



Generalitat de Catalunya
Departament de Territori

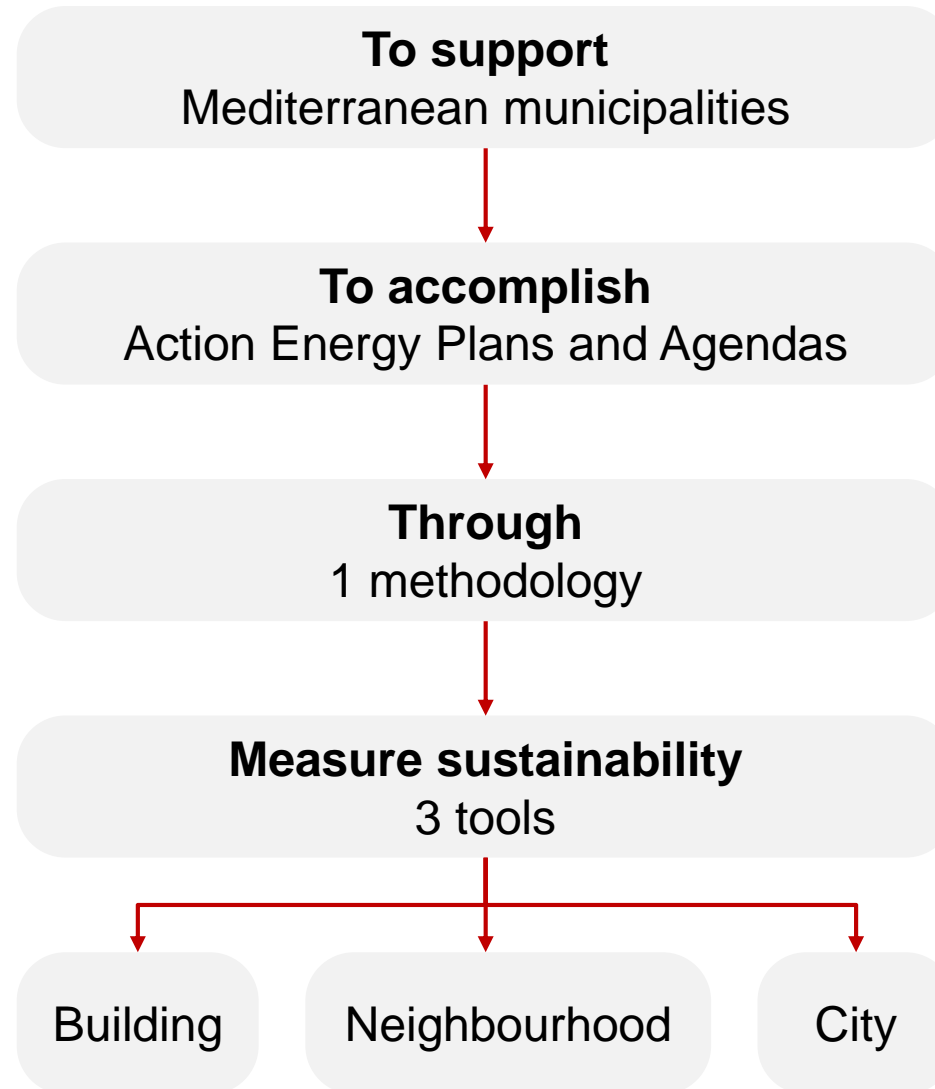
Sustainable MED Cities

**Digital tools and Decision Making Methodology to increase
the capacity of cities on sustainable urban planning**

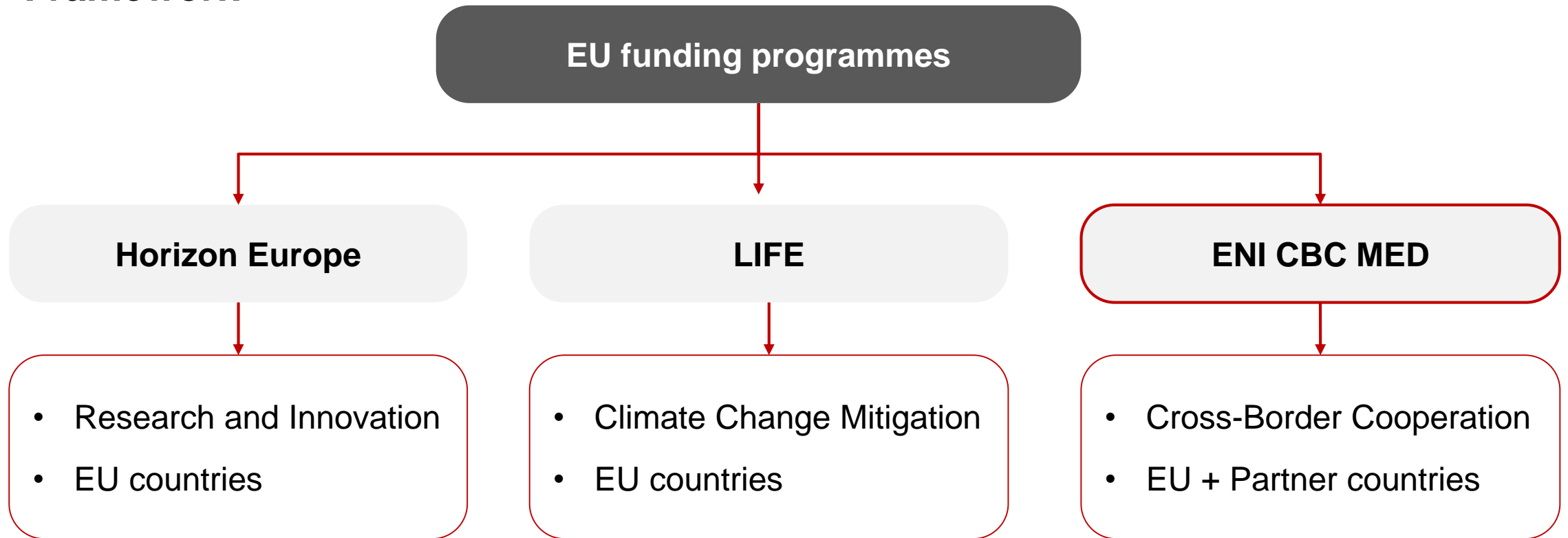


This Project has received funding from the European Union's ENI CBC Med programme

Goal



Framework



Sustainable MED Cities

About the Project

0.7 M€

Total Budget

0.6 M€

EU Contribution

2 Years

Duration

6 Partners

6 Countries

Partnership

01 GenCAT
Spain



02 iiSBE
Italy



03 Sousse Muni.
Tunisia



04 Moukhtara Muni.
Lebanon



05 Irbid Muni.
Jordan



06 NOA
Greece

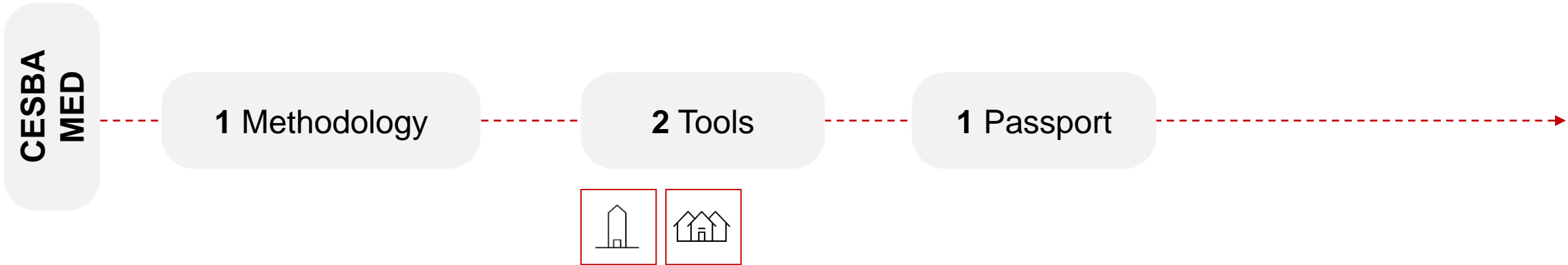
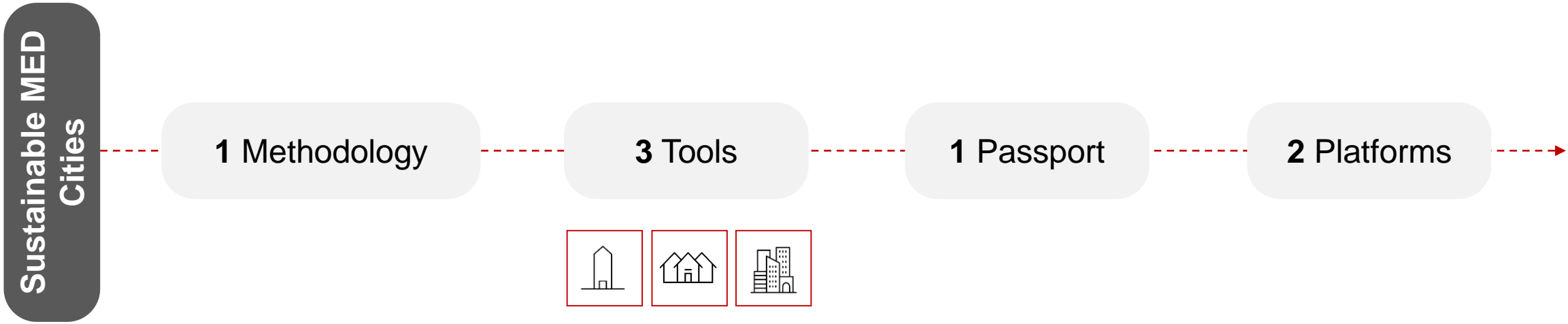


07 UNEP/MAP
Associated Partner

08 MedCities
Associated Partner



Capitalization Project



Capitalization Project

**INTERREG Mediterranean
CESBA MED project**



Capitalization



**ENI CBC MED
Sustainable MED Cities**

3 pilots



Sousse
Tunisia



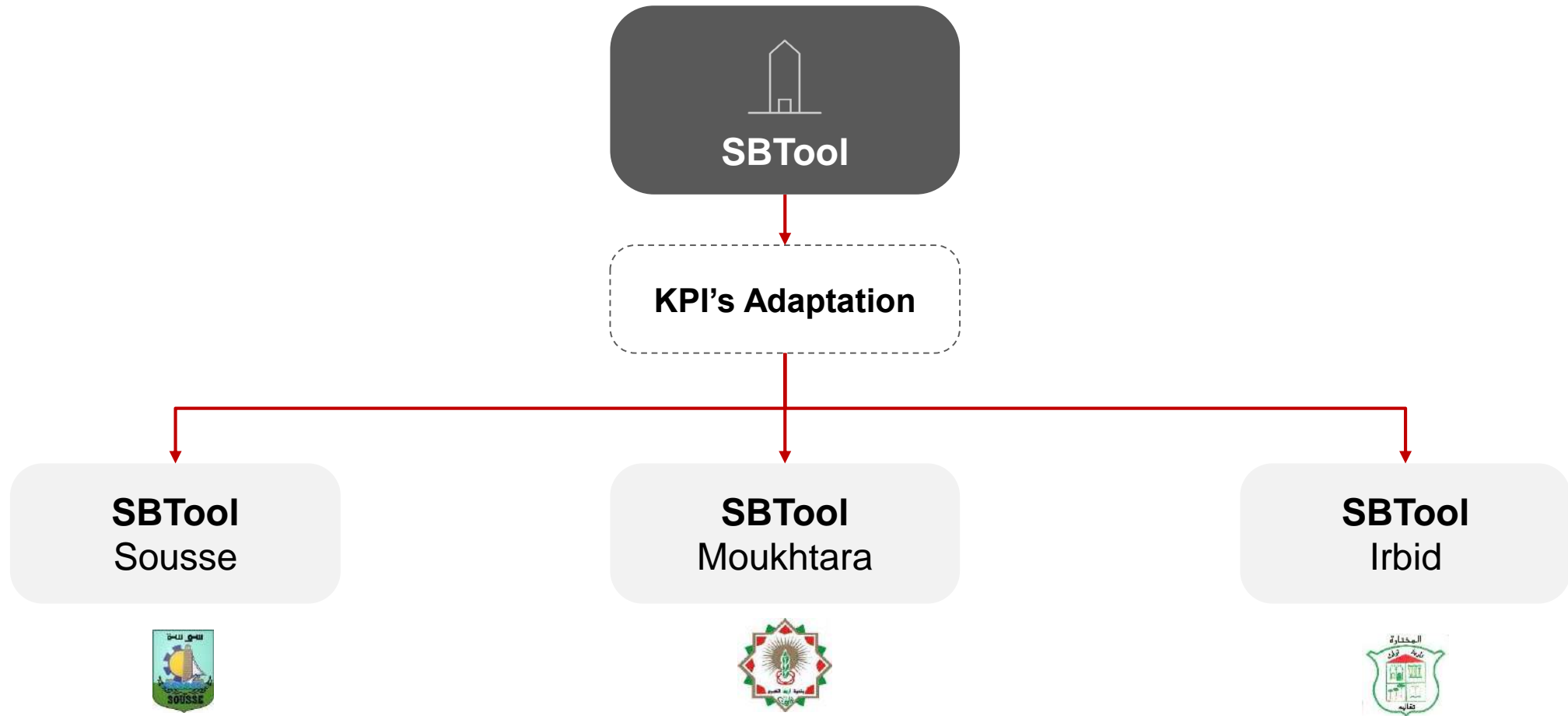
Moukhtara
Lebanon



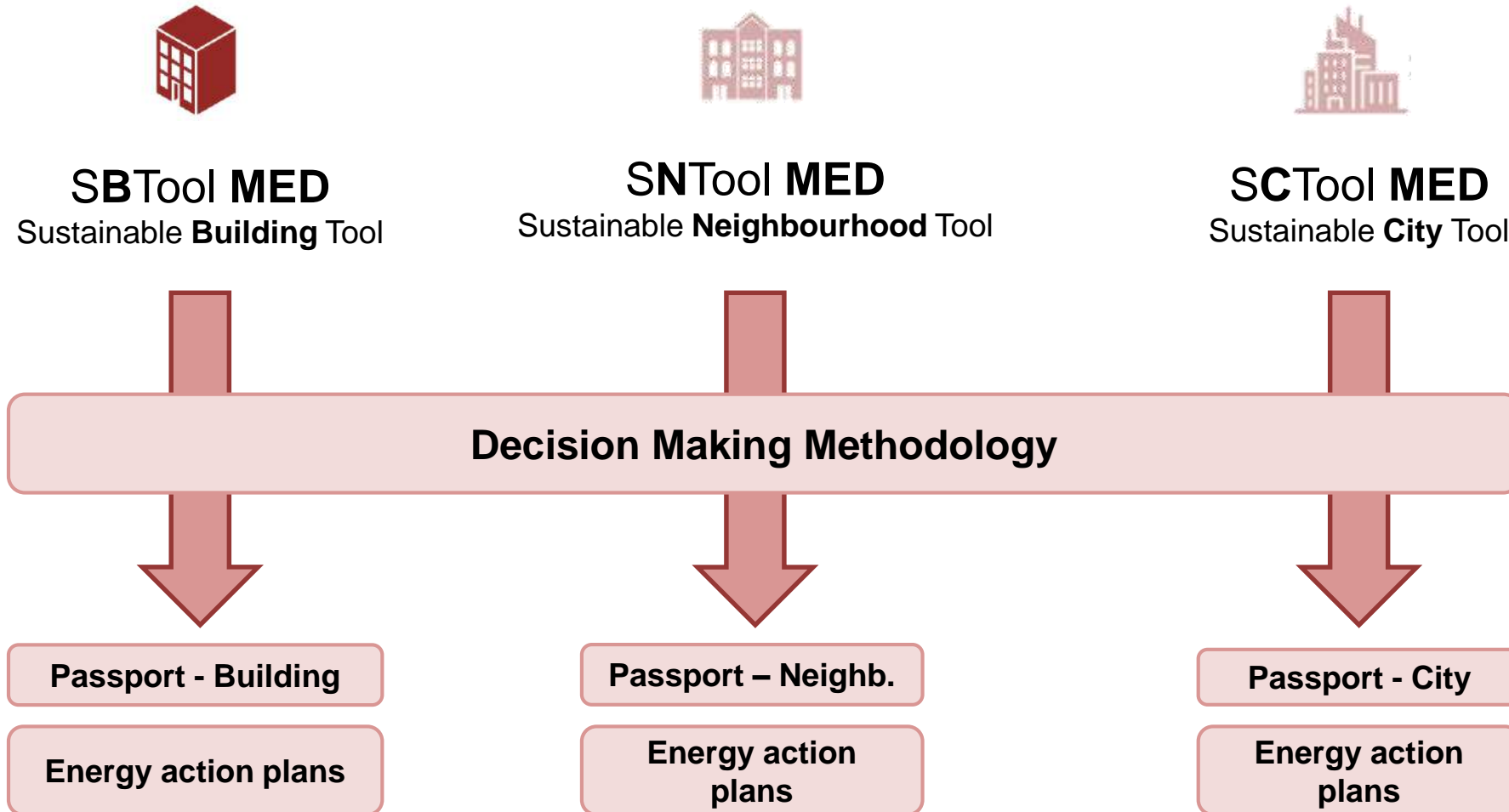
Irbid
Jordan



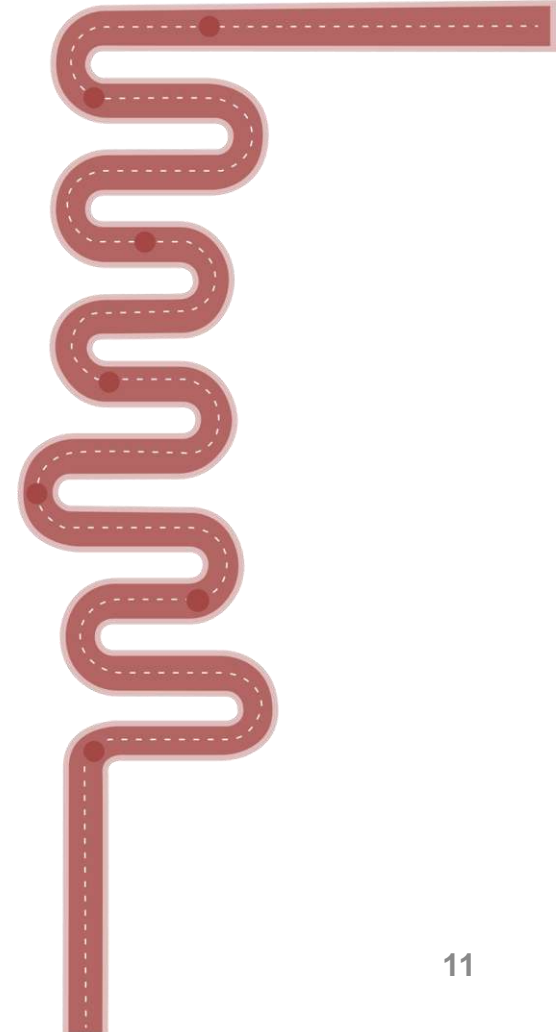
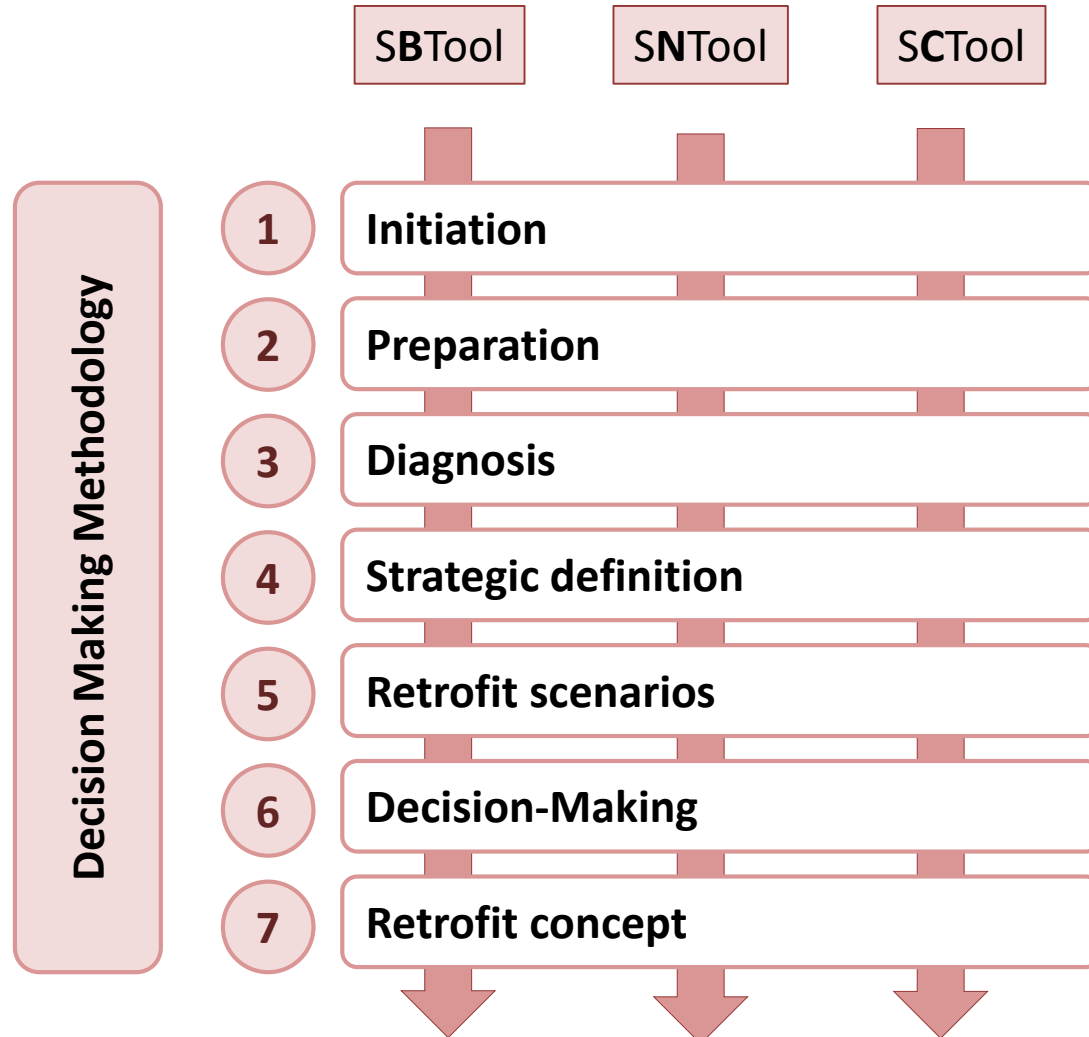
Tool Adaptation



Decision – Making Methodology



Decision – Making Methodology



Example Case



Irbid
Jordan



Public Building



SBTool MED
Sustainable **B**uilding Tool

Decision – Making Methodology

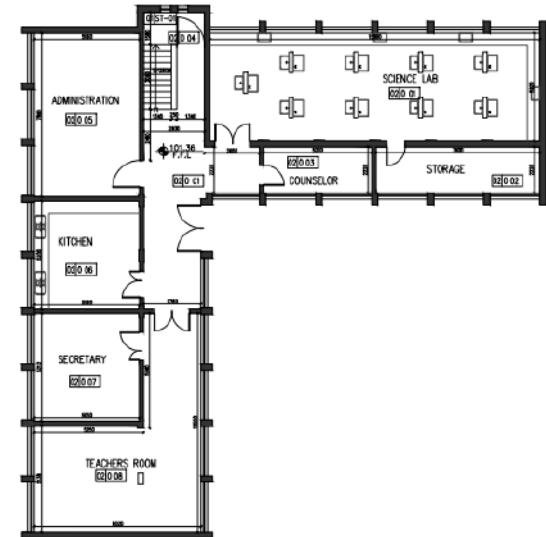
- 1 **Initiation**
- 2 **Preparation**
- 3 **Diagnosis**
- 4 **Strategic definition**
- 5 **Retrofit scenarios**
- 6 **Decision-Making**
- 7 **Retrofit concept**

Decision – Making Methodology

- 1 **Initiation**
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Elementary School for Boys
Abu Bakr Al-Sedeeq



Decision – Making Methodology

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Gather Key information

General Information

Year construction	1999
Building method	Concrete structure
Number of levels	4
Heating system	4 AC
Cooling system	Fans + natural cooling, 4 AC
Lighting system	Fluorescent + Glob lighting fixture + Compact Fluorescent lighting fixture + Spot down light + Hooligan + LED
Number of occupants	Students= 1920 Employees = 90

Decision – Making Methodology

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Team + Stakeholders



+

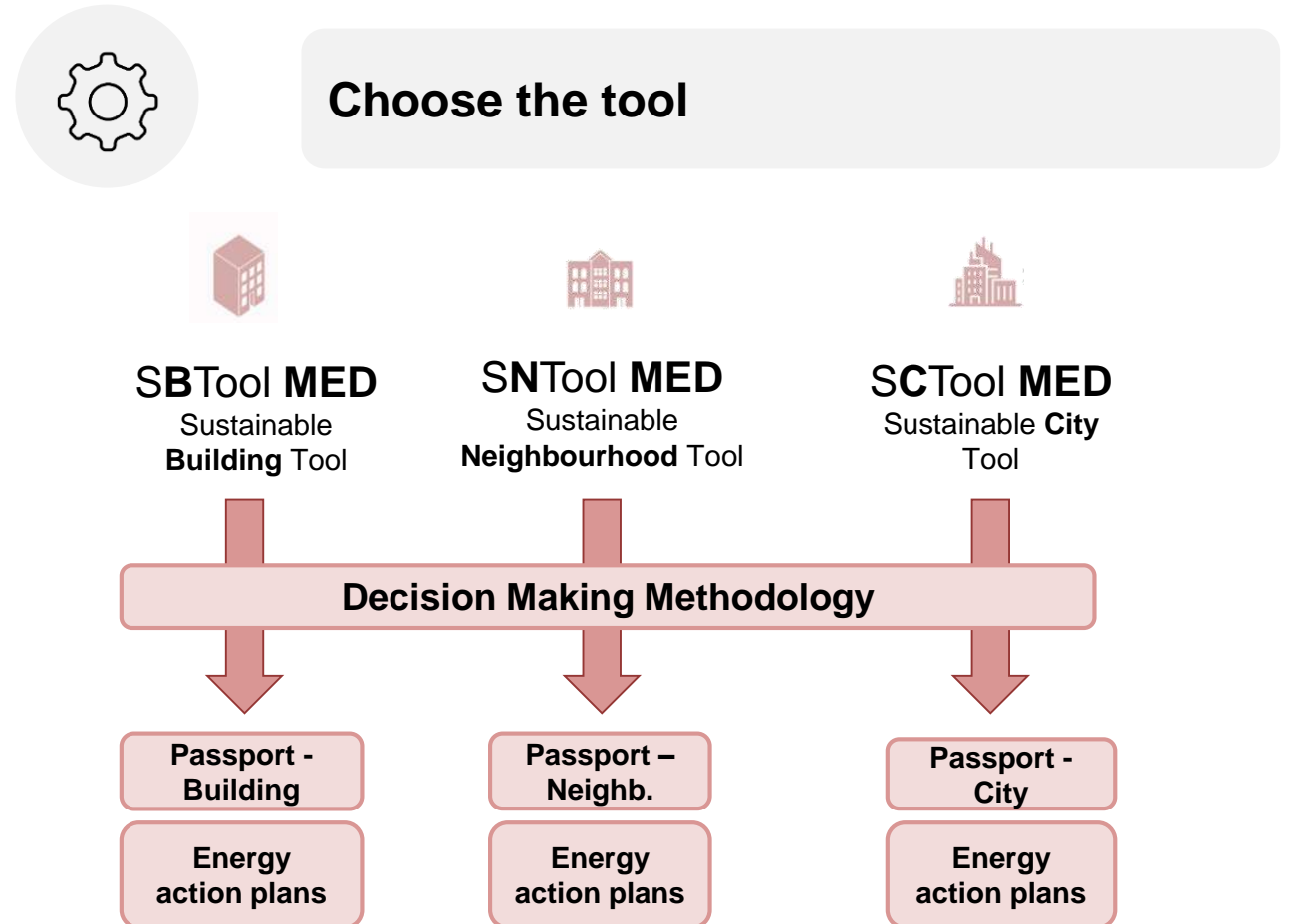


الجامعة الألمانية الأردنية
German Jordanian University



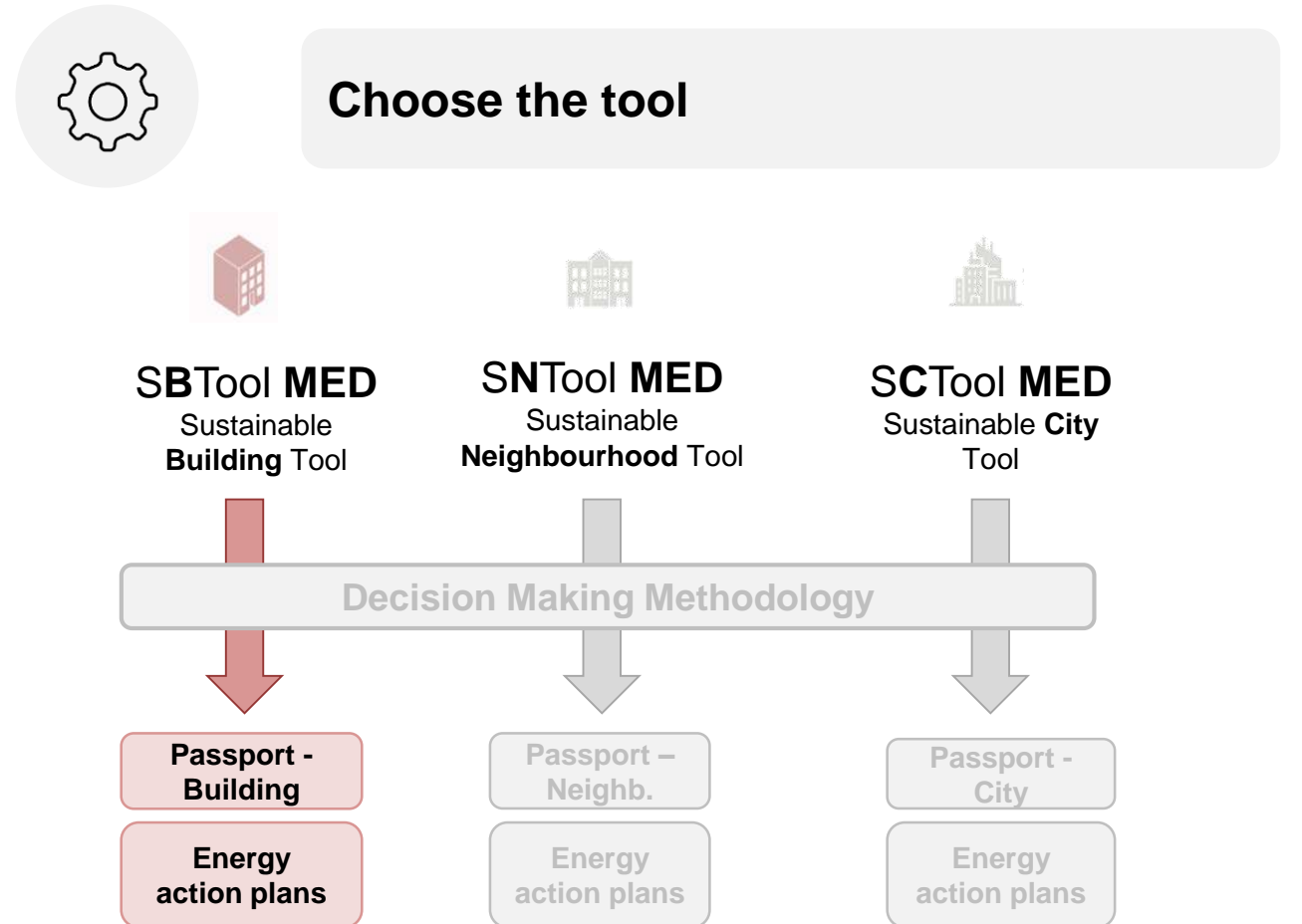
Decision – Making Methodology

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Decision – Making Methodology

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Decision – Making Methodology

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- Step 1** Generic Framework
- Step 2** Issues
- Step 3** Categories
- Step 4** Criteria and Indicators

Decision – Making Methodology

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Step 1

Generic Framework



<https://sustainablemedcities.tools/>

Decision – Making Methodology

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Step 1

Generic Framework

Generic Frameworks

+ Add Delete  Clone  Search 















Name	↑ Description	
SMC SBTool		 
SMC SNTTool		 
SMC SCTool		 

Decision – Making Methodology

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Step 2

Issues

Issues		
		Search 
+	Add	Delete 
↶	Import	
Code	Name	
A	Site regeneration and development, urban design...	 
B	Energy and resources consumption	 
C	Environmental loadings	 
D	Indoor environmental quality	 
E	Service quality	 
F	Social, cultural and perceptual aspects	 




Decision – Making Methodology











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Step 3

Categories

Categories

+ Add Delete  Clone  Search 

Code	Name		
B1	Energy		
B2	Electrical peak demand		
B3	Materials		
B4	Use of potable water, stormwater and greywater		



Decision – Making Methodology















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Step 4

Criteria and Indicators

Criteria

+ Add Delete  Import Search 

Code	Name	Indicator		
B1.1	Primary energy demand	I169 - Primary energy demand per...		
B1.2	Delivered thermal energy	I39 - Delivered thermal energy ...		
B1.3	Delivered electrical energy	I38 - Delivered electrical energy ...		
B1.4	Energy from renewable	I199 - Share of renewable energy...		
B1.5	Energy from renewable	I198 - Share of renewable energy...		
B1.6	Embodied non-renewable	I45 - Embodied primary non-ren...		

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Feedback from Stakeholders

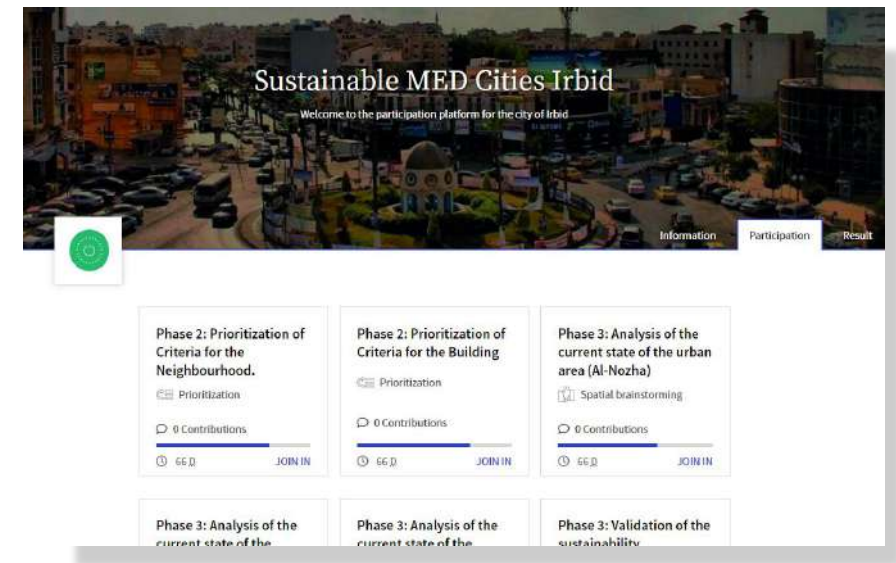


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Feedback from Stakeholders



www.adhocracy.plus/sustainable_med_cities/

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Feedback from Stakeholders

Accessibility (Disabled people)

1 ^ 0 v 0 D

G. Social aspects

Adaptation to the climatic action: drought

0 ^ 0 v 0 D

I. Climate Change: Mitigation & Adaptation

Adaptation to the climatic action: fluvial and coastal flood

0 ^ 0 v 0 D

I. Climate Change: Mitigation & Adaptation

Adaptation to the climatic action: heatwaves and increase of temperature

0 ^ 0 v 0 D

I. Climate Change: Mitigation & Adaptation

Adaptation to the climatic action: pluvial flood

0 ^ 0 v 0 D

I. Climate Change: Mitigation & Adaptation

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Current State Scoring (-1 to 5)

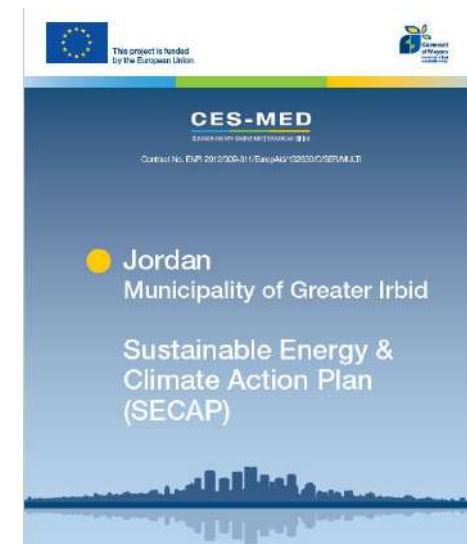
Code	Criterion	Indicator	Score Ranking
A2.1	Use of native plantings	The extent of vegetated landscaped area that is planted with native plants	-1
B2.1	Electrical peak demand for building operations	Average of peak monthly electrical demand for one year	0.2
C2.1	Emissions of ozone-depleting substances during facility operations	CFC-11 equivalent emissions per useful internal floor area per year	1
D2.2	Time outside of the thermal comfort range (heating season)	Percentage of the time out of the range of defined interior maximum and minimum temperatures during the heating season	-1
E1.2	Smart Readiness Indicator	Total Smart Readiness of buildings for responding to the needs of occupants, optimizing energy performance, and interacting with energy grids	-1
E2.1	Existence and implementation of a maintenance management plan	The availability of a comprehensive and long-term plan at the end of the Design phase, and evidence of its implementation during Operations phase	1.5
F1.1	Universal access on site and within the building	The scope and quality of design measures planned to facilitate access and use of buildings facilities by persons with disabilities	4

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To accomplish Energy Efficiency Plan



40% of CO2 emissions

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Sustainability Targets Score

Code	Criterion	Diagnosis score	Target score
A2.1	Use of native plantings	-1	1
E1.2	Smart Readiness Indicator	-1	0.5
D2.2	Time outside of the thermal comfort range (heating season)	-1	1.5
B2.1	Electrical peak demand for building operations	0.2	2

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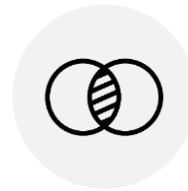


Sustainability Targets Score

Code	Criterion	Indicator	Target score	Target value
A2.1	Use of native plantings	The extent of vegetated landscaped area that is planted with native plants	1	600 m ²
E1.2	Smart Readiness Indicator	Total Smart Readiness of buildings for responding to the needs of occupants, optimizing energy performance, and interacting with energy grids	1	50 %
D2.2	Time outside of the thermal comfort range (heating)	Percentage of the time out of the range of defined interior maximum and minimum temperatures during	1.5	5 %
B2.1	Electrical peak demand for building operations	Average of peak monthly electrical demand for one year	1.5	150 W/m ²

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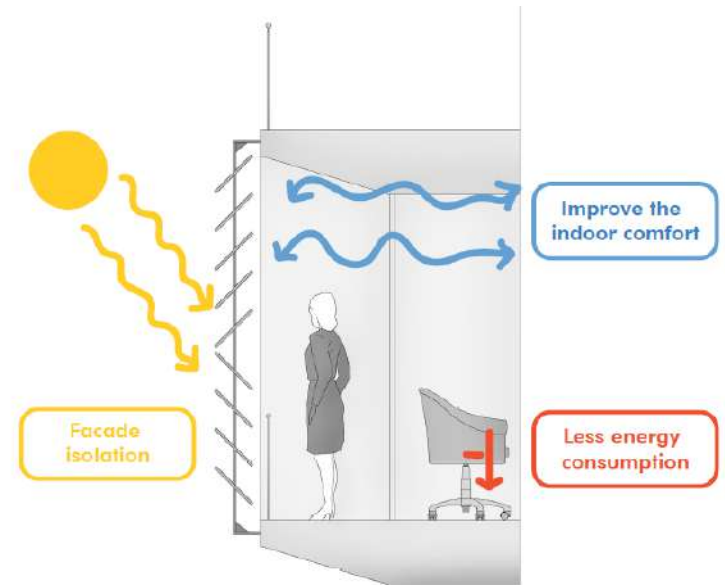
Compare different options

Solar protection

Natural ventilation

Seasonal adaptation

Daylight

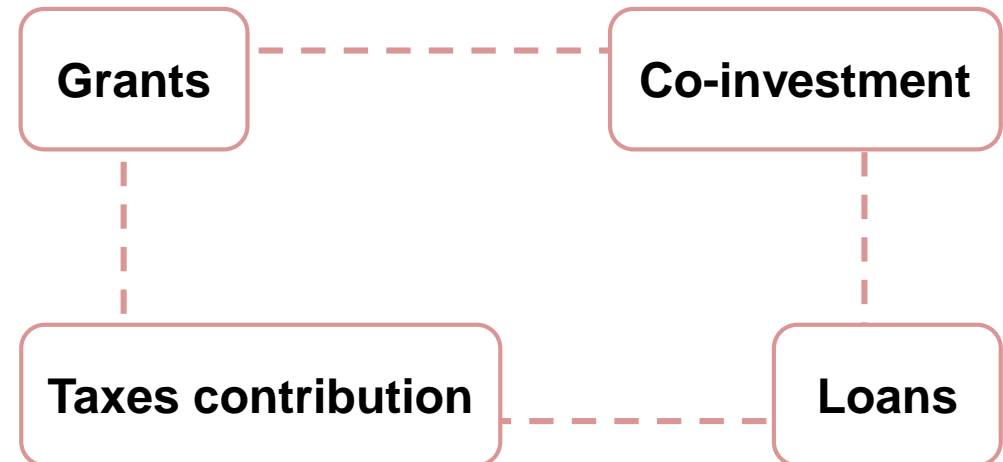


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Identification of financing models



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Selection of the best scenario

Position in the ranking	Scenario	Sustainability Global Score
#1	Scenario 2	2.0
#2	Scenario 1	1.4
#3	Scenario 3	0.8

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Feedback from Stakeholders

1 In the project page of your city go to the task you would like to participate in.

← SUSTAINABLE MED CITIES SOUSSE

Phase 6: Selection of the best scenario

Which scenario do you think is the best one for the development of the urban area? vote for the option that you consider the best solution for the neighbourhood. Read the description to find more information on each scenario.

Phase 6: Decision-making active

April 1, 2023, midnight - May 31, 2023, 11:59 p.m.

The overall goal of this phase is to select the best scenario in terms of energy and cost efficiency as well as the overall sustainability among the ones created previously. This phase is articulated in two main steps represented by the assessment of the scenarios and their ranking process.

2 Click on an scenario from the list to get more information about each one.

Search

ordering: Alphabetical ▾

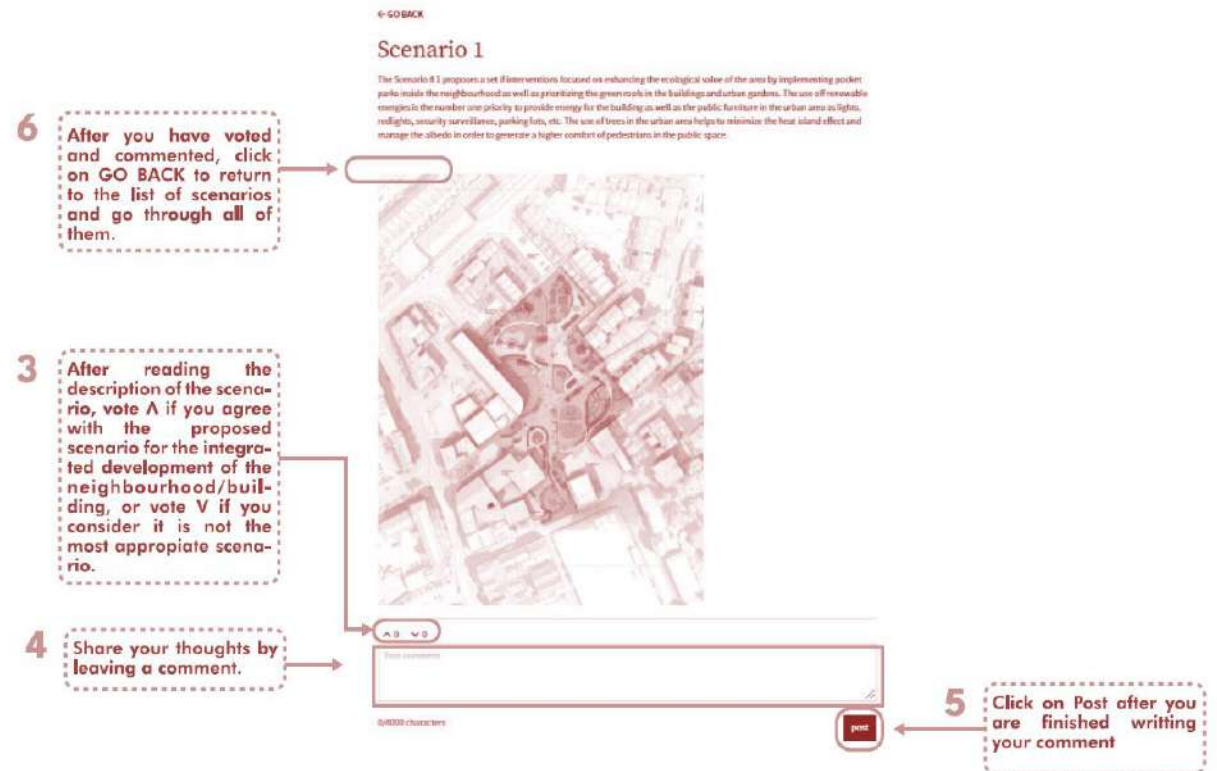
Scenario 1	0^ 0v 0D
<u>Scenario 2</u>	0^ 0v 0D
<u>Scenario 3</u>	0^ 0v 0D

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Feedback from Stakeholders



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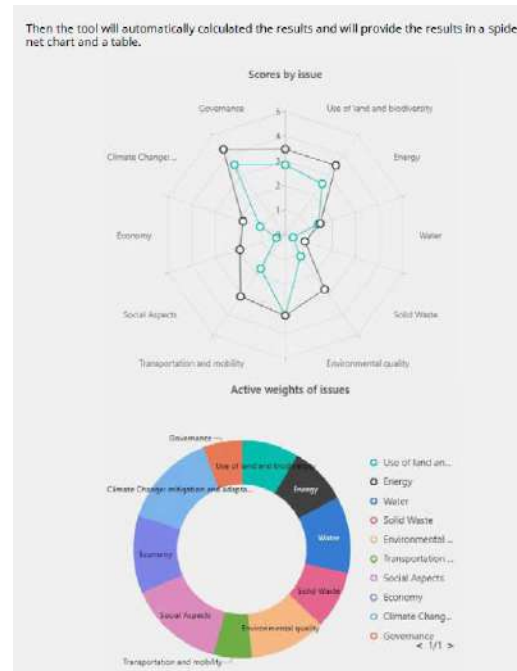


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Detailed Description of the interventions



Intervention Information

Description

Expected results

Activities/works to implement

Timescale

Budget estimation

Responsible for the implementation

Partnerships

Reference stakeholders

Links with existing or future strategies

Decision – Making Methodology

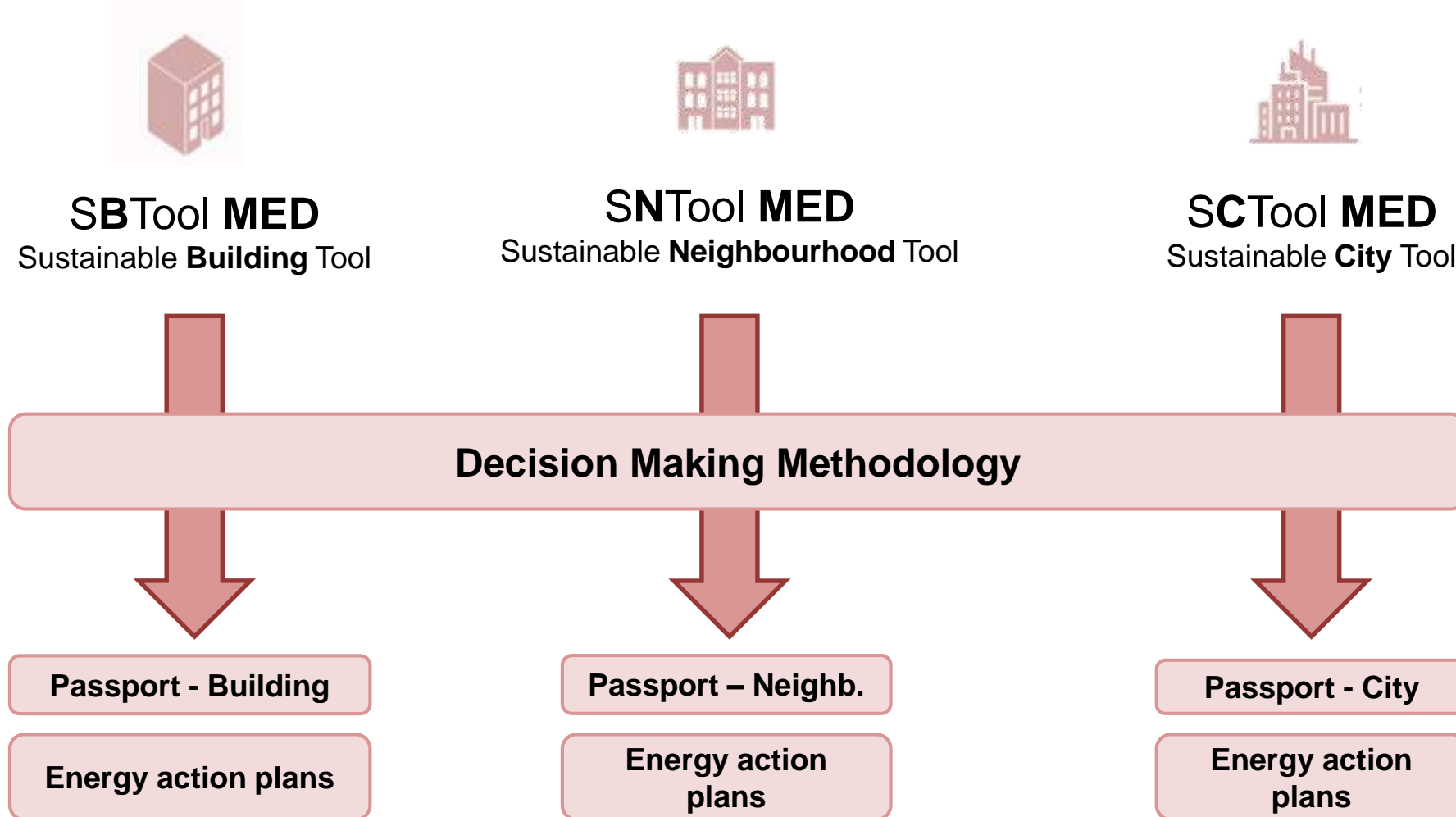
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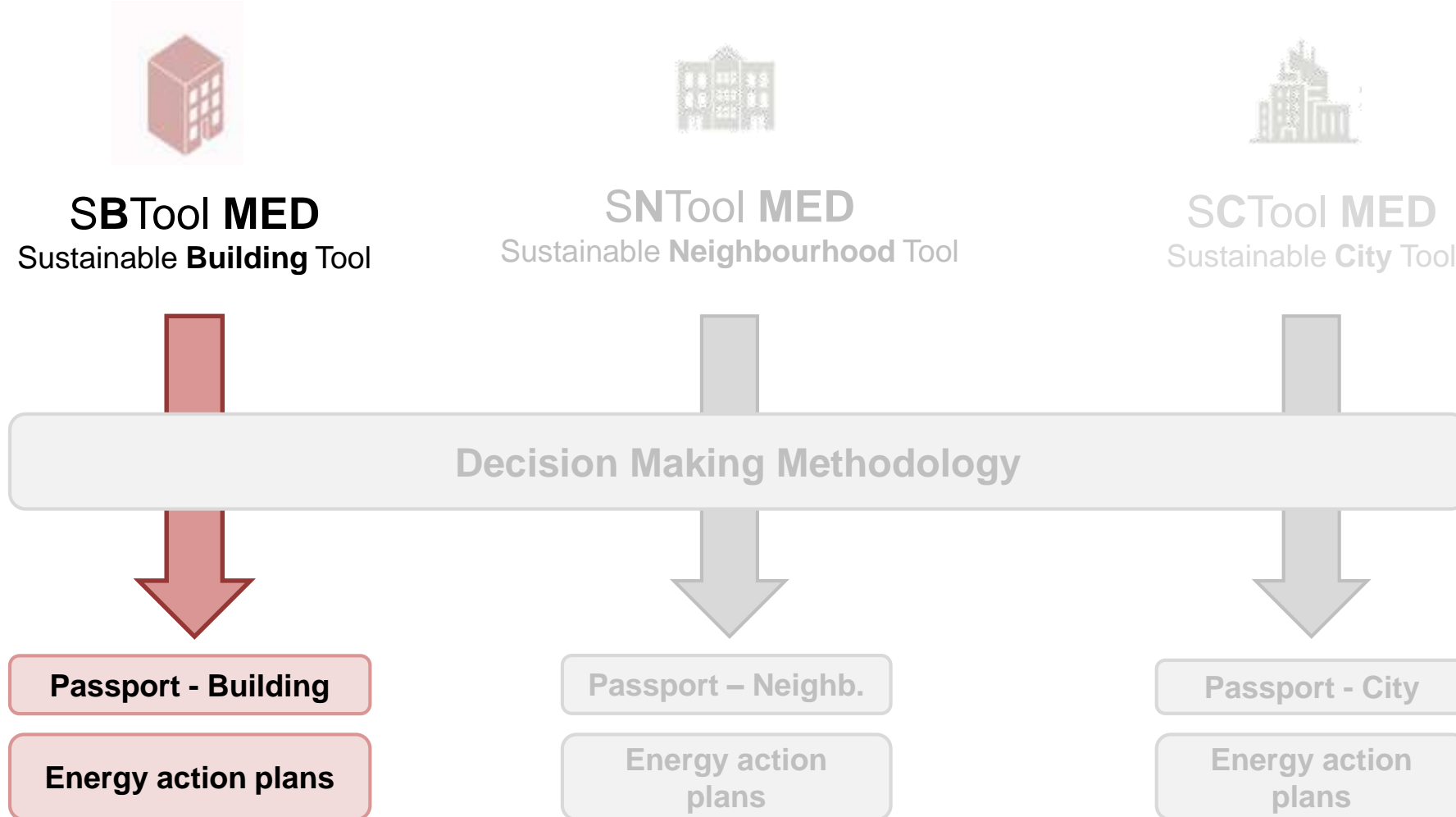
Final Presentation to Stakeholders



Decision – Making Methodology



Decision – Making Methodology





Generalitat de Catalunya
Departament de Territori



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



sustmedcities

