

## **EMERGING ISSUES**

The meeting was a precious opportunity to take stock of the implementation of regulations, plans and programmes in the Alpine context and to look at open issues related to the key topic of the safety of settlements and infrastructures. In this context, European directives 2000/60/CE and 2007/60/CE are reference documents also for non-EU regions (Switzerland and Liechtenstein) which participate in the Alpine Convention and in the Alpine Space Programme, as well as in many other cooperation projects at Alpine level.

During the meeting, it emerged how water has always been an important resource and an attractive factor in mountainous areas, but at the same time it deserves careful attention and can represent a risk for human settlements. In the past fifty years significant social changes have led to changes in the way in which soil is used, increased numbers of inhabited settlements, the growth of economic activities, and an increase in mobility and connections – which have in turn increased the sensitivity of territories. On the other hand, a whole host of actions targeted at planning soil utilisation, improving forestry resources and the stability of slopes, monitoring events, identifying and foreseeing hazards and risks, building and maintaining preventive works, and managing emergency situations through civil protection procedures and actions have also been implemented.

Climate changes are threatening to further accelerate processes; it is therefore necessary to maintain high levels of land protection and further improve prevention and safeguard measures. An integrated approach is proving more and more necessary and effective. Such approach shall also take into account non structural (such as land planning, land use, effectiveness of protection forests) and cultural measures, such as the information and involvement of the population to promote responsibility and adequate behaviours.

The long return times referred to by documents add to the complexity of the situation (for instance, the Floods Directive foresees up to five hundred years), as this makes both statistical and physical evaluations very complex to characterise.

In this framework, introducing the concept of residual risks becomes relevant. This shall promote a widespread social dialogue in case of out of scale events which may be beyond the scope of projects. Furthermore, in case of superficial landslides and debris flow events, comparisons can only be made by referring to the rains which have generated them.

Science and technology can certainly provide highly sophisticated tools to evaluate hydrogeological hazards (landslides, rock collapses, floods with liquid and solid elements, influence of the thermal zero) and to monitor and foresee phenomena which are always very complex and dependent on factors which sometimes cannot be detected with sufficient accuracy. Modern tools for land analysis (satellite surveys, laser altimetric surveys, ground measuring networks, various mathematical models, tools for the massive treatment of heterogeneous data, statistical and dynamic models) are a unique opportunity and provide a level of reliability which has never been achieved before.

The prevention of hydrogeological risks in the mountains is the result of the integration between hazard evaluation, the analysis of the event, of the land structure and of threatened elements, of repair and protection measures and of civil protection resources. In order to improve safety, it is therefore necessary to act on all these factors. Also, cooperation among Alpine regions is important, as it allows to compare different organisational models and experiences, and to rely on a wider database.

During the workshop, Regions and Basin authorities have exchanged ideas on their respective experiences, with particular reference to the zoning of hydrogeological hazards. The discussion highlighted how the maps resulting from such exercise do not always translate into constraints in urban planning activities.

Austria has been carrying out planning activities on hazard areas for decades; this is an important tool when drawing up evaluations and programme planning activities, however it does not have an automatic influence on land planning. The Swiss approach has a clear methodology for the identification of zones, but this does not automatically translate into land use constraints.

In Italy, the analysis of areas subject to hydrogeological hazards is the result of the implementation of Decree 180/1998 and is required for the definition of PAIs (Piano stralcio per l'Assetto Idrogeologico – Drafts plans for the hydrogeological structure) by Basin Authorities, while the autonomous provinces of Trento and Bolzano have carried out hazard studies and risk analyses in the framework of the General plans for the use of public waters. In particular, in the Trentino region, the new Provincial Urban Development Plan (2008) introduces urban development constraints for hazard areas, while risk maps will be used to plan protection and prevention actions, and will also be used as a tool to manage emergencies.

Public Administrations have made different choices in terms of risk analysis: some have chosen to carry out analyses and draw maps themselves, ensuring methodological consistency and a tighter control on the process of definition of areas; others have entrusted Municipalities with the task of drawing risk maps, while the Region is responsible for defining guidelines and producing reference materials.