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# Understanding, promoting and protecting geodiversity and geoheritage of the Piemonte region (Italy) through innovative techniques and public engagement in Earth Science studies

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The onset of Antropocene demonstrates the importance of considering both 1) geodiversity and 2) geoheritage as parts of the landscape "interfaces" where relationships between natural and socio-economic systems can be studied and interpreted. By definition: 1) is the variety, recognizable in nature ("diversity"), of geological features (rocks, minerals, fossils...), of geomorphological environments (and related forms and processes) and of soil characteristics; 2) is an integral part of the global natural heritage focusing on unique, special and representative sites of geological interests (geosites l.s.).
In the Antropocene, both 1) and 2) hold a dynamic character, as the result of actions and interactions of natural and/or human factors. Therefore, geodiversity and geoheritage studies are essential for breaking down geological environments and human territories into their main parts and to understand the variables and mechanisms that control their changes.
In this perspective, results of the multidisciplinary project PROGEO-Piemonte ("PROactive management of GEOlogical heritage in the Piemonte Region") are presented here: an innovative approach for assessing geodiversity in order to select areas of high potential value of geoheritage to be enhanced by targeted management actions. Since the geodiversity of Piemonte is materialized by elements of high scientific, educational, tourism, etc. value, the geosites where this geoheritage is preserved have been comprehensively analysed and characterized for encompassing both public and private interests.
9 strategic geothematic areas have been selected in the Piemonte Region to test this approach, and to improve social engagement aimed at protecting and promoting geodiversity ad geoheritage. The investigated areas represent the multifaceted geodiversity of Piemonte; each area is characterized by high potential for scientific studies, enhancement of public understanding of science, recreation activities and for economic support to local communities. Critical aspects for advancing knowledge on the geological history of Piemonte have been studied in each geothenmatic area, as well as climate and environmental changes, natural hazards, soil processes and georesources. Scientific concepts and techniques have been coupled with geodiffusion interests and products: not only geosites but also museum collections, evidences of mining activity, science exhibits and geo-trails. Action plans have been developed with local partners to determine management requirements. Experiments have been carried out to evaluate best solutions for visual representation of geological processes and evolutionary scenarios. Outcomes of the project include ICT educational tools for schools and the general public, and the establishment of regional guidelines on Geoconservation and on integrated quality management system of geosites, enabling innovative geo-tourism and sustainable development strategies.