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# The evolution of water environment management and research in Europe

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This paper considers the water environment and drivers behind water research across European regions. The recent history of policy development in water resource management is reviewed within the context of persistent and emerging water environment concerns and technologies.
Across Europe, the existing spatial and seasonal pattern of water distribution is placing stresses on societies with many experiencing too much or too little water. It is estimated that at least 11 % of the population and 17 % of EU territory are affected by water scarcity, with the cost over 30 years estimated at EUR 100 billion. With the projected impacts of climate change, some effects are forecast to increase in severity. Historically, industrial development and intensive agriculture have resulted in excessive modification of freshwater systems and unchecked abstraction has led to a widespread degradation of aquatic systems. European policies and research programmes have become increasingly concerned with securing this resource now and in the future. The 6th Environment Action Plan (2002 to 2012) identified natural resources as one of the four priority areas and sought to further integrate policy and research in the environment sector through the development, implementation and enforcement of European Community legislation. Much has changed since 2002, and the upcoming 7th EAP offers a new opportunity to develop practical strategies in the water sector.
Major European legislation contributing to the management and protection of water resources include the Water Framework Directive (WFD) and the Nitrates Directive. The Water Framework Directive is the main framework within which the EU is tackling water quality and has introduced a river basin management approach, now implemented in national legislation in most of the Member States. The Nitrates Directive, was introduced to reduce and prevent nitrates from agricultural sources to address water quality problems including eutrophication.
There exist opportunities for improvement. Currently, standards for monitoring of water resources across Europe still require unification. National assessment and monitoring programmes frequently possess information gaps and are seldom harmonised with regard to the data collected and methods used. In addition, the focus of the WFD on good ecological/ environmental status is of little applicability in arid zones, for example, Cyprus. There are emerging issues in these regions regarding the conflict between extreme water scarcity and environment protection.