

SuPeRBE Training Material

Macro Area of Expertise:

11. Decision Making for climate adaptation

Area of Expertise:

11.1 Decision Making for climate adaptation at small urban scale and building scale.

Level of competence: 3

Introduction: why urban and building scale adaptation?

- **Climate-related hazards**, including heatwaves, storms, flooding, and drought, are increasing in both frequency and intensity.
- While individual buildings may be directly exposed to hazards, entire neighborhoods experience **interconnected vulnerabilities** that cannot be addressed in isolation.
- Current tools mainly address single buildings but lack integration into broader, systemic adaptation strategies at the neighbourhood or city scale.



A Heavy precipitation



B Floods



C Extreme heat



D Droughts



E Storms



F Wild-fire



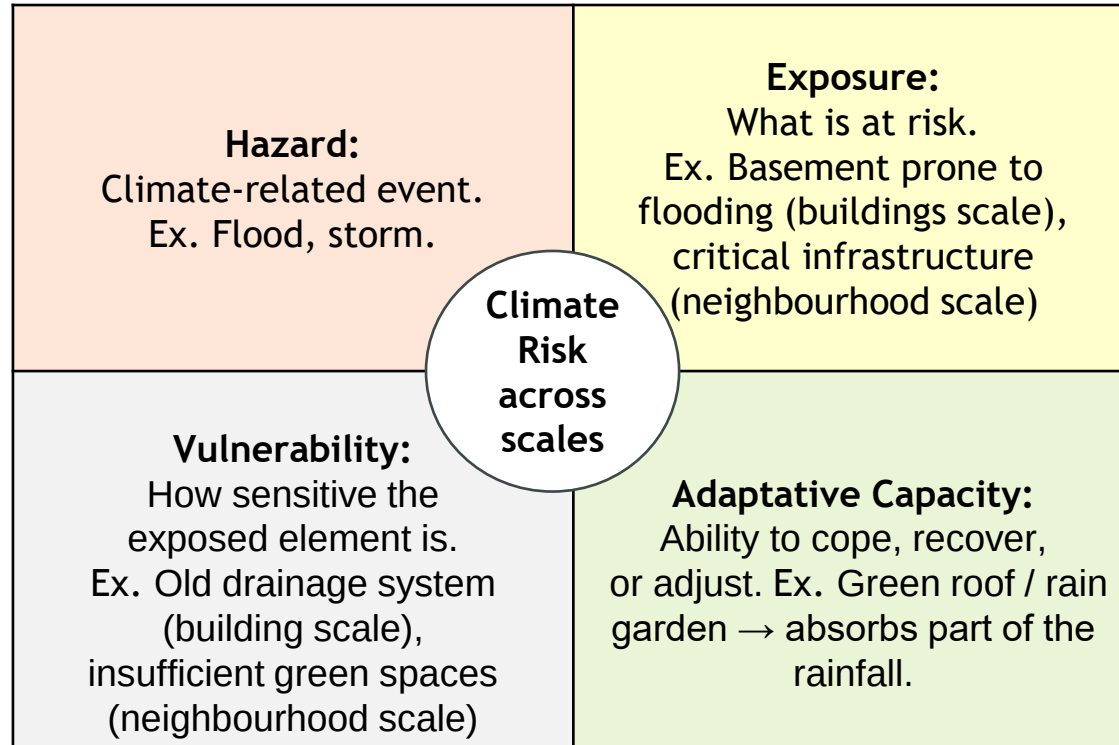
G Mass Movement

Introduction: SuPeRBE Decision-Making Model

- **The SuPeRBE Decision-Making Model**, supported by the **RBTool** (for buildings) and **RNTool** (for neighbourhoods), provides a structured, step-by-step framework for assessing building and urban scale vulnerabilities, identifying weaknesses, and defining effective multi-scalar interventions.
- Decision Making at neighbourhood scale guides and shapes adaptation actions at the broader scale, providing parallelly the guidelines that determine/impact the DM at building scale.
- Adaptation is an **iterative and participatory process**, combining technical analysis with stakeholder input to ensure measures are feasible, inclusive, and context-specific.



Key concepts before staring:



The SuPeRBE framework

1. Purpose:

The Decision Making Method (DMM) provides a **structured, step-by-step process** for climate adaptation, supporting municipalities and planners to **assess risks, prioritize actions, and implement adaptive measures**.

1. Scope:

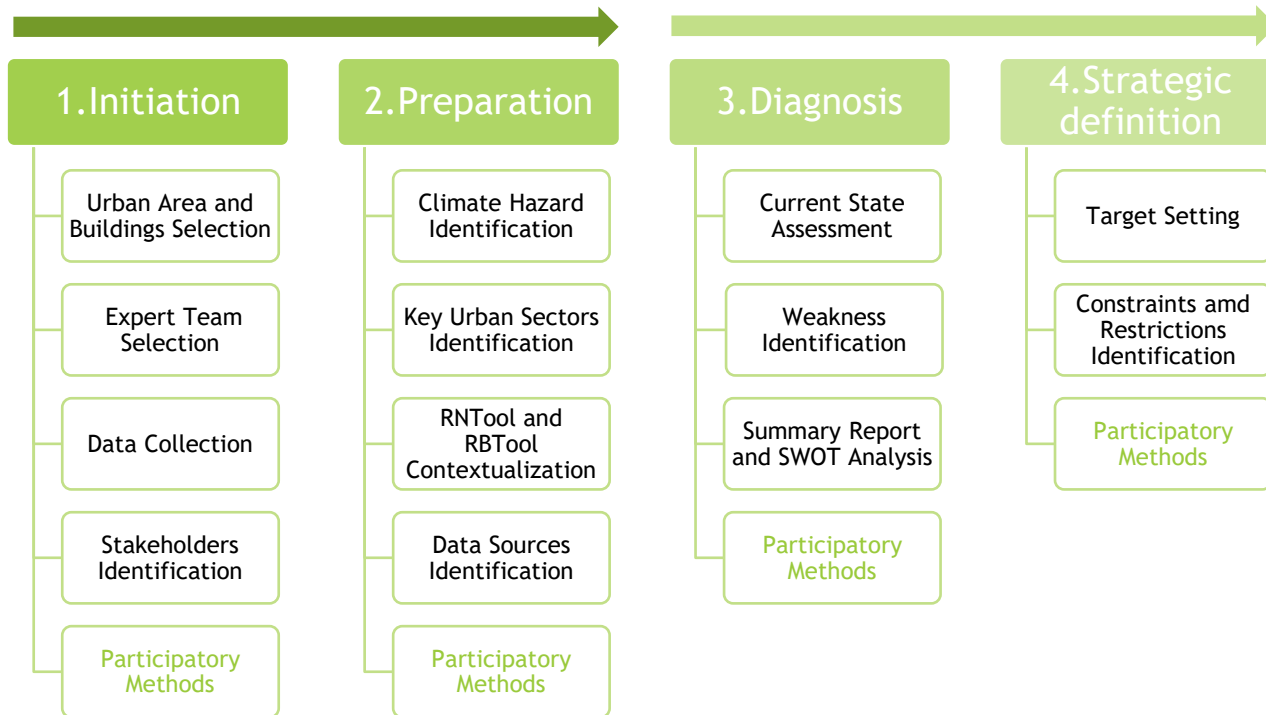
Based on **DIN EN ISO 14091** and the **RBE-CE assessment system**, the DMM enables cross-sectoral, multi-scale evaluation. Works alongside **RB Tool** for Building-Scale and **RN Tool** for Urban-scale Assessment .

1. Key Strengths:

- Iterative and flexible:** supports continuous learning and adaptation.
- Participatory:** engages stakeholders at every stage.
- Scalable:** applicable across cities and governance contexts.

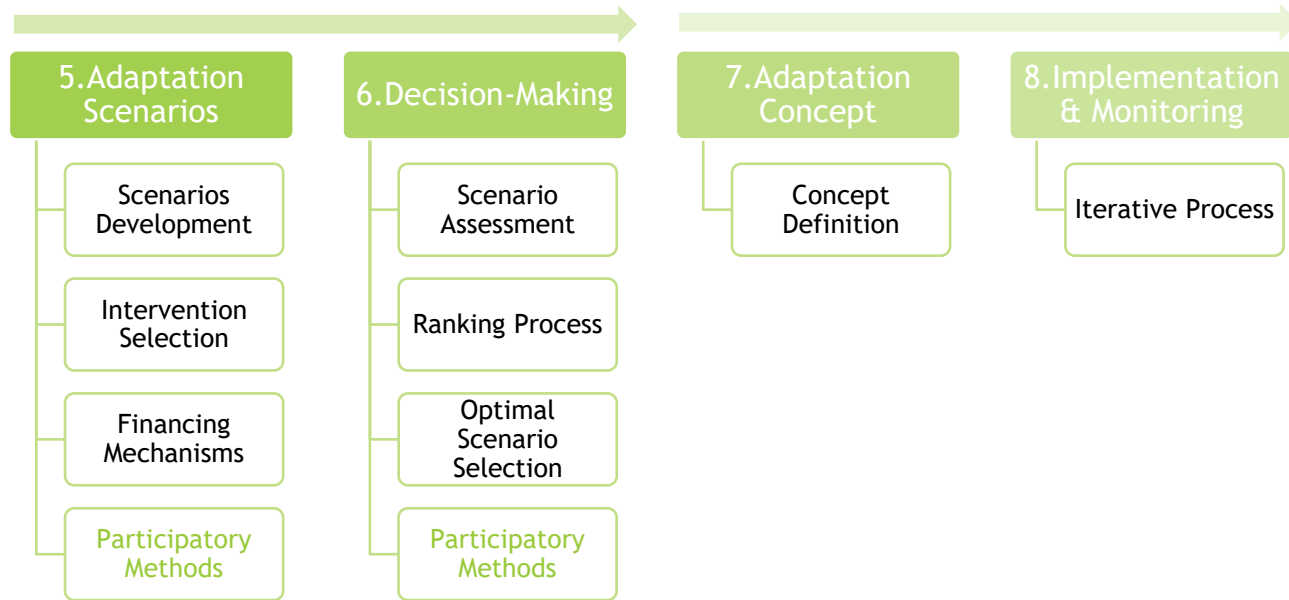
The SuPeRBE framework

Overview of the 8 different phases of the DM:



The SuPeRBE framework

Overview of the 8 different phases of the DM:



Phase 1: Initiation

Objective: Define the scope and set the foundation for the adaptation concept at building/neighbourhood scale.

Main tasks:

1. **Selection of urban area and buildings for adaptation:**
 - Provide description: physical, functional, social aspects
 - Define boundaries using criteria such as proximity, ownership, context, period of construction.
 - List resources, governance, preparedness measures
2. **Set up the Expert Team (SuPeRBE Working Group):**
 - Appointed by municipality, the SuPeRBE WG manages the process acting as an interface.
3. **Collect key data:**
 - Gather qualitative and quantitative information on climatic profile, vulnerabilities, risks
 - On-site assessments, surveys, questionnaires, workshops



SCHNIFIS [AT]

Phase 1: Initiation

Stakeholder Identification:

- **Municipal departments/local authorities** (planning, health & safety, green areas, mobility)
- **Experts** (urban planners, energy managers, landscape designers)
- **Utilities & service providers** (energy, water, waste)
- **Public interest groups** (residents' associations, NGOs, clubs, politicians)
- **External parties** (banks, funding agencies)



Roles in SuPeRBE Platform:

- **Owner** - initiates & manages projects (municipality/property owner)
- **Assessor** - conducts risk assessment (experts)
- **Observer** - views & provides input (public, utilities, funding bodies)

Participatory methods:

- Kick-off meetings, stakeholder mapping, site visits and interviews

Phase 1: Initiation

Practical Example. Urban area and building selection.
Stakeholder identification.



Pilot case example in Schnifis, Austria



Primary school of Schnifis



Municipal office of Schnifis

Stakeholder Identification in Schnifis:

- Citizens
- Members of the fire brigade
- Farmers
- Municipal representatives
- Urban planners and architects
- Energy managers

Phase 1: Initiation

Practical Example.

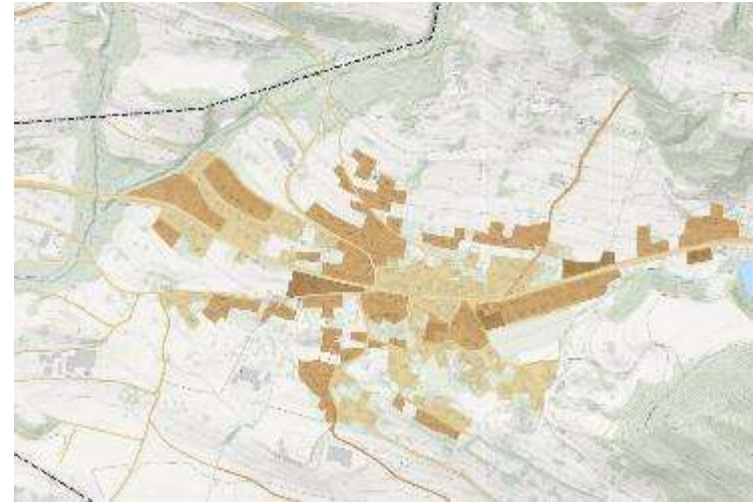
Collection of qualitative and quantitative information.

Heat load on residential and traffic areas:



Current vulnerabilities in Schnifis:

- Proximity to floodplain
- Drought in forest and farming land
- Urban heat island effect
- Lack of finance
- Lack of space for flood water drainage
- Increasing housing

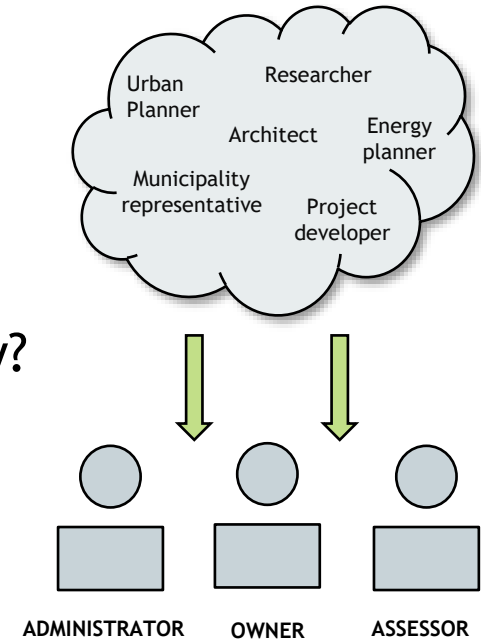


Map showing strong physical strain from heat load in Schnifis area

Phase 1: Initiation

✓ Learning checkpoint:

When starting an adaptation process for a building, which stakeholders would you involve first, and why?



Phase 2: Preparation

Objective: Build the information base for developing the adaptation concept.

Main tasks:

1. **Identify climate hazards and impacts:**
 - Heavy precipitation, floods, extreme heat, droughts, storms, wildfires, mass movement.
2. **Identify key urban sectors exposed/vulnerable to hazards:**
 - Buildings, transport, energy, water, waste, health, environment, ICT, economy, etc.
3. **Contextualize RBE Method - RBTool and RNTool:**
 - Select criteria (exposure & vulnerability)
 - Define weights (priorities)
 - Set benchmarks (0 = optimal, 1 = critical).



Phase 2: Preparation

Data sources Identification:

- Municipal/regional departments (planning, mobility, energy, etc.)
- Public agencies, utilities, statistical offices
- Building owners/tenants, certificates (e.g., energy performance)
- Databases, GIS, open sources, on-site inspections



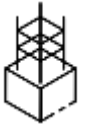
Participatory methods:

- Stakeholders central to tool contextualization
- Co-define criteria & priorities through: surveys, questionnaires and workshops

Phase 2: Preparation

Structure of RBTool - Macro categories

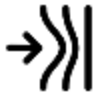
The key Building Components (as seen in *AD2.2 RBTool*) are:



Foundations



Load Bearing Structural Frame



Non-load Bearing Elements



Energy System



Ventilation System



Sanitary Systems



Other Systems



Utilities



Landscaping



Occupants



Location



Community

Phase 2: Preparation

Structure of RNTool - Macro categories

The key Urban Sectors (as seen in *AD2.3 RNTool*) are:



Buildings (Heavy precipitation, Floods, Extreme Heat, Storms, Mass Movement)



Energy (Heavy precipitation, Extreme Heat, Storms)



Transport (Heavy precipitation, Floods, Extreme Heat, Storms, Wild-fire, Mass Movement)



Water (Heavy precipitation, Floods, Drought)



Environment and Biodiversity (Extreme Heat, Drought)



Health (Heavy precipitation, Floods, Extreme Heat, Drought, Storms)



Emergency Services (Heavy precipitation, Floods, Extreme Heat, Drought, Storms, Wild-Fire, Mass Movement)



Tourism (Heavy precipitation, Extreme Heat, Mass Movement)

Phase 2: Preparation

Practical RNTool Example.

Identification of climate hazard, urban sectors and criteria affected in Schnifis.

A HEAVY PRECIPITATION				
A1 BUILDINGS				
A1.1 Damage risk for residential buildings				
VULNERABILITY				
Code	Criterion	Description	Indicator	Unit
A1.1.1	Surface Infiltration Capacity	Extent to which site can absorb rainfall and reduce surface runoff	Proportion of permeable vs. impermeable surfaces	%
A1.1.2	Surface Water Accumulation	Extent to which surface runoff collects in low-lying areas, leading to flooding	Average water depth in streets/yards	cm/m
A1.1.3	Building Envelope Waterproofing	Quality of sealing and resistance of roofs, windows, and doors to rainwater ingress	Share of envelope rated water-resistant	%
A1.1.3	Roof Drainage Capacity	Ability of roofing and gutter systems to handle intense rainfall	Share of buildings with oversized gutters/downspouts	%
A1.1.4	Rainwater Retention Capacity	The ability of the site to retain rainwater on site	Volume of rainwater retained (compared to total precipitation)	m3 or %
A1.1.5	Precipitation Event Monitoring	Capacity to detect, warn, and respond to intense precipitation in real time	Existence of precipitation monitoring systems (e.g. sensors, alerts)	Qualitative
A1.1.6	Sewer System Overload	Capacity/exceedence of combined or storm sewers causing backflows	Rainfall volume vs. design capacity	% over capacity
A1.1.7	Inadequate Surface Sloping and Grading	Surfaces not graded to direct water away from structures	Share of site surface with improper slope for water runoff	%
A1.1.8	Presence of Green Roofs	Vegetated rooftops that help retain rainwater and reduce building surface runoff	Share of buildings with functional green roofs	%
A1.1.9	Vegetation and Bio-retention Areas	Use of vegetation and nature-based solutions to absorb and slow water runoff	Share of green surfaces designed for water retention (e.g., swales)	%
EXPOSURE				
A1.1.E.1	Building Density	Density of buildings, reflecting potential concentration of physical assets in the neighborhood	Number of buildings per km ²	Buildings/km ²
A1.1.E.2	Population Exposure	Number of residents in the neighborhood	People per square kilometre in the neighborhood	People/km ²
A1.1.E.4	Exposure of Residential Built Asset	Extent to which residential buildings are located in the neighborhood	Share of residential buildings in the neighborhood	%
A1.1.E.5	Building Entrances Below Grade	Number of entry points vulnerable to surface runoff intrusion	Share of ground-level or below-grade entrances without protective slopedesign	%
A1.1.E.6	Street-to-Building Slope Exposure	Water flow potential from public space (roads, sidewalks) into private property	Share of entrances or ramps sloping from street toward buildings or garages	%



HEAVY
PRECIPITATION



FLOOD



EXTREME
HEAT



DROUGHT



STORM



WILDFIRE



MASS
MOVEMENT



BIOLOGICAL
HAZARD

Phase 2: Preparation

Practical RNTool Example.

Indication of observed value for each selected criterion.

A HEAVY PRECIPITATION							
A1 BUILDINGS							
A1.1 Damage risk for residential buildings							
Code	Criterion	Indicator	Unit	Range of values	Benchmark (value 0)	Benchmark (value 1)	Observed value
A1.1.8	Presence of Green Roofs	Share of buildings with functional green roofs	%	HIB	> 50%	< 10%	43%

Process should be repeated for each criterion.

Phase 2: Preparation

✓ **Learning checkpoint:**

Which data source could help you identify flooding risks for a neighbourhood?



Phase 3: Diagnosis

Objective: Analyse the current condition and adaptation level of buildings and neighbourhoods to identify risks and set the basis for future targets.

Main tasks:

1. Assessing the current state

- Each building/ neighbourhood criterion is evaluated against benchmarks set in Phase 2. Indicator values are normalized to calculate risk levels.
- Performance/ risk scores indicate whether elements are performing well or require attention.
- Experts rank criteria to highlight the most critical weaknesses.

2. Identification of weaknesses :

- Weak points are prioritised based on scores relative to benchmarks.
- Includes both quantitative data from RBTool/RNTool and qualitative input from occupants (surveys/workshops).
- Reveals vulnerabilities in structural elements, building systems, and functionality

Phase 3: Diagnosis

Practical RNTool Example. Normalizing values.

A HEAVY PRECIPITATION							
A1 BUILDINGS							
A1.1 Damage risk for residential buildings							
Code	Criterion	Indicator	Unit	Range of values	Benchmark (value 0)	Benchmark (value 1)	Observed value
A1.1-E.5	Building entrances below grade	Share of ground-level or below-grade entrances without protective slope/design	%	LIB	0%	> 30%	19,5%

Given that LIB (Lower is better) and that:

- Optimal benchmark (score = 0) → 0% of building entrances below grade
- Critical benchmark (score = 1) → 30% of building entrances below grade
- Observed value → ~19,5% of building entrances below grade

$$\text{Normalized score} = \frac{\text{Optimal benchmark} - \text{Observed benchmark}}{\text{Optimal benchmark} - \text{Critical value}} ; \quad \text{Normalized score} = \frac{0 - 19,5}{0 - 30} = 0,65$$

Phase 3: Diagnosis

Practical RNTool Example. Normalizing values.

A HEAVY PRECIPITATION							
A1 BUILDINGS							
A1.1 Damage risk for residential buildings							
Code	Criterion	Indicator	Unit	Range of values	Benchmark (value 0)	Benchmark (value 1)	Observed value
A1.1.8	Presence of Green Roofs	Share of buildings with functional green roofs	%	HIB	> 50%	< 10%	17,2%

Given that **HIB** (Higher is better) and that:

- Optimal benchmark (score = 0) → 50% of roofs are green
- Critical benchmark (score = 1) → 10% of roofs are green
- Observed value → ~17,2% of roofs are green

$$\text{Normalized score} = \frac{\text{Optimal benchmark} - \text{Observed benchmark}}{\text{Optimal benchmark} - \text{Critical value}} ; \quad \text{Normalized score} = \frac{50 - 17,2}{50 - 10} = \boxed{0,82}$$

Phase 3: Diagnosis

Practical RNTool Example. Weight assignment and calculation of overall risk score.

A HEAVY PRECIPITATION					
A1 BUILDINGS					
A1.1 Damage risk for residential buildings					
Code	Criterion	Description	Normalised values	Weight	Weighted value/ score
A1.1.1	Surface Infiltration Capacity	Proportion of permeable vs. impermeable surfaces	0.70	0.30	0,210
A1.1.3	Roof Drainage Capacity	Share of buildings with oversized gutters/downspouts	0.50	0.15	0,075
A1.1.8	Presence of Green Roofs	Share of buildings with functional green roofs	0.82	0.25	0,205
A1.1-E.1	Building Density	Number of buildings per km ²	0.30	0.05	0,015
A1.1-E.5	Building Entrances Below Grade	Share of ground-level or below-grade entrances without protective slope/design	0.65	0.25	0,163
Overall risk score				1	0,668

Phase 3: Diagnosis

Practical RNTool Example.

Ranking example of the RNTool scores to identify the most critical issues.

Assessment criterion			Score
A1.1.8	Presence of Green Roofs	Share of buildings with functional green roofs	0,82
A1.1.1	Surface Infiltration Capacity	Proportion of permeable vs. impermeable surfaces	0,7
A1.1-E.5	Building Entrances Below Grade	Share of ground-level or below-grade entrances without protective slope/design	0,65
A1.1.3	Roof Drainage Capacity	Share of buildings with oversized gutters/downspouts	0,5
A1.1-E.1	Building Density	Number of buildings per km ²	0,3

Given that:

- Optimal benchmark → score = 0
- Critical benchmark → score = 1

Phase 3: Diagnosis

Diagnosis Summary Report and SWOT Analysis:

- Summarises main findings and key weaknesses at building scale
- Provides recommendations for handling weaknesses in subsequent phases
- SWOT Analysis interconnecting strengths, weaknesses, opportunities and threats, allowing also to link between categories.

Participatory methods:

- Occupant feedback, expert knowledge, and workshops complement quantitative assessment.

Strengths		Weaknesses	
-Strategic location for emergency coordination	-Education and cooperation hubs for knowledge sharing	-Slow urban growth delays adaptation	-Weak environmental protection
-Natural areas buffer climate impacts	-Solid infrastructure (water, health, education)	-Outdated infrastructure (drainage, waste)	-Underused public/natural spaces
-Low pollution supports public health	-Tolerant, engaged community	-Limited local resources for upgrades	-High unemployment reduces adaptability
-Skilled population aids adaptation	-Diverse economy reduces risk	-Nature encroached, reducing buffers	-Poor investor links and weak tourism network
-Good medical facilities for crisis response	-Strong local identity (“Hue”) fosters cohesion	-Low climate risk awareness	-Inadequate public safety infrastructure
-Complex governance slows action			
Opportunities		Threats	
-Funding/support for resilience projects	-Integrate resilience in heritage plans	-Climate risks (flooding, heat, storms)	-Unregulated growth increases exposure
-Training in health and green sectors	-Promote low-impact tourism niches	-High exposure to natural hazards	-Shorter tourism seasons from weather shifts
-Develop as health/resilience tourism hub	-Public-private partnerships for upgrades	-Heritage/ ecosystem loss reduces buffers	-Fragmented geography hampers response
-Nature-based solutions for adaptation	-Leverage “Hue” brand for awareness and funds	-Regional competition for resources	-Growth may conflict with resilience goals
		-Globalization weakens local systems	

Phase 3: Diagnosis

✓ Learning checkpoint:

What information should a diagnosis report provide to guide future adaptation strategies?

Phase 4: Strategic definition

Objective: Define framework conditions for adaptation design by setting targets and identifying constraints. Here the diagnosis results are translated into clear targets.

Main tasks:

1. Setting adaptation targets:

- Define clear, measurable targets for building adaptation before scenario planning. Use **RBTool** and **RNTool** to set target scores for each assessment criterion.
- Targets must be **SMART**: Specific, Measurable, Attainable, Relevant, Time-bound
- Targets are **interdependent**; interventions may address multiple hazards simultaneously (e.g., green roofs reduce flood and heat risks)

2. Identify constraints:

Constraints must be identified and assessed individually for each site to guide feasible adaptation measures. Its early recognition prevents non-compliant interventions.

Phase 4: Strategic definition

Possible constraints and restrictions to take into account:

- Legal constraints (e.g. Building Codes, Cultural Heritage Protection)
- Technical constraints (e.g. Architecture, Systems)
- Financial constraints (e.g. Investment Cost, ROI)
- Environmental constraints (e.g. Climatic conditions, urban morphology)
- Stakeholder based restrictions



Participatory methods:

- PGS (Participatory Guarantee System) workshops are highly recommended.
- Stakeholders can help validate targets, constraints, and restrictions

Phase 4: Strategic definition

Practical RNTool Example.

Target score setting and calculation of the Target value.

Assessment criterion		Indicator	Diagnosis score	Target Score
A1.1.8	Presence of Green Roofs	Share of buildings with functional green roofs	0,82	0,2

Given that:

- Optimal benchmark (score = 0) → 50% of roofs are green
- Critical benchmark (score = 1) → 10% of roofs are green
- Normalized targeted score → 0,2

Target value = Optimal benchmark – Normalized targeted score * (Optimal benchmark – Critical benchmark)

Phase 4: Strategic definition

Practical RNTool Example.

Target score setting and calculation of the Target value.

Assessment criterion		Indicator	Diagnosis score	Target Score	Target Value
A1.1.8	Presence of Green Roofs	Share of buildings with functional green roofs	0,82	0,2	42 % (considering an optimal Benchmark value of 50% and an inadequate value of 10%)
A1.1.1	Surface Infiltration Capacity	Proportion of permeable vs. impermeable surfaces	0,7	0,2	64% (considering an optimal Benchmark value of 70% and an inadequate value of 40%)
A1.1-E.5	Building Entrances Below Grade	Share of ground-level or below-grade entrances without protective slope/design	0,65	0,3	9 % (considering an optimal Benchmark value of 0% and an inadequate value of above 30%)
A1.1.3	Roof Drainage Capacity	Share of buildings with oversized gutters/downspouts	0,5	0,1	87% (considering an optimal Benchmark value of 90% and an inadequate value of under 60%)

Phase 4: Strategic definition

✓ Learning checkpoint:

How would you define realistic adaptation targets at both the building and urban scale, and what types of constraints could limit their implementation?



Phase 5: Adaptation scenarios

Objective: Develop a set of distinct, feasible adaptation scenarios, each meeting the defined performance targets.

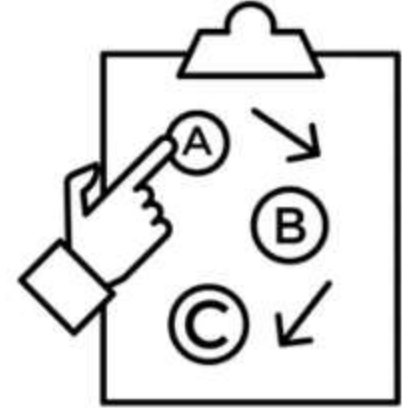
Main tasks:

1. **Develop adaptation scenarios** by combining hard (technological, structural) and soft (policies, training) interventions into coherent packages.
2. **Differentiate scenarios** to allow meaningful comparison in the decision-making phase (value assessment).
3. **Select interventions.** Start from weaknesses identified in the Diagnosis Phase; filter out interventions restricted by legal, technical, or contextual constraints.
4. **Evaluate interventions** by assessing contribution to performance targets, consider synergies and interdependencies between building and neighbourhood levels (e.g., energy, water systems).
5. **Iterative refinement.** Use RBTool/RNTool and Simulation Hub to test and adjust intervention packages until performance targets are met.

Phase 5: Adaptation scenarios

Key considerations in scenario development:

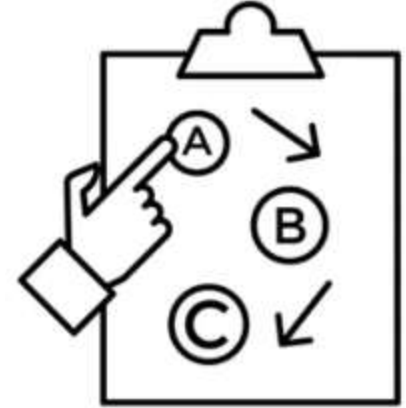
- **Integrated approach:** Foster cross-sectoral innovation, efficient resource use, and long-term resilience.
- **Financing mechanisms:** Secure feasibility by evaluating grants, loans, loan guarantees, energy performance contracting (ESCOs), tax incentives...
- **Stakeholder participation:** Organize a PGS workshop to collect input from inhabitants, occupants, and stakeholders; integrate their expectations and priorities into scenario design.



Phase 5: Adaptation scenarios

✓ Learning checkpoint:

Why is it important to develop multiple, distinct adaptation scenarios instead of just one?



Phase 6: Decision-Making

Objective: Select the optimal adaptation scenario based on performance, cost-efficiency, timeframe, and co-benefits among the scenarios developed in Phase 5.

Main tasks:

1. Assessment of scenarios:

- Evaluate interventions using RBTool and RNTool.
- Update and calculate performance scores with simulated indicator values from the SuPeRBE platform.
- Compare the different scenarios.

2. Ranking of Scenarios:

- Weight assignment(urban vs. buildings) to calculate overall risk/performance value of each scenario.
- Consider overall risk value, costs, timeframe, and synergy effects.
- Derive an Adaptation Efficiency Score (risk $\times$ cost factor).

Phase 6: Decision-Making

Key elements in Decision-Making:

- **Tools & Methods:**
 - RBTool → for quantitative scoring of adaptation.
 - Simulation Hub → for calculating updated indicator values.
- **Calculated Parameters:**
 - Overall Risk Value → weighted sum of RBTool scores
- **Decision Parameters:**
 - Synergy Effects → co-benefits across hazards and sectors
 - Timeframe → short-term, mid-term, long-term
 - Financial Mechanisms & Non-simulated Aspects → considered qualitatively
 - Costs → low € (factor 1.0), medium €€ (factor 1.1), high €€€ (factor 1.2)
- **Participation, transparency and inclusiveness:**
 - Feedback gathered from occupants, users, and stakeholders before final decisions.

Phase 6: Decision-Making

Practical RNTool Example.

Weight assignment and calculation of overall performance score for each Urban Area, Buildings A and B. Urban Area - Scenario 3:

A HEAVY PRECIPITATION					
A1 BUILDINGS					
A1.1 Damage risk for residential buildings					
Code	Criterion	Description	Target score	Weight	Weighted value/ score
A1.1.1	Surface Infiltration Capacity	Proportion of permeable vs. impermeable surfaces	0.20	0.20	0,04
A1.1.3	Roof Drainage Capacity	Share of buildings with oversized gutters/downspouts	0.10	0.45	0,045
A1.1.8	Presence of Green Roofs	Share of buildings with functional green roofs	0.20	0.20	0,04
A1.1-E.5	Building Entrances Below Grade	Share of ground-level or below-grade entrances without protective slope/design	0.30	0.15	0,045
Overall performance score				1	0,17

Phase 6: Decision-Making

Practical Example.

Repeat the process for remaining scenarios.

Scenarios	Urban area RNTool score	Building A RBTool score	Building B RBTool score
Scenario 1	0,3	0,4	0,5
Scenario 2	0,5	0,1	0,2
Scenario 3	0,17	0,5	0,4

Phase 6: Decision-Making

Practical Example.

Weight assignment for each element (urban area and buildings).

Calculation of the weighted score for each scenario.

Element	Weight
Urban area	90 %
Building A	7 %
Building B	3 %

Assessment	Assessment's score (Z)	Weight (Priority level) (Y)	Weighted score (Z x Y)
RNTool - Urban area	0,17	0,9 (90%)	0,153
RBTool - Building A	0,5	0,07 (7%)	0,035
RBTool - Building B	0,4	0,03 (3%)	0,012
Scenario 3 score			0,20

Phase 6: Decision-Making

Practical Example.

Application of decision parameters to each scenario (synergy effect, time and cost).

Scenarios	Scenario score	Synergy effect	Time	Estimated cost
Scenario 1	0,31	Moderate	Mid	€€
Scenario 2	0,4	Low	Long	€€€
Scenario 3	0,2	High	Short	€

Phase 6: Decision-Making

Practical Example.

Calculation of the evaluation/ efficiency score for each scenario.

Formula: **Efficiency Score = Risk Value × Cost Factor**

Heavy precipitation				
Scenarios	Overall risk/performance value	Estimated cost	Cost factor	Adaptation Efficiency score
Scenario 1	0,31	€€	1,1	0,34
Scenario 2	0,4	€€€	1,2	0,48
Scenario 3	0,2	€	1,0	0,2 BEST

Lower Efficiency score = better

Phase 6: Decision-Making

✓ Learning checkpoint:

If two scenarios show similar RBTool performance, what other factors would guide your decision?

Phase 7: Adaptation concept

Objective: Provide a detailed, chronologically sequenced adaptation concept that defines interventions, forming a solid basis for effective climate adaptation planning.

Main tasks:

1. **Identify and describe interventions** for selected scenario.
2. **Organize interventions** according to building-level issues, such as:
 - Structural safety, energy efficiency, water management, thermal comfort, occupant safety and usability.
3. **For each intervention specify:**
 - Description and expected results; activities and works needed; timeline and budget estimation; responsible actors and partnerships; links with existing or planned strategies.
4. **Chronological sequencing report.** Prioritize interventions for efficiency.

Phase 7: Adaptation concept

✓ Learning checkpoint:

How would you sequence interventions in a building adaptation plan to ensure efficiency and feasibility?

Phase 8: Implementation and monitoring

Objective: Ensure effective, adaptive implementation of climate adaptation measures at the building scale through continuous monitoring, stakeholder engagement, and iterative feedback.

Main tasks:

1. **Establish a project-specific system** to monitor progress and performance during construction and use.
2. **Develop measurable indicators** specific to the project and adaptation solutions; track them via the SuPeRBE platform.
3. **Collect and analyze data** to evaluate performance against project targets, local developments, and regional policies.
4. **Engage stakeholders** in informed decision-making using descriptive analytics.
5. **Adjust actions** based on monitoring results and stakeholder feedback to ensure continuous improvement and long-term sustainability.



Phase 8: Implementation and monitoring

✓ **Learning checkpoint:**

Which performance indicators would you track to verify if building adaptation measures are working as intended?



The SuPeRBE framework

Iterative process:

