



## **The Energy-Water Nexus: Managing the Links between Energy and Water for a Sustainable Future**

Karen Hussey (1) and Carine Petit (2)

(1) ANU Water Initiative, The Australian National University, based at Institut d'études européennes, Université Libre de Bruxelles, Avenue F.D. Roosevelt 39, 1050 Bruxelles, Belgium, +32 497 399 138, karen.hussey@anu.edu.au, (2) COST Office, Avenue Louise 149, 1050 Bruxelles, Belgium, +32 2 533 38 31, cpetit@cost.esf.org

Water and energy are both indispensable inputs to modern economies but currently both resources are under threat owing to the impacts of an ever-increasing population and associated demand, unsustainable practices in agriculture and manufacturing, and the implications of a changing climate.

However, it is where water and energy rely on each other that pose the most complex challenges for policy-makers. Water is needed for mining coal, drilling oil, refining gasoline, and generating and distributing electricity; and, conversely, vast amounts of energy are needed to pump, transport, treat and distribute water, particularly in the production of potable water through the use of desalination plants and waste water treatment plants.

Despite the links, and the urgency in both sectors for security of supply, in existing policy frameworks energy and water policies are developed largely in isolation from one another. Worse still, some policies designed to encourage alternative energy supplies give little thought to the resultant consequences on water resources, and, similarly, policies designed to secure water supplies pay little attention to the resultant consequences on energy use. The development of new technologies presents both opportunities and challenges for managing the energy-water nexus but a better understanding of the links between energy and water is essential in any attempt to formulate policies for more resilient and adaptable societies.

The energy-water nexus must be adequately integrated into policy and decision-making or governments run the risk of contradicting their efforts, and therefore failing in their objectives, in both sectors.

A series of COST Exploratory Workshops, drawing on on-going research in the energy-water nexus from a number of international teams, identified the implications of the energy-water nexus on the development of (i) energy policies (ii) water resource management policies and (iii) climate adaptation and mitigation policies. A preliminary list of recommendations on how best to account for and integrate these impacts into policy and decision-making processes at various institutional levels was prepared and future research needs in the energy-water nexus were suggested as main outcomes. This presentation draws on the contributions to the COST water-energy-links exploratory workshops and the development of 12 case studies undertaken by researchers from Europe, the United States, Australia and China, which will be published in a Special Feature of Ecology and Society, mid-2010.