical energy consumption of each building up to an aggregated total annual final electrical energy consumption (kWy/year) 4. Sum the annual final thermal energy consumption of each building up to an aggregated total annual final electrical energy consumption (kWy/year) 5. Calculate the indicator's value as: aggregated annual total final electrical energy consumption/aggregated indoor useful area (kWh/m²/year) Note: The metered energy consumption is suitable for the indicator's calculation only if the building has been in use for 3-years, in order to ensure that there has been time enough to have building systems reach their normal operating efficiency levels, and also to factor out unusual seasonal variations. This means that the buildings assessed are at least 3 years old.

Standard: EN 13790

SNTool MED

Unit of Measure

kWh/m²/yr

(\mathbf{f})

B2.7

B. Energy

SN Too

(\mathbf{z})

B3.1

B3 Renewable Energy

Share of Renewable Energy On-Site, I for Building Operations

Intent: To incentive the consumption and production of renewable energy

Indicator

Total consumption of final thermal energy generated from renewable sources on-site by total final thermal energy consumption

Assessment Methodology:

To perform the calculation, it is possible to use metered or estimated data. The source of data must always be clearly declared.

For the evaluation of the actual performance of the urban area it is preferable to use metered data. If metered data aren't available, estimated data shall be used. Estimated data shall be used for evaluating alternative scenarios in planning and decision-making processes. In reporting the indicator's value, the data source must be indicated.

Use of Estimated Data

1. In the calculation of the final thermal energy consumption, the following energy uses must be considered: heating, cooling, domestic hot water.

2. For each building in the local area, calculate the annual final thermal energy consumption in kilowatt hours (kWh/year).

3. Sum the annual final thermal energy consumption of each building up to an aggregated total annual final thermal energy consumption (kWh/year).

4. For each building in the local area, calculate the annual final thermal energy consumption from on-site renewable energy sources in kilowatt hours.

5. Sum the annual final thermal energy consumption from on-site renewable sources of each building up to an aggregated total annual final thermal energy consumption from on-site renewable sources (kWh/year).
6. Calculate the indicator as:

Annual total final thermal energy consumption from on-site renewable sources / Annual total final thermal energy consumption.

Note: Calculations are based on EN 13790 using the quasi-steady state monthly method.

Use of Metered Data

1. In the evaluation of the final thermal energy consumption, the following energy uses must be considered: heating, cooling, domestic hot water.

2. For each building in the local area, collect the metered annual final thermal energy consumption) in kilowatt hours (kWh/year).

3. Sum the annual final thermal energy consumption of each building up to an aggregated total annual final thermal energy consumption (kWh/year).

4. For each building in the local area, collect the monitored annual final thermal energy consumption from on-site renewable sources in kilowatt hours (kWh).

5. Sum the annual final thermal energy consumption from on-site renewable sources of each building up to an aggregated total annual final thermal energy consumption from on-site renewable sources (kWh/year).
6. Calculate the indicator as:

Annual total thermal energy generation from on-site renewable energy sources / Annual total final thermal energy consumption.

Note: The metered energy consumption is suitable for the indicator's calculation only if the building has been in use for 3-years, in order to ensure that there has been time enough to have building systems reach their normal operating efficiency levels, and also to factor out unusual seasonal variations. According to the Renewables Energy Directive (RED 2018),, energy from renewable sources means energy from renewable non-fossil sources, namely wind, solar, aerothermal, geothermal, hydrothermal and ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases. Heat pumps enabling the use of aerothermal, geothermal or hydrothermal heat at a useful temperature level need electricity or other auxiliary energy to function. The energy used to drive heat pumps should therefore be deducted from the total usable heat. Only heat pumps for which SPF > 1,15 * $1/\eta$ shall be taken into account.

Standard:		Refe
	EN 13790	CESE

Energy Consumption

Total Primary Energy Demand for Building Operations

Intent: To reduce the need of primary energy for building operations

Indicator Aggregated annual total primary energy consumption per aggregated indoor useful floor area

kWh/m²/yr

Unit of Measure

Assessment Methodology:

To characterize the indicator's value:

1.In the calculation of the primary energy consumption, the following energy uses must be considered: heating, cooling, ventilation, auxiliaries, domestic hot water and lighting.

2.For each building in the local area, calculate the annual final (thermal and electric) energy consumption per energy carrier in kilowatt hours (kWh/year)

3.Sum the annual final energy consumption of each building up to an aggregated annual final energy consumption per energy carrier (kWh/year).

4.Using the national conversion factors, convert the aggregated annual final energy consumption per energy carrier in annual primary energy consumption per energy carrier (kWh/year).

5.Sum the annual primary energy consumption per energy carrier up to an aggregated annual total primary energy consumption (kWh/year).

6.Sum the indoor useful area of each building in the area up to an aggregated indoor useful area value (m^2) .

7. Calculate the indicator's value as:

Aggregated annual total primary energy consumption / Aggregated indoor useful area (kWh/m² /year).

Note: Calculations are based on EN 13790 using the quasi-steady state monthly method.

Standard: EN 13790 **Reference:** CESBA MED Project - SNTool Assessment System.

SNTool MED

Share of Renewable Energy On-Site, Relative to Final Thermal Energy Consumption

	Unit of Measure
y te n	%

erence: BA MED Project - SNTool Assessment System.

B. Energy

B3 Renewable Energy

Share of Renewable Energy On-Site, Relative to Final Electric Energy Consumption **B3.4**

Intent: To incentive the consumption and production of renewable energy

Indicator	Unit of Measure
Total consumption of final electric energy generated from renewable sources on-site divided by the total final electric energy consumption	%

Assessment Methodology:

To perform the calculation, it is possible to use metered or estimated data. The source of data must always be clearly declared.

For the evaluation of the actual performance of the urban area it is preferable to use metered data. If metered data aren't available, estimated data shall be used. Estimated data shall be used for evaluating alternative scenarios in planning and decision-making processes. In reporting the indicator's value, the data source must be indicated. Exported energy is the one delivered by technical systems through the system boundary (urban area) and used outside the system boundary. Exported energy is a benefit beyond the system boundary and it has not to be included in the calculation.

Use of Estimated Data

1. In the calculation of the final electric energy consumption, the following energy uses must be considered: heating, cooling, ventilation, auxiliaries, domestic hot water and lighting.

2. For each building in the local area, calculate the annual final electric energy consumption in kilowatt hours (kWh/year).

3.Sum the annual final electric energy consumption of each building up to an aggregated total annual final electric energy consumption (kWh/year).

4. For each building in the local area, calculate the annual final electric energy consumption from on-site renewable energy sources in kilowatt hours

5. Sum the annual final electric energy consumption from on-site renewable sources of each building up to an aggregated total annual final electric energy consumption from on-site renewable sources (kWh/year). **6.**Calculate the indicator as:

Annual total final electric energy consumption from on-site renewable sources / Annual total final electric energy consumption.

Note: Calculations are based on EN 13790 using the quasi-steady state monthly method.

Use of Metered Data

1. In the evaluation of the final electric energy consumption, the following energy uses must be considered: heating, cooling, ventilation, auxiliaries, domestic hot water and lighting water.

2. For each building in the local area, collect the metered annual final electric energy consumption) in kilowatt hours (kWh/year).

3. Sum the annual final electric energy consumption of each building up to an aggregated total annual final electric energy consumption (kWh/year).

4. For each building in the local area, collect the monitored annual final electric energy consumption from on-site renewable sources in kilowatt hours (kWh).

5.Sum the annual final electric energy consumption from on-site renewable sources of each building up to an aggregated total annual final electric energy consumption from on-site renewable sources (kWh/year). **6.**Calculate the indicator as:

Annual total electric energy generation from on-site renewable energy sources / Annual total final electric energy consumption.

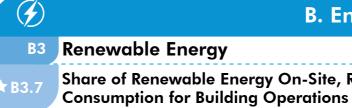
Note: The metered energy consumption is suitable for the indicator's calculation only if the building has been in use for 3-years, in order to ensure that there has been time enough to have building systems reach their normal operating efficiency levels, and also to factor out unusual seasonal variations.

According to the Renewables Energy Directive (RED 2018), energy from renewable sources means energy from renewable non-fossil sources, namely wind, solar, aerothermal, geothermal, hydrothermal and ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases.

Heat pumps enabling the use of aerothermal, geothermal or hydrothermal heat at a useful temperature level need electricity or other auxiliary energy to function. The energy used to drive heat pumps should therefore be deducted from the total usable heat. Only heat pumps

Standard: EN 13790

Reference: CESBA MED Project - SNTool Assessment System.



Intent: To incentive the consumption and production of renewable energy

Indicator

Total consumption of primary energy generated from renewable sources on-site divided by the total final electric energy consumption

Assessment Methodology:

1. In the calculation of the primary energy consumption, the following energy uses must be considered: heating, cooling, ventilation, auxiliaries, domestic hot water and lighting. 2. For each building in the local area, calculate the annual final (thermal and electric) energy consumption per energy carrier in kilowatt hours (kWh/year) 3. Sum the annual final energy consumption of each building up to an aggregated annual final energy consumption per energy carrier (kWh/year). 4. Using the national conversion factors, convert the aggregated annual final energy consumption p er energy c arrier i n annual p rimary energy c onsumption p er energy c arrier (kWh/year).

5. Sum the annual primary energy consumption per energy carrier up to an aggregated annual total primary energy consumption (kWh/year). 6. For each building in the local area, calculate the annual final (thermal and electric) energy consumption per on-site renewable energy source in kilowatt hours (kWh/year) – i.e. P.V, solar thermal panels, etc.

7. Sum the annual final energy consumption from on-site renewable energy sources of each building up to an aggregated annual final energy consumption per on-site renewable energy source (kWh/year).

8. Using the national conversion factors, convert the aggregated annual final energy consumption per on-site renewable energy source in annual primary energy consumption per on-site renewable energy source (kWh/year).

9. Sum the annual primary energy consumption per on-site renewable energy source up to an aggregated annual total primary energy consumption from on-site renewable energy sources (kWh/year).

10. Calculate the indicator's value as:

Aggregated total annual primary energy consumption from on-site renewable energy sources / Aggregated total annual primary energy consumption.

Note Calculations are based on EN 13790 using the guasi-steady state monthly method. Exported energy is the one delivered by technical systems through the system boundary (urban area) and used outside the system boundary. Exported energy is a benefit beyond the system boundary and it has not to be included in the calculation

Standard: EN 13790

SNToo

Share of Renewable Energy On-Site, Relative to the Total Primary Energy

Unit of Measure
%

Reference: CESBA MED Project - SNTool Assessment System.

C. Wa	ter SN Tool	ť	D. Solid
C2 Water Consumption		D2 Solid Wa	ıste Management
C2. 3 Consumption of Potable Water in Resider	ntial Buildings	★D2.2 Access to S	Solid Waste and Recycling Co
Intent: To make an efficient	use of water resources.	Inten	nt: To improve separate collectio
Indicator	Unit of Measure		
Annual potable water consumption per occupant.	L/occupant/yr		Indicator
Assessment Methodology:		to solid	age of inhabitants with access waste and recycling collection within a 400 meters walking distance.
The potable water consumption is calculated ba appliances and sanitary fittings in the buildings.	sed on metered data for water consuming		
The scope of the criterion includes the use of pot	able water for:	Assessment Me	ethodology:
Drinking water. Water for sanitation. Domestic hot water. Water for washing machine.			share of inhabitant living with points in the neighborhood.
-Water for dishwasher. -Water for cleaning.			(A) - Nui
alor for cloaning.		2. Calculate the	neighborhood's population.
o calculate the indicator:			(B) - Deno
1. For each residential building, collect the mon		3. Calculate the	e value of the indicator as :
for building operation. The consumption data m years period (litres).	Ust be estimated taking the average over 3		A/B
2. Sum the annual potable water consumption of total potable water consumption (litres/year).	each building up to an aggregated annual		
3. Estimate the number of residential buildings'	occupants.		
4. Calculate the indicator's value as:			
Aggregated annual total potable water co	onsumption / Number of occupants.		
Standard: Refere	ence: MED Project - SNTool Assessment System.	Standard:	Refe UNECI - Indicat

SNTool MED

SNTool MED

	Waste	SN Tool
nt		
ecycling Col	llection Points	
rate collectio	n disposal, avoiding to burn waste.	
'	Unit of Measure	
with access g collection rs walking	%	
nt living with borhood.	400m access to the solid waste and recy	-
(A) - Nur	nerator	
opulation.		
(B) - Deno	minator	
ator as :		
A/B (%)	
Refer	'ence: -Collection Methodology for Key Performance	

13	E. Environme	ntal Quality SN Tool
E1	Air Quality	
E1. 2	Particulate Matter (PM ₁₀) Concentration	n
Inter		ality with respect to particulates <10 mu (PM ₁₀) igborhood.
	Indicator	Unit of Measure
	Number of days within a year that PM ₁ concentration exceed the daily limit	o days/yr
Asse	essment Methodology:	
of on	aily test air samples in accordance with no ne year. aluate the number of days exceeding the	ational or regional procedures over a period daily limits in a year.
Star	ndard: Refe	erence:

6	F. Transportation	and Mobility	SN Tool		
F1	Performance of Mobility Services				
★F1. 1	Performance of the Public Transport Sys	lem	1		
	Intent: To determine the performance	of the public transportation system.	 		
	Indicator	Unit of Measure			
	Percentage of inhabitants that are within a 400 meters walking distance of at least one public transportation service stop.	%			
Asse	essment Methodology:				
	cate the public/municipal transport stops v ips, that serve the neighborhood.	vith daily total service frequency of at lea	ist		
	cate all the residential buildings in the neig entrance to at least one of the located stop				
3. Co	3. Calculate the occupants of the selected buildings.				
4. Calculate the total population of the neighborhood.					
	alculate the indicator's value as the percen s to the total population of the neighborho		I-		
For t	he calculation of the indicator the following	g are considered:	l I T		
- Or	- Only residents of the neighborhood and not working people in the area.				
- A s	- A stop must have a daily total service frequency of at least 20 trips.				
			1		

- Only re
- A stop

Standard: Global Platform for Sustainable Cities -Urban Sustainability Frame

SNTool MED

Reference: CESBA MED Project - SNTool Assessment System.

F . Transportation	and Mobility SN Tool	ŤŤ	G. Social A
F2 Green Mobility		G3 Availa	ability of Public, Private Facili
F2. 3 Bycicle Network	 	★ G3.1 Bycicle	Network
Intent: To emphazise the use of bycicles as a n	nethod to reduce traffic congestion and pollution.	Intent: To d	etermine t he accessibility and p rox schools. sports facilities, supermai
Indicator	Unit of Measure		Indicator
Total length of bicycle paths in the neighborhood per inhabitant.	m/inhabitant		centage of inhabitants that are an 800 meters walking distance of at least 3 key services.
Assessment Methodology:		Assessmer	nt Methodology:
1. Calculate the total length of bicycle paths/l	anes in the neighborhood.	1. Identify lo	cations of key services in the local o
(A) - Numerator. 2. Estimate/Calculate the total number of inhabitants in the neighborhood. (B) - Denominator.			the percentage of the inhabitants t 3 key services coming from the nir
		Note	
			aro.
3. Calculate the value of the indicator as:		Key services	
A	/В	2. Health cei	os. . center.
			to consider only one key service fro ces can be considered.
- UNEC	r ence: E-Collection Methodology for Key mance Indicators for Smart Sustainable Cities.	Standard:	- CESBA
118	SNTool MED	SNTool MED	

G. Social

Indicator

Methodology:

- schools, kindergartens, educatior
- ter (hospitals, medical ward, med
- ement areas (police station, etc.)
- ies.
- enter.

cial /	Aspects SN Tool
Facili	ities and Services
-	ximity of key s ervices f or l ocal r esidents (e.g rkets, community buildings, etc.)
	Unit of Measure
are ance	%
e local	1
	that are within 800 meters walking distance ne categories below.
	-
	i centers, etc.) ical center, etc.)
, etc.)	, ,
rvice fr	om each of the ten categories.
Refe	rence:
	A MED Project - SNTool Assessment System.

I. Climate C Mitigation & A	daptation ^{sw}
11 Climate Change Mitigation	
.1 Greenhouse Gas Emissions	
Intent: To assess the adverse contribution the	
Indicator	Unit of Measure
Total amount of greenhouse gases (equivalent carbon dioxide units) generatede from building operations over a calendar year per inhabitant.	t CO ₂ eq./ ihbaitant /yr
Assessment Methodology:	
 Calculate the total amount of greenhouse ga units) generated over a calendar year by all act ndirect emissions outside neighborhood bound 	ivities within the neighborhood, including
(A) - Num	nerator
2. Calculate the total population of the neighbo	orhood.
(B)-Denon	ninator
3. Calculate the value of the indicator as:	
A/B	3
- ISO 37	ence: 7120: Sustainable Cities and Communities - tors for City Services and Quality of Life.
20	SNTool M

I. Climate Change: 69 **Mitigation & Adaptation** Adaptation to the Climatic Action: Pluvial Flood 13 **★**13.1 Permeability of Land

Intent: To improve the permeability of the area.

Indicator

Percentage of the weighted ground permeability.

Assessment Methodology:

1. Calculate the size (Sa) of the neighborhood area (m²) 2. Calculate the size of the surfaces with a different paving or occupied by constructions in the neighborhood area (i.e. green areas, surfaces paved with asphalt, surfaces occupied by buildings, etc.). Include all the surfaces in the neighborhood area so that:

 $Sa = \sum_{i=1}^{n} Sa_{1}$

Sa = total surface of the neighborhood area $Sa_i = surface i-th in the neighborhood area (m²)$

- Calculate the real permeability of soil considering the permeability coefficient of each surface.

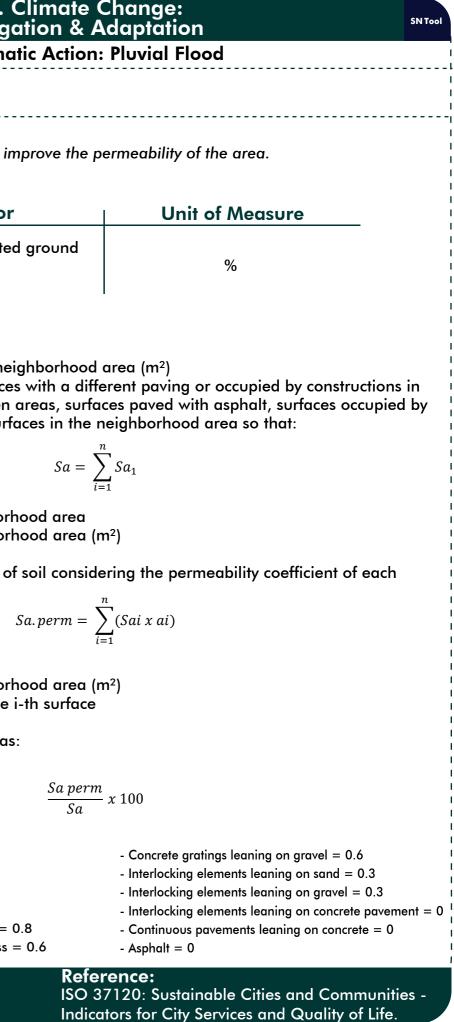
Sa, i = i-th surface in the neighborhood area (m²) $\alpha i =$ permeability coefficient of the i-th surface

- Calculate the indicator's value as:

Note:

- Reference permeability coefficients:
- Grass = 1
- Gravel = 0.9
- Sand = 0.9
- Plastic gratings filled with land/grass = 0.8
- Concrete gratings leaning on the grass = 0.6

Standard:	Refer
-	ISO 37
	Indicat



5.SMC passport

Sustainable MED cities passport



SNTool MED

Definition:

two different pages. tures of the analysis. ised version of SNTool.

Observation:



- The SMC Passport template is a graphical visualisation of the main information concerning the assessment and it includes
- The first one contains general information as well as maps and significant images, in order to better represent the fea-
- The second page of the Passport contains the list of the Key Performance Indicators, together with their code, criterion, unit of measure and The third page shows the sustainability results achieved by the neighbourhood using the contextual-
- The sustainability score produced by SMC rating system is valid only for the specific geographical area, as it reflects the local priorities and construction practice.
- In order to be able to compare the sustainability performance between buildings, neighborhoods or cities in the different Mediterranean regions, it is necessary to use indicators expressed in absolute values instead of scores.

Name of the Pilot Neighborhood

SMC Passport Neighbourhood

Short Description

Name:		Short Description		
Total area (km²):				
General location:		I I I I		
City:				
MAP		IMAGE		
Demography		Climate		
Residential population in the area	Inhab	Annual precipitation	mm	
Urban residential density	Inhab/ha	Solar irradiance on horizontal	kWh/m²y	
Population working in the area	Persons	Winter / summer design temperature	°C	
Other info		Heating degree days (base 18°C)	HDD	
Building Stock	_	Use of land and morphology		
Number of buildings in the area	number	Percentage of consumed land area	%	
Gross area of residential Buildings	m²	Total lenght of urban streets with sidewalks	km	
Gross area office buildings	m²	Total lenght of bicycles lanes	m	
Gross area of retail/ Commercial buildings	m²	Other relevant info		
Total gross area of all buildings	m²			
Total gross area of buildings con- structed before 1975	m²			
Average building density (total m²/ land surface in m²)	number			
101				

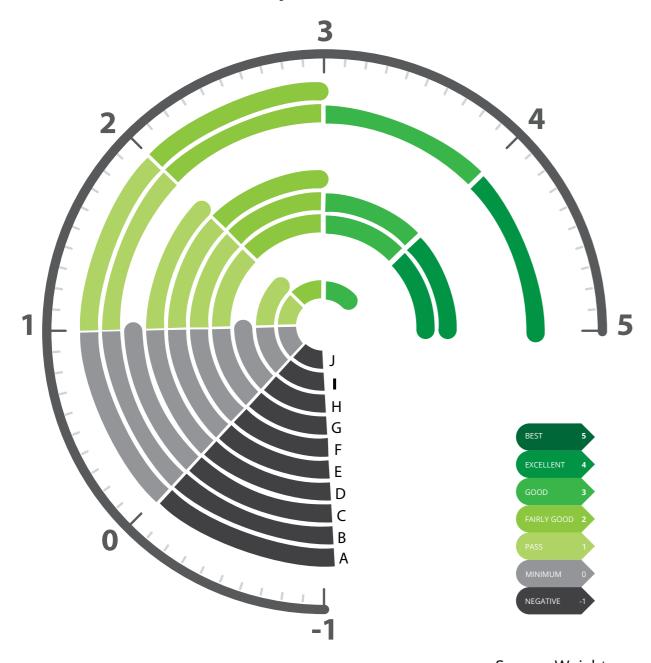
SMC Key Performance Indicators

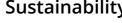
CODE	CRITERIA	INDICATOR	VALUE	UNIT
B2.1	Total final thermal energy con- sumption for building operations	Aggregated annual total final thermal energy consumption per aggregated indoor useful floor area		kWh/m²/yr
B2.4	Total final electric energy consump- tion for building operations	Aggregated annual total final electric energy consumption per aggregated indoor useful floor area		kWh/m²/yr
B2.7	Total primary energy demand for building operations	Aggregated annual total primary energy consumption per aggregated indoor useful floor area		kWh/m²/yr
B3.1	Share of renewable energy on-site, in total final thermal energy con- sumption for building operations	Annual total thermal energy consump- tion from on-site renewable energy sources / annual total final thermal energy consumption.		%
B3.4	Share of renewable energy on-site, in final electrical energy consump- tion for building operations	Annual total electrical energy consump- tion from on-site renewable energy sources / annual total electrical energy consumption.		%
B3.7	Share of renewable energy on-site in total primary energy consump- tion for building operations	Annual total consumption of prima- ry energy generated from renewable sources on-site / total primary energy consumption.		%
C2.3	Consumption of potable water in residential buildings	Annual potable water consumption per occupant		L /occupant/yr
D2.2	Access to solid waste and recycling collection points	Percentage of inhabitants with access to solid waste and recycling collection points within 400 meters walking dis- tance.		%
E1.2	Particulate matter (PM10) concen- tration	Number of days within a year that PM10 concentration exceeds the daily limit.		days/yr
F1.1	Performance of the public trans- port system	Percentage of inhabitants that are within 400 meters walking distance of at least one public transportation service stop.		%
F2.3	Bicycle network	Length of bicycle paths in the neighbor- hood per inhabitant.		m/inhabitant
G3.1	Availability and proximity of key services	Percentage of inhabitants that are within 800 meters walking distance of at least 3 key services.		%
11.1	Greenhouse gas emissions	Total amount of greenhouse gases (equivalent carbon dioxide units) gen- erated from buildings' operation over a calendar year per inhabitant.		t CO ₂ eq./ inhabitant/yr
13.3	Permeability of land	Percentage of weighted ground perme- ability		%



Sustainable MED Cities

Visualisation of the sustainability assessment results





sustainability.

The Certificate template is a graphic label which allows, in a visual way, to understand the sustainability performance obtained by the neighbourhood.



	Score	Weight	:
A Use of land and biodiversity	3,1	11,2%	0,34
B Energy	5	27%	1,35
C Water	1,1	20%	0,22
D Solid Waste	2,2	2,7%	0,05
E Environmental quality	3,2	10,5%	0,33
F Transportation and mobility	5	10%	0,5
G Social Aspects	5	4,4%	0,22
H Economy	1,1	2%	0,02
I Climate Change: mitigation and adaptation	n 2,4	8,6%	0,2
J Governance	4,2	3,6%	0,15
		100%	3,38
			SNTool MED

SNTool MED

Sustainability Assessmet Results

The document summarises the scores achieved in each issue of the assessment system, giving the final score of the

Scores are then illustrated using a tachometer with a gradu-ated scale which goes from the -1 (negative performance) to the 5 points (best performance).

6. References



In-Depth Report: Indicators for Sustainable Cities. Science for Environment Policy. European Commission. https://ec.europa.eu/environment/integration/research/newsalert/index_en.htm.

ment and Local Government

ment-friendly-city-award.

Vol. 35, No. 4, July 1969.

SNTool MED



CESBA MED – Sustainable MED Cities https://cesba-med.interreg-med.eu/

City sustainability Indicators - World Bank - Urban Develop-

Riccaboni, A., Sachs, J., Cresti, S., Gigliotti, M., Pulselli, R.M. (2020): Sustainable Development in the Mediterranean. Report 2020. Transformations to achieve the Sustainable Development Goals. Siena: Sustainable Development Solutions Network Mediterranean (SDSN Mediterranean).

Istanbul Environment Friendly City Award https://www.unep.org/unepmap/istanbul-environ-

Arnstein, Sherry R. "A Ladder of Citizen Participation," JAIP,

Anex 1: Benchmarks



A	Use of land and b	iodiversity			
A1	Use of land				
CODE	CRITERION	INDICATOR	UNIT	BENCHMARK 0	BENCHMARI 5
A1.1	Population density	Population density in built-up areas (neighbourhood area minus green and blue)	Inhabitants / / km²	125	500
A1.2	Urban compactness	Relation between the usable space of the buildings (volume) and the urban space (area)	+ m ³ / m ² 	2	3
A1.3	Homogeneity of the urban fabric	Percentage of the perimeter of the area directly adjacent to urbanized areas	%	1,5	5
A1.4	Conservation of land	Pre-development ecological value of land	Score	10	5
A2	Green urban area	as			
CODE	CRITERION	INDICATOR	UNIT	BENCHMARK 0	BENCHMAR
A2.1	Availability of green urban areas	Proportion of all vegetated areas within the neighborhood boundar- ies in relation to the total area	%	30	40
A2.2	Green areas in relation to the neighborhood population	Total area of green in the neighbor- hood divided by neighborhood's total population	m²/inhabi- tant	5	50
A2.3	Green Area Accessibility	Percentage of inhabitants with accessibility to green areas	•	20	150
A2.4	Green zones density	Density of green spaces within the area	 	20	30
A2.5	Green zones and ecosys- temic services	Share of natural green areas on total green areas	%	10	100
		i	上	· ·	131

A3	Biodiversity and e				
CODE	CRITERION	INDICATOR	UNIT	BENCHMARK 0	BENCHMARK 5
A3.1	Connectivity measures for natural areas	Share of natural areas that are connected	%	30	100
A3.2	Biodiversity in green zones	Number of plants on number of vegetal species	%	0,001	1
В	Energy				

B1 Energy infrastructure

CODE	CRITERION	INDICATOR	UNIT	BENCHMARK 0	BENCHMARK 5
B1.1 Acc	cess to electrical ser- vice	Percentage of households with authorized access to electricity	%	100	3

B2 Energy infrastructure

CODE	CRITERION	INDICATOR	UNIT	BENCHMARK 0	BENCHMARK 5
B2.1	Total final thermal energy consumption for building operations	Aggregated annual total final ther- mal energy consumption per aggre- gated indoor useful floor area	kWh/m²/yr	100	30
B2.2	Total final thermal energy consumption for residential building operations	Aggregated annual final thermal energy consumption of residential buildings per aggregated internal useful floor area	kWh/m²/yr	100	30
	Total final thermal energy consumption for public office/ educational building operations	Aggregated annual final thermal energy consumption of public office and educational buildings per ag- gregated internal useful floor area	kWh/m²/yr	100	30
B2.4	Total final electrical energy consumption for building operations	Aggregated annual total final elec- tric energy consumption per aggre- gated internal useful floor area	kWh/m²/yr	25	5
B2.5	Total final electrical energy consumption for residential building operations	Aggregated annual final electrical energy consumption of residential buildings per aggregated indoor useful floor area	kWh/m²/yr	15	5

B2.6	Total final electric energy consumption for public office/ educational build- ing operations	Aggregated annual final electric en- ergy consumption of public office and educational buildings per ag- gregated internal useful floor area		25	10
B2.7	Total primary energy de- mand for building opera- tions	Aggregated annual total primary energy consumption per aggregat- ed indoor useful floor area	kWh/m²/yr	50	I— — — — — I I I I
B2.8	Total primary energy demand for residential building operations	Ratio of average total primary energy consumption of residential buildings to the local minimum value		100	 50
B2.9	demand for public office/	Ratio of average total primary en- ergy consumption of public office/ educational buildings to the local minimum value	* % 	100	
B2.10	Energy consumption of public lighting	Total electricity consumption of public street lighting divided by the total distance of streets where street lights are present	kWh/кm/ yr	50	20
33	Renewable Energy	/			
_					
CODE	CRITERION	INDICATOR	UNIT	BENCHMARK	
CODE	CRITERION Share of renewable en- ergy on-site, relative to total final thermal energy consumption for building operations	Total consumption of final thermal energy generated from renewable sources on-site divided by total final thermal energy consumption	UNIT %	BENCHMARK 0 30	BENCHMAF 5 1 1 1 100
B3.1	Share of renewable en- ergy on-site, relative to total final thermal energy consumption for building operations Share of renewable ener-	Total consumption of final thermal energy generated from renewable sources on-site divided by total final thermal energy consumption Total consumption of final thermal energy generated from renewable		0	5
B3.1	Share of renewable en- ergy on-site, relative to total final thermal energy consumption for building operations Share of renewable ener- gy on-site, relative to total final thermal energy con- sumption for residential building operations Share of renewable en- ergy on- site, relative to total final thermal energy consumption for public	Total consumption of final thermal energy generated from renewable sources on-site divided by total final thermal energy consumption Total consumption of final thermal energy generated from renewable sources on-site divided by total final thermal energy consumption	%	0 30	5 100
B3.1 B3.2 B3.3	Share of renewable en- ergy on-site, relative to total final thermal energy consumption for building operations Share of renewable ener- gy on-site, relative to total final thermal energy con- sumption for residential building operations Share of renewable en- ergy on- site, relative to total final thermal energy consumption for public office/educational building	Total consumption of final thermal energy generated from renewable sources on-site divided by total final thermal energy consumption Total consumption of final thermal energy generated from renewable sources on-site divided by total final thermal energy consumption of residential buildings Total consumption of final thermal energy generated from renewable sources on-site divided by total fi- nal thermal energy consumption of	%	0 30 30	5

B3.6	gy on-site, on final electric	Total consumption of final electric energy generated from renewable sources on-site divided by total fi- nal electric energy consumption of public office/educational buildings	1 1 1 1 1	30	100
B3.7	Share of renewable en- ergy on-site, relative to total primary energy consumption for build- ing operations	Total consumption of primary energy generated from renewable sources on-site divided by total primary energy consumption		30	100
B3.8	Share of renewable energy on-site, relative to total primary energy consumption for resi- dential building opera- tions	Total consumption of primary energy generated from renewable sources on-site divided by total primary energy consumption of residential buildings	% 1 1 1 1 1 1	30	100
B3.9	Share of renewable energy on-site, on total primary energy con- sumptions for public office/ educational build- ing operations	Total consumption of primary energy generated from renewable sources on-site divided by total primary energy consumption of public office/educational buildings	%	30	100
			1		

Water

1 Water infrastructure

CODE	CRITERION	INDICATOR	UNIT	BENCHMARK 0	BENCHMARK 5
Av C1.1 mu 	vailability of a public unicipal water supply	Percentage of the buildings within the neighborhood that are served by a municipal water supply	 % 	5	2
C1.2 te	ailability of wastewa- r treatment system	Percentage of buildings within the neighbourhood that are served by wastewater collection	I	95	100

C2 Water Consumption

CODE	CRITERION	INDICATOR	UNIT	BENCHMARK 0	BENCHMARK 5
C2.1 I	Total water consump- tion	I Total amount of the neighbor- I hood's water consumption in litres I per day divided by the total neigh- borhood population	l/day/occu- pant	4000	3000
C2.2 I	Efficiency in water use	 Volume of water supplied minus the volume of utilized water divid- ed by the total volume of water supplied 	 % 	20	30
C2.3	Consumption of pota- ble water in residential buildings	I Annual potable water consumption I per occupant	L/occu- pant/yr	250	60
C2.4	Consumption of potable water in public offices	Annual potable water consumption	L/occu-	50	20
134					SNTool MED

C2.5	Consumption of potable water in educational buildings	l Annual potable water co tion per occupant
C2.6	Re-use of rainwater in residential buildings	Share of rainwater colled roofs of residential build reuse
C2.7	Consumption of potable Nonsumption of potable Noter in public green Notes	Potable water used for in purposes in public greer
C2.8	Solar powered water desalinisation	Percentage of water acce human consumption or ture from solar desalinat
C3	Effluents manager	ment
CODE		INDICATOR
CODE	CRITERION	
C3.1	CRITERION	INDICATOR I Total volume of wastewa collected for at least second treatment in centralized water treatment facilities water treatment facilities by the total volume of wa

	r		
onsump-	L/occu- pant/yr	30	10
ected from dings for	 %	20	60
irrigation n spaces		5	0
ceptable for agricul- ation	TBD	TBD	TBD

	UNIT	BENCHMARK 0	BENCHMARK 5
vater condary d waste- es divided vastewater orhood	%	90	100
water that	%	90	100
lds with	~ %	90	100

Solid Waste

D1

Solid waste collection infrastructure

CODE	CRITERION	INDICATOR	UNIT	BENCHMARK 0	BENCHMARK 5
D1.1	Availability of solid waste collection	Percentage of buildings with regu- lar solid waste collection	 % 	75	90
D2	Solid waste collec	tion infrastructure			
COD	E CRITERION	INDICATOR	UNIT	BENCHMARK 0	BENCHMARK 5

	ess to solid waste recycling collection points	Proximity of the resident popula- tion to the solid waste and recycling collection point	%	75	95
D2.2 Acce	ess to solid waste ecycling collection points	Percentage of inhabitants with access to solid waste and recycling collection points within 400 meters walking distance	%	75	95
E E	Environmental qเ	uality			•

Air quality E1

CODE	CRITERION	INDICATOR	UNIT	BENCHMARK 0	BENCHMARK 5
E1.1	Fine particulate matter (PM2.5) concentration	Number of days within a year that PM2.5 concentration exceeds the daily limit	days / yr	1 1 1 1	6 1 1
E1.2	Particulate matter (PM10) concentration	Number of days within a year that PM10 concentration exceeds the daily limit	days / yr	15	1 1 1 1
E1.3	Nitrogen Dioxide con- centration (NO2)	Number of days within a year that NO2 concentration exceeds the daily limit	µg/m³	80 1	40
E1.4	Sulfur Dioxide concen- tration (SO2)	Number of days within a year that SO2 concentration exceeds the daily limit	μg/m³	80	40
E1.5	Ozone concentration (O3)	Number of days within a year that O3 concentration exceeds the daily limit	μg/m³	80	40
E2	Noise	1			
CODE	CRITERION	INDICATOR	UNIT	BENCHMARK 0	BENCHMARK 5
E2.1	Ambient daytime noise conditions	I Percentage of building area over noise limit	I % I L	30 	10 10
136					SNTool MED

1	conditions	Percentage of building area over noise limit	%	20	5
	EMF exposure				
DDE	CRITERION	INDICATOR	UNIT	BENCHMARK 0	BENCHMAI 5
ا ا 3.1 ا س_ L	Exposure to high fre- quency electromagnetic fields	Percentage of mobile network an- tenna sites in compliance with EMF exposure guidelines	1 1 % 1	80	100
	Percentage of buildings exposed to ELF magnetic field	Percentage of buildings in the area located not respecting the safety distance from high voltage lines	%	80	100
	Environmental im	pacts			'
DDE	CRITERION	INDICATOR	UNIT	BENCHMARK 0	BENCHMAI 5
4.1	Degree of atmospheric light pollution caused by exterior public lighting systems	Percentage of lighting fixtures with upward luminous emission coefficient equal to 0%	%	2	0,5
	Transportation ar	nd mobility			
	Performance and	mobility services			
ODE		INDICATOR	UNIT	BENCHMARK	BENCHMA
ו 1 1.1 ^ו ו		 Percentage of inhabitants that are within 400 meters walking distance of at least one public transporta- tion service stop 		30	70 70
- T I 1.2 I	Walking distance to public transport for area	Percent of workers and students who can reach a public transport stop within a 400 meters distance	T — — — — %	80	 100
1	workers and students	I '	I		I
1	workers and students Green mobility	1 · 1	1		1
ODE	Green mobility	I I INDICATOR	I I UNIT	BENCHMARK	BENCHMA
	Green mobility	INDICATOR	UNIT I I n/1.000 I inhabitants	0	BENCHMA 5 1 50
ODE	Green mobility CRITERION	INDICATOR I I Number of shared vehicles per I 1.000 inhabitants Flectric vehicle charging stations	n/1.000	0	5
ODE 2.1 - T	Green mobility CRITERION Shared vehicles Electric-vehicle infra- structure (charging	INDICATOR I Number of shared vehicles per I 1.000 inhabitants Electric vehicle charging stations	 n/1.000 inhabitants – – – – – n/	0	5 50
ODE 1 2.1 - T 2.2 1 - 1 1	Green mobility CRITERION Shared vehicles Electric-vehicle infra- structure (charging stations) Bicycle network	INDICATOR INUMber of shared vehicles per 1.000 inhabitants Electric vehicle charging stations per inhabitant Total length of bicycle paths in the neighborhood per inhabitant INUMber of shared bicycles per	 n/1.000 inhabitants n/ inhabitant 		5 50 0.05

F3	Safety in mobility				
CODE	CRITERION	INDICATOR	UNIT	BENCHMARK 0	BENCHMARK 5
F3.1 	infrastructure	। I Percentage of the neighborhood I designated as a pedestrian/car free । zone	 % 	20	1 50
Γ F3.2ι L	Availability of sidewalks	Percentage of roads' length that has dedicated sidewalks	T — — — — % L	80	
ו F3.3 ו ו	Safety of bicycle lines	^I Percentage of bicycle paths physi- ^I cally separated from traffic roads I	 % 	20	I I 50 I
F3.4	Traffic fatalities	^I Traffic fatalities per 1.000 inhabi- ^I tants	n/1.000 inhabitants	18	 0
F4	Safety in mobility				
CODE	CRITERION	INDICATOR	UNIT	BENCHMARK 0	BENCHMARK 5
F3.1	Cyclomatic complexity of the street network	I I I Cyclomatic number I I	number	30	100
F3.2	Connectivity of the street network	Number of intersections related to the overall surface area	number/ km²	70	200
G	Social Aspects				

Accessibility (disabled persons) G1

CODE	CRITERION	INDICATOR	UNIT	BENCHMARK 0	BENCHMARK 5
(1)	Public buildings that are accessible for use by physically disabled persons	Percent of key public buildings that are accessible for use by physically disabled persons	%	50	90
U.1.2	Sidewalks and other pedestrian paths that are accessible for use by physically disabled persons	Percent of sidewalks and other pedestrian ways that are accessi- ble for use by physically disabled persons	%	50	100
	arrier-free accessibility n local outdoor public areas	Adequacy of barrier-free accessible public outdoor areas compared to the total public area	%	50	100

Housing G2

CODE	CRITERION	INDICATOR	UNIT	BENCHMARK 0	BENCHMARK 5
G2.1 Af	fordability of housing property	Housing properties in the local area that are financially accessible to the lowest quintile of area population	%	20	30
G2.2 Aff	fordability of housing rental	Percentage of the average salary of the lowest quintile of the popula- tion used for rental payments	%	30	20
138					SNTool MED

G2.3	Vacant residential units in the neighborhood	Percentage of vacant residential units	%		
G2.4	Informal settlements	Percentage of inhabitants living in slums, informal settlements or inadequate housing	%	5	0
G3	Availability of pub	lic and private facilities and serv	vices		
CODE	CRITERION	INDICATOR	UNIT	BENCHMARK 0	BENCHMARK 5
G3.1	Availability and proximi- ty of key services	Percentage of inhabitants that are within 800 meters walking dis- tance of at least 3 key services	%	50	100
G3.2	Availability and proxim- ity of a public primary school	Percentage of population near a public primary school	%	40	70
G3.3	Availability and proximi- ty of a public secondary school	Percentage of population near a public secondary school	%	30	1 1 80 1
G3.4	Availability and prox- imity of childrens' play facilities	Percentage of population near a childrens' play facilities	%	20	40
G3.5	Open space for public use	Average share of the built-up area of the neighborhood that is open space for public use	INDEX	25	34 1
G4	Education				
CODE	CRITERION	INDICATOR	UNIT	BENCHMARK 0	BENCHMARK 5
CODE G4.1	CRITERION Primary enrollment rate	INDICATOR Net primary enrollment rate	UNIT %		
	Primary enrollment			0	5
G4.1	Primary enrollment rate Rate of female	Net primary enrollment rate Ratio of female to male mean years of education received of	%	0 90	5 100 1
G4.1 G4.2 G4.3 G4.4	Primary enrollment rate Rate of female scholarship Secondary school	Net primary enrollment rate Ratio of female to male mean years of education received of population age 25+	% %	0 90 100	
G4.1 G4.2 G4.3	Primary enrollment rate Rate of female scholarship Secondary school enrollment	Net primary enrollment rate Ratio of female to male mean years of education received of population age 25+ Lower secondary completion rate Population age 25-34 with tertiary	% 	0 90 100 90	5 100 0 100 100
G4.1 G4.2 G4.3 G4.4	Primary enrollment rate Rate of female scholarship Secondary school enrollment Tertiary education Social inclusion	Net primary enrollment rate Ratio of female to male mean years of education received of population age 25+ Lower secondary completion rate Population age 25-34 with tertiary	% 	0 90 100 90	5 100 0 100 100
G4.1 G4.2 G4.3 G4.4 G5	Primary enrollment rate Rate of female scholarship Secondary school enrollment Tertiary education Social inclusion	Net primary enrollment rate Ratio of female to male mean years of education received of population age 25+ Lower secondary completion rate Population age 25-34 with tertiary educational attainment	% % %	0 90 100 90 90 30 BENCHMARK	5 100 0 100 100 40 BENCHMARK
G4.1 G4.2 G4.3 G4.4 G5 CODE	Primary enrollment rate Rate of female scholarship Secondary school enrollment Tertiary education Social inclusion CRITERION Energy poverty of	Net primary enrollment rate Ratio of female to male mean years of education received of population age 25+ Lower secondary completion rate Population age 25-34 with tertiary educational attainment INDICATOR Percentage of households unable to afford the most basic levels of energy (more than 10% of the	% % % %	0 90 100 90 90 30 BENCHMARK 0	5 100 0 100 40 BENCHMARK 5

G6	Safety				
CODE	CRITERION	INDICATOR	UNIT	BENCHMARK 0	BENCHMARK 5
G6.1	Police service	Number of police officers per 1.000 inhabitants	n/1.000 in- habitants	3	5
G6.1	Fire service	Number of firefighters per 1.000 inhabitants	n/1.000 in- habitants	1	2
G6.1	Population living in disaster prone areas	Percentage of inhabitants living in a zone subject to natural hazards	%	5	0
G7	Health				•
CODE	CRITERION	INDICATOR	UNIT	BENCHMARK 0	BENCHMARK 5
G7.1	In-Patient Hospital Beds	Number of in-patient public hos- pital beds per 1.000 inhabitants	n/1.000 in- habitants	3,5	5
G8	Food security				
CODE	CRITERION	INDICATOR	UNIT	BENCHMARK 0	BENCHMARK 5
G8.1	Urban agricultural land	Area of urban agricultural land on total neighborhood area	%	50	89
G9	Culture and Herita	age		-	
CODE	CRITERION	INDICATOR	UNIT	BENCHMARK	BENCHMARK
G9.1	Compatibility of urban design with local cultur- al values	Compatibility with local area traditional values of street lay- outs and the character of urban spaces	Score	Qualitative	Qualitative
G9.2	Compatibility of public open space with local cultural values	Compatibility with local area traditional values of local public open spaces, including major uses, dimensions and adjacent uses	Score	Qualitative	Qualitative
G10	Perceptual				
CODE	CRITERION	INDICATOR	UNIT	BENCHMARK 0	BENCHMARK 5
G10.1	Perceived safety of public areas for pe- destrians	Perceived safety of public places and pedestrian routes, as deter- mined by a sample of pedestri- ans	Score	Qualitative	Qualitative
G10.2	Impact of commercial signage on the visual environment	Visual impact of exterior com- mercial signage	Score	Qualitative	Qualitative
140			* '		SNTool MED

G10.3	Impact of overhead electric distribution system	Score	Qualitative	C – – – – – – Vualitative	
н	Economy				
H1	Economic perforn	nance			
CODE	CRITERION	INDICATOR	UNIT	BENCHMARK 0	BENCHMARK 5
	verage annual per-cap- a income of residents	l Percentage of average per-capita income	 % 	60	90 90
H2	Employment				
CODE	CRITERION	INDICATOR	UNIT	BENCHMARK 0	BENCHMARK 5
H2.1	Unemployment rate	Percentage of working age adults unemployed or actively looking for work	 % 1	25	 5
	outh unemployment rate	Percentage of unemployed youth		9	0 1
H3	Innovation				
CODE	CRITERION	INDICATOR	UNIT	BENCHMARK 0	BENCHMARK 5
H3.1 N	lew business registra- tion rate	Proportion of business regis- trations per 10.000 inhabitants aged 16 and above	 n	80	100
H4	ICT infrastructure				
CODE	CRITERION	INDICATOR	UNIT	BENCHMARK 0	BENCHMARK
H4.1 F	Fixed Broadband Sub- scriptions	Percentage of households with fixed (wired) broadband	 % 	90	100
H4.2	Wireless Broadband Coverage	Percentage of the neighborhood area served by wireless broad- band (3G, 4G, 5G)		80	95
H4.3	Availability of WIFI in Public Areas	Number of public WIFI hotspots in the neighborhood per 1000 inhabitants	n/1.000	6	10
H4.4	lobile phone subscrip- tions	Total number of mobile phone subscriptions in the area divided by one 1000th of the area's total population	n/1.000 inhabitants	1 80 1	 90

Climate Change: mitigation and adaptation

Climate change mitigation

11	Climate change m	litigation			
COD	CRITERION	INDICATOR	UNIT	BENCHMARK 0	BENCHMARK 5
ו ו ו1.1 ו ו	Greenhouse gas emissions	Total amount of greenhouse gases (equivalent carbon diox- ide units) generated from build- ing operations over a calendar year per inhabitant	I I I t CO ₂ eq. / I inhabitant/ I yr I	1 1 1 5 1	 2
	Greenhouse gas emis- sions from residential buildings	Total amount of greenhouse J gases in Kg (equivalent carbon J dioxide units) generated over a J calendar year per aggregated J indoor useful floor area	r – – – – – I I Kg CO ² eq I / m ² I I		Г – – – – – I I I I I I
 1.3 	Embodied carbon for construction and reno- vation of infrastructures	Aggregated total embodied car- bon per aggregated linear area I	i kg CO ₂ eq i / m ²	1 1 1 1 1 1 1 1	I 30 I 1
 1.4 +	Embodied carbon for construction/renovation of residential buildings	Aggregated total embodied carbon per aggregated indoor useful floor area	I kg CO ₂ eq I kg CO ₂ eq I / m ²		
 1.5 	Embodied carbon for construction/renovation of public offices/educa- tional buildings	 Aggregated total embodied carbon per aggregated indoor useful floor area 	I I kg CO ₂ eq I / m ² I	1 1 1 1 1	I 30 I
I1.6	CO2 sequestration	Potential CO2 sequestraion in the neighborhood per hectare	<pre></pre>	100	225
12	Adaptation to the	climatic action: heatwaves and	increase o	ftemperatur	е
CODI	E CRITERION	INDICATOR	UNIT	BENCHMARK 0	BENCHMARK 5
 2.1 	Albedo	l Mean Solar Reflectance Index of paved surfaces and roofs in the neighborhood	I SRI I I	7	 0
ī 2.2 	Use of vegetation to provide ambient outdoor cooling	Leaf Area Index: ratio of total vegetated surface area (on ground and on roofs, and including trees), divided by total site area	I Index		
I 12.3	Green roofs	 Aggregate area of building roofs covered with vegetated material 	I I %	10	I 60

Adaptation to the climatic action: pluvial flood 13

CODE	CRITERION	INDICATOR	UNIT	BENCHMARK 0	BENCHMARK 5
I3.1	Stormwater retention capacity on site by buildings	I I I Share of the attenuation storage I capacity by buildings in relation to I the optimal volume I	 % 	1 1 1 1 1 1	1 1 1 40 1 1
142					SNTool MED

3.2	Sustainable Urban Drainage	Share of the optimal cap sustainable urban draina systems
I3.3		Percentage of weighted permeability
14	Adaptation to the	climatic action: fluvia
COD	E CRITERION	INDICATOR
14.1	Flood risk	Percentage of populatio to flood risk
I	Protection of vulnerable	Share of land in vulneral protected by flooding ba
14.3	Protection of buildings from flooding	^I Share of buildings with e ground floor in vulnerab
15	Adaptation to the	climatic action: droug
COD	E CRITERION	INDICATOR
15.1	l Rainwater collection and storage from buildings for non-potable uses	l ^I Share of buildings in the ^I hood with a rainwater c ^I system I
15.2	Rainwater collection and storage from outdoor areas	^I Share of rainwater collect ^I paved (not permeable) s ^I in the neighborhood (ex ^I buildings' roofs and plot I
15.3	Greywater collection in Greywater collection in buildings for non-pota- ble uses	Share of buildings in the borhood with a greywat tion system
15.4	I I I Local vegetation I	l ^I Share of landscape (gree ^I plated with local vegetat I
16	Adaptation to the	climatic action: pluvia
COD	E CRITERION	INDICATOR
l6.1	Wildfire risk	l Percentage of population to wildfire risk
 I6.2	FILD DEDITION	 I Share of wildfire vulneral I protected by fire barriers I
1 I6.3	Fireproof ground	T – – – – – – – – – – – – – – – – – – –
SNTor		

acity of age	т — І І	— — — %		20	50
ground	+ - 	%	+ 	20	100

l and coastal flood

	UNIT	BENCHMARK 0	BENCHMARK 5
on exposed	%	10	5
ble areas	L % 	20	60 60
elevated ble sites	 % 	20	60

ght

	UNIT	BENCHMARK 0	BENCHMARK 5
e neighbor- ^I collection I I	%	30	 90
ected from surfaces (cluding ts)	%		
ا ا e neigh- ا ter collec- ا ا	%	1 10 	 60
<u> </u> en areas) tion	~ — — — — %	<u> </u>	<u> </u>
1		l i i i i i i i i i i i i i i i i i i i	1

al flood

	UNIT	BENCHMARK 0	BENCHMARK 5
n exposed	% 	 8 	 3
ble areas s	%	1 1 1 30 1	I – – – – – – – – – – – – – – – – – – –
nateri- plots) are fire		F	T — — — — — — I I 80 I

17	7 Climatic hazard: wind					
CODE	CRITERION	INDICATOR	UNIT	BENCHMARK 0	BENCHMARK 5	
ا 17.1 ^ا ا	Windproof urban form	Strategies to minimise the impact of wind	l I Score I	 30 	 80 	
J	Governance		1	I		
J1	Urban Planning					
CODE	CRITERION	INDICATOR	UNIT	BENCHMARK 0	BENCHMARK 5	
J1.1	Community involve- ment in urban planning activities	Percentage of residents active in public urban planning	Level	0	5	
J2	Management and	community involvement				
CODE	CRITERION	INDICATOR	UNIT	BENCHMARK 0	BENCHMARK 5	
J2.1	Involvement of resi- dents in community affairs	Percentage of resident population above 16 years having an involve- ment in community affairs	%	5	20	
J3	Management and	community involvement				
CODE	CRITERION	INDICATOR	UNIT	BENCHMARK 0	BENCHMARK 5	
J3.1	Public buildings sustain- ability	Percentage of population exposed to wildfire risk	%	20	100	
J3.2	Operating energy costs for public buildings	Aggregated annual operating energy cost per aggregated indoor useful floor area	€/m²/yr		2	
J3.3	Energy consumption of public buildings	Total end use of energy in public buildings within a neighborhood divided by total indoor useful area of these buildings	kWh/m²	25 1	10	

SNTool MED

Sustainable Neighborhood Tool



https://www.enicbcmed.eu/projects/sustainable-med-cities