Turin-Oslo
Metropolitan governance in Spatial and Strategic planning

making use of the ESPON SPIMA project through group exchange

24 ottobre 2019 - Sala Consiglieri, Via Maria Vittoria 12, Torino

ARTACLIM Project: climate change adaptation strategies in local and metropolitan planning

Ing. Marco Valle – Arch. Stefano Fraire
LINKS FOUNDATION

TABLE OF CONTENTS

Climate change adaptation: the framework

Pathways reflecting current nationally stated mitigation ambitions as submitted under the Paris Agreement (2015) would not limit global warming to 1.5°C with no or limited overshoot, but instead result in a global warming of about 3°C by 2100 with warming continuing afterwords.

This significant gap creates a significant risk of global warming impacting land degradation, desertification, and food security.

(IPCC 2018)

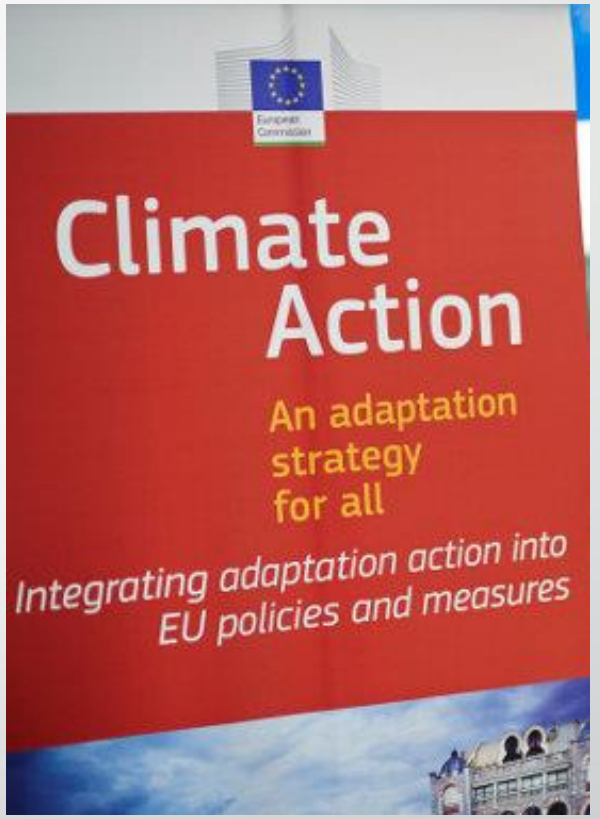
Climate change adaptation: the framework

European Union strategy for climate change (2013)

The European Commission has published an **EU climate change adaptation strategy** in April 2013 . The strategy has 3 main objectives:

- **National and local adaptation strategies** into all Members states: providing funding to help them develop their adaptation capacities. Supporting adaptation in cities by fostering the Covenant of Mayors initiative (SECAP);
- **Climate-proofing action at EU level** - promoting adaptation in key vulnerable sectors such as agriculture, fisheries and cohesion policy;
- **Knowledge on CC** - Better informed decision-making by addressing gaps in knowledge on adaptation and further developing the European climate adaptation platform (Climate-ADAPT).

An increasing number of EEA member countries have adopted a national adaptation strategy (also Italy), and several have developed and are implementing national adaptation action plans.



2050 long-term strategy (2018)

On 28 November 2018, the Commission presented its strategic long-term vision for a prosperous, modern, competitive and climate-neutral economy by 2050. The strategy shows how Europe can lead the way to climate neutrality by investing into realistic technological solutions, empowering citizens, and aligning action in key areas.

Climate change adaptation: the framework

Italian Adaptation Strategy to Climate Change (2015)

In 2015, Italy adopted the Adaptation Strategy to Climate Change (SNAC) that identifies the principles of adaptation, identifies the main risks in 18 sectors and refers to the National Adaptation Plan for the precise definition of future scenarios and the formulation of adaptation actions.

Italian National Plan for Adaptation to Climate Change

In 2017, the National Plan for Adaptation to Climate Change (PNACC) - in consultation but awaiting approval - is presented as a flexible tool. Numerous adaptation actions are defined, but it is then up to the responsible bodies to select and implement them on the local intervention scale.

The PNACC aims to:

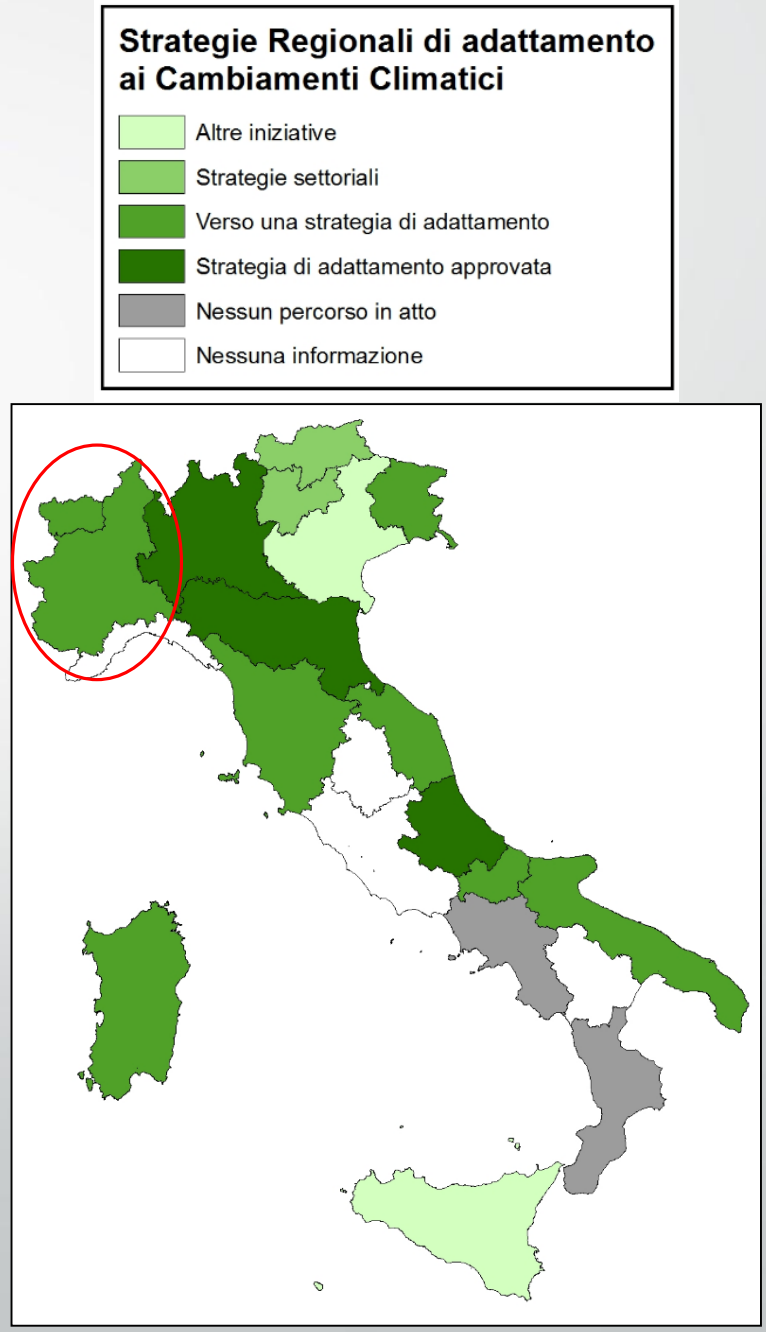
1. identify the priority actions in the field of adaptation for the key sectors identified in the SNAC, specifying the timing and those responsible for implementing the actions;
2. provide indications to improve the exploitation of any opportunities;
3. promote the coordination of actions at different levels.

Climate change adaptation: the framework

Italy – Regional situation (2018-2019)

In the end of 2018, were three Italian regions that had adopted strategies for adapting to climate change (Lombardy, Emilia-Romagna and Abruzzo), while numerous regions have embarked on a journey in this direction: (Piedmont, Valle d'Aosta, Friuli Venezia Giulia , Tuscany, Marche, Molise, Puglia and Sardinia).

Among the remaining regions, Trentino Alto Adige and Sicily, although they have not developed general relative adaptation strategies, have sectoral strategies.



Piedmont Region strategy

From a regulatory point of view, Piedmont is among the Regions that have started a process towards an adaptation strategy. The first concrete step in this direction was the approval of a Deliberation (DGR n. 24-5295 of 3 July 2017) with which the Piedmont Region started the process for the definition of the **Regional Strategy on Climate Change**

Climate change adaptation: the framework

Piedmont Region strategy

The **Regional Strategy on Climate Change**, which will guide the Piedmont territory in an integrated path aimed at reducing greenhouse gas emissions and the vulnerability of natural and socio-economic systems, increasing their resilience to the impacts of ongoing climate change.

The Deliberation of 3 July 2017 contains the provisions for the preparation and implementation of the Regional Strategy on Climate Change as an implementation of the National Sustainable Development Strategy pursuant to CIPE deliberation no. 57/2002 and article 3, paragraph 2 of law 221/2015.

The main purpose of the Strategy is:

- launching on a regional scale the implementation of the Strategy by preparing a *guidance document* on the various policies of sector Plans and Programs with strategic objectives, already proper to the Region, aimed at influencing both the causes and the effects of climate change.




Climate change adaptation: the framework

Metropolitan City of Turin

In the framework described above, the **City of Turin and the Metropolitan City of Turin** with the help of Piedmont Region, each for its scales of competence (building/neighborhood and territorial/wide area), are carrying out different projects on climate change, concentrating on methodology/indicators (mainly through EU projects: CESBA MED, ARTACLIM, CESBA ALPS). The actual idea to perform is to create a common set of basic indicators to monitor the climate change in every level and planning instrument (from time to time specific ones are added for the reference scale).

Climate change adaptation: the framework

Metropolitan City of Turin

Metropolitan City of Turin dialogues with the other Italian CMs and Piedmont Region to elaborate a *Metropolitan Sustainability Agenda* (economic, social, environmental) that is consistent with the higher scale of sustainability strategy (including the indicators for the CC).

The approach of Metropolitan City, concerning also the New Territorial Planning Scheme called PTGM, is based on 3 main ideas:

- Involvement of local/municipal administrations in defining and validating (and then monitoring) adaptation strategies to CCs;
- Insertion of adaptation thematics in the planning and strategic instruments of territorial level as a frame to the actions that are most commonly made on a building scale;
- The importance of linking the local operational urban planning tools (PRGC) to the national strategies, regional and metropolitan areas.

Climate change adaptation: the framework

Local planning situation

The introduction into local instrument of climate change adaptation actions and rules is still in progress in Piemonte Region Municipalities.

Some of them, especially in Metropolitan city territory, have adopted the SEAP and the new SECAP in order to start CO_2 reduction activities and sustainability/energetic actions.

Adaptation measures, directly into planning instruments, is not so usual; the idea is to foster these dynamics through EU project at the beginning (for example using pilot cases, such as ARTACLIM).

Covenant of Mayors for Climate & Energy

MASTER ADAPT

ARTACLIM PROJECT

European cross-border cooperation program between France and Italy

Specific objective

Improving the territorial planning system of public institutions for climate change adaptation.

Develop, test and validate methodology and tools to:

- make the effects of CC in the territories more "clear and measurable"
- increase the resilience of the territories with respect to the consequences of the CC

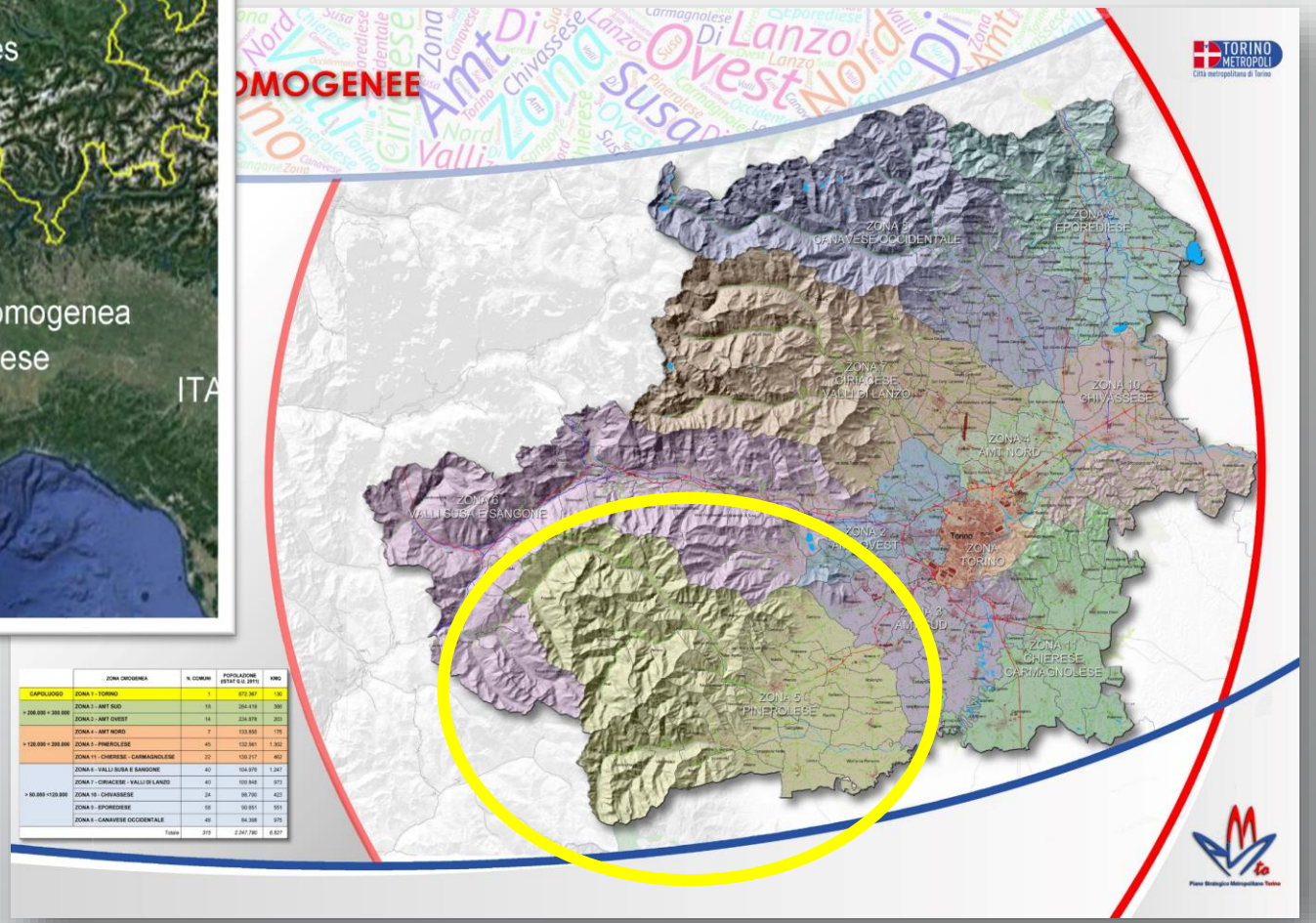
METHODOLOGY:

reproducible and transferable to other local territorial bodies of the Alpine band and beyond.

TOOLS:

introduce into the local processes and plans measures and actions to adapt to the CC.

ARTACLIM PROJECT – Pilot areas



PTGM
CITTÀ METROPOLITANA DI TORINO

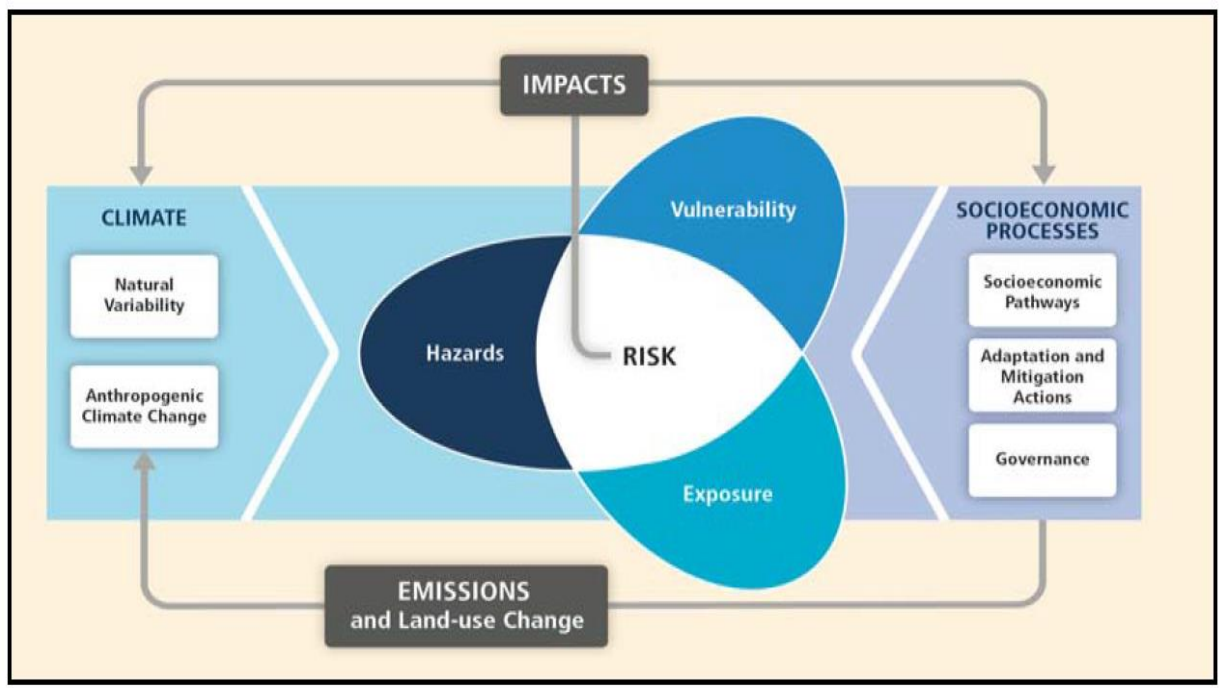
TORINO METROPOLI
Città metropolitana di Torino

ARTACLIM PROJECT – the process

ACTIVITIES

1. Define the state of the art of the climate of the pilot area (climate analysis, temperatures, precipitation patterns)
2. Definition of a set of climate indicators for monitoring
3. Study of the risks and vulnerabilities of the territories
4. Definition of a series of strategies and measures for adaptation to climate change to be included in the local planning tools
5. Participation and involvement of local stakeholders

ARTACLIM PROJECT – generic framework



RISK: the probability that a certain event will occur that can cause harm to goods, environment and people. The risks results from the interaction of vulnerability, exposure and hazards.

Source: IPCC WGII AR5

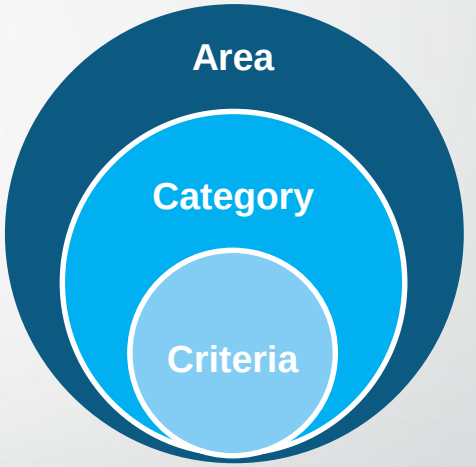
Hazard	Sensitivity	Adaptation	Exposure
Property or intrinsic quality of a given factor having the potential to cause damage	The extent to which a territory will be affected by a climate risk (hazard).	Process to moderate or avoid damage due to the current or foreseeable Climate Change.	Presence of sensitive targets (people, ecosystems, infrastructures or economic, social or cultural resources, …)
Increased intense rainfall	*Quantity of waterproof surfaces in a settlement*	*Extension of green areas respect to the surface of the settlement.*	*Percentage of the population living in areas at risk of flooding*

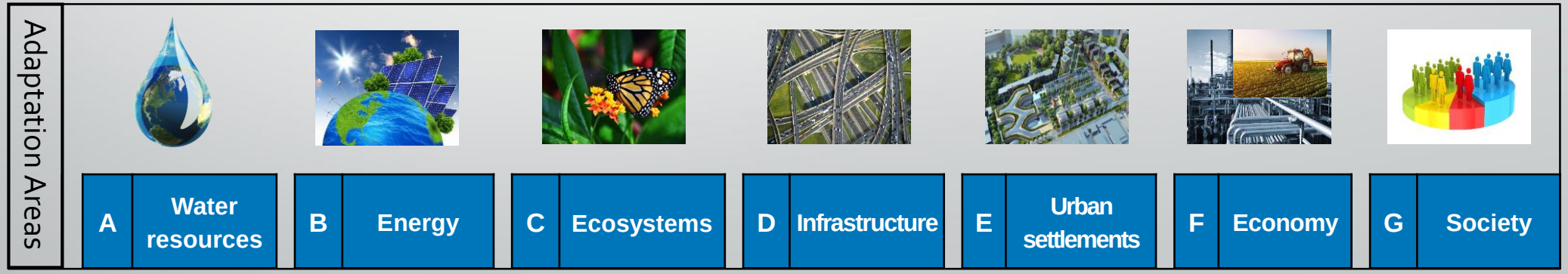
ARTACLIM PROJECT – indicator system

ARTACLIM develops several **Indicator sets** aimed at evaluating specific aspects of the territory

- Evaluation Area, relevant macro-themes (A, B, C, ecc.)
  - Categories, single aspect of an evaluation area (A1, A2, B1, B2,…)
    - Criteria, specific aspect of a category (A1.1, A1.2, B2.1,…)

Each criterion is associated with an indicator





ARTACLIM PROJECT – Italian pilot: ZOP Pinerolo

Climate analysis and Vulnerability study

Analysis of CC projections on a local scale

- use the data simulated by the different regional climate models made available by the EURO - CORDEX program
- With reference to the altitude bands (plain, hill, mountain) to which the 45 municipalities of the ZOP are ascribed according to the National institute of Statistics (ISTAT) classification.

COMUNE	R10	R20	RR1	PRCTOT	SDII	RX1DAY	RX5DAY	Pericolo attuale
Angrogna	5	4	4	5	4	5	5	5
Bobbio Pellice	2	2	5	2	2	3	2	3
Fenestrelle	1	2	2	1	2	2	2	2
Inverso Pinasca	3	4	3	3	4	4	5	4
Massello	1	2	3	1	2	2	2	2
Perosa Argentina	3	4	3	3	4	4	4	4
Perrero	2	3	3	2	3	3	3	3
Pinasca	4	4	2	3	4	4	4	4
Pomaretto	3	4	3	3	4	4	5	4
Porte	4	5	1	3	5	4	3	4
Pragelato	1	1	4	1	1	1	1	1
Prali	2	2	4	2	2	3	2	3
Pramollo	3	4	3	3	4	4	5	4
Prarostino	5							
Rorà	5							
Roure	2							
Salza di Pinerolo	2							
San Germano Chisone	4							
San Pietro Val Lemina	4							
Torre Pellice	5							
Usseaux	1							
Villar Pellice	4							
Villar Perosa	4							

Montagna: 1 2 3 4 5 — basso pericolo … alto pericolo

Comune	R10	R20	RR1	PRCTOT	SDII	RX1DAY	RX5DAY	Pericolo attuale
Bibiana	5	4	4	4	4	4	4	5
Bricherasio	5	5	3	4	5	4	4	5
Cantalupa	2	2	2	2	3	3	3	3
Cumiana	1	1	1	1	1	1	1	1
Frossasco	1	1	1	1	2	2	2	2
Luserna San Giovanni	3	3	5	5	1	5	5	4
Lusernetta	4	3	5	5	1	5	5	4
Pinerolo	2	2	2	2	3	2	2	3
Roletto	2	2	2	2	3	3	3	3
San Secondo di Pinerolo	3	4	3	3	5	4	4	5

Collina: 1 2 3 4 5 — basso pericolo … alto pericolo

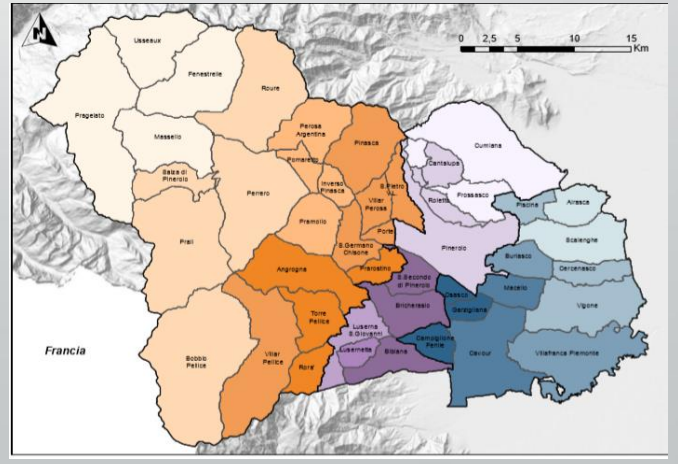
Tabella 10 - Pericolo attuale in pianura

COMUNE	R10	R20	RR1	PRCTOT	SDII	RX1DAY	RX5DAY	Pericolo attuale
Airasca	1	2	3	2	1	2	2	2
Buriasco	3	3	3	3	3	3	3	3
Campiglione Fenile	5	5	5	5	5	5	5	5
Cavour	4	4	4	4	4	4	4	4
Cercenasco	2	1	1	1	2	2	1	2
Garzigliana	5	4	4	5	5	4	4	5
Macello	4	3	3	4	4	3	3	4
Osasco	5	5	5	5	5	5	5	5
Piscina	2	3	3	3	2	2	3	3
Scalenghe	1	1	2	1	1	1	1	1
Vigone	2	1	1	2	2	2	1	2
Villafranca Piemonte	3	2	2	3	3	2	2	3

Pianura: 1 2 3 4 5 — basso pericolo … alto pericolo

Vulnerability process

- Population of selected indicators
- Identification of sensitivity and adaptive capacity indexes



ARTACLIM PROJECT – Italian pilot: ZOP Pinerolo

RESULTS - Vulnerability study

From the integrated reading of the indices, the level of vulnerability at the municipal level is estimated, which expresses the propensity of a thematic area to be negatively impacted by the CCs.

SECTOR	EXPOSURE	RISK	CLIMATIC HAZARD
Urban settlements and Infrastructures	Residential areas Areas for industrial use Commercial areas Service areas Historical and environmental assets Transport infrastructures (railways and roads) Population	Floods	- Increased rainfall frequency - Increased precipitation intensity
		Landslides	- Temperature increase - Increased intense precipitation - Increased heat waves at high altitudes
		Fires	- Temperature increase - Increased drought events - Increased heat waves at high altitudes
Turism	Winter and summer tourist sector Accommodation and restaurant facilities Mountain infrastructure and tourist facilities Trail network	-	- Temperature increase - Increased intense precipitation - Increased heat waves at high altitudes
Agriculture	Agricultural surfaces Pastoral areas Herds Farms	Floods	- Increased rainfall frequency - Increased precipitation intensity
		Drought	- Temperature variation - Variations in precipitation regime
Forestry	Forest surfaces Forest ecosystems	Drought	- Temperature variation - Variations in precipitation regime
		Fires	- Temperature increase - Increased drought events - Increased heat waves at high altitudes
Biodiversity	Agricultural surfaces (SAU) Forest surfaces Pastoral areas Other covers	Floods	- Increased rainfall frequency - Increased precipitation intensity
		Drought	- Temperature variation - Variations in precipitation regime

ARTACLIM PROJECT – Italian pilot: ZOP Pinerolo

Participation: stakeholders involvement

Check the Areas and Categories with respect to the territorial context

Involvement of **experts in the various disciplines** for:

- verify the completeness of the areas of investigation
- Identify the relationships and correlations between the different categories

Determine the importance of the categories of the multi-criteria system

Discussion with **local stakeholders** to:

- order the categories by importance with respect to the reference territorial context

Determine the set of indicators and targets

Discussion with **local stakeholders** to :

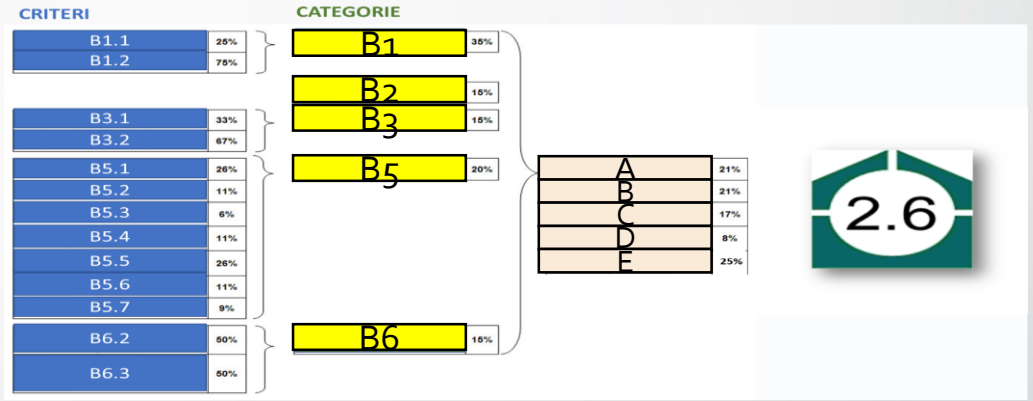
- **check the set of indicators and share the targets**

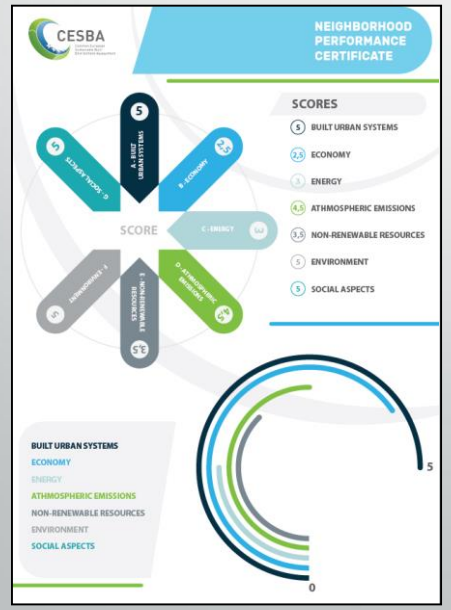
ARTACLIM PROJECT – Italian pilot: ZOP Pinerolo

Participation: stakeholders involvement

Through a participatory approach, we will proceed to:

- Set **target values** for different indicators at the local level
- Develop a **weighting system** for areas, categories and criteria





The final result may lead to defining a **synthetic score** for each territory about its **degree of adaptation to the Climate Changes.**

ARTACLIM PROJECT – Adaptation Strategies

Next steps

1. Definition of a set of strategies and territorial actions of adaptation to the CCs in the CMTo applicable to the planning tools of wide area (and local) and to the relative Environmental assessments. OUTPUT: "**Technical Guidelines**" to accompany the PTGM (New Territorial Planning Scheme of CMTo).

2. Contextualization of these strategies in the pilot case "**ZOP Pinerolese**", with the involvement of local actors (participatory process).

3. Definition of an operational tool for assessing the effectiveness of the strategies defined measures/adaptation actions: **Monitoring Tool (online), based on ARTACLIM indicator system.**

ARTACLIM PROJECT – Adaptation Strategies: the process

BEST PRACTICES ANALYSIS

Collection of main relevant measures and strategies for Alpine region and 5 ARTACLIM sectors

=

Urban settlements, Infrastructures, Tourism, Forestry, Agriculture and Biodiversity

Contextualization of strategies for provincial level (new PTGM)

→

PARTICIPATION: meetings with ZOP Pinerolese stakeholders

→

Definition/Contextualization of Adaptation Strategies for ZOP Pinerolese

Thanks for the attention

Ing. Marco Valle - Arch. Stefano Fraire

marco.valle@linksfoundation.com

stefano.fraire@linksfoundation.com