



**Water, water, every
nor any drop to
drink**

where,

For decades the study of water, let alone sewage, was neglected by academics. That has now transformed, but with thousands of children dying daily owing to unsafe water and poor sanitation, the challenges are huge. As the UN International Year of Water Co-operation approaches, **Judith Rees** looks at the vital importance of water as an academic discipline.

Today it is commonplace to read phrases such as “water is critical for sustainable development, including environmental integrity and the eradication of poverty and hunger” (announcing the mandating of 2013 as the UN International Year of Water Co-operation) or “water is essential for economic growth, human health and the environment” (OECD 2011). With such words ringing in your ears, it is hard to believe that barely 40 years ago a senior colleague advised me that my academic career would not prosper if I continued to focus my research on the water sector. He argued that the subject was regarded as too narrow, was not a politically salient policy area and, moreover, seemed unlikely to raise the sort of key intellectual issues which were appropriate for research within the social sciences.

Questions concerning energy demand, capacity planning, financing, pricing, regulation, industry structure and governance were viewed as academically challenging and respectable, but for some reason the same questions applied to water were not (and, of course, research on sewage or sanitation services was

completely beyond the pale). Given such views, it is not surprising that during the 1960s you could count on one hand the number of British social scientists doing work on water resources and water services, a fact which undoubtedly worked to my advantage in later years!

This academic neglect of the sector started to break down as it was realised that the characteristics of both water resources and services meant that they could provide a useful lens through which to study a range of important intellectual and policy-relevant issues. Economists, for example, became seriously engaged with the analysis of public expenditure and the application of economic analysis to the design and scale of services, with common property resources and market failures, with the role of the private sector and its regulation and with the treatment of risk and uncertainty. Many other social sciences also used the sector to consider a host of questions concerning such issues as sustainable development, environmental protection, property right allocations and social equity. However, while research on water has burgeoned over the last 40 years and is now considered to be

respectable, major challenges remain, not the least of which is to see the outcomes of this research translated into public policy and management practice.

It is well known that governments around the world are struggling to meet the considerable challenges involved in managing their water resources effectively and providing their populations with the basic water and sanitation services so vital for human health and well-being. Inevitably, with population growth, urbanisation and industrialisation, ever greater pressures are being placed on the accessible water resource base. According to the OECD's Environmental Outlook to 2050, over 40 per cent of the world's population is likely to be living in river basins under severe water stress and 20 per cent will be at risk from floods by 2050. Further, the quality of surface water will deteriorate still further in non-OECD countries and groundwater sources are under severe threat in several regions as the rate of depletion, which doubled between 1960 and 2000, shows no sign of slackening.

Despite major efforts being made in some countries to meet the Millennium Development Goals for water ►

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“The pace of urbanisation has outstripped connections to water infrastructure”

and sanitation, millions of people still lack access to even the most basic services. We know that some 800 million do not have any form of improved water supply but many more, possibly some 3 billion, are still forced to drink from unsafe sources. There are now more city dwellers without access to improved supplies than there were in 1990, as the pace of urbanisation has outstripped connections to water infrastructure. Over 2.5 billion lack access to even the most basic forms of sanitation, which has major implications for public health, for the environment and for the safety of ground and downstream water sources. Today, an estimated 1.4 million children under five die annually because of unsafe water and inadequate sanitation, and recent estimates by the World Health Organisation suggest total global economic losses of US\$260 billion per annum are associated with the failure to provide basic water services.

All this makes pretty depressing reading, and particularly so when some of the fundamental problems with conventional water resource and service management systems have been known for many years and the most recent recommendations for policy and practice change are incredibly familiar.

One such problem, the widespread failure to value water and adopt appropriate pricing policies, has long been highlighted as a key candidate for policy reform. Un-priced or under-priced water resources and services make it virtually inevitable that demands will outstrip supply, little investment will take place to improve water use efficiency or to develop non-conventional water sources, and available supplies will not be allocated to the most economically and socially beneficial purposes. It is, however, still commonplace for water resources and ecosystem services to be treated as free goods

and for water supplies to be “sold” for all purposes (agricultural, industrial and domestic) at prices which fail to recover the operating costs, let alone make any contribution to infrastructure replacement or extension. Ministers may declare their recognition of “the need for sustainable and efficient cost recovery ... and innovative financing mechanisms, such as appropriate payments for ecosystem services” (Ministerial Declaration 6th World Water Forum 2012) but recognition is one thing, implementation quite another.

Water pricing reforms are always controversial but without them the management system will not be sustainable either in environmental or in economic terms, and it is difficult to see how the investments needed to tackle the sector's problems can possibly be funded. It is estimated that some US\$18 billion will be required each year to meet the Millennium Development Goals of reducing by half the number of people without safe water and basic sanitation, and much more will be needed to achieve universal coverage. On top of this, some US\$54 billion of investment per annum is required to maintain the existing infrastructure, as well as undoubtedly very large, but largely unquantified, sums to tackle pollution and ecosystem degradation, reduce vulnerability to water-related hazards and address the potential effects of climate change.

Although overseas aid and other forms of development finance going to water service provision have risen markedly over the last ten years, at the very best this is likely to contribute less than five per cent of the total finance needed in developing countries, and private sector investment will only be attracted if reasonable rates of return can be made; the reality is that the bulk of the needed funding can only come from user charges or public budgets. It is sometimes argued

that the public good nature of some elements of water resources management and water service provision means that everything should be publically provided and financed, but this ignores the fact that people also derive private benefits. Given the pressures on public budgets, it seems essential that, where possible, revenue should be raised from user or beneficiary payments; the opportunity costs involved in continuing to use public funds to provide private goods to those who can afford to pay for them are high.

Pricing reform is but one of the many challenges facing the water sector. Equally important is the need to develop governance and institutional arrangements which recognise not only the interdependencies that exist between the different users and uses of the same multi-purpose water resource but also those between the water sector and other sectors of the economy. Understanding the interactions between water policies and those, for example, concerned with energy and climate change, with food and fibre production or with international trade, and developing coherence between them, represents a challenge not only for policymakers but also for academic researchers.

These are just some of the challenges that the growing body of academics researching into water are embracing with some urgency, as the situation becomes ever more critical for millions across the planet. ■



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