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Towards integrated water resources management in Colombia: challenges and opportunities for spatial environmental planning

Sergio Salazar (1,2) and Sebastián Hernández (1,3)

(1) Integrated Water Resources Management Directorate, Ministry of Environmental and Sustainable Development (Colombia), Bogotá D.C., Colombia, (2) Research Group of Hydrological and Environmental Modelling, Technical University of Valencia, Valencia, Spain (sersaga@upv.es), (3) Research Group of Water Resources Engineering, National University of Colombia, Bogotá D.C., Colombia

Only until 2010 was enacted the first national policy related to the integrated management of water resources in Colombia. In 2011 was established the Directorate for Integrated Water Resources Management within the Ministry of Environment and Sustainable Development. Between 2010 to 2013 were adopted the regulatory instruments to be developed within the hierarchical structure for spatial environmental planning around the water resources, considering both a transdisciplinary framework and a multi-ethnic and multi-participatory approach. In this context, there is a breakthrough in the development of strategic and tactic actions summarized as follows: i) technical guidelines or projects were developed for the spatial environmental planning at the macroscale river basins (i.e. Magdalena-Cauca river basin with 2.3 million hectares), meso-scale (river basins from 50.000 to 2 million hectares and aquifers) and local scale (catchments areas less than 50.000 hectares); ii) there is an advance in the knowledge of key hydrological processes in the basins of the country as well as actions to restore and preserve ecosystems essential for the regulation of water supply and ecosystem services; iii) demand characterization introducing regional talks with socio-economic stakeholders and promoting water efficiency actions; iv) water use regulation as a way for decontamination and achieving quality standards for prospective uses; v) introduction of risks analysis associated with water resources in the spatial environmental planning and establishment of mitigation and adaptation measures; vi) strengthening the monitoring network of water quality and hydrometeorological variables; vii) strengthening interactions with national and international research as well as the implementation of a national information system of water resources; viii) steps towards water governance with the introduction of socio-economic stakeholder in the spatial environmental planning and implementation of actions to a water culture and water use conflict management.

With the premise that "access to information and research are crucial for the integrated water resources management", different planning tools have been implemented in several case studies, considering several hydro-climatic, bio-geographic and socio-cultural contexts. It was supported with a transdisciplinary approach (integrated visions from disciplines such as hydrology, biology, ecology, pedology, geomorphology, geology, economy and social sciences among others) with a key protagonist: the technical and scientific capacity available in the country. From this practical experiences at different spatial scales, we have identified a battery of key challenges: i) extend the spatial and temporal coverage of hydrometeorological and water quality monitoring networks at regional scale; ii) expand the knowledge base of aquatic and transition ecosystem as well as the environmental baseline from regional to local scales; iii) researches about the state of subterranean water resources and their interactions with lotic and lentic systems; iv) move towards the establishment of decision support systems that integrate policy objectives at different scales; v) strengthening technical and scientific capacity of the country expanding academic and research public offer; vi) unifying technical criteria and standards environment management policy; vii) institutional architecture redesign. If there is a political and socio-economical consensus about the urgency to move towards the key aspect summarized here, Colombian people will be giving the definitive step towards integrated water resources management as a cornerstone of spatial environmental planning and water governance.

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