



## **Background report**

for the project workshop

## **Design of guidelines for the elaboration of Regional Climate Change Adaptations Strategies**

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## 1 Introduction

The European Commission recently presented a White Paper outlining the framework for adaptation measures and policies to reduce the European Union's vulnerability to the impacts of climate change<sup>1</sup>. Phase 1 (2009 to 2012) will lay the groundwork for a more comprehensive strategy to be implemented during phase 2 (2013 onwards). Two key elements of the action plan under phase 1 are to:

- encourage the further development of National and Regional Adaptation Strategies with a view to considering mandatory adaptation strategies from 2012.
- developing indicators to better monitor the impact of climate change, including vulnerability impacts, and progress on adaptation by 2011,

This two day workshop will present initial results from two projects initiated to help meet the objectives of the White Paper. On the first day, regional climate adaptation strategies will be discussed. We will debate the future process of regional adaptation to climate change. The specific objectives of this day are:

- To present and discuss the current EU situation with regard to the regional climate adaptation strategies; and
- To present and discuss guidelines to support regions to develop climate adaptation strategies

On the second day, the discussion will be about assessing and developing vulnerability indicators for the EU. The specific objectives of Day 2 are:

- To present and discuss the findings of the literature review and data scoping exercise; and
- To review and discuss a set of options for the further development and elaboration of vulnerability indicators across the EU.

This combined event provides the opportunity for National, Regional and local authority representatives, experts and European Commission services to discuss initial findings from both projects and consider their role in facilitating adaptation across the EU. There are strong links between the projects and this two day event will help understand the potential role vulnerability indicators could play in the development and implementation of adaptation strategies and also some of the challenges faced by decision-makers in identifying appropriate responses. **This background paper envisages to support the activities on the first day on regional adaption startegies**

## 2 Background and objectives of the study

Adaptation to climate change is complex as the severity of the impacts will vary from region to region, depending on physical conditions, the degree of socio-economic development, natural and human adaptive capacity, health services, and response mechanisms. Actions to adapt to climate

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<sup>1</sup> [http://ec.europa.eu/environment/climat/adaptation/index\\_en.htm](http://ec.europa.eu/environment/climat/adaptation/index_en.htm)

change will not only need to be taken at EU and national level, but also at a very local and regional level to match the specific conditions therein. Regions have a very significant role to play for adaptation to climate change. Some regions or cities have already produced regional adaptation strategies; others are in the process of doing so. Still many regions would benefit from assistance for capacity building and good practice sharing. The lack of information, knowledge and expertise at local and regional level, and local authorities' lack of guidance to develop regional climate adaptation strategies is, in part, a consequence of the uncertainties as regards the scale, timing and consequences of climate change. In this context, the European Commission wishes to mobilise adaptation responses amongst public authorities at local, regional and national level providing them the necessary support to act, providing technical guidance, case studies and examples of best practices. (For further details, please see the White Paper "Adapting to climate change: towards a European framework for action").

The main **objective of this study** is to provide guidelines for the elaboration of regional adaptation strategies (RAS), based on a screening of available guidance documents. The guidelines propose a check-list or a stepwise procedure strategies which can assist EU regions in achieving successful adaptation. The specific objectives of this study are:

- An **inventory** of existing regional adaptation strategies in the European Member States
- **Guidelines on the process** for the development of regional adaptation.
- Assess **options to support** the elaboration of RAS at the European level.

When elaborating guidelines for regional adaptation strategies, it should be taken into account that developments are fast in Europe, and the context of adaptation policy will continue to change. Therefore, any guidelines should be flexible to allow for adjustment to new developments, enabling learning by doing. Also it is crucial to note at the start of this report that the elaboration of regional adaptation strategies is very dependent on not only regional, but also local and national circumstances. Generic guidelines as proposed by this project can help starting and structuring the process of developing regional adaptation strategies, but in practice will always have to be tailored to these circumstances, which are very different across different regions of Europe.

### 3 Inventory of the RAS assessed

#### 3.1 Regional strategies assessed

In total, 29 regional strategies (including strategies for larger cities) targeting climate change impacts were identified in regions of six EU countries (France, Germany, Netherlands, UK, Sweden and Spain) (see Figure 1). A survey including interviews, web surveys, participation in workshops and the assessment of project reports for adaptation strategies was also performed for other countries (Austria, Czech Republic, Italia, Latvia, Portugal and, Romania), but no formally adopted regional strategies were identified in these countries. However the workshop also aims to identify further RAS which have not been considered so far.

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Since 2005, eight countries in Europe have developed and adopted formal national adaptation strategies: Finland, France, Germany, Hungary, the Netherlands, Romania, Spain, the United Kingdom (Swart et.al., 2009). The limited number of strategies can also be explained by the fact that in several regions initial discussions or vulnerability assessments have started, but have not yet led to “existing”, i.e. formally adopted regional strategies. Also, rather than developing regional adaptation strategies initiated from a climate point of view, in some regions a different approach is taken, namely assessing and improving the climate resilience of general spatial or sectoral development plans and programmes.

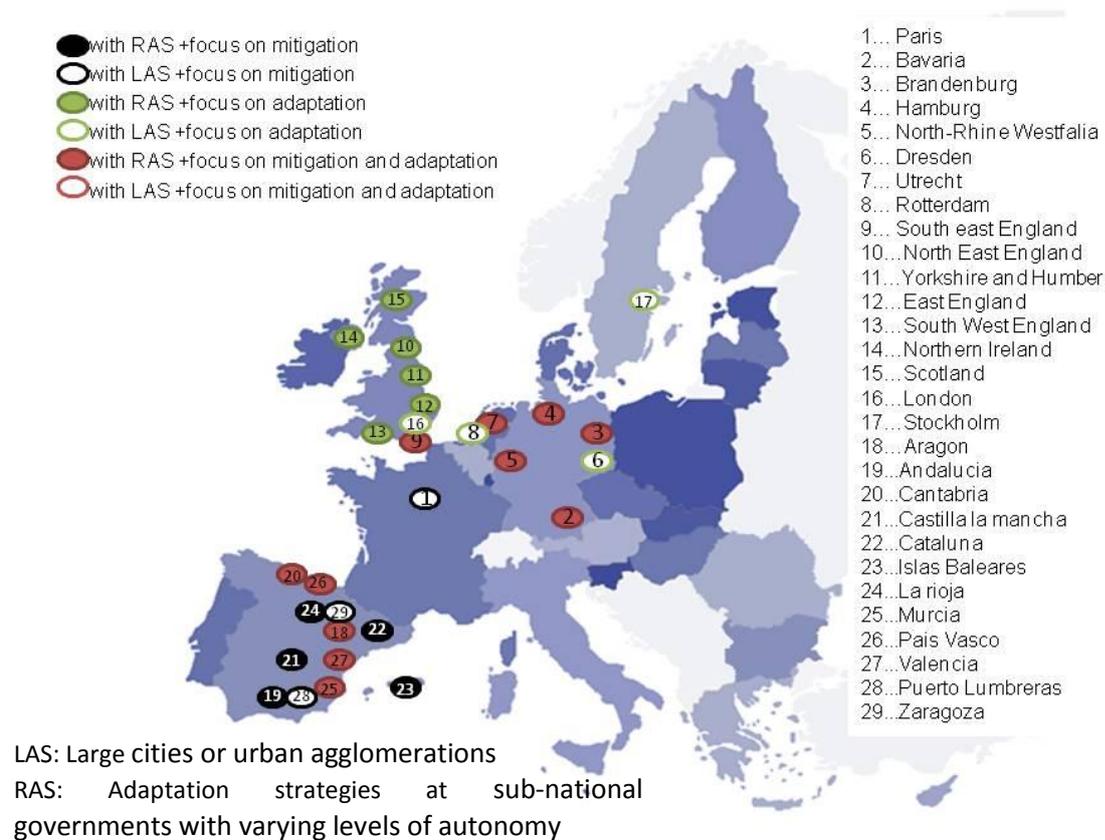


Figure 1: Type and focus of the assessed climate change adaptation strategies

### 3.2 Summary of findings

Despite the limited number of regional strategies assessed, it is possible to identify a number of common features, differences and strengths and weaknesses that could be addressed in designing guidelines for developing and implementing regional strategies.

- Across Europe, regions have realized that they may be vulnerable to climate change, and have started to assess their vulnerability in more detail, or have already started developing response plans.
- At the national level, we have identified two major types of regions that have started this process: (a) sub-national governments with varying levels of autonomy (Regional adaptation strategies), like Länder (Germany), Comunidades Autonomas (Spain), countries (in the UK), or provinces (Netherlands), and (b) large cities or urban agglomerations (local adaptation

strategies). Also, transnational strategies and multiregional strategies are being developed in shared river basins or the alps, but these were not included in this study.

- The relative scarcity of concrete adaptation plans at the regional level suggests that the availability of guidelines at the national or European level for designing such regional strategies can be helpful, especially for countries which do not have the same capabilities as large countries such as the UK and Germany. Similarly, making scientific information (the evidence basis for the strategies) widely available and easily accessible enhancing the ability of regional authorities to develop adaptation strategies. The proposed European Climate Change Impacts and Adaptation Clearinghouse will address this need.
- Generally, the national strategies in those countries that now have adopted such a strategy provide a framework for the development of regional strategies. The national strategies can include possible legal obligations for such plans, or merely encouragement and information support. Guidelines for regional strategies should take this national context into account.
- Especially for urban agglomerations adaptation strategies, adaptation to climate change is often coupled to mitigation, or to even broader sustainable development objectives. This is to be taken into account in designing guidelines for regional strategies.
- Regional adaptation strategies cover a multitude of vulnerable sectors, dependent on the regional specific context. Two factors stand out as the most important candidates for priority attention: water safety and supply (flooding, urban water disposal, sea level rise, droughts) and health (heat stress, disease management, urban and building design).
- Little attention appears to be paid as yet to implementation issues, such as implementation policy instruments, assignment of specific responsibilities to different actors at different administrative levels, and costs. Guidelines for adaptation strategies should pay attention to these issues.

#### Questions for the Workshop:

- Vulnerability to climate change is spread differently across Europe. Do all EU regions need a adaptation strategy and which regions should develop such strategies first?
- The links between levels in the existing strategies and sectors seem to be weak, but multilevel governance also appears to be one of the major challenges. Should regional strategies be developed in a "stand-alone" manner, or should explicit attention be paid to the linkages with higher (international, national) and lower (local) levels and sectoral approaches?
- How can stakeholders being involved in the development of climate change strategies?
- Which role do you see for the EU in relation with regional strategies?

## 4 Review of existing guidelines

A review of guidelines for adaptation in the EU has been conducted to identify key features for developing adaptation strategies and inform the elaboration of Regional Adaptation Strategies at the European level. In total, 114 guidance documents have been reviewed. Of these, 10 guidelines used have been selected to represent as broad a spectrum of guidance as possible from across the EU.

Some of the common steps/procedures identified in the guidance documents reviewed are:

- Gaining political backing and managerial commitment
- Embedding climate change adaptation within existing plans, policies and programmes
- Scientific basis and use of tools, including climate change scenarios, cost benefit analyses and risk assessment
- Identification of key vulnerabilities

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- Assessment and selection of adaptation options
- Stakeholder engagement and communication throughout the process
- Monitoring, evaluation and review following implementation

Box 1: Guidelines reviewed include:

1. Scottish Local Climate Impacts Profile (LCLIP) Guidance (Alan Speedie Associates, 2009)
2. UK Climate Impacts Programme (UKCIP) 'Identifying Adaptation Options' (UK Climate Impacts Partnership, undated).
3. European Spatial Planning: Adapting to Climate Events (ESPACE) programme, which has produced two important guidance documents: 'Planning in a Changing Climate' and 'A Toolkit for delivering water management climate change adaptation through the planning system' (ESPACE project, undated).
4. The Baltic Sea Regions guidance (Hilpert et al., 2007)
5. Nordregio Swedish guidelines (Nordregio, 2009)
6. The Nottingham Declaration Action Plan (UKCIP, 2009)
7. UK Climate Impacts Programme (UKCIP) 'Costings Guidelines' and 'Risk, Uncertainty and Decision Making'.
8. UK Climate Impacts Programme (UKCIP) 'guidance for conducting Local Climate Impacts Profiles'
9. United Nations Economic Commission for Europe (UNECE). 'Draft Guidance on Water and Climate Adaptation'.
10. Australian Government's Climate Change Impacts & Risk Management Guide for Business and Government (Australian Government. Climate Change Impacts & Risk Management, 2006) and
11. USAID Guidance Manual for Development Planning (USAID, 2007).

For the links to the guidelines reviewed see literature annex

### 4.1 Proposed guidelines for the elaboration of RAS

Building on the review of existing guidance documents, analysis of the RAS inventory and the experience of the project team, a basic five-stage RAS process is considered as initial framework. The preliminary approach to the guidance is based on **Fehler! Verweisquelle konnte nicht gefunden werden..** Please note that the policy driver in some regions may not be climate change, but regional development plans or programmes for which climate resilience is to be evaluated and, if required, improved. The methodology suggested could be used to support this approach too, the starting would then be step 6 rather than 1.

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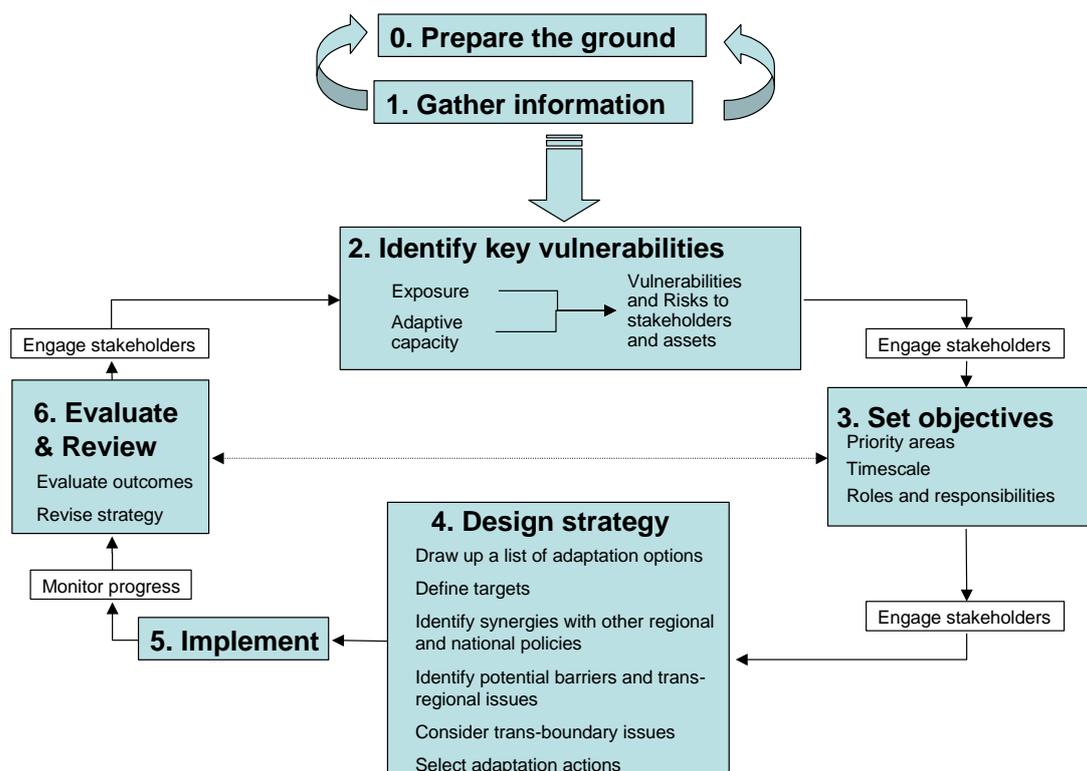


Figure 2: Guidelines Schematic

## 4.2 Description of the main stages in the RAS Guidance

### **Stage 0 – Prepare the ground**

The preparatory stages underpinning the development of a new adaptation strategy include:

- Secure political commitment
- Decide RAS project lead and core team
- Identify internal and external stakeholders
- Engage with stakeholders

### **Stage 1: Gather Information**

The outcomes of this stage are the necessary tools and information to use in the RAS process. These include:

- Information on previous weather events
- Observations of recent trends in climate patterns
- Projections of future climate change from climate models and potentially from climate impacts models
- Scenarios of future socio-economic conditions
- Information and tools that can be used to inform the RAS process
- Relevant non-climate information

### **Stage 2: Identify key vulnerabilities and risks**

Existing information on potential impacts and adaptive capacity in the region should be used to assess key vulnerabilities for at least four main systems, taking into account scientific and other uncertainties, e.g. by using a broad set of scenarios:

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- Spatial areas within the region
- Key economic sectors
- Different socio-economic groups (e.g. age groups, ethnic groups, those on low income, etc)
- Critical assets and infrastructure in the regions

Various tools can be used to assist the completion of Stage 2, including climate and socio-economic scenarios, regional climate impacts profiles, vulnerability indicators and climate risk assessment methodologies.

It is important to discuss the outcomes (and possibly the methods and processes) of Stage 2 with a wide range of stakeholders. This helps to improve the quality of the assessments made, as well as to encourage buy-in to the RAS process itself. Stage 3: Set Objectives

The outcome of this stage will be a list of the strategy's objectives. These objectives will progress and should relate to both the content (outcome) of the strategy as well as the process be used to assess progress and guide implementation. The objectives will be specific to the regional context and should be agreed with various stakeholders and partners who are destined to play a significant role in the implementation of the RAS. The objectives should be SMART, that is:

- Specific
- Measurable ; to be expressed through a targeted set of indicators
- Achievable
- Realistic
- Time framed

### **Stage 4: Design Strategy**

Building on the evidence base gathered in Stage 1 and the objectives identified in Stage 23, a number of actions can be designed to address the key vulnerabilities and risks in the region. The following steps in strategy design may be followed:

- Draw up an initial list of potential adaptation options
- Define targets
- Identify existing policies and institutional frameworks through which to deliver adaptation (including existing regional, national and European policies)
- Identify potential barriers to implementation
- Consider trans-boundary issues
- Propose adaptation options
- Assess costs
- Assess the impacts of the adaptation actions
- Assess the governance implications of the adaptation actions
- Select adaptation actions
- Design adaptation actions

As with any other learning process, the process of selecting adaptation measures should be iterative. Thus, it may be necessary to repeat the process and to re-visit stages 1-7 based on the knowledge acquired during a first iteration.

### **Stage 5: Launch & Implement**

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RAS usually should be launched and implemented by a combination of the lead regional authority and regional stakeholders. Engagement of stakeholders continues during launch and implementation according to the responsibilities of each party in the RAS.

### **Stage 6: Monitoring, Evaluate & Review**

The RAS process is iterative, meaning that the early stages should be repeated following the evaluation and review stage. Monitoring should take place within the context of routine assessments by the leading regional authority. Indicators identified in Stage 3 can be used to **monitor the progress** of the strategy regularly. **Evaluation and review** require stakeholder participation (based on the principles of participatory decision-making) and should include a theory-driven evaluation, based on the objectives agreed in stage 3. A full RAS Review should take place after a period of 12-18 months after the launch of the strategy. A **Steering Group**, made up of influential members of key stakeholder organisations, should take the lead on monitoring, evaluation and review of the RAS. The composition of this Steering Group should strongly reflect the expert climate change community and relevant administrative and regulatory bodies who play a role in adaptation. Individual thematic working groups of the Steering Group should carry out independent evaluation reports of the RAS (e.g. water working group, vulnerable communities working group, etc).

It is pertinent to provide detailed reviews (and ultimately re-evaluation) of Stages 2 and 4; these stages are of equal importance. However, to focus the discussion during the workshop on the more complex phases, we elaborate cornerstones of a RAS.

### **4.3 Assessment of vulnerability and its challenges in RAS (Stage 2)**

**Assessing vulnerability** is the development of a list of priority risks, as well as a better understanding of the key vulnerabilities in the region. **Vulnerability** is the degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes. The suggested **process by which to assess key vulnerabilities** is as follows:

1. Consider future climate scenarios (both short term variability and long term climate change, possibly dependent on the type of strategy including low-probability/high impact scenarios); to allow for comparison and consistency at least at the national level, it may be useful to harmonize scenarios with those used elsewhere in the country, or nationally. In the future, the EU may stimulate harmonized use of scenarios across Europe through the climate change impacts and adaptation Clearinghouse mechanism.
2. Consider future socio-economic scenarios
3. Identify the potential impacts of climate change in the region.
4. Assess the exposure, sensitivity and adaptive capacity of each system. This includes the assessment of the population and economic assets in the region, i.e. geographical area, sector, socio-economic group or asset.
5. Determine the vulnerability of that system on the basis of 1, 2 and 3, considering the most important uncertainties.
6. Prioritise the risks posed to the region. The result will be a qualitative, or semi- qualitative assessment and will form the knowledge base upon which strategic measures are developed.

Stakeholder involvement has been found to be useful during vulnerability assessment. For example, scenarios can be presented to stakeholders to jointly assess and prioritise risks, using stakeholders expertise. Alternatively, the results of a thorough vulnerability and risk assessment can be discussed

with stakeholders to identify priorities and begin the process of setting objectives and developing adaptation measures. The challenges to take into account during vulnerability assessment include:

1. **Large and fragmented evidence base** on climate change impacts, vulnerability and risks. It is often difficult for regional decision-makers to find all the relevant information that may be of use to them. The climate change impacts and **adaptation Clearinghouse** can support the vulnerability assessment by providing a platform for sourcing and exchanging information on climate impacts and adaptation measures. Several good practice case studies and a wide range of supporting information will be available once the Clearinghouse has been established. **Complexity of relevant information with associated uncertainties**, e.g. often scientific literature is not easy to digest for the purposes of developing RAS. Working in partnership with local stakeholders and, where they exist, climate change partnerships may be a very effective way of improving awareness of existing sources of information.
2. **Stakeholder consultation** can be difficult because of insufficient budget availability, problems reaching the right target audience, raising their attention towards the issue and keeping that attention (willingness to participate), and competing interests among different stakeholders. In the end, adapting should be in the self-interest. All possible avenues for national and European funding should be explored. Carefully planned, early stakeholder engagement will minimise costs and help to avoid repetitive or unconstructive engagement. Stakeholder engagement should be designed with a realistic idea of vulnerable stakeholders, so awareness raising should be an important part of any strategy.
3. **Level of prioritization and awareness of climate change impacts** by stakeholders. Stakeholders may disagree on the prioritisation of risks. However, it is more important to consult and involve stakeholders in these processes than to reach overall agreement. Final decisions on prioritisation will be taken by the regional authority and may be influenced by regional political factors. Low awareness of climate change can prevent rapid action with RAS. It is advisable to engage with climate change stakeholders early and to rely on regional partnerships and networks (as well as national and European institutions) to raise awareness among stakeholders at an early (or pre-RAS development) stage.

#### 4.4 Design strategy: selection of adaptation measures (stage 4)

Adaptation measures are processes, practices and technologies aimed at avoiding or reducing the adverse effects of climate change. In the context of provinces or larger administrative regions, “measures” may often be procedural, institutional, or financial mechanisms to create an enabling environment for the actual implementation of adaptation action at lower levels. In the case of large metropolitan, urban areas the strategies may include more concrete measures, including particular spatial or technological solutions.

Based on the identification of key vulnerabilities (Stage 2) and objectives (Stage 3), an **initial list of potential adaptation measures** can be drawn up. This can be a brainstorming exercise of potential measures that can lead to a reduction of climate risks and vulnerabilities, or that will enable the region to take advantage of any opportunities posed by climate change. Useful sources of information and good practice include: EC Adaptation Clearing House; National networks and climate change support partnerships and Trans-national partnerships.

Subsequently, **specific targets** are identified for each adaptation measure. As this increases the ability to monitor, evaluate and review the effectiveness of the measure. Targets may include:

- No. of businesses/ households/ residents reached by a certain campaign.

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- Resilience against a particular ‘frequency’ of natural events, e.g. protection against a 1/200 year flood, increase in capability of health services provided, change in building standards, etc
- Investment in certain adaptation measures, e.g. EUR creating green spaces
- Setting up of a website, Steering Group, research programme

Several policy initiatives help to reduce vulnerability to climate change without necessarily being classified or identified as ‘adaptation’. Existing policies or governance frameworks can be utilised to deliver adaptation. It is therefore important to communicate with other policy departments and stakeholders in order to fully understand current initiatives that may help (or hinder) the reduction of vulnerability and management of risk and **identify synergies with regional, national and European policies**. Many regions will also identify vulnerabilities and climate hazards that will impact large areas beyond their regional control, for example water management within trans-national river basins.

A **priority list of specific adaptation actions** can be selected (or new actions developed) from the initial list of potential adaptation measures by considering a number of criteria, including:

- Urgency of the potential impact and risk that measure aims to mitigate
- Their complementarity against other sustainable development goals, for example synergies with climate change mitigation measures or with water management
- the governance implications of the option, for example the requirement or interaction with existing governance structures, for example the need for the establishment of new partnerships
- cost of the measures

The actions identified should be carefully designed to fit the local context and make use of the review of other regional objectives made during Stage 1. The list of measures should also reflect the views and capabilities of the stakeholders involved in the RAS process. Measures should be highly specific in nature and will require a lead organisation in each case.

**Potential barriers to the identification of effective adaptation measures** at the design stage include:

- Lack of awareness of climate change impacts, vulnerabilities and risks
- Scepticism of ‘climate change’ as an issues worthy of peoples’ attention
- Uncertainty around future climate change
- Old fashioned managerial structures and management structures preventing joined-up/ integrated adaptation responses
- Prioritisation of mitigation at the expense of adaptation
- Short-term planning and management horizons demote adaptation
- Lack of investment capital for adaptation

**Challenges** related to the identification and selection of adaptation measures include:

1. Designing the strategy can be a **resource-intensive undertaking** and requires a **guarantee from the lead regional authority** that the investment of time and resources from various internal and external stakeholders will be met with commitment for the long term. In this regard, it is beneficial to secure early political commitment to the RAS and make a public statement of intent to address adaptation.
2. Designing adaptation actions requires the **agreement of several departments** within the lead authority. It is therefore important that the department (or consultants) undertaking the

strategy receive a formal consent by the top-level management of the different departments and organizations involved. It is also a plus significant help to have full access to the relevant contacts in the regional authority and to work closely with a wide range of internal as well as external stakeholders. In addition, it is recommended to arrange long-term funding structures for the RAS programme at its inception, rather than relying on insecure, one-off project budgets. Trans-boundary systems such as river basins, ecosystems and marine habitats will require some level of co-management and cost-sharing for the successful implementation of adaptation measures.

### Questions for the workshop:

- What processes and tools or selection of adaptation measures can be used in RAS?
- Which challenges are related to the identification and selection of adaptation measures?
- How to overcome challenges related to vulnerability assessment?
- How should the guidelines be presented in order to be a useful tool for regional policy making?
- What should be taken into consideration while drawing an initial list of potential adaptation measures? What type of measures can be distinguished?

## 5 Role of the EU in developing RAS

Under the principle of subsidiary decisions are taken as closely to the citizen as possible, it requires a constant check whether action at EU level is justified in the light of the capacities at national, regional or local level. The EU does not take action (except in areas which fall within its exclusive competence) unless it is more effective than action taken at more local levels<sup>2</sup>. As stated in the impact assessment to the White Paper, actions to adapt to climate change will need to be taken at a very local level to match the specific conditions. Therefore regions have a very significant role to play for adaptation to climate.

This means that some co-ordination of regional and local adaptation initiatives at the EU-level may be necessary in order to avoid major gaps, to provide strategic direction and to ensure a comprehensive and coherent approach to adaptation across the EU, especially in situations with trans-national linkages. The lack of information, knowledge and expertise at local and regional level and the lack of guidance to the local and regional authorities may hinder access and use of available tools. In this area the EU could also play an important role, by developing methodologies for assessing the impact and designing cost-effective adaptation policies. Finally, in light of the climate change challenge, it is likely that local and regional authorities will have to bear the cost of developing and implementing adaptation strategies. A new context for solidarity and burden sharing will therefore emerge, and there will be the need for revising the framework for EU financial support to the regions to facilitate adaptation (see impact assessment to the White Paper).

The role of the EU in development process of RAS could be threefold:

- Triggering the elaboration of RAS
- Development of RAS
- Implementation and evaluation of RAS

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<sup>2</sup> [http://europa.eu/scadplus/glossary/subsidiarity\\_en.htm](http://europa.eu/scadplus/glossary/subsidiarity_en.htm)

Thereby different instruments, support activities or funding mechanism could be applied.

### 5.1 Triggering the elaboration of RAS

From the impact assessment it comes clear that all regions should develop a RAS. However RAS are not mandatory so far and in order to trigger the elaboration of such guidelines, the Commission could:

- Develop clear examples/reasons why RAS are beneficial
- Provide financial support
- Develop new legislation (for example. amend EIA /SEA to take CC into account)
- Facilitate linkages between new infrastructure projects and RAS in order to ensure sustainability of the investments

### 5.2 Development of RAS

Figure 3 below indicates some supporting activities organised in the framework of the EU along this development process.

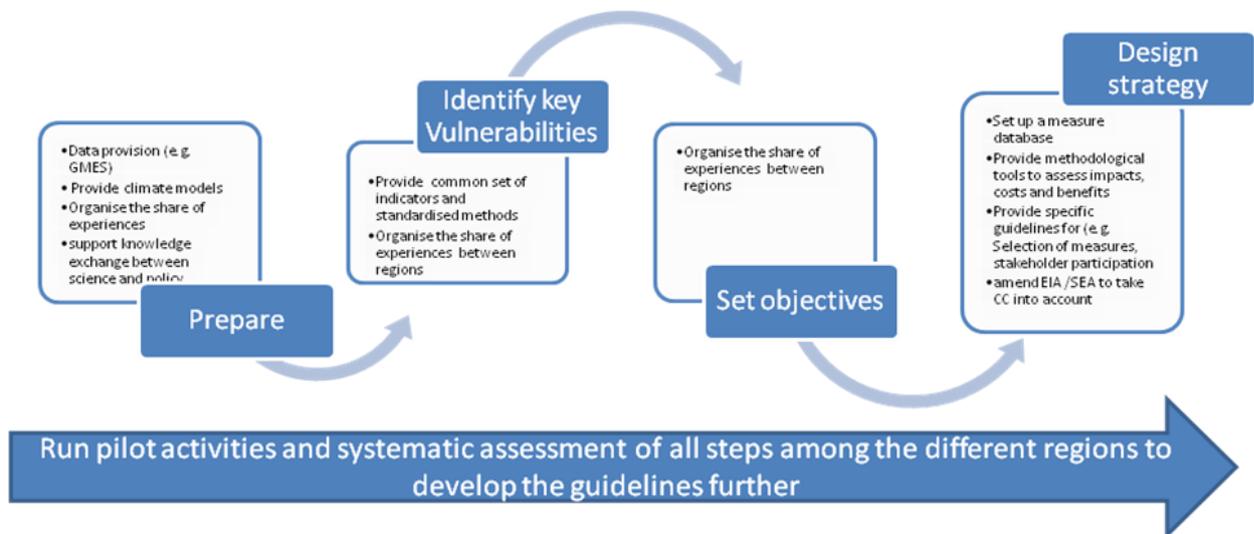


Figure 3: Possible supporting activities in the development phase of RAS

### 5.3 Implementation and evaluation of RAS

The figure below indicates some supporting activities organised in the framework of the EU along the implementation and evaluation process.

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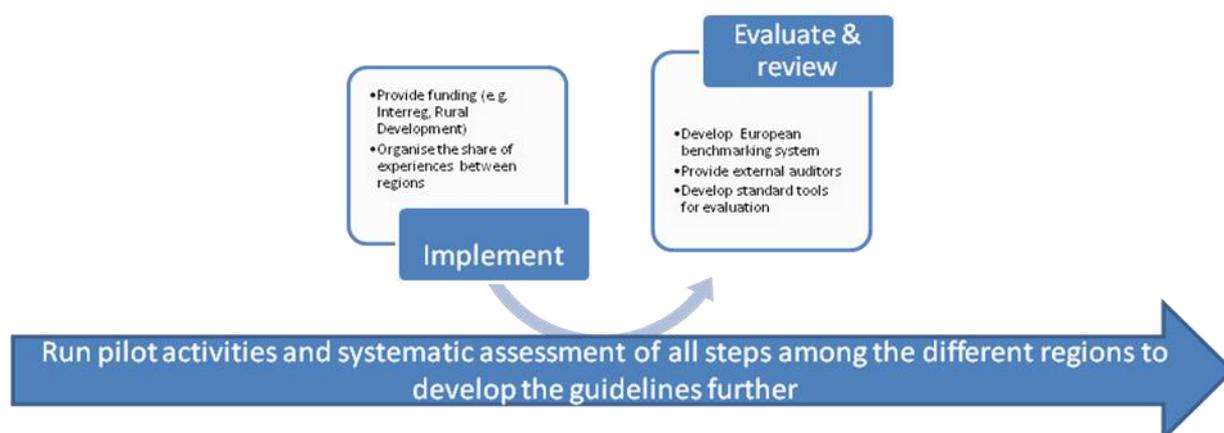


Figure 4: Possible supporting activities in the implementation and evaluation phase of RAS

In the implementation phase, financing seems to be the most important issues. Specific funding at EU level can promote transboundary adaptation or in regions with lower financial capacity to invest in adaptation.

### Questions for the workshop:

- In which ways can the EU support the development of RAS?

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