Water for Our Future – Eawag, GAIA and the Challenge of Sustainability

Prof. Dr. Janet G. Hering

Eawag | Duebendorf | Switzerland |
E-Mail: janet.hering@eawag.ch

Water is a substance with many fascinating and contradictory aspects. It is both a basic necessity of life and – in the form of hurricanes, floods, and tsunamis – a massively destructive force of nature. Human settlements on coasts, lake shores, and river banks facilitate the use of surface waters for transportation, recreation, and fishing. But they also increase vulnerability to extreme events. The central importance of water to civilization is evidenced by both past and present societal investments in infrastructure for water conveyance, treatment, and storage; yet the pricing of water is highly variable and often belies its value to society. Water availability and scarcity are primarily local issues, but inter-basin water transfers, virtual water trade,¹ and transboundary issues arising from rivers and catchments that cross political boundaries require a broader focus. The basic uses of water for hygiene and as a drinking water source pose an inherent conflict, and the withdrawal of water for irrigation can compromise the functioning of aquatic and riparian ecosystems.

It was the conflict between industrial waste and sewage discharge and the maintenance of healthy fisheries that inspired the establishment of an Advisory Center for Wastewater Treatment and Drinking Water Supply at the Swiss Federal Institute of Technology (ETH) Zurich in 1936. From this modest beginning 75 years ago, the Swiss Federal Institute of Aquatic Science and Technology (Eawag) has grown into an autonomous institution within the ETH Domain² with about 450 staff (including over 100 PhD students) and a mandate in research, education, and expert consulting.

With Eawag's participation, many water quality problems in Switzerland have been solved, and the provision of safe drinking water and sanitation is ensured. This is unfortunately not the case in developing countries, but Eawag continues its 30-year tradition of addressing these issues.³ Eawag's research also deals with emerging environmental concerns in industrialized countries including the occurrence and effects of micropollutants and engineered nanoparticles, loss of biodiversity, and climate change.

The great challenge of meeting human needs for water while preserving the capacity of the water environment to provide essential ecosystem services demands multiple perspectives and approaches. Measures must be developed and implemented to reduce the resource intensity and environmental impacts of providing water for human welfare. The response of ecosystems to human impacts must be understood in order to prevent irreversible losses and target interventions effectively.

Eawag is committed to addressing these critical issues, but a much broader effort, based on collaboration and cooperation, is needed to secure a sustainable future. An emphasis on inter- and transdisciplinary research is needed; in this context, Eawag was pleased to host the 2011 GAIA annual meeting. I am also honored to be a member of GAIA's scientific advisory board. GAIA plays an important role in fostering interaction not only among the research communities in the natural, social and engineering sciences but also with stakeholders and practitioners.

Janet G. Hering

© 2011 J. G. Hering; licensee oekom verlag.

This is an article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/3.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

¹ Discussed in three articles in this issue:

Gawel, E., K. Bernsen. 2011.

Do we really need a water footprint?

Global trade, water scarcity and the limited role of virtual water.

GAIA 20/3: 162–167.

Biewald, A. 2011. Give virtual water a chance! An attempt to rehabilitate the concept. GAIA 20/3: 168–170.

Wichelns, D. 2011. Virtual water and water footprints. Compelling notions, but notably flawed.

GAIA 20/3: 171–175.

² The ETH Domain comprises two schools in Zurich and Lausanne, four research institutes and a governing board; see www.ethrat.ch.

³ These activities are conducted primarily in Eawag's Department of Water and Sanitation in Developing Countries; see www.eawag.ch/forschung/sandec/index.