

### Case 1: Large dams and liquid dynamics

Large dams are often considered to be the panacea to water scarcity. However, dam builders and planners have often tended to ignore their high social and environmental costs. The spread of pains and gains has not been equal with benefits often going to large farmers and irrigators and have also led to unintended consequences such as disease

outbreaks. Large-scale displacement from river valleys has led to the impoverishment of thousands of marginal farmers and indigenous peoples, the destruction of their ancestral homes and cultural attachments to land and river resources. But the primacy of the large dam is maintained in places like India and China, ignoring more locally appropriate alternatives



## Liquid Dynamics

From STEPS Working Paper 6: Liquid Dynamics: challenges for sustainability in water and sanitation

STEPS briefing 6

### More reading



Liquid Dynamics: challenges for sustainability in water and sanitation, STEPS Working Paper 6 by Lyla Mehta, Fiona Marshall, Synne Movik, Andy Stirling, Esha Shah, Adrian Smith and John Thompson (2007).

ISBN - 13: 978 185864 655 3

The Politics and Poetics of Water: Naturalising Scarcity in Western India by Lyla Mehta (2005). ISBN - 81 250 2869 2

Pathways to Sustainability: an overview of the STEPS Centre approach by Melissa Leach, Ian Scoones and Andy Stirling (2007). ISBN - 13: 978 1858646561

For other titles in this series (including agriculture, health, dynamics, governance, designs) see: [www.steps-centre.org/publications](http://www.steps-centre.org/publications)

### Credits

This briefing was written by Lyla Mehta and edited by Julia Day.

### About the STEPS Centre

The STEPS Centre (Social, Technological and Environmental Pathways to Sustainability) is an interdisciplinary global research and policy engagement hub uniting development studies with science and technology studies. We aim to develop a new approach to understanding, action and communication on sustainability and development in an era of unprecedented dynamic change. The STEPS Centre is based at the Institute of Development Studies and SPRU Science and Technology Policy Research at the University of Sussex with a network of partners in Asia, Africa and Latin America and is funded by the Economic and Social Research Council. Find out more: [www.steps-centre.org](http://www.steps-centre.org)

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**The effects of recurring floods and droughts, the deaths of 6,000 babies daily from waterborne diseases and growing sanitation problems in booming peri-urban and urban centres. No act of terrorism generates devastation on the scale of the crisis in water and sanitation. A billion people still lack access to safe water and 2.6 people lack access to adequate sanitation. More than most**

**resources and services, water and sanitation are essential for all aspects of life, wellbeing and productivity and have been the focus of development interventions and international action for three decades. But there remains a big disconnect between global rhetoric and the everyday realities and experiences of poor and marginalised people.**



Women drawing water from a well, Kenya / Dieter Telemans / Panos

### Why is there a disconnect?

Much current debate, policies and interventions fail to address water and sanitation problems in sustainable ways that meet the needs of poorer and marginalised people. The focus on water as an economic good can overshadow other, particularly cultural and symbolic, meanings and roles of water. The engineering and public health domination of sanitation can obscure local level priorities, needs and socio-cultural practices. Consequently, despite good intentions, many projects fail. For example, villagers in Merka, western India, prefer local sources of water (e.g. the tank and wells) to the ostensibly 'improved' government-supplied piped water. Views that see water and sanitation problems in aggregate, technical terms, ignore the social, political and distributional issues that often underlie what may appear as 'scarcity' and have little to do with local users' rights and interests (See Case 1).

**“It is time to move beyond conventional indices of sustainability that tell us little about equity, pro-poor agency, power and resilience”**

### Liquid dynamics and Sustainability

Current approaches often fail to address challenges associated with contemporary dynamics in water and sanitation systems. These could be called 'liquid dynamics' and refer to the patterns of complexity and interaction between the social, technological and ecological/hydrological dimensions of water and sanitation systems.

Access to water and sanitation is determined by the complex, dynamic interactions between different social, technological and environmental processes across different scales and working and timeframes, with uncertain consequences. But significant existing problems in sustainable access are now compounded by new uncertainties

arising from rapid urbanisation and climate change.

Governance processes are key here - institutional and political relationships that shape interactions between water and sanitation technologies and people. While important moves to involve communities and address water and sanitation problems at different scales have been made, key challenges remain in addressing adaptation to dynamics, uncertainties and the framings of different groups.

Design processes are also crucial. This refers to different kinds of social appraisal through which water and sanitation knowledge is gathered to inform decision-making and institutional arrangements designed to enhance equity and sustainability. These processes have traditionally focussed on narrow, technically-focussed approaches such as cost-benefit analyses and blanked out a range of options and alternative perspectives. Appraisal processes must be opened out to support pathways to sustainability and social justice.

### Developing pathways to sustainability in water and sanitation

A sustainable water and sanitation system is one that can maintain a level of service provision over the long term by adapting and coping with these dynamic interlocking processes (e.g floods, droughts, growing number of users etc.). But there are diverse views of what counts as sustainable or not and it is important to look at the services valued by marginalised rather than powerful groups and ask whether water and sanitation sustainability has normative goals such as poverty reduction or social justice.

**“Seeing water and sanitation problems in aggregate, technical terms, ignores the social, political and distributional issues that often underlie 'scarcity'”**



Anti-dam protestors prepare to drown themselves, Domkhedi, India / Karen Robinson / Panos

### To achieve socially just Sustainability in water and sanitation, the following need attention:

- How the dynamics of complex socio-technical-ecological water and sanitation systems, and how resilience, robustness, durability and stability might be built in the context of new shocks and stresses from, for instance, climate change, rapid urbanisation and new middle class hygiene movements. Processes at different scales (temporal and spatial), and the ways these interlock and are felt in different places and by different groups, are key.
- The framings of water and sanitation systems and dynamics held by different people, and how they lead to particular, valued Sustainability goals and properties
- The governance and appraisal of water and sanitation systems and how these are shaped by power relations, including political economy and power-knowledge, and how approaches might better enable poorer people's own perspectives and agency in water and sanitation services provision.

- The influence of history and culture in shaping water and sanitation knowledge and practice, whether in diverse local settings or in the contexts of global debates and agencies, is also a crucial factor.

Building pathways to pro-poor, equitable Sustainability in water and sanitation will involve a plurality of approaches. Mapping what works when, where and how needs to involve detailed case studies, urban as well as rural, whether focusing in on water and sanitation issues or examining their interaction with other processes - for instance in relation to health, food or agriculture.

It is time to move beyond conventional indices of sustainability - and those definitions of water and sanitation problems and solutions - that tell us little about equity, pro-poor agency, power and resilience. It is important to advance an agenda for understanding and action in the water and sanitation domain that links poverty reduction and social justice with Sustainability in today's accelerating liquid dynamics.