

Resum de Tesi Doctoral



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Títol de la tesi	Multi-criteria and Participatory Approach to Socio-Economic, Environmental and Institutional Indicators for Sustainable Water Use and Management at River Basin Level
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(Mínim 1 i màxim 4, podeu veure els codis a <http://doctorat.upc.edu/gestio-academica/impresos/tesi-matricula-i-diposit/codis-unesco>)

Resum de la tesi de 4000 caràcters màxim (si supera els 4000 es tallarà automàticament)

Water is a limited resource essential for life. Human activities have been exercising considerable pressures on it. The unsustainable use and the need to improve the management of water are among the largest global concerns of our time. Indicators are fundamental to monitoring progress towards and trends water sustainability. Despite the widespread recognition of the relevance of indicators to water sustainability worldwide, significant challenges remain. Improved knowledge, research and innovation around this subject are necessary to promote the transition towards sustainable water use and management. This demands also points to the need of developing indicators in a participatory way, with the active engagement of both scientist and stakeholders. Furthermore, these indicators should be suitable for the scale where the governance of water take place: the river basin scale. The main objective of this research is to identify and validate, in a participatory way, a set of indicators that would allow decision makers to measure the sustainability of water use and management at river basin level. This research combined relevant concepts in a holistic methodology that is scientifically robust and easy to understand. This study presents a detailed description of how to apply multi-criteria and participatory approaches to identify, select and validate indicators for sustainable water use and management at river basin level, considering their socio-economic, environmental and institutional aspects. In the initial stage of this study, 60 criteria for the evaluation of indicators and 170 indicators linked to water resources were identified through extensive literature reviews. Subsequently, an international panel of experts selected from these set of indicators the 24, which best fulfilled the criteria of social, economic, environmental and institutional sustainability (Chapter 3). Then, it was identified that 11 of the 24 indicators have the appropriate characteristics to assess water use and management in an actual watershed, fulfilling the criteria of: scientific foundation, individuality, geographic scale of application and specificity (Chapter 4). In the next step, the Salitre River Basin (in semiarid region of Bahia-Brazil) was selected for pilot implementation of this project. At that point, the major stakeholders were identified and involved in the development of the research. The indicators were, then, assessed based on the innovative eDPSIR methodology, in which the interconnectedness of the indicators becomes a key part of the selection process. The application of this method showed that 8 of the 11 indicators are of great relevance to address the complex issue of sustainable use and management of water in the pilot river basin (Chapter 5). Finally, this set of eight indicators was validated against scientific and end-use criteria in a multistage and multistakeholder participatory approach (chapter 6). More than 100 international experts and local stakeholders participated in the development of this research. This study resulted in the selection and validation of a comprehensive set of eight key-indicators to measure the social, economic, environmental and institutional sustainability of water use and management at the Salitre River Basin. This research also provides a transparent, robust and reproducible set of methods that could be applied by scientific community, indicators developers/user and decision makers to identify, select and assess indicator at other river basins of interest. This knowledge could be used by the scientific community, international organizations, water resources managers, policy and decision makers, practitioners, as well as other stakeholders interested in the matter, to promote changes towards sustainable use and management of water. These changes can contribute to harmonising both the human and ecosystem needs at the present as well as being essential for building the future we want for all.

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