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Does the law stymie the science? The role of law in achieving sustainable groundwater management

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Legal frameworks for the management of groundwater evolved in an environment where scientific understanding of the resource was sketchy. As hydrogeological knowledge has improved over time, the law has often failed to catch up and enforcement of those laws that are in place has proved difficult. Consequently, groundwater in many countries is still managed by inadequate regimes that are unable to effectively integrate the impacts of land use management and surface water interactions. The Water Framework Directive and its associated Groundwater Directive require the integrated management of both ground and surface waters, but on a global level, this is unusual. Institutional frameworks often perpetuate this split, and the legal regime for the management of transboundary shared aquifers is a work in progress. Both national and international frameworks encourage a race to over-exploit groundwater resources.

Symptomatic of the problems currently seen in groundwater management is a widespread inability to adapt to changing climate and environmental conditions. Users may be granted unchangeable rights of use in perpetuity, and the impacts of aquifer over-exploitation on dependent ecosystems may be ignored. There are therefore significant barriers to the application of existing science in many countries, and this seriously jeopardises efforts to sustainably manage groundwater.

This presentation will assess current developments in the laws relating to the use of groundwater around the world, highlighting case studies from India, Australia and the USA, and assessing the implementation of the Groundwater Directive in selected European countries (in work derived from the EU-funded GENESIS project). It will also examine the legal architecture relating to international shared aquifers, and the extent to which it can cope with national groundwater use patterns that will shift in response to climate change and its consequences.