



# Guidelines for Climate Change Adaptation at the local level in the Alps, and beyond

Kick-off meeting Working Group on Climate Change of the  
Carpathian Convention

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# The challenge of local adaptation to climate change in the Alps



The policy framework on Climate change in the Alpine area:

*... with respect to the progressive climate change for the future, ... **it is necessary to develop appropriate strategies** and activities for the Alpine area for the adaptation to the consequences that will result from the climate change.*

Ministers' Declaration, IX<sup>th</sup> Alpine Conference, Alpbach 2006

**Adaptation is one of the main challenges in the fight against climate change especially in the Alps, which are particularly exposed and densely populated.**

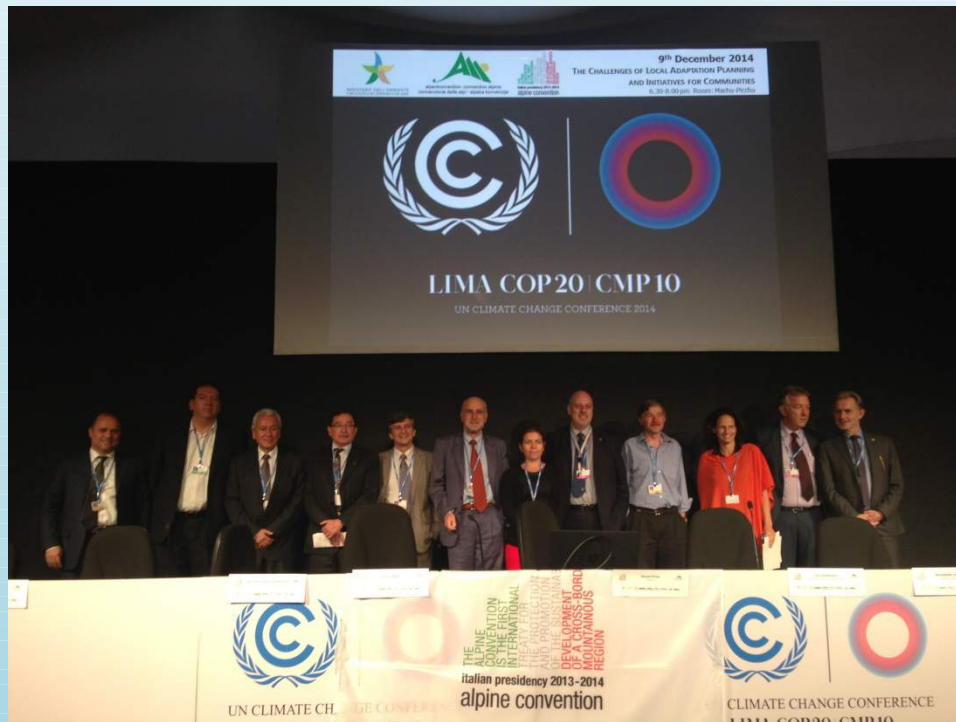
Action Plan on Climate Change in the Alps, X Alpine Conference, Evian 2009

# The initiative of the Italian Presidency for a Climate Action *Plan for local decision makers*

- The Italian Presidency set up a **Task Force on Climate Change** with the mandate to elaborate **Guidelines for local adaptation**
- **All the Working Groups and Platforms** of the Alpine Convention worked together in drafting the Guidelines
- All the Alpine Countries have been represented in the working team which counted **6 countries and more than 40 experts**



# The Climate Action Plan: scientific contents and presentation into the international context



- The final document was submitted to **external reviewers** (5 experts from 4 Alpine countries) and **welcomed by the the XIII Conference of the Alps** by the Alpine Ministers of Environment (Turin, November 21, 2014)
- The Guidelines have been presented to an international expert audience during the **UNFCCC COP20 on Climate Change** (Lima , 1-12 December 2014)





MINISTERO DELL'AMBIENTE  
E DELLA TUTELA DEL TERRITORIO E DEL MARE

THE ALPINE CONVENTION  
CONSTITUTES THE SUSTAINABLE  
DEVELOPMENT OF A CROSS-BORDER  
MOUNTAINOUS REGION  
AND PROTECTION  
OF THE ENVIRONMENT  
Italian presidency 2013-2014  
alpine convention

# Guidelines for Climate Change Adaptation at the local level in the Alps



# Guidelines for Local Adaptation in the Alps (Paragraphs)

## Steps of Local Adaptation Strategy in the Alps

- 1.1 Why develop guidelines for climate change adaptation at local level in the Alps?
- 1.2 Climate change: the interlinked challenges of mitigation and adaptation
- 1.3 Adaptation policies in the EU and in the Alpine countries: the significant role of the regional and local level
- 2. Policy guidance for the development and implementation of sub-national Adaptation Strategies in the Alps
  - 2.1 The climate change in the Alps
  - 2.2 Impacts, vulnerabilities and resilience capacity in the policy sectors
    - 2.2.1 Mountain forests
    - 2.2.2 Water resources
    - 2.2.3 Energy
    - 2.2.4 Air quality and human health
    - 2.2.5 Mountain agriculture and livestock farming
    - 2.2.6 Transport
    - 2.2.7 Extreme events and natural hazards management
    - 2.2.8 Tourism
    - 2.2.9 Biodiversity and ecosystems
    - 2.2.10 Spatial planning
  - 2.3 Identification and selection of local adaptation options
    - 2.3.1 Cost benefit and multi-criteria analyses: feasibility assessment
    - 2.3.2 Prioritization
  - 2.4 Implementation of measures at local level
- 2.5 Multi-level governance (harmonization of planning measures at different governance levels)
- 2.6 Monitoring and evaluation: the follow up of the adaptation policy
  - 2.6.1 The need of indicators-based system
  - 2.6.2 Adjustments of and reporting on the adaptation strategy
- 3. Key factors to ensure success of sub-national adaptation strategies at local level in Alps
  - 3.1 Dealing with cross-cutting issues
  - 3.2 Participation
  - 3.3 Communication and awareness rising
  - 3.4 Financing
  - 3.5 Enhancement of trans-boundary cooperation
  - 3.6 Ensuring stakeholder engagement
  - 3.7 Avoiding maladaptation

The Alpine Policy Context

Stage (i)  
Assessment of impacts, vulnerability and risks

Stage (ii)  
Planning for adaptation

Stage (iii)  
Implementation of adaptation measures

Stage (iv)  
Monitoring and evaluation of adaptation interventions

Cross-cutting issues

*The Guidelines are an instrument delivered to policymakers of the Alpine regions to define policies, local strategies and activities to make their mountain territories more resilient and competitive in front of the challenge of climate change*

## How?

- 1
  - Identifying **impacts, vulnerabilities, resilience factors** and **adaptation options** for each “**policy sector**” involved in the adaptation process (spatial planning, agriculture & forests, energy, water management, transport, tourism, ...).
- 2
  - Select **criteria** to help policymakers to make their **decision** and define a **priority** ranking for the consequent actions.
- 3
  - Define **methodologies for the involvement of the stakeholders**, including governments on different levels, the private sector and the civil society (*bottom up process*).



## 2.2 Impacts, vulnerabilities and resilience capacity in policy sectors prevailing in the mountains

- Mountain forests
- Water resources
- Energy
- Air quality and human health
- Mountain agriculture and livestock farming
- Transport
- Extreme events and natural hazards
- Tourism
- Biodiversity and ecosystems
- Spatial planning





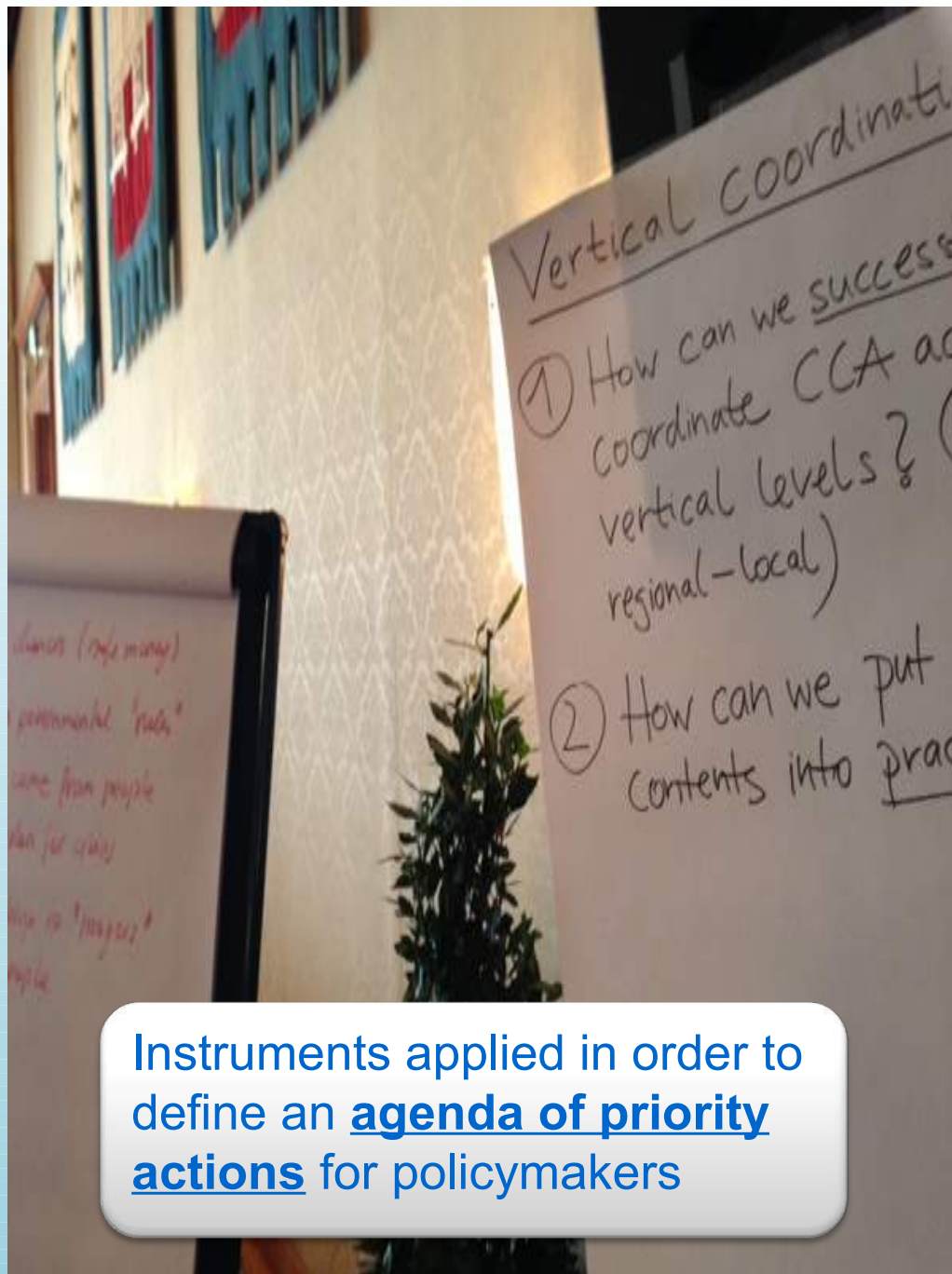
# Assessment of the economic, environmental and social costs of adaptation

**Cost-Benefit Analysis:**  
do the benefits outweigh the costs of adaptation?

**Cost-Effectiveness Analysis:**  
which option ensures to meet the target at the lowest cost?

**Multi-criteria analysis:**  
which option scores higher beyond economic valuation?

Source: United Nations, United Nations Framework Convention on Climate Change (UNFCCC), *Assessing the costs and benefits of adaptation options. An overview of approaches*, 2011



Instruments applied in order to define an agenda of priority actions for policymakers

# Methods for economic assessment: Benefit-Cost Analysis

## BCA Results. Use of Discount Rates.

### Nepal: Assessing livelihood-centred disaster reduction measures

10 year horizon	r = 5%	r = 10%	r = 15%
Present value of benefits	383,764	306,287	250,831
Present value of costs	265,253	241,527	221,657
Net present value	118,511	64,760	29,174
Benefit-cost ratio	1.45	1.27	1.13
Internal rate of return 22.2%			
20-year horizon	r = 5%	r = 10%	r = 15%
Present value of benefits	611,774	393,484	310,501
Present value of costs	300,235	261,717	233,688
Net present value	311,539	131,767	76,812
Benefit-cost ratio	2.04	1.5	1.33
Internal rate of return 26.3%			

## Methods for economic assessment: Cost-Effectiveness Analysis

Community	Rainwater harvesting equipment	Total project costs	Cost-effectiveness (Cost per person/water harvesting potential in litres per person)
Aitutaki, Cook Islands	246 household tanks of 2,000 litres and 12m of gutters for each household	USD 233,155	USD 259/547 litres
Tilivalevu, Fiji	Two communal tanks, a new piping system and upgraded dams	USD 63,431	N.A.
Luli, Vanuatu	24 household tanks of 2,400 litres, each combined with a catchment area of ca. 20m <sup>2</sup>	USD 100,480	USD 334/192 litres

Source: UNFCC 2011

**Pacific Islands: Assessing adaptation options for freshwater resources**



# Methods for economic assessment: Multi Criteria Analysis

Criteria	Estimated cost	Human life/ health saved	Arable land, water supply etc. saved	infrastructure and monuments saved	Summary of weighing	Initial rank:	National (N) Regional (R) Local (L)	Adjusted ranking
Weights to be multiplied with standardised results							N +15 % R +/- 0 % L -15 %	
Options	0.20	0.33	0.27	0.20				
(1) Disaster Management Strategy (Food Security and Emergency Medicine)	0.71	1.00	0.75	0.25	0.7245	2	N 0.833175	1
(2) Landslide Management & Flood Prevention	0.56	0.75	0.75	0.50	0.662	4	R 0.662	4
(3) Rainwater Harvesting	0.56	0.75	0.50	0.00	0.4945	7	N 0.568675	6
(4) Weather Forecasting System to Serve Farmers and Agriculture	0.81	0.75	0.50	0.25	0.5945	5	N 0.683675	3
(5) Artificial Lowering of Thorthomi Glacier Lake	0.26	1.00	0.75	1.00	0.7845	1	R 0.7845	2
(6) Installation of Early Warning System on Pho Chu Basin	0.85	0.75	0.00	0.25	0.4675	8	R 0.4675	8
(7) Promote Community-based Forest Fire Management and Prevention	0.81	0.25	0.50	0.25	0.4295	9	R 0.4295	9
(8) GLOF Hazard Zoning	0.93	0.50	0.25	0.50	0.5185	6	R 0.5185	7
(9) Flood Protection of Downstream Industrial and Agricultural Area	1.00	0.75	0.25	1.00	0.715	3	L 0.60775	5



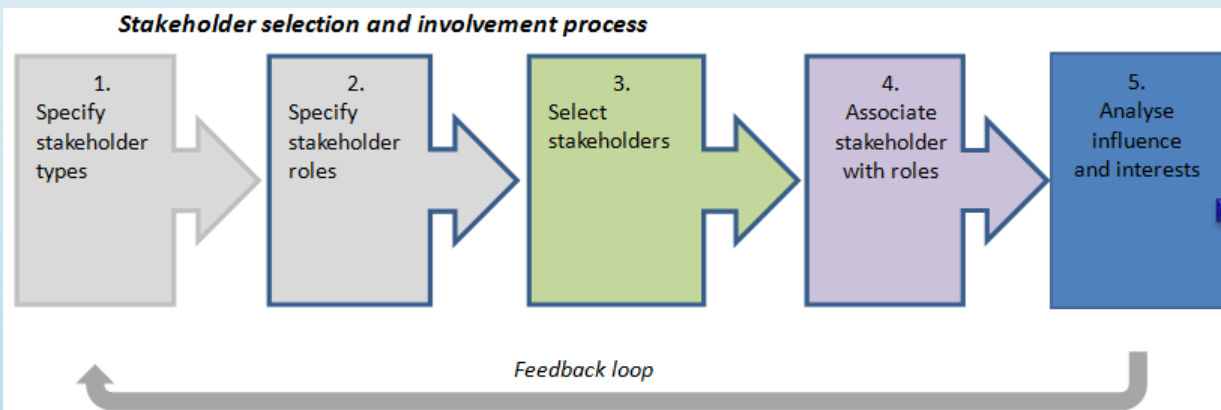
# *Stakeholder selection : a search for a methodology in adaptation\**

The engagement approach should involve stakeholders having at least one of the following characteristics:

1. are affected by the impacts of climate change
2. are affected by the adaptation measures implemented
3. can influence adaptation policies and measures since they are called to decide or implement adaptation actions
4. play a formal/informal role in the affected organisations
5. play a formal/informal role in the hierarchy of the responsible institutions for the decisions on, or implementation of adaptation actions
6. are actually relevant to the process of adaptation
7. deliver concrete adaptation actions.

# The stakeholders' selection process

The stakeholder selection process is made up of **5 steps**:



Source: Guidelines for CC adaptation at the local level in the Alps, 2014

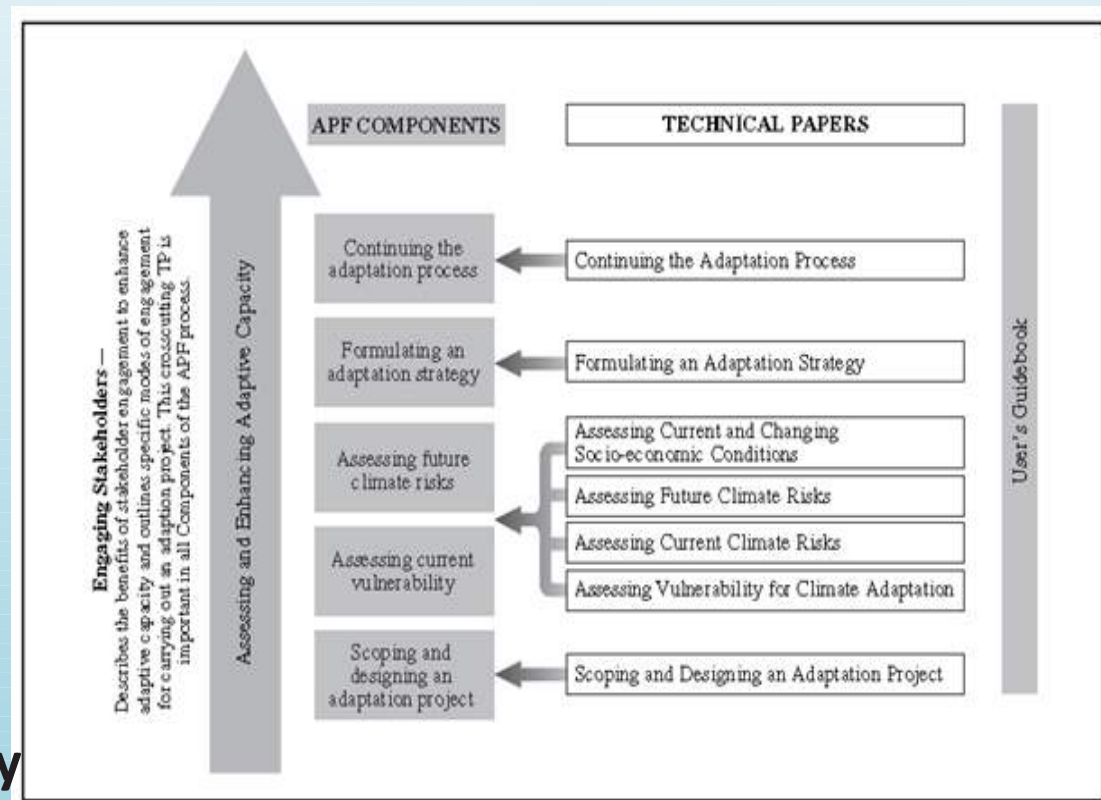
## **Relevant stakeholders:**

- Classified as of a certain **type** out of 4 available criteria
- Characterized by a certain **influence on a set of other stakeholders**
- Hold a **specific interest in the adaptation process**

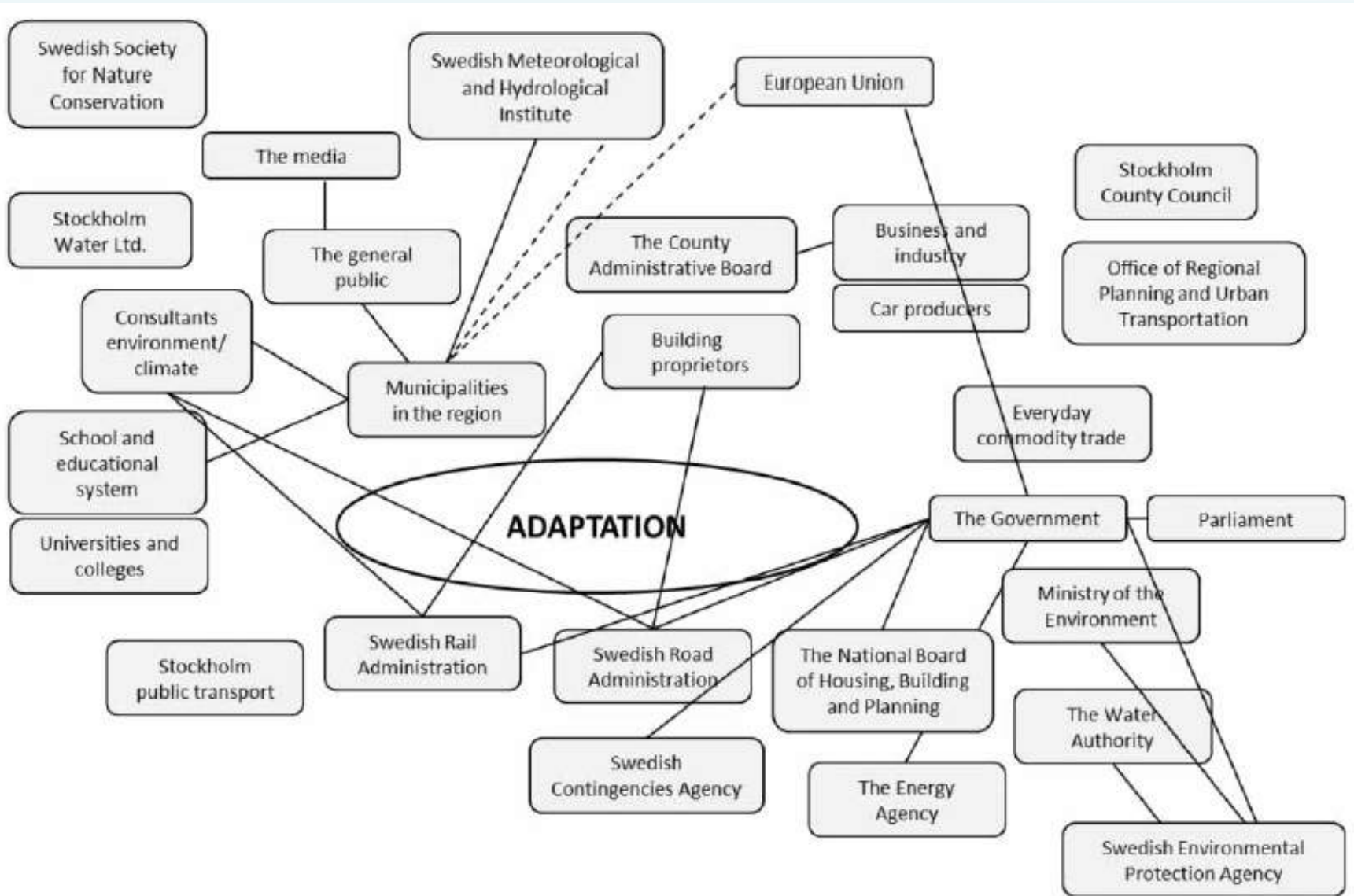
# How to get the right institutions onboard in an adaptation process?

The engagement approach takes into account:

- ✓ That **formal engagement** of public administrations and offices is **not enough to assure effective adaptation**
- ✓ The **scope of the issues** that stakeholders will participate in defining and solving
- ✓ The **stage of the policy-making process** at which the engagement is occurring
- ✓ What **decisions have already been taken** and what **positions** already defined



# An overview of stakeholders' role in CC adaptation

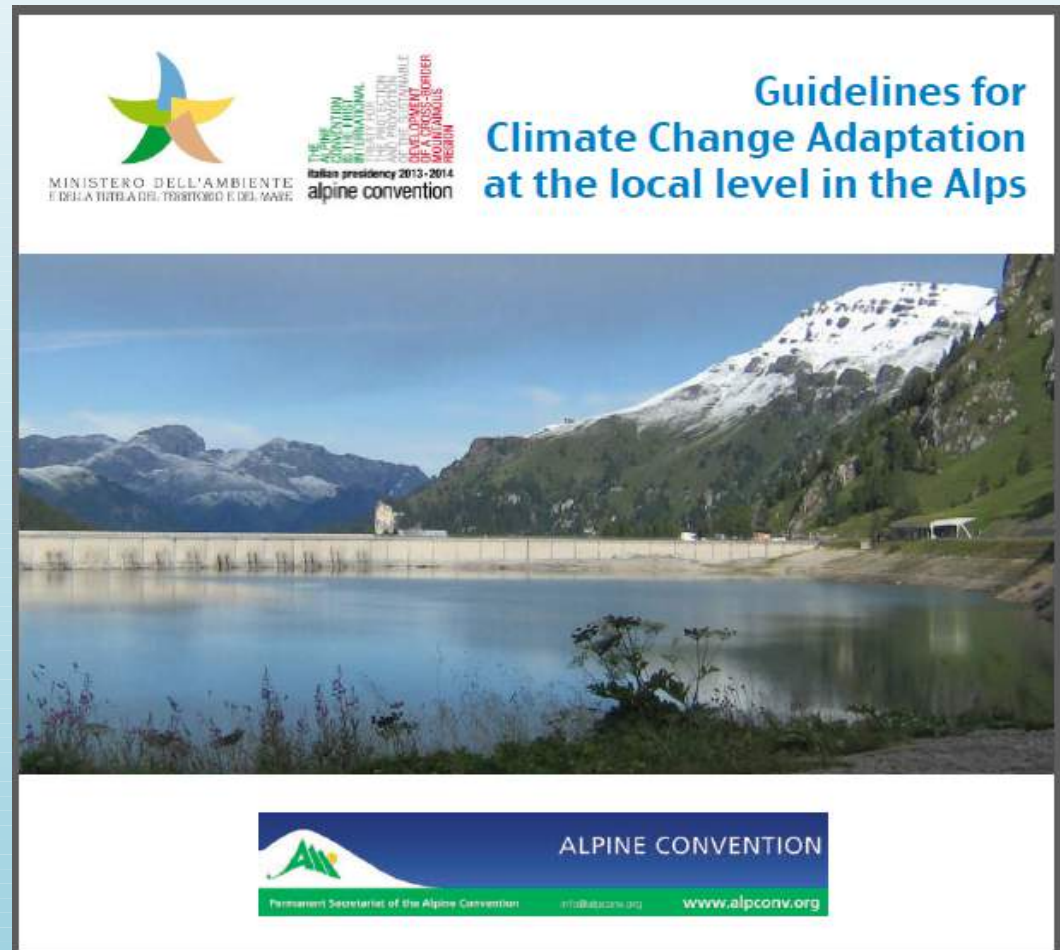




# Where can be found the Guidelines for Climate Change adaptation at the local level in the Alps?

*Short version*

*Complete version*



**Looking forward to a positive Alpine –  
Carpathian ... and beyond mountain cooperation  
for building resilience and developing “ad hoc”  
adaptation plans**



Thames Frost Fair, 1683-84, by Thomas Wyke