



Three different approaches to provide urban geological information from a geological survey perspective: the Catalan case study

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Studying urban geology is a key way to identify municipal issues involved with urban development and sustainability, land resources and hazard awareness in highly populated areas. In the last decade, one of the lines of work of the Catalan Geological Survey (Institut Cartogràfic i Geològic de Catalunya) has been the development of (i) 1:5.000 scale Urban Geological Map of Catalonia project. Besides, two pilot projects have recently been started: (ii) the system of layers of geological information and (iii) the fundamental geological guides of municipalities. This communication focuses on the presentation of these projects and their utility, with the aim of finding effective ways of transferring geological knowledge and information of a territory, from a geological survey perspective.

The 1:5.000 urban geological maps of Catalonia (i) have been a great ambitious project focused on providing detailed, consistent and accurate geological, geotechnical and anthropogenic activity information of the main urban areas of Catalonia. Nevertheless, it must be taken into account that the compilation and elaboration of a large volume of geological information and also the high level of detail require a lot of time for data completeness.

In order to optimize a greater distribution of information, a system of layers of geological information (ii) covering urban areas is being developed. This pilot project consists of providing specific layers of Bedrock materials, Quaternary deposits, anthropogenic grounds, structural measures, geochemical compositions, borehole data and so on. However, as information layers are treated individually, it may not be clear the coherence between data from different layers of information and its use is currently limited to Earth-science professionals working with geological data.

Hence, as a strategy to reach a wider range of users and also provide a homogeneous and varied geological information, the development of fundamental geological guides for municipalities is also being carried out (iii). These documents include the general geological characterization of the municipality, the description of the main geological factors (related to geotechnical properties, hydrogeology, environmental concerns and geological hazards and resources) and the list of the sources of geological information to be considered. Moreover, each guide contains a 1:50.000 geological map that has cartographic continuity with the neighbouring municipalities. The municipal guides allow a synthesis of the geological environment of the different Catalan municipalities and give fundamental recommendations for the characterization of the geological

environment of the municipality.

In conclusion, the three projects facilitate the characterization of geological environment of urban areas, the evaluation of geological factors in ground studies and also, in general, the management of the environment. These products differ depending on the degree of detail, the coherence of the geological information, the necessary knowledge for their execution or their purpose of use. This set of projects defines a geological urban framework, which is adjusted depending on the government's requirements, the society's needs and the geological survey's available resources.