



# MASTER ADAPT

MAInSTreaming Experiences  
at Regional and local level  
for ADAPTation to climate change

## GUIDELINES FOR THE REGIONAL ADAPTATION STRATEGY



Con il contributo dello strumento finanziario LIFE dell'Unione Europea  
With the contribution of the LIFE financial instrument of the European Community

LIFE MASTER ADAPT – MAInSTreaming Experiences at Regional and local level  
for ADAPTation to climate change - LIFE15 CCA/IT/000061





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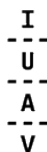
## Report coordination



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## ABSTRACT

*The full version of the document is available in Italian language on Master Adapt website <http://masteradapt.eu/strumenti/>.*



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## LG 1. GENERAL INTRODUCTION

### LG 1.1. Introduction

The fundamental aim of the European LIFE MASTER ADAPT project is to develop methods and tools to activate a **coherent and effective mainstreaming process**.

Based on the climate change **impacts** and the **good practices** identified, this process involves defining specific **adaptation objectives** for planning and programming - at the regional and local level - to direct administrations towards a mainstreaming **process** for a long-term adaptation **vision** that integrates the needs of all sectors of territorial policies.<sup>1</sup>

This logical path identifies the **regional strategy** as a framework tool to guide and coordinate the mainstreaming process.

Therefore, this document sets out **guidelines for adaptation strategies** for regional climate change, presenting the relevant tools and a guide for the development and implementation of policies.

The document illustrates the main elements for drafting and implementing a regional strategy, defined considering the experiences of the MASTER ADAPT partners and generalizing and extending the different conceptual and methodological approaches through the project research. The integration process (mainstreaming) is framed from a conceptual and regulatory point of view, highlighting the importance of the action taken by for Regions and Cities for adaptation. The Regional Adaptation Strategy is described according to the principles that should drive its approach and define its main requirements

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<sup>1</sup> The impacts are analysed and described in the report "Climate Analysis and Vulnerability Assessment results in the pilot Region (Sardinia) and in the Areas targeted in Action C3" (also referred to as **Climate analysis A1**). The method used has been outlined in seven steps, detailed in the "Guidelines, principles and standardised procedures for climate analysis and vulnerability assessment at regional and local level" (**Guidelines A1**).

A European-wide analysis of various, innovative climate policy approaches at the regional and local levels has been carried out in the framework of MASTER ADAPT Action A2. The results of the analysis are available in "Climate Change Adaptation practices across the EU - Mainstreaming adaptation policies at regional and local level" (**CCA practices A2**).

"Policy Guidance for the definition of regional and local adaptation objectives and related governance" details the path to identifying objectives and options (**Policy guidance**).

The specific tools for mainstreaming adaptation, with a path that is diversified according to the size of metropolitan cities and aggregations of municipalities, are illustrated in the "Guidelines for the implementation of mainstreaming in metropolitan cities" and in the "Guidelines for the implementation of mainstreaming in groups of municipalities" (**Guidelines C3**).

All such documents are available in the *Tools* section of the project website ([masteradapt.eu/tools](http://masteradapt.eu/tools)).

regarding its mandatory nature, level of integration and structuring, then analysing the fundamental steps for its development, starting from the cognitive framework to achieve the construction of the vision of the territory and the adaptation objectives in a participatory path with stakeholders.

Among the several tools defined by MASTER ADAPT, two are particularly noteworthy as fundamental to the mainstreaming of adaptation: (i) the integration of the Strategic Environmental Assessment (SEA) procedure and (ii) the structuring of multilevel governance.

The guide primarily addresses regional administrations and explicitly requires involvement at the local level. The document assumes as a definition of adaptation mainstreaming the **real integration into current policies**. Its aim is, therefore, to provide a guide that – by using specific sectoral and territorial adaptation strategies – can assist the process of integrating adaptation to climate change into "ordinary" planning and programming tools.

## LG 1.2. Regulatory framework of a regional adaptation process

The 2013 EU Strategy on Adaptation to Climate Change (ESACC) encourages countries to adopt national adaptation strategies that identify priorities and target investments.

In the Italian example, the 2015 National Climate Change Adaptation Strategy (NCCAS) provides a multilevel strategic vision on how to address climate change impacts and offers a framework for adaptation for regions and local authorities, outlining the set of actions and priorities to reduce the impact of climate change through adaptation measures and policies to be implemented under sectoral action plans.

The regional level appears to be the most appropriate level of governance to steer the adaptation process: national indications must be substantiated by actions at the local level, and it is up to the Regions to translate these general guidelines into targeted actions in their planning and programming tools.

## LG 1.3. The role of Regions for adaptation

The role of regions and cities in the implementation of climate policies is widely recognised at the international and European levels.

The Committee of the Regions (CoR) of the European Commission makes it clear that the commitments of the parties in the Paris Agreement will not be sufficient to

achieve the agreed objectives without increased action by the regions and cities, which are closely linked to local communities and territories.<sup>2</sup>

The Paris Agreement itself recognises the importance of multilevel governance in climate policies. The local administrative level is recognised as essential for planning and implementing adaptation policies. The impacts of climate change are specific to each territory: the regional and municipal administration levels know more about the development needs of the territories they administer and can, therefore, integrate adaptation objectives and measures within their current planning.

Even lacking nation-wide planning, it is important - and necessary - that the Regions adopt strategic documents for adaptation that enable them to take immediate action to implement adaptation policies and help the several regional and local players to integrate them into their policies, guiding and encouraging adaptation action within local territories.

Adaptation to climate change requires suitable tools, already developed in different contexts for the local level (especially in terms of urban-scale adaptation actions, or economic conversion strategies) but still not sufficiently structured for the regional level with suitable governance. The Regions are therefore called upon to develop their own innovative tools, suitable to face a rapidly changing context due to climate change, and the MASTER ADAPT project intends to support this path through its own research.

### LG 1.4. The regional strategy as a tool for an effective adaptation process

Based on the evidence of the impacts and to respond to the challenges induced by the new climate scenarios and mitigate the framework of the resulting vulnerabilities, local authorities (and in particular the regions and municipalities) are called to identify the **priority courses** of intervention and the **set of tools** for implementation.

These elements constitute the **strategic document**, which guides the mainstreaming path of the adaptation by developing specific objectives in planning and programming and to identifying which tools are effective to implement the process.

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<sup>2</sup> Opinion of the European Committee of the Regions on "Delivering the Global Climate Agreement - A territorial approach to COP 22 in Marrakech", ENVE-VI/013, 119th plenary session, 10, 11, and 12 October 2016.



The main tool to govern the adaptation mainstreaming process, translating the ambitious climate policy objectives into operational policies and actions on the territory, can be identified in the **regional-scale strategy**.



Whatever form is chosen, regional strategies should be set out at an early stage as an overall framework for the regional sectors, administrations and organisations involved, aiming to develop a territory in a positive, synergistic and non-prescriptive, competitive or conflictual way.

## LG 2. KEY PRINCIPLES FOR A REGIONAL STRATEGY

### LG 2.1. General approach

Climate change impacts all environmental systems, and socio-economic sectors and synergistic action in each sector supports adaptation. A regional adaptation strategy must, therefore, encompass the many different sectors and is therefore inevitably **complex**.

In some cases, this complexity can delay or block the process at an early stage, so it is advisable to set out some key elements that the strategy should cover. A mainstreaming strategy, versatile enough to govern adaptation but still inclusive of its complexities, should, in fact, envisage:

- a. **awareness-raising and education on climate change**, to ensure full awareness of future risks and stimulate responses that also address the development of specific projects;
- b. the **development of cross-cutting strategies** common to the different sectors, since sectoral players and policies are interrelated and interdependent;
- c. the **precise definition of governance**, to include the various branches of administration and society in the adaptation process;
- d. the **reform of procedures** to improve the Public Administration's capacity to respond;
- e. a **territorial information system** that ensures the exchange of data and information among different sources and for a variety of users.

### LG 2.2. Priority requirements



Climate change must not be treated as an environmental sector in isolation, but as a **catalyst for environmental risk phenomena**, which **requires new planning methods**.

Adaptation stems primarily from the need to very quickly adapt policies, strategies, and tools (and perhaps, in a broader sense, behaviour, and needs) to climate change, a phenomenon that is accelerating rapidly and on a gradually increasing scale.



Any policy, strategy, or planning or programming tool therefore faces the time-compression of its chances of success due to a factor that

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accelerates and amplifies natural phenomena and the effects of which, according to global scenarios and local manifestations, are already beginning to be fully evident.

It is therefore appropriate for the adaptation strategy to take a cross-cutting, non-sector-specific approach, and to be designed as a **framework process for guiding** sectoral and regional **planning and programming** and for this purpose to identify methods and procedures for steering plans and programmes for adaptation.

### LG 2.2.1. Mandatory nature

The strategy can be set up as an *autonomous and mandatory* (possibly *over-arching*) tool, with the risk, however, of an excessive complexity due to the number and diversity of the possible impacts and sectors involved. A second possibility is a *standalone but non-mandatory document*, providing guidance and information.

The strategy can also be interpreted as *widespread updating* and *timely integration* of sectoral and intersectoral plans and programs. Here too, however, a tool should be provided to verify and monitor the consistency of the approach towards the adaptation objectives that have been set.



Based on relevant experience, the MASTER ADAPT project argues that an adaptation strategy should be a **standalone document**, that is necessary to **ensure the consistency of the adaptation process**, and to **guide synergistic action** among the various sectors.

### LG 2.2.2. Integration

Close integration of adaptation objectives into the sectoral objectives helps to ensure the effective implementation of the adaptation strategy, exploiting the resources (without generating competition) and the implementation and monitoring tools already in place.

This reinforces the view expressed above concerning the appropriateness of structuring the strategy as a **tool to guide sectoral policies** rather than as a standalone mandatory tool.

### LG 2.2.3. Financial provision

A specific financial provision can facilitate the possibility of implementing concrete adaptation actions. However, if the financial provision made available for adaptation stems from a competitive split among sectors, there may be strong internal resistance to the adaptation process. If not for cross-cutting activities, a specific financial provision may lead to the characterisation of adaptation as a sector in its own right, against the position of integration and in contrast to a mainstreaming process.

Strong integration could, therefore, make it possible to **exploit existing resources** without diverting them and facilitate the adaptation process. In the best-case scenario, individual sectors could experience an *increase in resources* due to the joint effort towards adaptation.

### LG 2.2.4. Strategic Environmental Assessment

The SEA is the primary tool under European legislation to integrate environmental requirements into plans and programmes effectively. The European Commission itself also deemed it appropriate to define a methodological framework for considering climate change issues (and, therefore, adaptation) in SEAs.

In particular, SEAs make it possible to reinforce the development of the strategy from its earliest stages. By verifying internal consistency, it is possible to check and certify whether the adaptation objectives have actually become concrete measures capable of addressing the identified risks, thus reducing the vulnerability of the territory or increasing its resilience.



An adaptation strategy and the related SEA process could help shape the relevant framework, **providing insights to inform the subsequent development** of individual sectoral plans on adaptation to climate change.

Considering that for MASTER ADAPT **reform of procedures** is one of the cornerstones for the effectiveness of an adaptation process, these Guidelines suggest considering SEA as a valuable operational tool to do so (§ 0).

### LG 2.2.5. Structuring

Climate change impacts all sectors: local contextualisation can result in a multiplication of the sectors affected, leading to a very fragmented development of the impact chains of climate risks (§ 0). In such a case, it could become difficult to put together a single strategy document, and complications could arise within the adaptation process meant as mainstreaming in sectoral planning.



This document, therefore, proposes a general outline for developing a **regional strategy structured as a model** (organisational, managerial, and methodological) designed **to achieve strategic objectives** and to develop sectoral objectives for adaptation, in line therefore with the orientation towards a framework document rather than an additional higher-order required tool.

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### LG 2.2.6. Feedback



scenarios, **continuous iterative decision-making processes** are required at key moments to navigate along one or more tracks that can be adaptive or non-adaptive. In line with the proposed approach of the strategy as a guidance tool, this element emphasises the **focus on the process**.<sup>3</sup>

The adaptation strategy should, therefore, provide tools and discussion opportunities to review the dynamically evolving climate driver-driven decisions and objectives over time so that the adaptation process remains within adaptive limits.

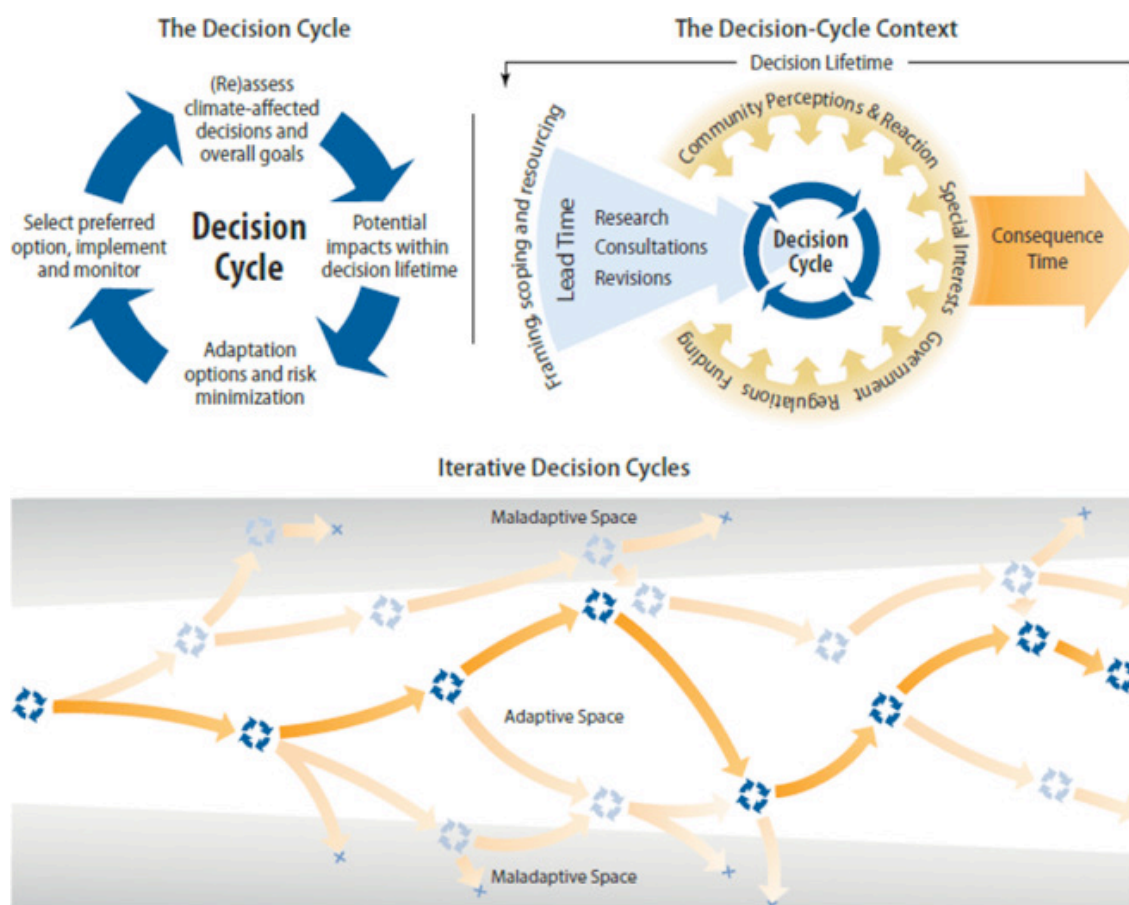


Fig. 1 - Iterative decision cycles (Wise et al. 2014)

<sup>3</sup> Wise et al. (2014), *Reconceptualising adaptation to climate change as part of pathways of change and response*, Global Environmental Change, Volume 28, September 2014, pages 325–336



### LG 2.3. General Principles

Three general guiding principles should guide the choice of the intervention areas of a regional strategy:

1. **creating a framework of favourable adaptation conditions;**
2. **creating and sustaining adaptive capacity;**
3. **suggesting effective adaptation paths.**

These principles should inform the regional strategy by pursuing objectives to reduce climate risks, protect the population and natural heritage, and improve the resilience and adaptive capacity of natural, social and economic systems, taking advantage, where possible, of the opportunities presented by the new climate conditions.

### LG 2.4. Possible adaptation pathways

The levels of uncertainty and complexity of climate change impacts suggest that it is not possible to define a universally valid adaptation strategy or approach for all situations, since the latter also depend on the type of approach taken:

- **passive** (of those who are *affected* by the consequences of a change)<sup>4</sup>;
- **reactive** (of those who *react* to the consequences of a change);
- **proactive** (of those who *govern and guide* change).

Each type of approach also corresponds to a different view of adaptation: **incremental, systemic, or transformative.**

Each regional strategy should be designed to be implemented in a way that includes all three strategic paths suggested below.

A strategic approach to climate change requires **long-term thinking** and a **systemic approach** to planning and implementation. The process can be broken down either in terms of individual initiatives or as a series of rapid incremental changes in a particular direction, establishing periodic strategy reviews to make corrections if needed.



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<sup>4</sup> In general, it seems almost obvious that a strategy should be designed to **avoid a passive approach** by the stakeholder. This approach generally leads to forms of **spontaneous adaptation** (also defined as survival or coping), the objective of which, often in the short and very short term, is to reduce the negative impact of an event by aiming at restoring the original conditions and re-establishing the quality of life. However, this type of adaptation can generate sectoral conflicts or *poor adaptation* in the medium and long term if not managed at a coordinated level.

### LG 2.4.1. Incremental adaptation

For limited climatic anomalies, the signs of change can be confused with natural climatic variability. In these situations, it is sufficient to improve the accuracy of the management of known risks, rather than trying to identify completely new (and uncertain) solutions.



This type of adaptation can be considered incremental, based on experience gained from observing what has happened in the past. The stakeholder generally **acts reactively to the consequences of change**.

### LG 2.4.2. Systemic adaptation

This option can be conceived as a strategic adaptation option that acts on the fundamental elements of a system in response to clearly perceptible climate changes, the effects of which undermine system-wide sustainability.



It includes **planned and reactive measures** that involve innovation or shifting certain activities to new positions. In this case, therefore, **the response is on a system-wide scale**, as has already occurred in the past as a result of changes in the economic environment.

At the government level, systemic adaptation implies the reconfiguration of services to support **medium-term choices** and requires proactive action by stakeholders.

### LG 2.4.3. Transformative adaptation

This is the strategic option of **adapting to climate impacts so substantial that it changes the fundamental attributes of a system** and makes it necessary to design a course that can lead to profound transformations in order to respond resiliently to the expected impacts.



Even more than the systemic approach, **the transformative approach requires the ability to anticipate** scenarios and requires the involved stakeholders to proactively orient governance and change systems.

Transformative adaptation requires substantial and advanced large-scale investments in infrastructure, diversification of the production means, etc. This change can have considerable costs, but these costs are offset in the **long term** by avoiding emergency and more costly solutions.

## LG 3. DEVELOPMENT OF A STRATEGY

A regional climate change adaptation strategy should primarily identify a **process of implementation of adaptation policies** at different levels of planning and programming and integration of adaptation into sectoral and territorial policies (plans and programmes, but also guidelines, regulations, funding calls, etc.). The strategy should, therefore, provide the **framework, objectives, methods, and tools** for the various regional sectors, administrations, and organisations involved to address the effects of climate change and stimulate responses tailored to specific local needs.

### LG 3.1. The knowledge framework

Although climate change is a global event, its effects appear and have varying effects on a local scale, depending on the criticality of the territory and its environmental, economic, and social characteristics. Adaptation, therefore, requires responses that are appropriately framed and tuned to the social, economic, and environmental context.



The basis of a regional adaptation strategy must therefore always be a **knowledge framework that makes it possible to define the underlying climatic, territorial, and socio-economic context.**

#### LG 3.1.1. Regional and local climate analysis



Observing climate change is a **prerequisite for assessing its impacts** and establishing adaptation strategies and plans: **adaptation strategies are strongly influenced by local climatic conditions**, particularly in certain areas.

The analysis of the future climate - with projections based on climate models that are suitable for the scale as close as possible to the planning context and according to different Global Scale Emission Scenarios (GERCs) - should focus on various timeframes, appropriate for the adaptation strategy, and cover both average values and representative indices of temperature and precipitation extremes.

#### LG 3.1.2. Vulnerability and risk appetite assessment

An essential condition for planning aimed at governing the critical issues linked to climate change is the knowledge of the environmental, social, and economic

elements that determine the vulnerability of the territory and **understanding their interaction with the changing climate**.

Risk can be represented by using **impact chains** (Fig. 2), an analytical tool that helps to investigate, describe, and assess the factors against which we can assess vulnerability and risk propensity in the system in question. Developing impact chains leads to a **more detailed comprehension of the various components of climate risk (hazard, exposure, and vulnerability, each characterized by several elements and/or factors)** and to obtain operational information that can be used to set up specific adaptation strategies.

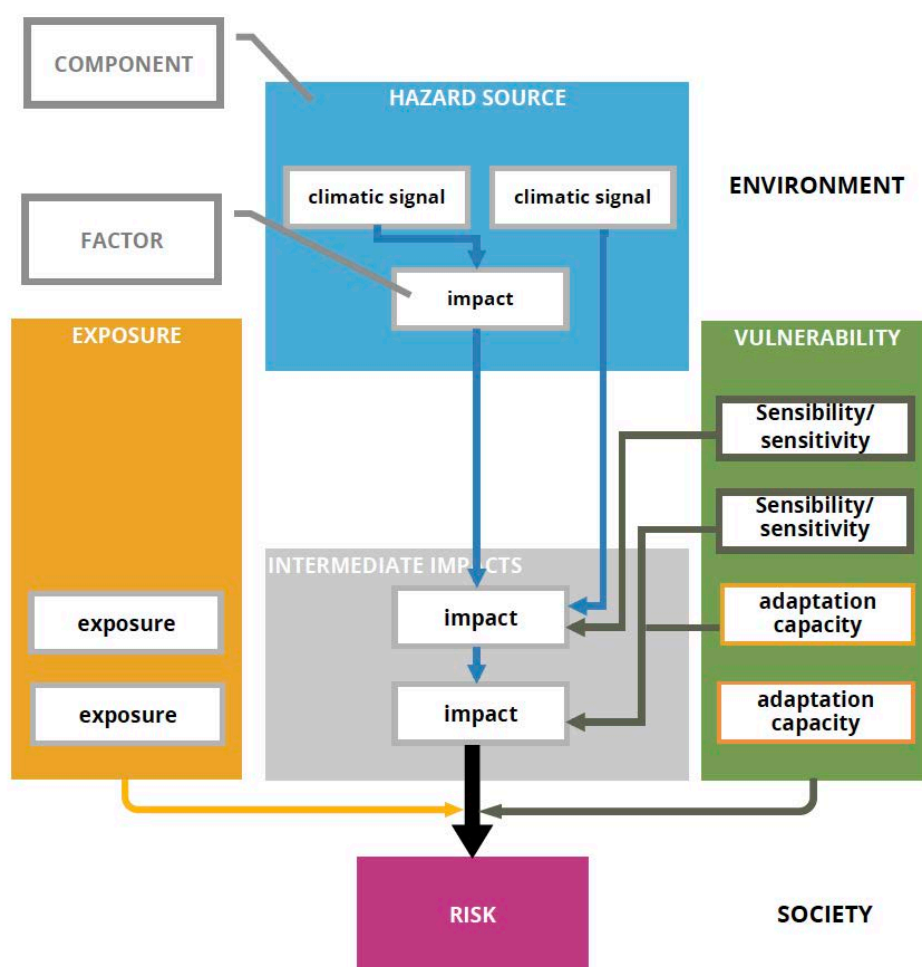


Fig. 2 - Detailed structure of an impact chain according to the IPCC approach (AR5, 2014)<sup>5</sup>

<sup>5</sup> GIZ & EURAC (2017), *Risk Supplement to the Vulnerability Sourcebook. Guidance on how to apply the Vulnerability Sourcebook's approach with the new IPCC AR5 concept of climate risk*. Bonn, GIZ.

### LG 3.1.3. Definition of adaptive capacity

**Adaptive capacity** includes the inherent quality and capacity of a system to plan and implement adaptation strategies that **reduce vulnerability** to climate change impacts. The adaptive capacity of a system depends on the context, processes, and factors that occur at different levels and should be assessed in a future perspective.



Increasing the adaptive capacity of a system means strengthening access to the **determinants** of that capacity, allowing stakeholders to use resources to reduce vulnerability or reinforce and diversify their response strategies.

Within the context analysis of a plan/programme it is therefore essential to identify - for each sector - the **determinants of adaptive capacity**, by complementing the **quantitative approach**, which allows easier comparison, communication, and measurement of results, with the **qualitative approach**, in order to collect information that helps to reliably define a picture or situation in terms of, for example, vulnerability, determinants of adaptive capacity, strengths and weaknesses of the system.

On the basis of these determinants, which are then aggregated into the three components **action**, **skills** and **awareness**, suitable indicators should be developed to create a **synthetic index of adaptive capacity** (Fig. 3).

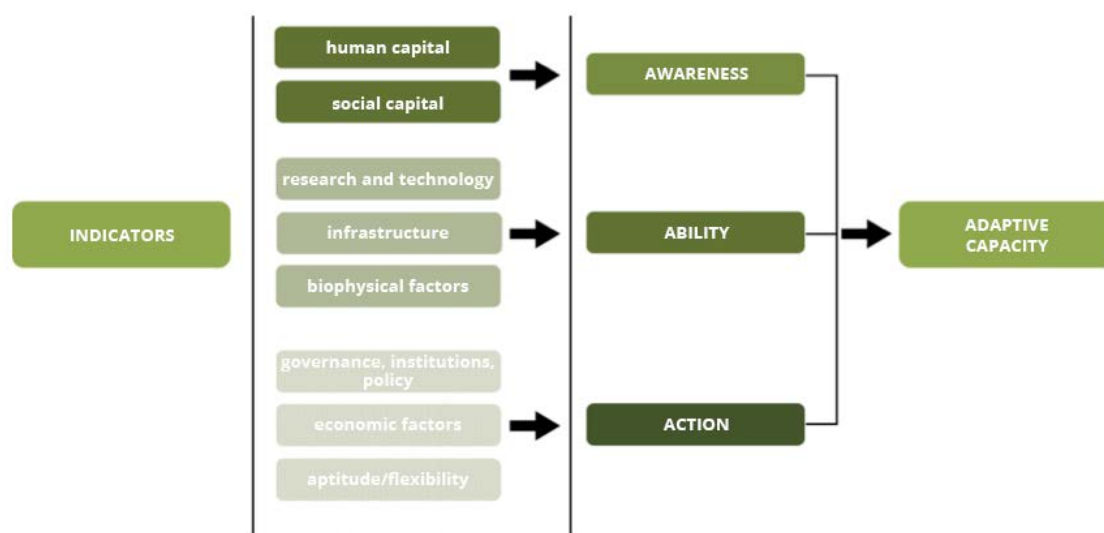


Fig. 3 - Example of indicators/determinants framework for assessing adaptive capacity

### LG 3.2. Definition of the path and objectives

#### LG 3.2.1. Stakeholder involvement



The development of a sector adaptation strategy should involve the social players who are directly affected. Stakeholder involvement is particularly important to: i) **map the knowledge framework of the most relevant issues and needs** for action for each sector; ii) enrich the process of **identifying indicators of adaptive capacity**; iii) identify the **framework of strategic objectives** that are priorities and determinants for sector policies in relation to climate change; iv) suggest possible adaptation actions and measures.

#### LG 3.2.2. Defining adaptation objectives

Based on the definition of **adaptation to climate change as a process**, we can identify two essential types of objectives:

- **cross-cutting objectives**, those that do not relate to a single specific sector;
- **sector-specific objectives**.

What is most relevant to the effectiveness of adaptation action - and therefore to the success of the strategy - is how to achieve these objectives.

#### Cross-cutting objectives

To increase the resilience of socio-economic systems to the impacts of climate change, the strategy needs to identify some cross-cutting strategic guidelines. The five general objectives suggested in the Italian SNACC (National Climate Change Adaptation Strategy) can be taken as examples:

- **minimise the risks** caused by climate change;
- **protect** the health, well-being, and assets of the population;
- **preserve the natural heritage**;
- **maintain or improve the resilience and adaptive capacity** of natural, social and economic systems;
- **take advantage of any opportunities** that may arise under the new climate conditions.

These macro-objectives could be more structured in detail, possibly by participatory processes, so as to create a strategy that is more in line with a regional or sub-regional context.

For each objective, it is appropriate to indicate the **priority level**, the **timeframe**, and the **level of consensus** found in the discussion with stakeholders. It is also useful to specify, if possible, the **type of measures** involved (infrastructural, ecosystemic, or soft) and preferably their **adaptation process** (see § LG 2.4).



### Sectoral objectives

Implementing an effective adaptation strategy involves identifying specific objectives that apply to the sectors involved, for instance based on their classification in the national strategies.<sup>6</sup>

Using this basic matrix as a basis, the identification and implementation of sectoral objectives can be achieved by actively involving specific stakeholders from time to time.

The methodology proposed by MASTER ADAPT<sup>7</sup> makes it possible to define specific and focused adaptation **objectives** (both integrated and sectoral) and **options** (cross-cutting or sectoral) with which it is possible to respond to such objectives, and which can subsequently be transformed into actions.



The adaptation options can be geared towards **reducing exposure and sensitivity** or **increasing the adaptive capacity** of communities.

## LG 3.3. Implementation

### LG 3.3.1. Governance

Governance is a key factor in shaping the adaptation process (§ LG 2.1), which requires **new multisectoral and multilevel approaches** and thus a **coordinated and cooperative structure** to avoid or resolve conflicts and implement the measures.

Regional strategies should take into account the importance of the **active involvement of local authorities** in promoting adaptation actions and objectives,

<sup>6</sup> If there are no more specific references, or to harmonise with the over-arching levels, the sectors of the Climate-ADAPT platform (<https://climate-adapt.eea.europa.eu>) can be used, for example.

<sup>7</sup> See *Policy guidance C1* for details (see note 1). In essence, the path envisages starting from the identification of the **impacts** of climate change and their **development** in relation to the expected scenarios, then defining their expression in **focus areas** concerning the adaptation sectors, and ultimately establishing the **adaptation objectives and options**. As a premise for all the above, the future **vision** of the adapted territory or system must be established, as a basis to drive the choice of the diverse goals and objectives within an integrated framework.

also in view of the lack of uniformity and differentiation of impacts and effects on sectors in different local areas.

A crucial aspect of developing a governance model for adaptation is the urgent need to **tailor the whole regional and local planning and programming framework to the adaptation issues**. As mentioned above, (see § LG 2.2) adaptation should be viewed primarily as the need to **transform current planning and programming models** into new ways of coping with the effects of climate change.



According to MASTER ADAPT's research, the optimal approach to the governance system of a regional strategy should revolve around a **coordinating body that directs and supports** the various regional departments towards synergistic adaptation initiatives at the regional level, and promotes good practices in local government.



The proposed multilevel governance model (Fig. 5) is **conservative of the existing institutional configuration, with the identification of a central structure for the technical coordination** of climate change adaptation activities within the structures, **flanked by an advisory body** (control room) established according to the division of powers within the administration.

### LG 3.3.2. Mainstreaming in plans, programmes and government tools

#### Horizontal Mainstreaming

The **horizontal mainstreaming** of adaptation can be defined as the **process of integrating** adaptation objectives within the many sectors of regional administration.



Mainstreaming can be achieved by an expert coaching of regional stakeholders, whose primary purpose should be to **increase the awareness and planning capability** of regional officials and technicians.

Discussions should also focus on identifying the **tools to implement the adaptation process**, preferably among the existing ones to avoid the proliferation of new tools, and to classify the adaptation process as a mainstreaming process.

The multidisciplinary nature of adaptation strategies requires the inclusion of the various sectors of the administration: long-term and medium-short term policies and related actions must be defined, and the effectiveness of the actions to be implemented must be verified.



### Vertical Mainstreaming

The regional strategy is an initial and essential response to the need for local administrations to act in a defined context and with the certainty of expert support from their reference Region in the adaptation process. Therefore, the regional strategy should already address the process of mainstreaming towards the administrative levels of local authorities and define the criteria and tools for structured integration of adaptation objectives on a sub-regional scale.

This convergence of intentions among different levels, according to a **vertical mainstreaming** approach, can increase the effectiveness and efficiency of the adaptation strategies adopted, because it directs them towards common objectives and enables the involvement of all levels of territorial government that, with different roles and powers, are involved in the adaptation process.

Therefore, MASTER ADAPT's governance proposal attributes an explicit role to local authorities for strategic orientation according to the adaptation of their territorial planning tools, including the mandatory tools with which the actions can be implemented (such as urban planning tools), but also the various voluntary tools which can be used to set the guidelines (local plans for adaptation, SECAP Sustainable Energy and Climate Action Plan, river contracts, etc.).

#### LG 3.3.3. Definition of actions

Although the following statement may seem obvious, it must be kept in mind that only identifying actions within sectoral plans and programmes can ensure real and effective implementation of the strategy in a mainstreaming process.



**Therefore, while we cannot speak of integration without identifying specific adaptation actions,** it is equally true that **merely identifying actions is not enough** to say that the process has (at least) been started.



Therefore, the strategy should be mainly focused on sharing, support and participation activities, so as to **create the conditions** for the identification of adaptation actions in sectoral plans and programmes to be embedded in the process of **increasing awareness and ability of decision-makers**, rather than be a sterile selection process from a portfolio of solutions suggested by experts.

Based on the experiences we analysed, a mainstreaming strategy can envisage an implementation path structured in several different ways: a first method is to implement the strategy under an **action plan** that **identifies priority actions**.

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The other path proposed leads to a strategy that works primarily on creating the conditions to guide the mainstreaming process, defining in particular **roles and powers**, and the most effective **procedures** to translate the overall adaptation strategy into actions in the sectoral plans.

In both cases, adaptation actions should be:

- **based on the most up-to-date scientific knowledge** of future climate scenarios and expected impacts;
- **consistent with the priorities and values** of local stakeholders;
- **defined and implemented at the most appropriate administrative level**, following the principle of territorial subsidiarity;
- **cross-cutting** across different sectors and branches of administration;
- **flexible**, so that they can be modified and updated over time, mindful of uncertainty;
- identified by means of **decision support tools** that assess their efficiency, effectiveness, and robustness;
- **consistent and not conflicting with mitigation objectives**.



A general criterion for identifying adaptation actions, at least for its precautionary nature, stems from the high uncertainty concerning future scenarios. Therefore, it recommends identifying **no- or low-regret** measures, which can be **effective in most possible climate scenarios**.

### LG 3.3.4. Integration of the procedures: the SEA



A mainstreaming strategy such as the one proposed by these guidelines, due to its non-mandatory nature, risks having an **inherent weakness**, which makes the process of integrating adaptation difficult and ineffective **if it is not accompanied by the appropriate tools** for its implementation.

The most powerful tool to support this objective in planning processes is the Strategic Environmental Assessment (SEA), introduced into European legislation by Directive 2001/42/EC to integrate environmental considerations into plans and programmes. Since climate change primarily impacts environmental systems, resulting in significant impacts on, for example, biodiversity and ecosystems<sup>8</sup>, one of the main objectives of the SEA is therefore to incorporate the climate issue into planning. In this respect, the Regional Adaptation Strategy could and should play a

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<sup>8</sup> "Principles and recommendations for integrating climate change adaptation considerations under the 2014-2020 rural development programmes", European Commission, 2013.

pivotal role, first of all by defining climate scenarios to be used in territorial and sectoral planning (from the perspective of horizontal and vertical mainstreaming), as well as by identifying robust adaptation objectives related to such planning.

An effective representation of the role of the SEA for guiding plans and programmes towards climate change mitigation and adaptation objectives is contained in the Guidelines of the European Commission.<sup>9</sup>

The key aspects to address throughout the assessment procedure phases required by regulations include:

- **analysing** national and international adaptation **policies**;
- **involving and raising the awareness of stakeholders** during the participation phases;
- **analysing** environmental trends in relation to vulnerability, risk propensity, and assessing the territory's adaptive capacity;
- developing **plan alternatives that outline resilient scenarios** in relation to the main critical issues identified;
- developing a **monitoring plan** that can measure the effectiveness, in terms of adaptation, of the actions of a plan or programme.

The MASTER ADAPT project has developed a guideline for the Italian regulatory context (see box at the end of this document) that contains some operational elements for the proposed revision of the SEA procedure, which can be adopted for the modification of procedures but which, even if there is no explicit modification, already enable the SEA authorities to include adaptation concerns in territorial and sectoral planning tools.

### LG 3.4. Monitoring, reporting, and assessment

A specific **monitoring, reporting, and assessment** (MRA) system should be designed right from the drafting phase of the regional adaptation strategy to enable, during implementation, the periodical assessment of the effectiveness of strategic choices and the achievement of objectives.

The system should take into account some basic principles including its **inherent flexibility**, to ensure smooth and timely integration of any changes needed in the

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<sup>9</sup> European Commission, *Guidance on Integrating Climate Change and Biodiversity into Strategic Environmental Assessment*, EU 2013

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future, due to changing conditions and needs, and lessons learned<sup>10</sup>, and the inclusion of adaptation policy processes at the national level or other processes related, for example, to international agreements and European policies.

The indicators may include both performance-based and process-based indicators of the adaptation measures.

### LG 3.4.1. Monitoring and assessment

#### Strategy effectiveness

The system used to monitor and assess the effectiveness of a mainstreaming strategy should report on its progress in relation to the impact of individual plans and programmes and therefore requires integration with the monitoring systems and plans for each plan or programme. Reciprocally, they should include specific context and programme indicators as well as methods to assess measures according to adaptation, with specific reciprocal information flows.

An integrated system could also provide a **guide to integrating adaptation** into sectoral policies, with elements for analysing the **consistency of objectives** and criteria for **classifying actions** in plans and programmes.



#### Evolution of the context

Climate change and adaptation strategies, both in the medium and long term, are complex and, for the most part, are not fully understood. They can be monitored in a consistent, repeatable and comparable way both in time and space by describing and analysing them using synthetic descriptors. The strategy's monitoring system should include a specific section that **monitors the evolution of the context**, to provide an up-to-date picture.

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<sup>10</sup>This principle is particularly important for adaptation, given the rapidly changing environment and the strong need for experimentation and research (for example, on models and technological solutions).

### LG 3.4.2. Information system

For integrating adaptation into planning processes, all the context and monitoring outputs of the strategy (indicators, targets, maps) should be managed and represented using the territorial information systems already in use by regional administrations, and preparing a specific thematic area on climate change. A database could be developed on this area for regional and local administrations to access for preparing adaptation-oriented planning and programming tools.

Compatibly with the data collection and validation processes, the information provided should be as up-to-date as possible and should be obtainable and viewable at the highest level of breakdown available.

### LG 3.4.3. Reporting

The preparation of interim and periodic monitoring and assessment reports is helpful to provide some evidence on the measures implemented or not implemented to achieve the macro-objectives identified by the strategy and implemented through sectoral adaptation actions. This information can contribute to achieving the strategic objective of raising awareness of the effects of climate change and informing on the state of implementation of the strategy.

The MRA system, as designed, can provide two orders of output:

- an updated (including cartographic) **database**, that should be the database for context analyses of additional plans and programmes at the sectoral or local level;
- **periodic reports** on the implementation of the strategy, containing information on the progress of the strategy and the implementation of adaptation actions.

In institutional portals, including thematic portals, creating a special climate change section could be useful as the main channel for publishing and disseminating environmental data for adaptation and regular reporting on the implementation of the strategy.

## LG 3.5. A framework for sustainable development

For both adaptation to climate change and sustainable development, defining successful strategies means adopting a local approach in tackling global challenges, working on environmental awareness and education and sustainability, activating partnerships, interpreting the challenge positively and, above all, working towards mainstreaming these issues so that virtuous processes are triggered at all levels, and that adaptation to climate change and sustainability do not remain topics confined to the "environment sector".

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The connections of an adaptation strategy with the Regional Strategy for Sustainable Development (RSSD) therefore present several levels of integration, related to the 17 *Sustainable Development Goals* (SDG) of the United Nations' 2030 Agenda (Fig. 4).



Fig. 4 - Levels of integration RSSD-RSCCA

### Level I: pursuing sustainable development goals

On a first level (I), the regional adaptation strategy can directly address the strategic goal SDG13 (as well as many others). This is the case both if the strategy is self-contained and explicitly identifies actions, and if the strategy guides sectoral plans and programmes and identifies objectives, actions, and tools for adaptation. The position is balanced: **adaptation is part of a sustainable development process** and must have equal priority in local contexts over other development goals and strategies.

### Level II: educating for sustainability

A second level (II) is the matching between one of the strategic goals that an adaptation strategy should necessarily pursue (increasing awareness of the effects of climate change) and SDG4: only a **full awareness of the framework and limits forced by the changing scenario** will positively inform sustainable development and the ensuing strategic choices.

### Level III: creating Partnerships

A third possible level (III) concerns the degree of integration of the strategy (§ 0) and the need to establish a **system of governance that is coordinated** between the adaptation strategy and the sustainable development strategy, consistent with the SDG objective 17. At regional level, we need to identify common synergies, shared objectives and governance to enable dialogue between different players, e.g. at **control room** level.

### Level IV: steering sustainable development

The fourth (IV) level of integration concerns a possible general approach of the RSSD, in line with the definition of the adaptation strategy as mainstreaming: adapting to climate change is an essential element to address many of the most relevant challenges for sustainable development.

## LG 4. CONCLUSIONS

### Adaptation as positive action

As mentioned in the introduction (§ LG 1.4), an effective interpretation of an adaptation integration process, also as a stimulus to overcome barriers to climate action, could be to **face the issue from a developmental perspective with a positive approach**. The European Commission itself encourages synergies between adaptation, sustainable development, and disaster risk reduction management.

According to MASTER ADAPT's results, the most suitable tool for the adaptation to climate change is the regional-scale strategy, of which the most significant elements have been described so far, both from the conceptual point of view and with regard to the operational aspects for their implementation and effectiveness.

However, an adaptation strategy should always **look at the possible opportunities** that new climatic conditions may present. A lever in support of climate action could be identified precisely in the fact that the climate crisis (or perhaps better, awareness of the effects of change) provides an **opportunity to rethink certain** economic and social **models** in terms of sustainable development.

MASTER ADAPT's results suggest some proposals and topics for discussion.

An initial discussion can be triggered on the opportunity to take up the climate challenge with the ability to anticipate scenarios and with a proactive attitude of governance and change orientation, leading to **transformative adaptation strategies** and the necessary multidisciplinary and multisectoral approach towards integration among objectives.

The second conclusion is the need to **pursue/build a future vision of the territory** and the system that integrates adaptation to climate change as an element to rethink and direct choices and priorities towards a general improvement of living conditions, especially in the most vulnerable areas.

Lastly, we reach the need to govern the adaptation process by using a strategy that is aimed at orienting sectoral policies, a requirement which these Guidelines intend to address to support the process and **direct adaptation to climate change in a regional-scale mainstreaming strategy** and to orient change towards sustainable development.



## **BOX - OPERATIONAL ELEMENTS FOR THE INTEGRATION OF THE SEA PROCEDURE**

### **Phase 1 – Verification of subjection**

#### **Screening**

*The criteria for verifying the subjection of plans and programmes should take into account the extent to which the P/P (Plan/Programme) provides a framework for projects that may be affected (negatively or positively) by climate change issues, so that adaptation options may need to be introduced.*

### **Phase 2 - Preliminary consultation**

#### **Scoping**

*Climate change adaptation issues must be addressed at an early stage of the decision-making process, starting with the scoping phase, in which the scope of influence of the P/P is defined and accompanies the entire development and approval process.*

*In particular, during this phase, it is appropriate to:*

- analyse the context of climate change policies and the main objectives set at national and international level;*
- identify stakeholders and environmental stakeholders who, by applying their specific expertise, could help to identify the key aspects of climate change adaptation within the competence of the P/P. The main stakeholders will be: (i) those who are interested in the development and implementation of the plan or programme (including climate change specialists);(ii) those who are particularly vulnerable to climate change and who will be affected by the plan or programme, and therefore have an interest in improving the resilience of the P/P to climate change (for example populations with high levels of exposure and vulnerability to climate change risks); (iii) those who may be affected and involved in the implementation of measures to respond to climate change risks (for example private companies, representatives of specific production sectors such as farmers and stockbreeders). During this phase, it is also essential to define how to involve the players in the various stages of consultation and participation (for example, meetings, assemblies, forums, workshops);*
- identify, in collaboration with stakeholders, the key aspects of climate change to be addressed in the P/P and prioritise them according to its scope of influence;*
- define the information needed for the analysis to be carried out and the sources from which it can be obtained;*
- identify the methods and tools to be used to carry out the necessary in-depth analysis.*

*Therefore, the scoping document must take these aspects into account.*

### **Phase 3 - Elaboration and drawing up**

*The environmental report, which is an integral part of the plan or programme proposal, should take the following aspects into account.*

#### **Analysis of the policy and planning framework**

*Each territory development project must be analysed in relation to the existing planning and programming context. During this phase, in addition to referring to the main international*

climate change commitments (UNFCCC, Kyoto Protocol, etc.), it is important to identify and analyse the objectives and targets for CCA set by Community (ESCCA), Italian National Strategy (NSCCA) and Plan (NPCCA) and Regional Strategy (RSCCA) on CCA.

The SEA, during the external coherence analysis, will have to assess whether the lines of development outlined in the draft P/P are consistent with the priority objectives for climate change set at national and international level and declined by the regional strategy, as well as the opportunity to integrate the P/P target set.

### **Analysis of the environmental context at present**

As part of the analysis of the environmental characteristics of the context at the present state, it is appropriate to report an analysis of the current and past climate condition, drawn up according to the territorial scale of study. The analysis should report the state of the main climate variables prior to the implementation of the P/P and their medium and long-term trends so as to provide a comprehensive picture of future climate variability related to the territorial context.

Aspects and phenomena to analyse during this phase – as examples only and to be further investigated according to sectors and specific impact chains – may include:

- temperature;
- precipitation;
- heatwaves (and related impacts on human health, crop damage and fire risk);
- droughts (including lower water availability and quality, and increased demand);
- extreme weather conditions, including intense thunderstorms and strong winds, which also cause damage to infrastructure, buildings, crops and forests;
- sea-level rise;
- coastal erosion;
- saltwater intrusion.

Consideration should also be given to how these aspects interact with other environmental and contextual components (for example, water availability, ecosystem deterioration, hydrogeological disruption, and human health). Such information is useful to identify the P/P objectives, but also to provide a baseline for analysing the evolution of trends while monitoring.

### **Analysis of environmental trends**

Identify the main risks related to climate change for strategic sectors (for example, loss of coastal systems for tourism, increased rainfall variability for agriculture, increased ranges of carriers harmful to health).

Analyse vulnerability and risk propensity and assess the adaptive capacity of the territory.

### **Identification of CCA objectives/measures**

To identify climate change adaptation objectives and measures to be incorporated into the P/P for specific strategic areas of intervention that reduce the negative impacts of climate change, safeguard the health and well-being of the population and promote territory management to improve its resilience.

Objectives are defined in relation to the sector of influence of the draft P/P (for example, transport, energy, hydrogeological disruption), contextualising the priority objectives for climate change set at the national and international level according to the results of the context analysis and climate projections.

## Operational elements for Strategic Environmental Assessment

*In this sense, an analysis of "internal consistency" between the sectoral objectives, the general objectives of the plan and the actions should be carried out to verify the lack of conflict among the specific objectives of the plan and the various actions envisaged (for example mismatch), concerning the same general objective.*

### **Definition of alternatives**

*To develop design alternatives that map out resilient scenarios in relation to the main critical issues related to climate change that have been identified (for example to envisage relocation of projects or infrastructure, to encourage the selection of sustainable crops in relation to water availability and soil productivity).*

*Where, in the light of the analysis of the expected effects, the proposed P/Ps fail to deliver the expected results due to the climate change impact, clarify whether there are alternatives that could be more effective in a given climate change scenario (for example where reduced rainfall affects the profitability of hydropower production, hydropower could be replaced or integrated with micro-generation including biogas, solar, or other).*

### **Assessment of the effects of the P/P**

*Assess whether and how the implementation of the P/P could affect climate change and how it will be influenced by climate change and assess its resilience and capacity to tackle it. Assess the synergic/cumulative effects of climate change to understand the interactions.*

*Assess how climate change mitigation and adaptation interact with each other: a positive effect on climate change mitigation can lead to negative effects in terms of adaptation.*

## **Phase 4 - Consultation, adoption, and approval**

### **Consultation**

*Involve decision-makers, environmental stakeholders, and stakeholders in the formulation of a CC resilient P/P proposal.*

*This discussion phase could form the basis for explaining and investigating the following aspects of the P/P:*

- which incentives can ensure that the identified adaptation measures are implemented (for example development of legislation, carbon taxes, financial assistance to facilitate adaptation and mitigation practices).*
- the existence of possible conflicts of interest among the various groups affected by the P/P and the adaptation measures that have been identified and whether these conflicts could be compounded by introducing adaptation measures.*

## **Phase 5 - Implementation and monitoring**

### **Monitoring**

*Due account should also be taken of climate change adaptation aspects in the design and organisation of the P/P management and monitoring structure.*

*Both in the definition of the structure of the monitoring system and in the specific definition of the indicators and their targets, it is, therefore, necessary to be consistent with the results of the climate analysis and the resulting weather-induced impacts, particularly on the specific impact chains for the sectors covered by the P/P.*

*Therefore, based on the effects of current and future climate change, the design of the management and monitoring structure of the Plan/Programme should identify a set of*

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*indicators (specific or selected among those already envisaged) to periodically verify the influence of these effects.*

*Develop a Monitoring Plan that can measure the effectiveness, in terms of adaptation to climate change, of the P/P actions during its useful life, by identifying a set of indicators to be measured at regular intervals and to be compared with the initial baseline. The indicators should (i) describe the level of implementation of the ACC actions defined by the P/P, (ii) and the state of natural and non-natural resources (in particular those considered most vulnerable) so as to verify whether the measures implemented by the P/P are effective in terms of results or whether they lead to greater/lesser vulnerability to climate change impacts in the receiving system.*

*In the light of the results, it will be possible to assess whether specific climate events or trends have influenced the attainment of the P/P objectives and if so, to address the problems that have arisen systematically.*

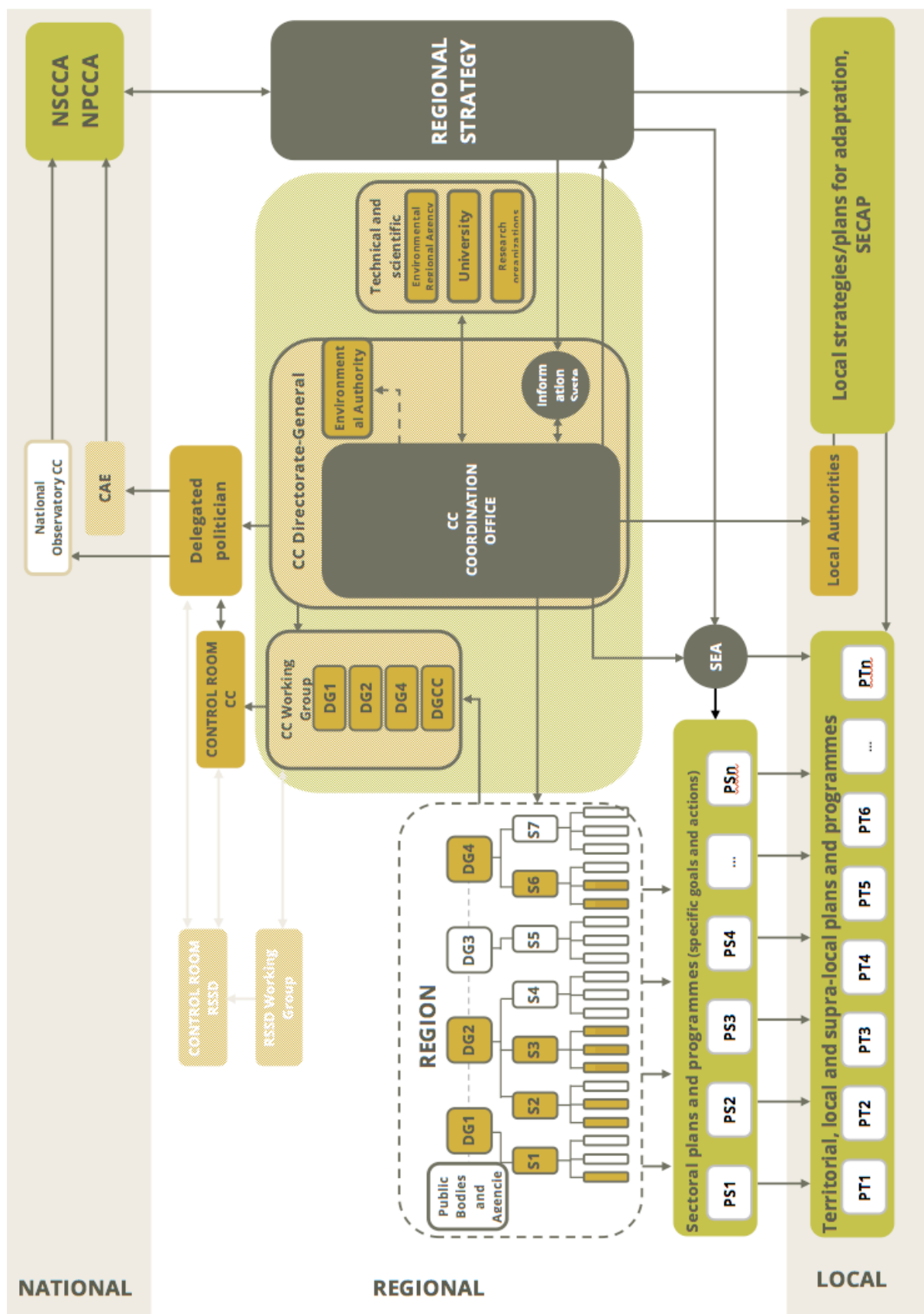


Fig. 5 - Proposal for a multilevel governance structure

## NOTES





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